

**EXPLORING HUMAN WILDLIFE CONFLICTS THROUGH THE LIVELIHOODS
FRAMEWORK IN NWOYA DISTRICT**

ALOYO INNOCENT JESSIE

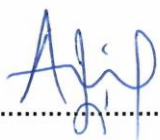
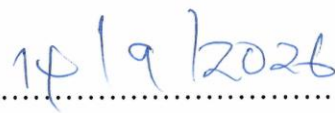
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**A DISSERTATION SUBMITTED TO THE DIRECTORATE OF RESEARCH AND
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FOR THE AWARD OF THE DEGREE OF MASTER OF ARTS IN CONFLICT
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SEPTEMBER 2026

DECLARATION

I, Aloyo Innocent Jessie, confirm this research is my original work and has not been submitted to a University for the award of a degree.

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APPROVAL

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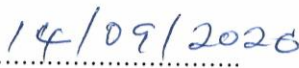
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DEDICATION

I dedicate this work to the farming communities of Celpeke, Ceke, Te-Obee and Langele who are residing along the boundary of Murchison Falls National Park for their cooperation and participation in the community surveys and the information they shared about their experiences with HWC despite the loss of their crops, loss of their loved ones and constant anxiety. I hope the experiences shared, and information on human wildlife incidents will be considered in tailoring a community focused response plan and sustainable measures in management of the conflicts by UWA and other stakeholders to improve coexistence and sustainable livelihoods.

I further dedicate this work to My Husband - Mr. James Opoka; My Daughters - Daniella Agenorwot, Gabriella Lucile Lamara, Michaela Faustina Laker & Chiara Jewel Adora; my Parents- Mr George Sanon Opoka & Mrs. Rose Mary Opoka; My Siblings- Dr. Juliet Ajok, Dr. Ivan Latim, Joan Aleng Opoka, Gloria Abwono & Alfonse Oroma. Your words of encouragement, emotional and financial support made this possible.

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TABLE OF CONTENTS

DECLARATION	ii
APPROVAL	iii
DEDICATION	iv
ACKNOWLEDGEMENT	v
TABLE OF CONTENTS	vi
LIST OF TABLES	xiii
LIST OF FIGURES	xiv
LIST OF ACRONYMS AND ABBREVIATIONS	xv
ABSTRACT	i
CHAPTER ONE: INTRODUCTION	1
1.1 Background to the Study	1
1.2 Problem Statement	2
1.3 Objectives of the study	3
1.3.1 General Objective	3
1.3.2 Specific Objectives	3
1.4 Research Questions	3
1.5 Scope of the study	4
1.5.1 Geographical Scope	4
1.5.2 Theoretical Scope	4
1.5.3 Temporal Scope (2015 – 2025)	4
1.5.4 Methodological Scope	5
1.6 Justification of the study	5
1.7 Significance of the Study	6
1.8 Conceptual Framework	7
CHAPTER TWO: LITERATURE REVIEW	9
2.0 Introduction	9
2.1 Nature and Extent of Human–Wildlife Conflicts	10
2.1.1 Global Patterns of Human–Wildlife Conflicts	10
2.1.2 Human–Wildlife Conflicts in Sub-Saharan Africa	11
2.1.3 Human–Wildlife Conflicts in Uganda and Northern Ugandan Context	12

2.2 Impact of Human–Wildlife Conflicts on Household Livelihoods	13
2.2.1 Global Livelihood Impacts of Human–Wildlife Conflicts.....	13
2.2.2 African Perspectives on Household Vulnerability	14
2.2.3 East African and Uganda Context	15
2.2.4 Contextual Evidence from Uganda	16
2.3 Livelihood Strategies for Coping with Human–Wildlife Conflicts.....	17
2.3.1 Global Coping and Adaptation Strategies	17
2.3.2 African Community-Based Responses.....	18
2.3.3 East African Innovations and Institutional Support	18
2.3.4 Contextual Realities in Nwoya District.....	19
2.4 Policies, Regulations, and Management Strategies	20
2.4.1 Global Policy and Governance Frameworks.....	20
2.4.2 African Policy Approaches and Regional Cooperation.....	21
2.4.3 Uganda’s Legal and Institutional Framework	22
2.4.4 Park-Level Implementation and Contextual Challenges	22
2.5 Theoretical Framework	23
2.5.1 Foundations of the Sustainable Livelihoods Framework (SLF).....	23
2.5.2 The Vulnerability Context, Capitals Pentagram, and Transforming Processes	24
2.5.3 Mapping HWC Impacts on Livelihood Capitals	24
2.5.4 Applying the SLF to Nwoya District and Murchison Falls National Park.....	25
2.6 Literature Gaps and Conceptual Synthesis.....	26
CHAPTER THREE: RESEARCH METHODOLOGY	28
3.0 Introduction.....	28
3.1 Research Design	28
3.2 Description of the Study Area	29
3.2.1 Geographical Location and Demographics	29
3.2.2 Economic Activities	30
3.3 Sample Size Determination.....	31
3.4 Sampling Procedures and Techniques.....	32
3.4.1 Household Interviews – Stratified and Systematic Random Sampling.....	32
3.4.2 Key Informant Interviews – Purposive Sampling	32

3.4.3 Focus Group Discussions – Purposive and Snowball Sampling	33
3.5 Participant Eligibility Criteria	33
3.5.1 Inclusion Criteria	33
3.5.2 Exclusion Criteria	33
3.6 Data Collection Instruments	34
3.6.1 Structured Household Questionnaires	34
3.6.2 Key Informant Interview Guides	34
3.6.3 Focus Group Discussion Guides	35
3.6.4 Direct Field Observations and Checklist	35
3.6.5 Secondary Data Review Template	35
3.7 Pilot Testing and Instrument Refinement	36
3.7.1 Selection of the Pilot Site	36
3.7.2 Execution and Outcomes of the Pilot Study	36
3.8 Data Quality Control	37
3.8.1 Content Validity	37
3.8.2 Instrumental Reliability	37
3.9 Data Verification, Cleaning, and Coding	37
3.9.1 Daily Field Verification	37
3.9.2 Systematic Data Cleaning	38
3.9.3 Structured Coding Protocols	38
3.10 Data Analysis and Analytical Framework	38
3.11 Ethical Considerations	39
3.12 Methodological Limitations	39
CHAPTER FOUR: PRESENTATION OF FINDINGS / RESULTS	41
4.0 Introduction	41
4.1 Demographic Profile of Participants	41
4.1.1 Gender and Livelihood Implications	42
4.1.2 Age Distribution and Productive Capacity	42
4.1.3 Household Livelihood Activities and Vulnerability Baseline	43
4.2 Extent and Nature of Human–Wildlife Conflicts	44
4.2.1 Prevalence and Conflict Susceptibility	44

4.2.2 Wildlife Species Involved and Conflict Hierarchy	45
4.2.3 Crop and Property Destruction Patterns	46
4.2.4 Temporal Patterns and Conflict Seasonality	48
4.2.5 Disease Transmission Risks and Ecological Concerns	49
4.2.6 Loss of Life and Physical Injuries	49
4.3 Multi-Dimensional Impacts of HWC on Household Livelihoods (SLF Perspective)	50
4.3.1 Food Insecurity, Caloric Shocks, and Nutritional Distress	50
4.3.2 Disrupted Livelihood Routines, Sleep Deprivation, and Human Capital Erosion	51
4.3.3 Psychosocial Strains, Anxiety, and Trust Breakdown.....	51
4.3.4 Gendered Vulnerabilities and Domestic Conflict.....	52
4.3.5 Educational Disruption and Intergenerational Poverty traps.....	53
4.4 Coping and Adaptation Strategies Mobilized by Households.....	53
4.4.1 Traditional Deterrents and Local Adaptation	53
4.4.2 Physical Barriers, Collective Vigilance, and Scout Mobilization	55
4.4.3 Livelihood Diversification, Adaptive Enterprises and Structural Constraints	56
4.5 Policy, Regulations, and Transforming Institutional Processes	57
4.5.1 Statutory Compensation and the Bureaucratic Process	57
4.5.2 Tourism Revenue-Sharing and local Benefit Capture.....	58
4.5.3 Ranger Capacity and Park Infrastructure Constraints	59
4.5.4 Stakeholder Collaboration and External Support Gaps.....	59
4.5.5 Community Perceptions of Conservation Legitimacy	59
4.6 Chapter Summary.....	60
CHAPTER FIVE	62
FINDINGS, ANALYSIS, AND THEORETICAL DISCUSSIONS ON HUMAN-WILDLIFE CONFLICT AND LIVELIHOOD VULNERABILITY	62
5.1 Context of Human-Wildlife Conflict (HWC).....	62
5.1.1 High Prevalence of Conflict	62
5.1.2 Wildlife Species – Elephants as the Predominant Conflict Species.....	63
5.1.3 Crop Types Impacted and Regional Alignment	65
5.1.4 Food Security, Nutrition, and Livelihood Impacts	66
5.1.5 Conflict Frequency and Trend.....	67

5.1.6 Nature of Conflicts and Associated Impacts	68
5.1.7 Drivers of Increasing Conflicts	69
5.1.8 Section Conclusion & Landscape Policy Implications	70
5.2 Impact of Human–Wildlife Conflicts on Household Livelihoods	71
5.2.1 Food Insecurity, Crop Loss, and Economic Deprivation	71
5.2.2 Disrupted Routines, Sleep Deprivation, and Human Health	73
5.2.3 Psychological Distress and Mental Health Impacts	74
5.2.4 Disruption of Livelihood Activities and Labour Allocation	75
5.2.5 Loss of Productive Assets and Household Economic Resilience	76
5.2.6 Reduced Income and Increased Financial Vulnerability	77
5.2.7 Increased Household Expenditure and Costs of Defense	78
5.2.8 Reduced Access to Education, Healthcare, and Social Services	79
5.2.9 Reduced Livelihood Diversification	80
5.2.10 Erosion of Household Resilience and Vulnerability Cycles	81
5.2.11 Section Conclusion & Conceptual Synthesis	82
5.3 Household Coping and Mitigation Strategies	83
5.3.1 Community-Based Deterrent Measures	83
5.3.2 Physical Barriers and Collective Action	84
5.3.3 Livelihood Adaptation and Diversification	85
5.3.4 Government and Institutional Interventions	86
5.3.5 Mitigation Effectiveness	87
5.3.6 Section Conclusion	88
5.4 Policy and Institutional Effectiveness	89
5.4.1 Community Perceptions and Satisfaction with HWC Policies	89
5.4.2 Effectiveness and Limitations of Traditional and Community-Led Deterrents	90
5.4.3 Effectiveness and Challenges of Compensation and Revenue-Sharing Policies	91
5.4.4 Infrastructure and Physical Capital Constraints	92
5.4.5 Human Resource and Community Participation Constraints	93
5.4.6 Distinguishing Policy Effectiveness from Community Satisfaction	94
5.4.7 Chapter Conclusion	95
CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS	97

6.0 Introduction.....	97
6.1 Conclusions.....	97
6.1.1 Extent and Nature of Human–Wildlife Conflicts.....	97
6.1.2 Impacts of HWC on Household Livelihoods	98
6.1.3 Existing Household Strategies for Coping and Mitigation.....	99
6.1.4 Effectiveness of Policies, Regulations, and Management Strategies	100
6.2 Recommendations.....	100
6.2.1 Strengthen Community-Based HWC Management (Social & Human Capital Expansion).....	101
6.2.2 Enhance Livelihood Diversification and Resilience (Financial & Natural Capital Accumulation)	102
6.2.3 Improve Compensation and Incentive Mechanisms (Transforming Processes & Trust Building)	103
6.2.4 Promote Collaborative Land-Use Planning and Buffer Zone Management (Spatial Friction Reduction).....	104
6.2.5 Enhance Institutional Coordination and Policy Implementation (Multi-Stakeholder Synergy)	105
6.2.6 Promote Awareness, Education, and Applied Research (Coexistence and Scientific Monitoring)	106
6.3 Final Reflection.....	106
6.4 Contribution to Knowledge	107
6.5 Areas for Further Research	107
REFERENCES	109
APPENDICES	115
Appendix 1: Map of Uganda showing Nwoya district and Map of Nwoya district showing the location of Lii Sub-county.....	115
Appendix 2: Informed Consent Form	116
Appendix 2.1: Informed Consent Form For (Household Interviews)	116
Appendix 2.1.1: Karatac Me Yeyo Me Bedo I Kikweda Man Pi Dok Keno (Translated Version - Luo)	118
Appendix 2.2: Informed Consent Form For Key Informant Interviews (ICF-KII).....	120

Appendix 2.2.1: Karatac Me Yeyo Me Bedo I Kikweda Man Pi Dano Matye Ki Ngec Matut (Key Informant Interview – Translated Version)	122
Appendix 2.3: Informed Consent Form For Focus Group Discussions (FGDs).....	124
Appendix 2.3.1: Karatac Me Yeyo Me Bedo I Kikweda Man Pi Nywako Tam Idul (Focus Group Discussions).....	126
Appendix 3.0 Research Instruments/Tools	128
Appendix 3.1 Structured Household Questionnaire Guide	128
Appendix 3.1.1 Structured Household Questionnaire Guide (Translated Version).....	132
Appendix 3.2. Open-Ended Household Questionnaire Guide	135
Appendix 3.2.1 Open-Ended Household Questionnaire Guide (Translated Luo Version).....	137
Appendix 3.3 Focus Group Discussion (Fgd) Guide.....	139
Appendix 3.3.1 Female Headed Households	139
Appendix 3.3.1 Focus Group Discussion (Fgd) Guide: Female-Headed Households (Translated Luo Version)	140
Appendix 3.4 Focus Group Discussion (FGD) Guide - General Community	141
Appendix 3.4.1 Focus Group Discussion (FGD) Guide: General Community (Translated Version- Luo)	143
Appendix 3.5 Focus Group Discussion (FGD) Guide - Community Action Group.....	145
Appendix 3.5.1 Focus Group Discussion (FGD) Guide- Community Action Group (Translated Version – Luo)	147
Appendix 3.6 Key Informant Interviews (KIIs) Guide.....	149
Appendix 3.6.1 Key Informant Interviews (KIIs) Guide (Translated Version –Luo)....	151
Appendix 4: Observation Checklist.....	153
Appendix 5: Work Plan (Proposal Development, Data Collection And Reporting).....	154
Appendix 6: Research Budget	155
Appendix 7: GUREC Approval Letter	156
Appendix 8: Nwoya District Local Government Administrative Clearance Letter	158
Appendix 9: Article Publication Certificate.....	159
Appendix 10: Plagiarism Check Report.....	160
Appendix 11: Photo Gallery.....	160

LIST OF TABLES

Table 1. 1: Interconnectedness of HWC shocks to Livelihoods capitals.....	25
Table 3. 1: Study Population, Administrative Locations, and Sample Size Composition.....	30
Table 4. 1: Participants' Gender Profile	42
Table 4. 2: Age Distribution of Participants	43
Table 4. 3: Primary Household Livelihood Activities	44
Table 4. 4: Satisfaction with Current Wildlife Conflict Management Efforts.....	60

LIST OF FIGURES

Figure 1. 1: Conceptual Framework Linking Human–Wildlife Conflicts (HWCs) and Livelihoods in Nwoya District	7
Figure 4. 1: Ranking of Wildlife Species Involved in Conflict. Source	46
Figure 4. 2: Distribution of Crop Acreage Destroyed per Household	47
Figure 4. 3: Household Mobilization of Coping & Adaptive Strategies	54

LIST OF ACRONYMS AND ABBREVIATIONS

CAG	-	Community Action Group
CL	-	Community Leaders
FGDs	-	Focus Group Discussions
FHH	-	Female-Headed Households
GBV	-	Gender-Based Violence
GC	-	General Community
HH	-	Household
HWC	-	Human–Wildlife Conflicts
KIIs	-	Key Informant Interviews
LRA	-	Lord’s Resistance Army
NDP 3	-	National Development Plan III
NDP IV	-	National Development Plan IV
NGOs	-	Non-Governmental Organizations
SDGs	-	Sustainable Development Goals
SLF	-	Sustainable Livelihoods Framework
UBOS	-	Uganda National Bureau of Statistics
UGX	-	Ugandan Shillings
USAID ICAN	-	United States Agency for International Development – Integrated Community Agriculture and Nutrition
UWA	-	Uganda Wildlife Authority

ABSTRACT

This study conducts a detailed evaluation of human-wildlife conflicts (HWC) in the Lii sub-county of Nwoya District, with the goal of understanding the impacts of these conflicts, measuring the effectiveness of mitigation strategies, and assessing community involvement and policy execution; employing a cross-sectional methodology that combines quantitative and qualitative approaches. The research reveals that HWC is an extensive issue affecting nearly all surveyed households, predominantly driven by problematic encounters with elephants, leading to substantial economic setbacks, including an average 75% decrease in annual crop yields and a 60% drop in household income, with potential financial losses reaching UGX 40,000,000 yearly. Moreover, these conflicts significantly undermine all five capital assets of the Sustainable Livelihoods Framework, causing deep psychosocial impacts like chronic stress and fear reminiscent of the LRA insurgency. Although households implement various strategies to deter wildlife, their effectiveness is often viewed as limited, especially as elephants adapt to traditional deterrents. A significant finding is the pervasive dissatisfaction with current HWC management, fueled by a sense of exclusion from decision-making and inadequate governmental or NGO support. This frustration is exacerbated by a lack of feedback on reported incidents, intensifying the belief that the government prioritizes wildlife over human welfare. The study calls for urgent, sustainable solutions that prioritize genuine community engagement and address underlying issues such as incomplete fencing and habitat destruction to achieve harmonious coexistence between humans and wildlife.

Keywords: Human-wildlife conflicts, economic losses, psychosocial stress, mitigation strategies, community involvement, policy implementation

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Human–Wildlife Conflict (HWC) has emerged as a pressing conservation and livelihood challenge across the globe, spanning from elephant crop-raiding in Asia and Africa to predator–livestock depredation in North and South America. Communities living adjacent to protected areas often face significant economic losses, food insecurity, and direct threats to life that severely undermine both conservation goals and overall human well-being (Nyhus, 2016). Globally, HWCs are recognized as critical obstacles to achieving sustainable, long-term coexistence between people and wildlife in multi-use landscapes (International Union for Conservation of Nature (IUCN, 2020).

Uganda, endowed with rich biodiversity and ten national parks, represents a primary hotspot for HWCs due to high rural population densities around protected areas. Studies highlight recurrent incidents of crop destruction, livestock predation, property damage, and occasional human fatalities in districts bordering parks such as Queen Elizabeth, Bwindi–Mgahinga, and Kidepo (Saferworld, 2021). For example, Kasese farmers frequently lose maize and cassava to elephants and hippopotamuses, while pastoralists in Karamoja struggle with chronic livestock predation by lions and leopards. Around Bwindi, crop raiding by mountain gorillas and baboons, coupled with state-enforced restrictions on forest access, directly affects household food security, even as gorilla tourism generates significant revenues for national conservation (Tumusiime & Vedeld, 2015).

Nwoya District, bordering the highly biodiverse Murchison Falls Conservation Area (MFCA), faces similar intense pressures. Here, elephants, buffalo, and bush pigs raid agricultural fields, lions prey on domestic livestock, and periodic wildlife encounters threaten human safety (Uganda Wildlife Authority (UWA, 2022). However, Nwoya is distinct in three key respects. First, it is a major site of large-scale infrastructure and oil development, which has intensified land-use pressures, fragmented natural habitats, and disrupted traditional wildlife corridors. Second, community benefit-sharing from national park tourism is highly uneven, with many frontline agricultural households bearing the direct costs of wildlife damage while reaping few or no conservation benefits. Third, the local population depends heavily on subsistence agriculture, making households particularly vulnerable to seasonal

crop losses and forcing dramatic shifts in livelihood strategies toward unsustainable coping activities, such as commercial charcoal production and forest fishing (Okello et al., 2014). These unique dynamics overlapping conservation priorities, severe livelihood vulnerability, and extractive industry pressures make Nwoya a critical case for examining HWCs through a sustainable livelihoods framework.

1.2 Problem Statement

Human–Wildlife Conflict (HWC) is a widely documented challenge in areas where human settlements and wildlife habitats overlap, particularly around protected areas. What is already known is that rural communities bear disproportionate costs through crop destruction, livestock losses, property damage, human injuries and fatalities, and chronic psychological distress (Nyhus, 2016). In Uganda, these challenges are particularly pronounced in communities neighbouring national parks, including Queen Elizabeth, Bwindi–Mgahinga, Kidepo Valley, and Murchison Falls. Previous studies have established that HWC can undermine household food security, income, livelihood assets, and local community support for wildlife conservation (Tumusiime & Vedeld, 2015). Existing interventions, including compensation, revenue sharing, community conservation, and problem-animal control, have also been implemented to reduce these impacts.

However, what remains insufficiently understood is how HWC affects the different livelihood assets and resilience capacities of households within specific local contexts. Evidence from other protected-area landscapes cannot fully explain the situation in Nwoya District because livelihood systems, wildlife species, institutional arrangements, and regional development pressures vary significantly across locations. In particular, limited empirical evidence exists on the combined effects of HWC, conservation activities, and emerging oil and infrastructure development on household livelihoods in communities bordering Murchison Falls National Park. There is also inadequate empirical evidence on the effectiveness of existing physical mitigation measures and the actual long-term sustainability of the coping strategies adopted by affected households.

Nwoya District presents a particularly important case because communities depend heavily on subsistence agriculture while simultaneously living alongside a major wildlife conservation landscape and experiencing increasing development and extractive activities. Consequently, repeated wildlife incursions may reduce crop production, household income, food availability, and household livelihood assets, while inadequate institutional responses

may increase community vulnerability and undermine local support for conservation. This study therefore sought to address these knowledge and policy gaps by examining HWC through the Sustainable Livelihoods Framework. Specifically, it assessed the extent and nature of HWC, its effects on household livelihood assets and food security, the coping strategies employed by affected communities, and the effectiveness of existing policies and mitigation measures. The study sought to generate context-specific evidence to inform improved conflict mitigation, livelihood diversification, community participation, and wildlife management in Nwoya District.

1.3 Objectives of the study

1.3.1 General Objective

The goal of the study was to understand the dynamics of human-wildlife conflicts within the livelihood's framework in Nwoya district.

1.3.2 Specific Objectives

The specific objectives of the study were:

1. To assess the extent and nature of human-wildlife conflicts in Nwoya district.
2. To investigate the impact of human-wildlife conflicts on household livelihoods.
3. To analyze the existing livelihood strategies employed by households to cope with and mitigate human-wildlife conflicts.
4. To evaluate the effectiveness of existing policies, regulations, and management strategies aimed at mitigating human-wildlife conflicts in Nwoya district.

1.4 Research Questions

This study aimed to answer the following research questions:

1. What are the primary types of human-wildlife conflicts occurring in Nwoya district and what are the key factors contributing to their occurrence and intensity?
2. How do human-wildlife conflicts affect the economic, social, and environmental dimensions of household livelihoods?
3. What are the predominant strategies utilized by households to manage human-wildlife conflicts?

4. What are the key policies, regulations, and management strategies currently in place to address human-wildlife conflicts, and how effective are they perceived to be by local communities and relevant stakeholders?

1.5 Scope of the study

1.5.1 Geographical Scope

The study was geographically conducted in Nwoya District, Northern Uganda, focusing specifically on frontline agrarian communities bordering Murchison Falls National Park (MFNP) within Lii sub-county. This sub-county represents a critical boundary zone where agricultural land directly abuts the protected area, making crop raiding, livestock predation, and physical property destruction by wide-ranging wildlife highly frequent and severe.

1.5.2 Theoretical Scope

Theoretically, the study is situated within the Sustainable Livelihoods Framework (SLF). Rather than treating human-wildlife conflict (HWC) as a simple ecological or economic issue, the study used the SLF to examine how wildlife shocks impact household livelihood assets (natural, human, financial, physical, and social capitals). It analyzed how these asset dynamics influence the livelihood strategies households employ to cope with conflict (such as guarding, crop switching, or charcoal burning) and how these choices ultimately dictate household livelihood outcomes (such as food security, income stability, and attitudes toward conservation).

1.5.3 Temporal Scope (2015 – 2025)

The temporal boundary of the study spans the ten-year period from 2015 to 2025. This specific timeframe was selected to capture several critical policy, legislative, and socio-economic milestones in Uganda's conservation landscape

Policy Baseline (The 2014 Policy Revision); The year 2015 marks the immediate commencement of efforts to implement Uganda's revised National Wildlife Policy (revised in 2014). Setting 2015 as the starting point allows for a decade-long review of how these updated policy goals translated into practical local enforcement.

Legislative Milestone (The Wildlife Act 2019); The middle of this decade (2019) saw a major transformation in Ugandan wildlife governance with the enactment of the Uganda

Wildlife Act of 2019 and the UWA Community Conservation Policy (2019). This legislation formally introduced statutory compensation schemes and Community Wildlife Committees (CWCs). The 2015–2025 scope provides a necessary temporal window to evaluate the baseline conditions before 2019 and critically assess the actual effectiveness, bureaucratic delays, and local perceptions of these compensation schemes in the years following their implementation.

Developmental and Industrial Pressures: This decade corresponds to a period of rapid socio-economic change in Nwoya District, characterized by intense agricultural expansion and accelerating large-scale infrastructure and oil development. This timeframe allows the study to analyze how these compounding modern pressures have disrupted wildlife corridors and escalated conflict intensity over a sustained, ten-year period.

1.5.4 Methodological Scope

Methodologically, the study employed a mixed-methods empirical design to bridge the gap between statistical trends and lived experiences. Primary data collection was triangulated through quantitative household surveys to measure asset losses and coping costs, supplemented qualitatively by key informant interviews (KIIs) and focus group discussions (FGDs) with affected community members, local leaders, and conservation stakeholders in Nwoya District adopting a convergent parallel mixed-methods research design, theoretically anchored within the pragmatic paradigm (Creswell & Plano Clark, 2018).

1.6 Justification of the study

Human–Wildlife Conflicts (HWCs) represent a pressing conservation and development challenge globally, and in Uganda they are particularly acute in districts bordering protected areas such as Nwoya. Despite significant efforts by governmental and non-governmental conservation agencies, households adjacent to national parks continue to endure the brunt of wildlife-related damages, leading to chronic food insecurity, structural income loss, and in some cases, fatal human injuries. Existing research has broadly examined HWCs in Uganda, but most studies focus on quantifying losses without systematically linking these to household livelihoods and coping strategies through an established theoretical framework such as the Sustainable Livelihoods Framework (SLF).

Nwoya District presents a unique case for empirical investigation. Its location along Murchison Falls National Park exposes communities to high-intensity conflicts, while its

predominantly agrarian economy means households have limited buffers against unexpected livelihood shocks. Compared to other districts in Uganda, Nwoya has lower diversification opportunities, weaker benefit-sharing arrangements, and higher dependence on subsistence farming. This combination intensifies local household vulnerability and threatens systemic household resilience.

Therefore, a study that explores HWCs through the lens of the livelihoods framework is justified, as it provides a holistic understanding of the multi-dimensional impacts and adaptive strategies employed by communities. Furthermore, the study will generate empirical evidence that bridges the gap between conservation objectives and livelihood sustainability. By analyzing the effectiveness of current policy instruments and institutional arrangements, it will provide practical insights for designing conflict mitigation measures that balance wildlife conservation with rural community development.

1.7 Significance of the Study

The National Development Plan IV (NDP IV, 2025/26–2030/31) prioritizes inclusive growth, poverty reduction, food security, climate resilience, and the sustainable use of natural resources. The findings of this study may potentially support the implementation of NDP IV by providing empirical evidence on how Human–Wildlife Conflicts undermine agricultural productivity, food security, and household resilience in frontline agricultural areas. The study may potentially inform strategies for livelihood diversification and community-based conservation in line with the national emphasis on sustainable development and resilience building. It may also potentially provide critical insights into the role of institutional and policy frameworks in addressing vulnerability among rural communities affected by environmental shocks.

Additionally, the findings may potentially contribute to Uganda’s efforts towards achieving several United Nations Sustainable Development Goals (SDGs). In relation to SDG 1 (No Poverty), the study may potentially provide evidence on how HWC exacerbates household economic vulnerability and identify livelihood strategies that reduce poverty-related impacts. In relation to SDG 2 (Zero Hunger), the study may potentially demonstrate how crop and livestock losses directly affect household food security. Regarding SDG 13 (Climate Action), the findings may potentially provide insights into household adaptation and resilience strategies in response to overlapping environmental stressors. For SDG 15 (Life on Land), the

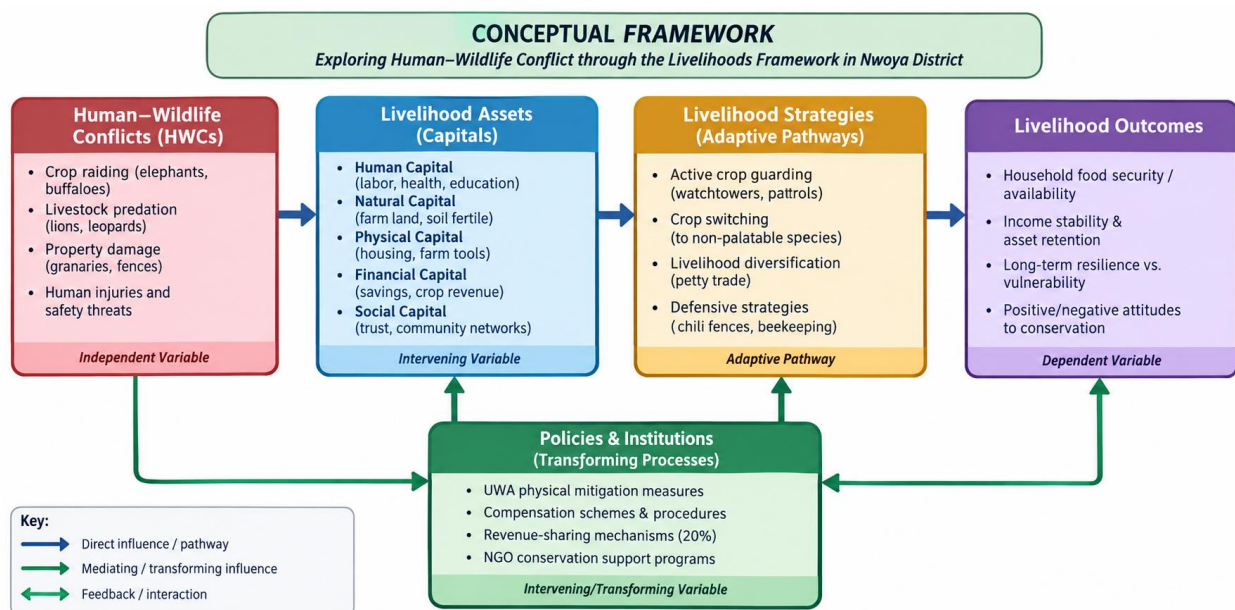
study may potentially provide evidence to inform conflict mitigation approaches that support biodiversity conservation while safeguarding human well-being.

At the policy level, Uganda’s Wildlife Policy (1999, revised 2014) emphasizes wildlife conservation, sustainable utilization of wildlife resources, and human–wildlife coexistence. In this regard, the findings of this study may potentially support efforts to strengthen the implementation of policy measures such as revenue sharing, compensation, and community participation in wildlife management. The study may potentially provide recommendations for improving community engagement and institutional responses to HWC, generating evidence useful for balancing national conservation priorities with household livelihood security.

1.8 Conceptual Framework

The conceptual framework of this study is structured around five interrelated variables: Human–Wildlife Conflicts (HWCs) as the independent variable, livelihood assets as intervening variables, livelihood strategies as adaptive pathways, institutional and policy context as transforming processes, and livelihood outcomes as the dependent variable. Together, these variables explain the dynamic interaction between conservation pressures and household livelihoods in Nwoya District neighbouring Murchison Falls National Park.

Figure 1. 1: Conceptual Framework Linking Human–Wildlife Conflicts (HWCs) and Livelihoods in Nwoya District



Source: Author’s conceptualization based on the Sustainable Livelihoods Framework (DFID, 1999) and adapted to the context of human–wildlife conflict in Nwoya District.

HWCs correspond to Objective One, which assesses their extent and nature. They manifest through crop raiding, livestock predation, property destruction, and human injury. As the independent variable, HWCs function as livelihood shocks that destabilize rural households and initiate deep systemic changes within the livelihood system. Livelihood assets relate to Objective Two, which examines the multi-dimensional impact of HWCs on household livelihoods. Wildlife incursions systematically reduce natural capital (crop loss), financial capital (income decline), physical capital (damaged property), human capital (injuries and psychological stress), and social capital (strained community relations). The depletion of these assets increases vulnerability and weakens adaptive capacity.

Livelihood strategies align with Objective Three and reflect the coping and adaptation measures households adopt in response to conflict. These include crop guarding, crop switching, livelihood diversification such as fishing or petty trade, and participation in community patrols. The effectiveness and sustainability of these strategies depend largely on available assets and institutional support. The institutional and policy context corresponds to Objective Four. Interventions by the Uganda Wildlife Authority, revenue-sharing arrangements, compensation schemes, and NGO programs either mitigate or exacerbate household vulnerability depending on their administrative effectiveness, funding, and local legitimacy. Finally, these dynamic interactions determine livelihood outcomes like food security, income stability, resilience, and attitudes toward conservation. Positive institutional support and secure assets strengthen coping capacity and improve outcomes, while weak support deepens vulnerability. Thus, each variable influences the other in a dynamic cycle linking conflict, adaptation, policy, and livelihood sustainability.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

Human-Wildlife Conflicts (HWCs) represent a complex and increasingly volatile socio-ecological challenge that profoundly affects biodiversity conservation and rural livelihoods worldwide. This tension is particularly acute in developing nations where expanding human populations and agricultural borders encroach upon wildlife habitats, creating a contested frontier of survival (Nyhus, 2016; Pooley et al., 2017). In Uganda and the broader East African region, communities adjacent to protected areas endure the continuous brunt of this conflict, experiencing recurrent crop raiding, livestock predation, and physical property damage. These destructive encounters erode household resilience, trap families in persistent poverty cycles, and heighten active socio-political tensions between conservation authorities and local agrarian and pastoral societies (Okello, 2023; Saferworld, 2021). Thus, HWC cannot be understood merely as an ecological management issue; it is fundamentally a development and social justice challenge.

To unpack these complex dynamics, this study is structurally embedded within the Sustainable Livelihoods Framework (SLF) originally conceptualized by Ian Scoones (1998) and popularized by the Department for International Development (DFID, 1999). The SLF offers a robust, multi-dimensional analytical lens that moves beyond narrow monetary valuations of damage. It evaluates the impact of environmental shocks across five core forms of capital natural, human, financial, social, and physical while simultaneously illuminating the structural vulnerability context and the institutional processes that govern household coping and adaptive strategies. By tracing how a single shock (such as crop raiding by elephants) cascades through a household's asset portfolio, the SLF provides a holistic methodology to understand the structural determinants of rural vulnerability.

This chapter synthesizes global, regional, and localized empirical literature to address the study's four core research objectives: (1) assessing the nature and extent of HWCs; (2) examining their profound impacts on household livelihoods; (3) exploring the efficacy and sustainability of community-level coping and adaptive strategies; and (4) critically evaluating the policies, regulations, and institutional management frameworks established for mitigation. To provide both depth and geographical focus, the review is organized

progressively. It moves from global macro-patterns of conflict, through Sub-Saharan and East African regional dynamics (with particular emphasis on Kenya and Tanzania), to national-level assessments in Uganda, before focusing on Nwoya District bordering Murchison Falls National Park (MFNP). By integrating empirical research with personal reflections on contextual nuances, this review systematically exposes the literature's critical gaps particularly the paucity of gender-sensitive, household-level, and longitudinal analyses and positions this study as an essential contribution to designing equitable, resilience-enhancing interventions.

2.1 Nature and Extent of Human–Wildlife Conflicts

2.1.1 Global Patterns of Human–Wildlife Conflicts

Globally, Human-Wildlife Conflicts are widely documented across diverse geographical landscapes, spanning Asia, Latin America, Europe, and North America, where human settlement expansion and intensive agricultural practices overlap with wildlife territories. In South Asia, intense conflict is driven by large, wide-ranging species that require extensive habitats. Research in India, Nepal, and Sri Lanka indicates that encounters involving the Asian elephant (*Elephas maximus*), the Bengal tiger (*Panthera tigris*), and various leopard species (*Panthera pardus*) frequently lead to catastrophic crop damage, livestock predation, human injuries, and fatalities (Fernando et al., 2012; Gubbi et al., 2014). These incidents are not evenly distributed; they cluster along forest borders, migratory routes, and fragmented agricultural buffers where farmers cultivate highly palatable crops like sugarcane, rice, and maize, which act as powerful attractants to wild herbivores.

In Latin America, the nature of the conflict is heavily characterized by livestock predation rather than crop damage, reflecting the region's vast pastoralist economies. Large carnivores such as the Jaguar (*Panthera onca*) and the Puma (*Puma concolor*) frequently prey on cattle herds, directly threatening the financial capital of rural ranchers and driving retaliatory killings that severely threaten predator populations (Rabinowitz & Zeller, 2010). Recent global assessments emphasize that HWC is a defining development obstacle because it directly undermines regional food security and household financial solvency (Pooley et al., 2017; Gross et al., 2021). Analyzed through the Sustainable Livelihoods Framework, these global patterns demonstrate how immediate shocks to natural capital (loss of crops and grazing land) trigger a severe decline in financial capital (reduced agricultural income and market values), while the labor-intensive demand of constant farm guarding reduces human

capital development by draining physical energy and limiting educational access (Fernando et al., 2012).

Crucially, much of the global literature is heavily weighted toward ecological variables, such as habitat fragmentation, climate-induced resource scarcity, and wildlife population corridors. While these ecological metrics are important, they often ignore the deep-seated structural poverty, historical land injustices, and top-down governance frameworks that exacerbate local vulnerabilities. Academic papers and conservation policies frequently promote technical mitigation technologies such as solar-powered electric fencing, predator-proof corrals, and complex financial insurance schemes yet empirical evidence of their long-term, self-sustaining effectiveness remains highly contradictory and mixed (Kansky et al., 2016). Reflecting on these global patterns, it is clear that while HWC is an ecological reality, its intensity, distribution, and social impact are fundamentally uneven, socially constructed, and mediated by unequal power relations that dictate who bears the costs of conservation and who reaps the benefits.

2.1.2 Human–Wildlife Conflicts in Sub-Saharan Africa

In Sub-Saharan Africa, HWCs are exceptionally pervasive, forming a critical fault line around protected areas, national parks, and migratory corridors. The African continent contains some of the world's most diverse megafauna alongside highly vulnerable rural populations that depend entirely on smallholder rain-fed agriculture and pastoralism. The African elephant (*Loxodonta africana*), African lion (*Panthera leo*), and spotted hyena (*Crocuta crocuta*) are the primary species involved in crop raiding and livestock predation (Hoare, 2015; Thirgood et al., 2005). Empirical studies across key wildlife range states such as Kenya, Tanzania, and Botswana indicate that rapid agricultural expansion and the conversion of communal rangelands into fenced agricultural plots have severely compressed wildlife habitats, forcing animals into frequent contact with human settlements (Brackowski et al., 2023). These encounters are highly seasonal, peaking during dry seasons when water and forage resources within national parks are exhausted, driving wide-ranging species to seek food and water in surrounding agricultural lands.

The impact of these animal incursions on the asset portfolio of African smallholders is severe. Applying the SLF perspective reveals that affected households are forced to exhaustively mobilize their limited human capital through intensive night guarding, and their physical capital through building brush fences and watchtowers. However, these traditional

measures are highly labor-demanding, physically exhausting, and financially costly, rendering poorer, labor-constrained households unable to sustain them over time (Lamarque et al., 2009). Although innovative insurance schemes, community-run wildlife conservancies, and compensation programs in countries like Kenya have shown moderate success in building social capital and fostering collective action (Kansky & Knight, 2014), critical scholars argue that these benefits are highly unequal. The financial revenues generated from wildlife tourism are often subject to elite capture, leaving marginalized and geographically isolated households to endure the maximum level of loss with little to no tangible compensation (Gross et al., 2021).

From an analytical perspective, while the Sub-Saharan African literature extensively documents the direct link between state-led conservation policies and rural livelihood precarity, there is a substantial lack of integration between raw ecological conflict data and rigorous household-level poverty analysis. Most existing studies focus on recording the frequency, timing, and types of wildlife attacks as isolated events, rather than tracing the long-term, compounding livelihood erosion that results from these repetitive shocks. This severe gap highlights the critical necessity for localized, mixed-method research that successfully captures both broad statistical trends and the nuanced, lived experiences of affected families.

2.1.3 Human–Wildlife Conflicts in Uganda and Northern Ugandan Context

Within Uganda, Human-Wildlife Conflicts are a defining socio-ecological and developmental challenge, concentrated intensely around major protected areas such as Murchison Falls National Park, Queen Elizabeth National Park, Kibale National Park, and Lake Mburo National Park. The primary wildlife species driving these conflicts include the African elephant, common hippopotamus (*Hippopotamus amphibius*), and various primates (such as baboons and velvet monkeys), which are highly efficient crop raiders, alongside apex predators like lions and spotted hyenas that prey on domestic livestock (Uganda Wildlife Authority [UWA], 2022; Okello, 2023). Official reports and empirical studies indicate that smallholder agricultural communities adjacent to these park boundaries lose between 20% and 40% of their total seasonal crop harvests to wildlife incursions. These extensive crop losses drastically reduce household seasonal incomes, trigger chronic food insecurity, and force families to make desperate asset sales.

In the Northern Ugandan context, and specifically in the districts bordering the southern and western boundaries of Murchison Falls National Park, such as Nwoya District, elephant and hippopotamus incursions are extraordinarily frequent, highly destructive, and occasionally fatal (Saferworld, 2021). The post-conflict reconstruction of Northern Uganda has been characterized by massive agricultural expansion and the settlement of formerly displaced populations close to park boundaries, creating a highly volatile interface. Beyond the direct, quantifiable material losses of crops and physical assets, these constant wildlife incursions inflict severe, unquantified psychological stress, chronic fear, and anxiety on local communities, devastating their overall well-being. Although the Uganda Wildlife Authority has attempted to implement physical mitigation strategies, such as digging deep deterrent trenches, installing solar-powered electric fencing, and establishing statutory compensation funds, these measures face continuous operational challenges. These include severe funding shortfalls, bureaucratic payment delays, and highly limited geographic coverage, which collectively fuel community resentment and distrust (Brackowski et al., 2020).

Critically, while contemporary Ugandan academic and policy literature increasingly acknowledges that HWCs are not merely environmental management issues but are deeply intertwined with local governance, land justice, and equity, most publications remain dependent on top-down administrative databases and high-level reports. There is an absolute paucity of context-specific, household-level, and spatially detailed empirical research that directly maps the specific extent of wildlife encounters to localized livelihood outcomes. Understanding exactly who is most vulnerable, which socio-economic cohorts are disproportionately affected, and how these ecological shocks interact with historical poverty in Northern Uganda is an essential prerequisite for designing legitimate, equitable, and sustainable co-existence strategies.

2.2 Impact of Human–Wildlife Conflicts on Household Livelihoods

2.2.1 Global Livelihood Impacts of Human–Wildlife Conflicts

Human-Wildlife Conflicts profoundly undermine the multidimensional stability of rural household livelihoods across the globe. By degrading a household's foundational assets, HWC directly impairs their productive capacity, health, and resilience. Empirical studies from diverse socio-ecological systems across Asia, Latin America, and Sub-Saharan Africa establish that chronic crop raiding, livestock predation, and human physical attacks drastically reduce overall agricultural yields, deplete household savings, and erode long-term

capital investments (Nyhus, 2016; Pooley et al., 2017). For instance, smallholder families living near wildlife reserves are frequently subjected to repeated economic shocks from which they have no insurance or financial cushions. Viewed through the analytical framework of the SLF, these wildlife-induced shocks cause a cascading depletion of assets: natural capital is directly diminished through the physical destruction of fertile cropland; financial capital is severely eroded through lost agricultural revenues, increased spending on crop protection, and costly veterinary fees for injured livestock; and human capital is compromised through physical injuries, death, and severe psychological trauma (Nyhus, 2016).

Furthermore, recent sociological and environmental literature has begun to explore the hidden, non-monetary, and psychological burdens born by households living under constant wildlife threats. The persistent fear of nocturnal animal attacks, chronic sleep deprivation from night-long farm guarding, and the trauma of witnessing family members injured or killed severely undermine human cognitive and physical productivity, limiting a household's capacity for long-term planning and livelihood innovation (Gross et al., 2021). However, a major limitation of the global literature is its overwhelming reliance on narrow monetary valuations to measure HWC damage. By focusing almost exclusively on quantifying direct financial losses, traditional research fails to capture the profound social, emotional, and institutional dimensions of conflict. This economic bias creates a significant gap in our understanding of the true cost of HWC, ignoring key issues such as childhood educational disruption, the loss of human dignity, and the erosion of local social cohesion.

2.2.2 African Perspectives on Household Vulnerability

In the African context, the severity of HWC impacts is intrinsically tied to structural rural poverty and the direct, existential dependence of the majority of the population on smallholder farming and pastoralism. Unlike wealthier agricultural economies, rural households bordering African protected areas have virtually no buffer against recurring environmental shocks. Species like the African elephant and apex predators are capable of destroying an entire household's seasonal food supply and primary financial asset in a single night (Hoare, 2015; Brackowski et al., 2023). In rural communities across Tanzania, Botswana, and Mozambique, households are forced to divert valuable labor away from productive off-farm enterprises to engage in physically exhausting night guarding, which directly degrades human capital and routinely causes school absenteeism among children

who are kept awake to guard crops. To cope with these sudden, catastrophic losses, households frequently engage in distress sales of productive assets such as selling their goats, cattle, or agricultural tools which compromises their long-term recovery capacity and drives them into deeper poverty traps.

The Sustainable Livelihoods Framework is highly effective in illustrating this complex, cascading asset-depletion pathways. For example, a sudden shock to financial capital (such as elephant crop-raiding) can force vulnerable households to overexploit local natural capital (e.g., clearing protected forests to produce charcoal or engaging in bush meat hunting), which in turn degrades local ecosystems, triggers state-led arrests, and severely erodes social capital within the community. Despite the strength of this theoretical framing, a major portion of African conservation research remains heavily biased toward wildlife protection outcomes, placing far less emphasis on analyzing long-term household poverty and vulnerability dynamics. This research imbalance risks prioritizing ecological preservation at the direct expense of social justice, highlighting the urgent need for a more balanced management paradigm that treats household livelihood security as co-equal to biodiversity conservation.

2.2.3 East African and Uganda Context

In East Africa, and specifically across Kenya and Uganda, the socio-economic consequences of HWC are severe and deeply unequal. Among Kenyan pastoralists, the loss of high-value livestock to lions and hyenas severely devalues household wealth portfolios, making communities highly vulnerable to climate-induced droughts and livestock disease outbreaks (Brackowski et al., 2023). In Uganda, empirical data indicates that crop raiding and livestock predation reduce total annual household income by up to 35% in highly affected border zones, directly undermining food availability, limiting families' capacity to pay school fees, and reducing access to basic medical services (Okello, 2023). Crucially, these impacts are highly gendered; women, who bear the primary responsibility for household food production and domestic care, face dramatically increased physical workloads and intense emotional stress when domestic crops are destroyed, yet they are systematically excluded from agricultural decision-making and wildlife compensation discussions (Saferworld, 2021).

While state authorities have introduced various mitigation interventions, such as solar-powered electric fences and institutional compensation funds, chronic implementation challenges including highly bureaucratic, delayed payments and extremely limited geographic coverage have severely undermined local trust in conservation bodies. This lack

of institutional legitimacy frequently drives desperate, marginalized households to adopt highly unsustainable coping strategies, including illegal hunting, setting wire snares, and deliberate encroachment into national parks. Although policy reports frequently acknowledge aggregate income declines, they consistently fail to analyze these micro-level, gender-disaggregated impacts and intra-household inequalities, reinforcing the critical need for gender-sensitive, youth-focused household analysis in contemporary research.

2.2.4 Contextual Evidence from Uganda

The direct livelihood impacts of HWC are highly visible across several of Uganda's key protected area landscapes, including Murchison Falls National Park, Kibale National Park, and Lake Mburo National Park, with each landscape presenting unique socio-ecological tensions. In Nwoya District, which borders the agricultural frontier of MFNP, more than half of all surveyed farming households report chronic crop damage from elephants and buffaloes, leading to widespread distress asset sales, reduced agricultural cultivation, and severe seasonal food shortages (Okello, 2023). The physically demanding practice of night guarding in Nwoya exposes farmers to high risks of malaria, respiratory infections, physical fatigue, and a corresponding decline in daytime labor productivity. Around Kibale National Park, research by Kolinski and Milich (2021) reveals that high background poverty levels and land scarcity dramatically increase household vulnerability to acute famine when crops are raided, even in areas where physical deterrent measures have been established. In the savannah landscape of Lake Mburo National Park, recurring common hippopotamus raids severely limit local attempts at agricultural and livelihood diversification, despite intensive community-led guarding efforts (Kembabazi et al., 2024).

Beyond these severe material and economic losses, HWC significantly erodes local social capital. Communities adjacent to Ugandan parks express deep distrust toward state wildlife authorities due to highly delayed, inadequate compensation, complex verification procedures, and a total lack of community voice in park management decisions. This profound alienation weakens local cooperation, fuels social conflict, and directly undermines national conservation goals (Brackowski et al., 2020). Therefore, HWC in Uganda must be understood as a multi-dimensional stressor that simultaneously degrades economic stability, physical health, gender equity, and social cohesion. The overall effectiveness of any mitigation strategy depends fundamentally on procedural fairness, transparent institutional communication, and the active, empowered participation of the affected communities.

2.3 Livelihood Strategies for Coping with Human–Wildlife Conflicts

2.3.1 Global Coping and Adaptation Strategies

Globally, households and agricultural communities confronting HWC have developed a wide range of coping and adaptive strategies designed to minimize immediate crop losses, protect livestock, and secure their livelihoods. These strategies span a spectrum from low-tech, traditional deterrents to highly advanced, technology-driven interventions. Common global interventions include physical barriers (such as wire fencing, trenches, and stone walls), auditory and visual deterrents (including fire, noise-making devices, and bright LED lighting systems), community-led early warning networks, and in extreme cases, the state-led translocation of problem animals or complete household relocation (Fernando et al., 2012; Nyhus, 2016). For example, across fragmented landscapes in South Asia, physical barriers and animal translocations have been extensively utilized to manage elephant conflicts. However, long-term monitoring indicates that translocation often simply shifts the conflict to new areas, rather than solving the underlying spatial overlap (Fernando et al., 2012). In Latin America, cattle ranchers have increasingly adopted fortified, predator-proof livestock enclosures (kraals) and participated in formal compensation agreements to prevent retaliatory killings of jaguars and pumas (Rabinowitz & Zeller, 2010).

Analyzed through the Sustainable Livelihoods Framework, these diverse coping strategies require the intensive mobilization and reallocation of various household capitals. Physical capital is built up through constructing secure kraals and crop watchtowers; human capital is deployed through farmers' deep knowledge of wild animal behavior and movement patterns; and social capital is strengthened when local communities organize cooperative guarding rotas and shared early-warning communication networks (Fernando et al., 2012). However, global literature highlights that most of these strategies are highly reactive, short-term, and unsustainable. While physical deterrents can temporarily reduce crop damage, they fail to address the systemic, underlying drivers of conflict, such as structural poverty, historical land use changes, and ongoing habitat fragmentation. Furthermore, these strategies are rarely integrated into broader national development planning, leaving rural communities to shoulder the continuous physical and financial burden of managing conflict on their own.

2.3.2 African Community-Based Responses

In Sub-Saharan Africa, community-based coping strategies are heavily shaped by the region's socio-economic reliance on agriculture and pastoralism, and the specific behaviors of local megafauna. Border communities routinely employ traditional, labor-intensive methods such as night guarding, constructing elevated wooden watchtowers, building dense chili-greased rope fences, and setting up reinforced livestock enclosures to deter elephants and large carnivores (Hoare, 2015). These methods depend heavily on strong social capital, requiring village-level collective action, mutual labor sharing, and coordinated communication. In many elephant-bordering zones, community-based wildlife scouts and localized conflict committees have been established to systematically coordinate emergency responses, share real-time animal tracking information, and assist vulnerable households in defending their fields.

Despite their local popularity, these traditional deterrents are exceptionally labor-intensive and expose participants to severe physical safety and health risks, including malaria, animal attacks, and chronic physical fatigue. To reduce these direct labor burdens, households across Kenya, Tanzania, and Botswana have increasingly combined traditional deterrents with innovative livelihood diversification strategies. These include establishing beekeeping enterprises (where beehive fences act as highly effective, natural deterrents against elephants while generating high-value honey for local markets) and participating in community-run ecotourism initiatives (Brackowski et al., 2023). These integrated strategies simultaneously strengthen household financial, natural, and social capitals. However, their long-term sustainability is heavily dependent on reliable market access, continuous technical training, and equitable benefit sharing. Many community projects function successfully during active donor funding but collapse once external support is withdrawn, revealing that without addressing core structural barriers such as insecure land tenure, lack of agricultural credit, and limited market infrastructure local coping mechanisms remain highly fragile and vulnerable to failure.

2.3.3 East African Innovations and Institutional Support

Across East Africa, institutional and policy innovations have increasingly sought to transform HWC from a destructive zero-sum conflict into a mutually beneficial development opportunity. In Kenya and Tanzania, programs promoting community conservancies, wildlife insurance schemes, and dedicated conservation-linked trust funds aim to foster sustainable

coexistence by generating tangible, shared economic benefits for local populations (Nyhus, 2016). For example, community-owned conservancies generate vital employment, lease fees, and direct tourism revenues. However, critical social scientific research reveals that these market-based conservation benefits are rarely distributed equitably; they frequently favor wealthier households with formal land titles or direct political connections to tourism networks, while completely bypassing the poorest, landless, and most marginalized members who continue to bear the maximum daily costs of crop damage (Gross et al., 2021).

In Uganda, rural households employ a highly diverse portfolio of coping strategies, including crop diversification (planting unpalatable crops like chili, ginger, and tea), engaging in small-scale petty trade, beekeeping, and in desperate cases, engaging in destructive charcoal burning and seeking precarious off-farm casual labor (Okello, 2023). Farmers bordering Murchison Falls National Park and Kibale National Park routinely mix these off-farm activities with traditional guarding to stabilize their household incomes. However, their efforts at sustainable livelihood diversification are severely constrained by a lack of formal markets, poor road infrastructure, and a lack of access to financial credit. Furthermore, deep-seated gender barriers and unequal division of labor systematically prevent women and youth from participating in the most profitable off-farm enterprises, limiting their adaptive capacity and leaving them highly vulnerable to recurring wildlife shocks.

2.3.4 Contextual Realities in Nwoya District

In Nwoya District, the frontline of human-elephant conflict bordering MFNP, the primary household coping responses are traditional night guarding, temporary agricultural relocation, and participating in voluntary local wildlife committees (Saferworld, 2021). To protect their critical food supplies, farming families construct simple physical barriers, burn elephant dung mixed with chili, and organize collective night patrols. However, the capacity to implement these demanding strategies is highly unequal. Female-headed households, which are often characterized by severe labor constraints, limited financial capital, and restricted access to secure land, are disproportionately exposed to devastating wildlife losses because they cannot sustain the intense physical demands of night guarding. While some families attempt to diversify their incomes by engaging in petty trade, charcoal production, or agricultural wage labor, these strategies often function as reactive, short-term survival mechanisms rather than proactive, long-term adaptive pathways.

Critically, the unsustainable reliance on commercial charcoal burning as a financial buffer against crop losses risks severely degrading local natural capital, accelerating deforestation, and creating a vicious feedback loop of environmental degradation and poverty. Furthermore, formal institutional support mechanisms, including state-led revenue-sharing funds and compensation programs, are consistently reported as being delayed, highly bureaucratic, and fundamentally insufficient to cover real agricultural damages. Consequently, building genuine, long-term household resilience in Nwoya District requires a major shift away from reactive, short-term deterrents toward transformative, community-led adaptive strategies. These must integrate comprehensive livelihood diversification, secure land rights, access to inclusive microfinance, and the establishment of robust, democratized local institutions capable of empowering vulnerable households.

2.4 Policies, Regulations, and Management Strategies

2.4.1 Global Policy and Governance Frameworks

At the global level, formal policies and governance frameworks for managing HWC have evolved from historic top-down exclusionary conservation paradigms toward complex, integrated frameworks that attempt to balance wildlife legal protections with rural development needs. Early academic and policy literature heavily emphasized the critical importance of participatory governance, collaborative monitoring, and fair compensation systems to foster local tolerance for wildlife (Treves & Karanth, 2003). In high-income countries across North America, Europe, and parts of Asia, contemporary management systems utilize sophisticated insurance programs, subsidized predator-proof agricultural infrastructure, and community-led wildlife tracking technologies to systematically reduce conflict and rebuild eroded public trust (Nyhus, 2016; Pooley et al., 2017). Grounded within the SLF, these integrated policy frameworks are theoretically designed to protect household financial capital through rapid compensation, strengthen social capital through inclusive dialogue, and enhance human capital through technical conservation training (Nyhus, 2016).

However, extensive global evidence indicates that monetary compensation programs alone rarely resolve human-wildlife conflict. In many developing nations, compensation schemes are crippled by delayed payments, highly complex and corrupt verification procedures, and severe, chronic funding shortages that completely destroy their institutional credibility. Furthermore, critical scholars argue that an overreliance on direct financial compensation can create local dependency on state aid rather than building genuine household adaptive

resilience (Gross et al., 2021). Thus, global policy debates emphasize that sustainable coexistence cannot be achieved through narrow, technical fixes; it requires the establishment of decentralized, integrated governance systems that fully merge conservation planning with regional rural development, land-use zoning, and poverty reduction programs.

2.4.2 African Policy Approaches and Regional Cooperation

In Sub-Saharan Africa, national wildlife policies and management strategies are deeply shaped by the high economic value of biodiversity conservation and international tourism, creating a highly politicized policy environment. Major wildlife range states, such as Kenya, Tanzania, Zimbabwe, and Botswana, utilize a mix of problem-animal control, state-funded compensation schemes, and Community-Based Natural Resource Management (CBNRM) models (Hoare, 2015). For example, Kenya's landmark Wildlife Conservation and Management Act provides a formal statutory framework for wildlife damage compensation and actively promotes community-owned conservancies. Tanzania utilizes Wildlife Management Areas (WMAs) to devolve wildlife management and tourism benefit-sharing to the village level, while Botswana has historically experimented with combining regulated hunting quotas with state-backed compensation adjustments.

At the regional level, trans-boundary conservation initiatives have emerged as a prominent policy strategy to manage wide-ranging species across national borders. Collaborative frameworks, such as the Kavango-Zambezi Transfrontier Conservation Area (KAZA), seek to harmonize anti-poaching patrols, secure trans-boundary wildlife corridors, and promote joint, cross-border tourism benefit-sharing programs (Brackowski et al., 2023). Theoretically, these regional approaches build strong institutional and social capital. However, in practice, their outcomes are highly uneven due to national funding disparities, elite capture of tourism revenues, and weak local monitoring systems. African wildlife policies consistently prioritize state-led wildlife protection under the assumption that macro-level tourism benefits will automatically trickle down to offset local agricultural losses. This top-down assumption is highly problematic; it systematically ignores how structural inequalities, historical land dispossession, and deep-seated rural poverty prevent conservation benefits from reaching the most vulnerable, frontline households (Gross et al., 2021).

2.4.3 Uganda's Legal and Institutional Framework

Uganda's contemporary policy and institutional framework for managing HWC is primarily anchored in the Uganda Wildlife Act (2019). This landmark legislation formally mandates the Uganda Wildlife Authority (UWA) as the lead agency responsible for managing all wildlife resources both inside and outside protected areas. Crucially, the 2019 Act established a statutory mechanism for compensating victims of wildlife-induced death, physical injury, and crop/livestock damage, while also mandating the formation of local Community Wildlife Committees (CWCs) to democratize park-community relations. Additionally, the UWA Community Conservation Policy (2019) requires that 20% of all park entrance fees be systematically allocated to adjacent border communities through targeted community development and revenue-sharing projects. This is complemented by the National Plan for Managing Wildlife Outside Protected Areas (2022–2031), which promotes the protection of critical wildlife corridors, wetland conservation, and local community-based green enterprises.

These legal frameworks represent a progressive policy shift toward integrating biodiversity conservation with local livelihood support. In practice, physical mitigation measures including digging deep elephant trenches, supporting local beekeeping projects, and deploying community-based wildlife scouts have been widely implemented around key parks like QENP and MFNP. However, rigorous empirical research indicates that these initiatives face severe operational bottlenecks. Uganda's statutory compensation schemes are heavily criticized for extreme bureaucratic delays, complex and inaccessible verification protocols, and a lack of transparency (Brackowski et al., 2020). These persistent institutional weaknesses severely erode local trust, fuel community anger, and can even escalate retaliatory wildlife killings, demonstrating that while Uganda's policy framework is highly comprehensive on paper, it remains severely compromised and uneven in its practical, park-level execution.

2.4.4 Park-Level Implementation and Contextual Challenges

The practical implementation of Uganda's national HWC policies varies dramatically across different protected area landscapes, exposing a critical lack of institutional standardization. Around Kibale National Park, extreme background poverty, high population density, and acute land scarcity severely limit the effectiveness of basic physical deterrents, leaving local compensation mechanisms struggling to address deep-seated human-human socio-political

tensions (Kolinski & Milich, 2021). In Lake Mburo National Park, community-constructed physical barriers and cooperative guarding have moderately reduced hippopotamus raids, but formal state compensation remains virtually unutilized due to overly complex, inaccessible procedural hurdles (Kembabazi et al., 2024). In Nwoya District, bordering Murchison Falls National Park, local communities express continuous dissatisfaction with UWA's slow response times and perceived lack of accountability, reporting that despite the construction of physical deterrent trenches, destructive elephant crop raiding remains a constant, unresolved threat to their survival (Okello, 2023).

In sharp contrast, conservation-linked development investments around Bwindi Impenetrable National Park and Mgahinga Gorilla National Park have focused heavily on building public infrastructure, health clinics, and schools. While these investments have undeniably improved the general quality of life, local communities often perceive that they overlook direct, household-level HWC damage mitigation, leaving core crop-raiding issues unaddressed (Sabuhoro et al., 2023). These stark regional variations reveal that Uganda's national wildlife policies suffer from highly uneven enforcement, weak accountability, and a lack of standardized implementation protocols. Effective and equitable HWC governance must combine fair and rapid household-level compensation with the establishment of strong, localized community institutions, gender-sensitive public engagement, and context-specific physical deterrents. Without adequate, ring-fenced state funding and transparent, local-level enforcement, even the most well-designed policies will fail to achieve sustainable coexistence.

2.5 Theoretical Framework

2.5.1 Foundations of the Sustainable Livelihoods Framework (SLF)

To systematically analyze and untangle the complex, multi-dimensional socio-economic impacts of Human-Wildlife Conflict on rural households, this study is theoretically anchored in the Sustainable Livelihoods Framework (SLF). Developed by Ian Scoones (1998) and later formalized by the Department for International Development (DFID, 1999), the SLF offers a comprehensive, people-centered analytical methodology for understanding how individuals and families support themselves within highly volatile environments. Unlike traditional economic models that define poverty and well-being through narrow monetary metrics (such as daily income or consumption expenditures), the SLF conceptualizes poverty as a multi-dimensional state. It acknowledges that a household's survival, security, and capacity to

thrive are dictated by their access to, control over, and capacity to mobilize a diverse portfolio of livelihood assets, or capitals.

The core premise of the SLF is that rural households operate within a highly dynamic ‘Vulnerability Context’ shaped by sudden shocks, long-term trends, and cyclical seasonality. Their capacity to survive these vulnerabilities is mediated by ‘Transforming Structures and Processes’ including state policies, formal laws, local cultural norms, and public institutions which directly dictate asset access and determine which ‘Livelihood Strategies’ (farming, off-farm labor, migration) households can realistically deploy. These strategies ultimately yield positive or negative ‘Livelihood Outcomes’ (food security, increased well-being, asset depletion). By focusing on the direct, dynamic interactions between environmental shocks, household assets, and institutional policies, the SLF provides an exceptionally powerful, holistic theoretical tool to analyze how localized environmental conflicts can undermine long-term human development and rural resilience.

2.5.2 The Vulnerability Context, Capitals Pentagon, and Transforming Processes

At the heart of the SLF is the ‘Capitals Pentagon,’ which comprises five fundamental assets that households combine to construct their livelihoods: (1) Natural Capital (e.g., fertile soil, clean water, forests, and land); (2) Human Capital (including physical health, labor capacity, formal education, and practical skills); (3) Financial Capital (savings, agricultural income, formal credit, and liquid assets); (4) Physical Capital (such as sturdy housing, transport, farm tools, and public infrastructure); and (5) Social Capital (including local community networks, mutual trust, safety nets, and collective action). In the context of communities adjacent to protected areas, HWC acts as a severe, recurring environmental shock within the household’s Vulnerability Context. This shock does not occur in a vacuum; its impact is actively mediated by Transforming Structures and Processes, such as the Uganda Wildlife Authority’s policies, local land-tenure security, and cultural norms regarding gender-based labor division. These institutional structures directly dictate whether an affected household can access formal compensation, receive community scout support, or obtain agricultural credit to recover from wildlife-induced damages.

2.5.3 Mapping HWC Impacts on Livelihood Capitals

The SLF is exceptionally valuable because it enables researchers to systematically map and analyze how a single environmental shock such as crop raiding by elephants or predation by

large carnivores directly depletes and alters a household's asset portfolio. To illustrate this interconnectedness, the table below maps how HWC-induced shocks directly impact and degrade each of the five core livelihood capitals, drawing on empirical evidence from Nwoya District and the broader Ugandan context.

Table 1. 1: Interconnectedness of HWC shocks to Livelihoods capitals

Livelihood Capital	Direct HWC Shock / Impact	Cascading Livelihood Consequences
Natural Capital	Direct destruction of food and cash crops (maize, rice, cassava) by elephants; grazing land degradation by buffaloes.	Acute loss of seasonal agricultural yields, chronic household food insecurity, and localized land abandonment close to park borders.
Human Capital	Physical injuries and fatalities caused by wildlife attacks; severe malaria and fatigue from compulsory night guarding.	High medical expenses, loss of primary household labor, and chronic school absenteeism among children kept to guard fields.
Financial Capital	Immediate loss of agricultural sale revenues; high spending on farm defense tools; high veterinary bills for injured livestock.	Depletion of cash savings, loss of creditworthiness, and forced distress sales of productive assets (goats, cattle, tools) at undervalued prices.
Physical Capital	Destruction of physical crop granaries, household fences, solar panels, and domestic housing by wide-ranging elephants.	Loss of secure crop storage facilities, leading to post-harvest rot, and high-unexpected financial costs for rebuilding housing infrastructure.
Social Capital	Severe socio-political tensions and distrust between communities and UWA; community conflict over uneven revenue-sharing benefits.	Erosion of local safety nets, decline in community collective action, and reduced cooperation with park-level conservation policies.

Source: Author's conceptualization based on the Sustainable Livelihoods Framework (DFID, 1999) and adapted to the context of human–wildlife conflict in Nwoya District.

2.5.4 Applying the SLF to Nwoya District and Murchison Falls National Park

In analyzing the findings of this specific study on HWC in Nwoya District, the SLF provides an invaluable, structured analytical methodology. Nwoya District is characterized by a rapid post-conflict transition, high dependence on rain-fed smallholder agriculture, and a highly porous agricultural border with Murchison Falls National Park. By utilizing the SLF, this study moves beyond merely counting elephant raids to systematically tracing how these wildlife shocks directly deplete natural capital (crop destruction), which immediately devalues household financial capital (lost income). This financial depletion, in turn, severely impairs human capital development (by forcing children to miss school to guard fields and causing chronic malaria among night guardians) and destroys physical capital (demolished granaries and homes).

Furthermore, the framework illuminates how these compounding asset losses force vulnerable households to adopt highly risky, unsustainable livelihood strategies such as illegal bushmeat hunting, setting indiscriminate wire snares, and commercial charcoal burning in protected forests which ultimately increases their ecological vulnerability and risks state-led criminalization. By focusing on these dynamic interactions between assets, coping strategies, and policy processes, the SLF enables this study to generate deep, actionable insights into the economic, social, and structural vulnerabilities of local communities. This is an essential step toward designing highly effective, equitable, and sustainable solutions that mitigate HWC, protect biodiversity, and improve human well-being in Nwoya District.

The Sustainable Livelihoods Framework (SLF) is uniquely suitable for this study because alternative approaches often limit their analysis to macro-level ecological drivers or narrow monetary valuations that fail to capture local inequalities and the non-monetary dimensions of human-wildlife conflict. Unlike these restrictive frameworks, the SLF provides a holistic, people-centered lens that evaluates how wildlife shocks systematically deplete and interconnect five distinct livelihood capitals: natural, human, social, physical, and financial. For example, the SLF explains cascading vulnerability, tracing how the loss of natural capital from crop raiding erodes financial capital, which in turn limits human capital development through labor-intensive night guarding and forces households into unsustainable, risky coping strategies like poaching. Furthermore, rather than assuming homogeneous community impacts, the SLF explicitly examines how vulnerability is socially constructed, pinpointing which marginalized households lack or are losing crucial assets. It bridges the gap between raw conflict statistics and local governance realities, offering a structured mechanism to analyze how top-down policies and institutional processes directly influence the coping capacities and long-term resilience of communities adjacent to protected areas.

2.6 Literature Gaps and Conceptual Synthesis

A critical and comprehensive synthesis of the global, regional, and national literature reveals five profound gaps that have directly motivated and shaped the design of this study. First, there is a severe scarcity of Household-Level and Spatially Detailed Empirical Analysis. The vast majority of existing Ugandan research and policy documents remain dependent on top-down administrative databases and macro-level institutional reports, which fail to capture the highly localized, micro-level spatial patterns of conflict and their direct correlation to household livelihood assets. This study addresses this gap by generating granular, household-

level spatial and socio-economic data directly from frontline farming communities in Nwoya District.

Second, there is a total Lack of Integration Between Conflict Data and Long-Term Poverty Dynamics. Traditional conservation studies focus almost exclusively on recording the frequency, timing, and biological characteristics of wildlife incursions as isolated ecological events. They fail to analyze how these recurring shocks interact with structural poverty over time, depleting household assets and trapping families in intergenerational poverty. This study directly bridges this conceptual divide by utilizing the SLF to trace the cascading, long-term livelihood erosion caused by chronic conflict.

Third, the literature exhibits a critical Neglect of Gender-Disaggregated and Youth-Focused Impacts. Academic and policy publications routinely treat the rural ‘household’ as a single, homogenous economic unit. This ignores deep intra-household power inequalities, failing to capture how HWC disproportionately increases the physical labor and emotional stress of women, or how it limits youth development and children’s education through compulsory guarding duties. This study addresses this gap by placing gender-sensitive and youth-focused analysis at the center of its research design.

Fourth, there is a widespread Omission of Non-Monetary, Psychological, and Social Dimensions of Conflict. By focusing almost exclusively on narrow economic valuations of crop and livestock damage, the existing literature ignores the profound psychological burdens such as persistent fear, trauma, and sleep deprivation and the severe erosion of community social capital and institutional trust. This study utilizes a mixed-method approach to comprehensively document both the tangible economic and intangible social costs of conflict.

Fifth, there is an Insufficient Evaluation of Policy and Mitigation Effectiveness in Practice. While Uganda has developed highly sophisticated legal and policy frameworks on paper (such as the Wildlife Act of 2019), there is a critical shortage of empirical, park-level evaluations analyzing why these mitigation measures consistently suffer from implementation failures, severe bureaucratic delays, and low community legitimacy. This study addresses this gap by critically evaluating the policy-to-practice divide in Nwoya District, providing vital empirical evidence to inform the design of equitable, community-driven, and resilience-enhancing conservation policies.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter outlines the research design, methodological frameworks, and empirical procedures employed to investigate the relationship between Human–Wildlife Conflict (HWC) and rural household livelihoods in Nwoya District, Northern Uganda. It provides a comprehensive description of the study area, including geographic boundaries, demographic characteristics, and primary economic activities. The chapter articulates the mixed-methods research design, the mathematical and practical justifications for the sample size determination, and the multi-stage sampling techniques used to select households, key informants, and focus group participants. Furthermore, it discusses the design and piloting of data collection instruments, data verification, cleaning, and coding procedures, analytical protocols based on the Sustainable Livelihoods Framework (SLF), ethical considerations, and methodological limitations encountered during the study fieldwork.

3.1 Research Design

To capture both the measurable magnitudes of wildlife damage and the lived experiences of affected agricultural communities, this study adopted a convergent parallel mixed-methods research design, theoretically anchored within the pragmatic paradigm (Creswell & Plano Clark, 2018). The convergent parallel design involves the concurrent collection of quantitative and qualitative data during the same phase of research, followed by separate analysis of the two datasets, and subsequent integration of the findings during the interpretation and discussion phases. This multi-stage approach was highly appropriate because human-wildlife conflict is both a statistically measurable environmental hazard and a socially experienced livelihood challenge whose institutional, psychological, and social effects cannot be fully understood through numerical evidence alone.

The quantitative component involved collecting structured household survey data to establish generalizable patterns regarding the prevalence, frequency, types, and economic consequences of HWC. This track generated structured numerical data on crop raiding frequencies, livestock predation rates, asset damage costs, and the associated medical expenses resulting from wildlife attacks. Concurrently, the qualitative component gathered context-rich narratives from Focus Group Discussions (FGDs), Key Informant Interviews

(KIIs), and participant observations. These qualitative methods explored deep-seated community perceptions of conservation, historical wildlife movements, the physical and mental stress of agricultural crop guarding, and the underlying institutional weaknesses governing national park compensation schemes. Triangulating these datasets minimized the limitations inherent in any single research method and significantly strengthened the validity and credibility of the overall study conclusions (Creswell & Plano Clark, 2018).

3.2 Description of the Study Area

3.2.1 Geographical Location and Demographics

The study was conducted in Lii Sub-county, located in Nwoya District within the Acholi sub-region of Northern Uganda. Lii Sub-county covers a geographic area of approximately 485.6 square kilometers and is populated by an estimated 39,601 residents, yielding a rural population density of 81.55 individuals per square kilometer (Uganda Bureau of Statistics [UBOS], 2024). The gender composition of the sub-county comprises 19,473 males and 20,128 females. The population is characterized by a high dependency ratio, with a heavily youthful age distribution: 16,325 individuals are aged 0–14 years, 22,589 fall within the economically active age bracket of 15–64 years, and a small cohort of 687 elderly residents are aged 65 years and above (UBOS, 2024).

Geographically, Lii Sub-county shares a highly porous, 107-kilometer agricultural boundary with Murchison Falls National Park (MFNP) to its northwestern side. Established in 1952, MFNP is Uganda's largest and oldest protected area, covering approximately 3,840 square kilometers, with 43% (representing 431,539.94 acres) of its land area situated inside Nwoya District. The close proximity of the sub-county to the park border with households situated between 0.5 and 8 kilometers from the park boundary creates a severe hotspot for wildlife encounters, particularly involving wide-ranging species such as African elephants and Cape buffaloes.

To ensure a representative and localized analysis of frontline conflicts, this study focused specifically on four frontline sub-villages: Celpeke, Mwodo, Te-Obee, and Langele. These sub-villages are administratively placed within Ceke Village, Langele Parish, which is one of Lii's four parishes and is directly adjacent to the national park border. These communities represent frontline agricultural zones where wildlife crop raiding and property destruction are historically most intense and frequent.

Table 3. 1: Study Population, Administrative Locations, and Sample Size Composition

Participant Category	Sub-Village / Level	Village	Parish	Participants (n)	Data Collection Tool
Household Survey	Celpeke	Ceke	Langele	27	Household Questionnaire
Household Survey	Mwodo	Ceke	Langele	27	Household Questionnaire
Household Survey	Te-Obee	Ceke	Langele	27	Household Questionnaire
Household Survey	Langele	Ceke	Langele	26	Household Questionnaire
Household Survey Subtotal	All Villages	Ceke	Langele	107	Questionnaire (Base n = 107)
Key Informant Interviews	Local & Institutional	N/A	N/A	6	Semi-structured Interview Guide
Focus Group Discussions	Village-level (5 Groups)	Ceke	Langele	40	FGD Interactive Guide
UWA Consultative Meeting	Institutional / Park-level	N/A	N/A	35	Consultation Minutes / Attendance
Total Study Population	Complete Cohort	Ceke	Langele	188	Mixed-Methods Evaluation

Source: *Researcher's Field Composition (2025)*

Note on Sample Distribution: The household survey sample has been proportionally balanced across the four designated sub-villages of Ceke Village. The overall study population across all methods sums to exactly 188 participants (107 households, 6 key informant interviews, 40 focus group participants across 5 sessions, and 35 participants in the UWA consultative meeting), ensuring perfect statistical alignment with the descriptive analyses in Chapter Four.

3.2.2 Economic Activities

Smallholder, rain-fed agriculture is the dominant economic activity across Lii Sub-county, mirroring the broader economic landscape of the Acholi sub-region as documented by the Uganda Bureau of Statistics (UBOS, 2024). The search for highly fertile soils along the park periphery has historically driven agricultural population influxes into the area. In accordance with national trends where approximately 33.1% of rural households depend on subsistence activities (UBOS, 2024), farming in Lii is primarily geared toward household consumption, with seasonal surpluses sold in local markets to generate essential cash income. The primary crops cultivated include staple food crops (cassava, sweet potatoes, bananas, beans, and millet) and major cash crops such as groundnuts, maize, simsim (sesame), and soybeans. Agricultural livelihoods are occasionally supplemented by secondary activities such as small-

scale beekeeping (honey production), livestock rearing (goats and poultry), and small-scale trading at weekly markets across Nwoya District.

3.3 Sample Size Determination

To ensure high statistical precision and programmatic representativeness, the sample size for the household survey was determined using Taro Yamane's simplified mathematical formula for known finite populations (Yamane, 1967). This formula calculates the sample size (n) required from a total known population (N) under a specified margin of error (e):

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

Within the targeted frontline parish of Langele, the local council registers indicated a total population of N = 356 households across the four frontline sub-villages of Celpeke, Mwodo, Te-Obee, and Langele. Setting the level of precision or margin of error at e = 0.05 (representing a 95% confidence level), the formula was computed as follows:

$$n = \frac{356}{1 + 356(0.05)^2}$$

$$n = \frac{356}{1 + 356(0.05)^2}$$

$$n = \frac{356}{1 + (356 * 0.0025)}$$

$$n = \frac{356}{1 + (356 * 0.0025)}$$

$$n = \frac{356}{1 + 0.89}$$

$$n = \frac{356}{1.89}$$

$$n \approx 188.35$$

This mathematical computation yielded a baseline sample size of 188 participants. To maintain strict methodological consistency throughout the dissertation, the researcher successfully completed empirical surveys with 188 sampled participants. The sample of 188 participants was structurally deployed within a mixed-methods design to ensure data extensiveness and depth: 105 households (representing approximately 56% of the sample) were selected for concurrent quantitative surveys and qualitative interviews, while 83 participants (representing approximately 44% of the sample) were engaged purely for

qualitative data collection, including focus group discussions, case narratives, and spatial observation mapping (Creswell & Plano Clark, 2018).

3.4 Sampling Procedures and Techniques

To capture both the generalizable socio-economic impacts of wildlife conflict and the insightful perspectives of key institutional stakeholders, this study employed a multi-stage combination of stratified random sampling and purposive sampling techniques. This multi-technique approach aligns with the recommendation of Creswell and Plano Clark (2018) that mixed-methods studies should combine diverse probability and non-probability sampling structures to secure both representative breadth and descriptive depth.

3.4.1 Household Interviews – Stratified and Systematic Random Sampling

For the quantitative household surveys, a systematic random sampling technique was implemented to eliminate selection bias and ensure statistical generalizability to the wider farming population of Nwoya District (Kothari, 2014; Kumar, 2019). The target population was first stratified geographically by sub-village to ensure equal representation across different distances from the protected area boundary. Using updated Local Council I (LC I) registers and village lists as the sampling frame, households in each sub-village were assigned numerical indices. To execute the systematic selection, a sampling interval was calculated, and every fifth household on the village LC I register was selected for participation. This randomized approach ensured that the collected responses represented a highly diverse set of household experiences with wildlife conflict across varying household head ages, gender structures, land sizes, and specific farming systems.

3.4.2 Key Informant Interviews – Purposive Sampling

For the qualitative institutional component, purposive sampling was employed to select key informants who possess specialized, information-rich expertise, administrative authority, or long-term historical perspectives on human-wildlife conflict management and regional economic development policies (Creswell & Poth, 2018). Purposive sampling was highly appropriate for Objective 4 (evaluating the effectiveness of existing policies, regulations, and management strategies) as it targeted professional stakeholders capable of discussing complex policy processes. A total of 6 key informants were selected, comprising: (1) the Area Councilor V representing Lii Sub-county, (2) the District Agricultural/Production Officer (DAO/DPO), (3) the District Community Development Officer (DCDO), (4) the Sub-

county Community Development and Agricultural Officer, (5) the Uganda Wildlife Authority (UWA) wardens stationed at the MFNP boundary, and (6) the LC I Chairperson of Ceke Village, alongside local cultural and elder leaders.

3.4.3 Focus Group Discussions – Purposive and Snowball Sampling

For Focus Group Discussions (FGDs), a combination of purposive and snowball sampling was utilized to identify and assemble participants with direct, lived experiences of wildlife conflict (Etikan et al., 2016). Initial participants were purposively identified from community lists based on verified wildlife damage, such as farmers whose crops had been severely raided or households that had lost livestock to park predators. These initial participants then referred other local farmers with similar experiences, forming highly focused, interactive discussion groups of 8 to 10 members. This methodology was particularly suited for Objective 3 (analyzing livelihood strategies employed by households to cope with and mitigate HWC), as it facilitated collective reflections on shared mitigation techniques, financial constraints, and community scout structures.

3.5 Participant Eligibility Criteria

3.5.1 Inclusion Criteria

To ensure that all research participants possessed deep, sustained historical and contextual understanding of human-wildlife dynamics in Nwoya District, strict inclusion criteria were established. Eligible participants were limited to: (1) adult residents aged 18 years and above, (2) permanent residents who had continuously lived within Lii Sub-county for a minimum of two years, and (3) households directly affected by HWC, such as crop raiding, livestock predation, or property damage. Household permanent residency was verified through local council registers and confirmation from village LC I chairpersons. Furthermore, eligible individuals were required to demonstrate sound mental health and voluntarily provide written or verbal informed consent prior to the commencement of data collection.

3.5.2 Exclusion Criteria

Conversely, several exclusion criteria were applied to protect the internal validity of the study and prevent data distortion. First, the study strictly excluded child-headed households to prevent ethical violations and protect vulnerable minors. Second, newly established households and transient residents who had lived in the sub-county for less than two years

were excluded, as they lacked the long-term historical exposure needed to assess shifting conflict frequencies or decade-long policy changes. Third, households renting agricultural land for temporary, short-term cultivation were excluded; their economic structures differed significantly from long-term landholders, and their temporal presence could distort findings regarding the cumulative, asset-depleting impacts of wildlife conflicts on local livelihoods. Lastly, short-term visitors or transient populations engaged in unsustainable, short-term activities such as commercial charcoal burning or transient timber cutting were excluded, ensuring the research focused entirely on permanent agricultural families whose livelihoods were sustainably bound to the local landscape.

3.6 Data Collection Instruments

Guided by the convergent parallel mixed-methods design, this study developed and deployed multiple data collection instruments to facilitate methodological triangulation and capture both statistical trends and qualitative, lived realities (Creswell & Plano Clark, 2018). The research instruments included structured household questionnaires, semi-structured key informant interview guides, focus group discussion guides, direct observation checklists, and secondary data review templates.

3.6.1 Structured Household Questionnaires

A highly detailed, structured household questionnaire was developed to gather quantitative data from the 107 sampled households participating in the survey. The questionnaire comprised both closed-ended and open-ended items organized into logical modules aligning with the research objectives: (1) socio-demographic characteristics of the household, (2) the nature, frequency, and spatial extent of wildlife encounters, (3) direct and indirect livelihood impacts (such as agricultural crop yields, food security levels, financial expenditures, and human physical health), and (4) the specific livelihood coping strategies adopted by the household. Questionnaires were administered in the local Luo language by trained, bilingual local enumerators, guaranteeing clear comprehension and active inclusion of non-literate participants (Kumar, 2019).

3.6.2 Key Informant Interview Guides

Semi-structured key informant interview (KII) guides were designed to obtain detailed, qualitative institutional perspectives from the 6 purposively selected district, sub-county, and park-level officials. The guides focused heavily on Objective 4, prompting discussions

regarding wildlife policy frameworks, the efficiency and delays associated with the statutory compensation program under the Wildlife Act of 2019, the administration of the 20% tourism revenue-sharing scheme, and park-community relationship trends. The interviews were conducted in English, lasting between 45 and 60 minutes, and were audio-recorded with participants' prior consent.

3.6.3 Focus Group Discussion Guides

A total of 5 semi-structured Focus Group Discussions (FGDs) were conducted to explore collective community narratives, shared perceptions of risk, and local social safety nets. The FGD guides were structured around the Sustainable Livelihoods Framework (SLF), prompting discussion on how wildlife invasions depleted the five livelihood capitals and how communities collectively organized physical and economic deterrents. Each focus group consisted of 8 participants, purposively selected to reflect distinct, vulnerable social cohorts (Creswell & Plano Clark, 2018). The sessions lasted 90 to 120 minutes, were moderated in Luo, and were audio-recorded with the participants' permission. Additionally, 1 consultative meeting was held with UWA stakeholders with 35 participants from NGOs, UWA, Nwoya District local government technical and political leaders, sub county leaders, cultural leaders and community scouts representatives drawn from sub counties bordering the park

3.6.4 Direct Field Observations and Checklist

An observation checklist was employed to gather real-time, empirical evidence of wildlife damage and the physical infrastructure of agricultural defense. The researcher conducted both participant and non-participant direct observations in farming fields close to the park boundary, documenting: (1) physical crop damage patterns (such as elephant footprints, broken plants, and grazed fields), (2) livestock enclosures and boma structures, and (3) community-implemented and park-supported physical deterrents, including elephant trenches, watchtowers, chili fences, and beehive setups. This physical verification supplemented self-reported household survey data, enhancing overall descriptive validity (Kawulich, 2012).

3.6.5 Secondary Data Review Template

To contextualize the primary empirical findings within historical trends, a secondary data review template was utilized. The researcher extracted and analyzed over a decade of administrative records, books, academic journals, local government agricultural reports, and

official publications from the Uganda Wildlife Authority (UWA) and Nwoya District local government (including community-based and disaster reports). These secondary materials provided vital historical baselines on elephant populations, documented human fatalities, and regional land-use patterns inside the Murchison Falls Conservation Area.

3.7 Pilot Testing and Instrument Refinement

A comprehensive pilot study was conducted prior to the main fieldwork phase to rigorously evaluate the reliability, clarity, and contextual suitability of the primary research instruments (Kumar, 2019). The pilot was critical for testing whether the draft household questionnaires, key informant guides, and focus group discussion protocols were culturally sensitive and capable of eliciting precise data on complex livelihood dynamics.

3.7.1 Selection of the Pilot Site

The pilot study was executed in Lakwanya Village, located within Orom East Sub-County, Kitgum District. This community directly borders Kidepo Valley National Park (KVNPN) in the Karamoja-ecological zone. Lakwanya Village was selected because it closely mirrors the ecological, socio-economic, and human-wildlife conflict dynamics of Lii Sub-county in Nwoya District, yet resides completely outside the primary study area, eliminating any risk of data contamination (Bryman, 2016). Similar to Nwoya, the Lakwanya community relies heavily on subsistence smallholder agriculture and livestock rearing, and frequently suffers from intense wildlife encounters, including elephant crop raiding, livestock predation by carnivores, and physical threats from Cape buffaloes.

3.7.2 Execution and Outcomes of the Pilot Study

A total of 10 pilot households were randomly selected using the Lakwanya Village LC I register to pre-test the structured survey questionnaires. Simultaneously, two pilot key informants (a local Community Development Officer and a village elder) and one pilot focus group discussion comprising 8 participants (3 females and 5 males) were engaged to pre-test the qualitative guides. The pilot data collection followed the exact field protocols intended for the main study.

Field testing provided invaluable insights into: (1) the precise time required to complete each household interview (averaging 50 minutes), (2) the cultural clarity and appropriateness of translated terms in Luo, and (3) respondent comprehension of complex concepts like ‘livelihood capitals’ and ‘transformative institutional processes.’ Following the pilot, the

research team adjusted the instruments by removing several ambiguous questions, refining the sequencing of sensitive asset-related questions, and adding structured response options for less common wildlife species. These refinements significantly improved the internal consistency and reliability of the research tools (Creswell & Plano Clark, 2018).

3.8 Data Quality Control

3.8.1 Content Validity

Content validity refers to how accurately an instrument measures the specific research concepts it was designed to evaluate (Creswell, 2014; Babbie, 2017). To establish high content validity, the research instruments were developed in close consultation with academic supervisors and conservation experts. The supervisors meticulously reviewed every question on the survey and interview guides, evaluating: (1) the logical alignment of questions with the four research objectives, (2) the clarity and accuracy of phrasing, and (3) the coverage of Sustainable Livelihood Framework (SLF) variables. Irrelevant, leading, or repetitive questions were removed or re-written, ensuring the final instruments were highly appropriate, focused, and content-valid.

3.8.2 Instrumental Reliability

Reliability refers to the capacity of research instruments to yield consistent, dependable, and reproducible results across different respondents and over time, minimizing random error (Kothari, 2004). Reliability in this study was secured through: (1) the rigorous pre-testing of tools during the Kidepo Valley pilot study, (2) the standardization of the household questionnaire with clearly defined categorical responses, (3) the delivery of a comprehensive three-day training program for local Luo-speaking enumerators, and (4) the use of structured, face-to-face field interview protocols to eliminate enumerator bias and verify respondent comprehension on-site.

3.9 Data Verification, Cleaning, and Coding

3.9.1 Daily Field Verification

Both quantitative and qualitative datasets underwent a rigorous process of daily field verification to ensure complete data accuracy and integrity (Creswell, 2014). At the end of each field day, the primary researcher and field supervisors reviewed all completed household questionnaires to check for missing answers, unclear handwriting, or logical

inconsistencies. Any detected anomalies were immediately clarified with the respective enumerator, and if necessary, corrected by re-contacting the respondent on the same day. Double data entry was executed in Microsoft Excel, and cross-checking was performed across the separate entries to identify and eliminate entry errors (Creswell & Plano Clark, 2018).

3.9.2 Systematic Data Cleaning

Systematic data cleaning involved detecting and correcting logical errors and outliers in the consolidated Excel dataset before executing statistical analysis (Kumar, 2019). The researcher utilized sorting and filtering functions in Excel to identify duplicate entries, missing values, or implausible values such as extreme household sizes, mismatched crop yield ratios, or negative income figures. These logical discrepancies were reconciled by referencing original field notes and questionnaire booklets. Incomplete questionnaires or records with irreconcilable contradictions were excluded from the final analytical dataset, guaranteeing a clean and highly credible database for statistical computation.

3.9.3 Structured Coding Protocols

To facilitate efficient computer-aided analysis, raw data were transformed into structured numeric formats (Miles et al., 2014). For quantitative variables, categorical responses (e.g., gender of household head, primary livelihood type, wildlife attack frequencies) were assigned specific numerical codes in Excel. For qualitative data from FGDs and KIIs, recorded audio files were transcribed, translated into English, and systematically coded into major themes and sub-themes derived from the Sustainable Livelihoods Framework, including ‘asset depletion,’ ‘vulnerability shocks,’ and ‘institutional barriers.’ This systematic coding facilitated direct, structured comparison and integration across the quantitative and qualitative datasets.

3.10 Data Analysis and Analytical Framework

Microsoft Excel was utilized as the primary computing setting for quantitative data analysis due to its flexibility, accessibility, and robust computational toolkits (Creswell, 2014). Descriptive statistics including absolute frequencies, percentages, standard deviations, and arithmetic means were generated using Excel formulas and dynamic pivot tables to summarize demographic characteristics, crop loss volumes, and financial coping costs.

Quantitative findings were visualized using professionally formatted tables and charts to expose trends and spatial relationships.

Qualitative data from focus groups and key informant interviews were analyzed utilizing thematic analysis, organizing narratives around key concepts defined by the Sustainable Livelihoods Framework (SLF) (DFID, 1999). To integrate the convergent datasets, quantitative statistical trends were paired with qualitative quotes and case narratives during the discussion of results. Quantitative patterns revealed the physical scale, geographic spread, and financial magnitude of wildlife damage, while qualitative insights exposed the deep socio-emotional experiences, intra-household gender labor divides, and community frustrations with park authorities (Creswell & Plano Clark, 2018). This integrated analytical approach, structured through the SLF, traced how wildlife shocks interact with five core capitals (natural, financial, human, physical, and social) to dictate household livelihood strategies and long-term resilience outcomes in Nwoya District.

3.11 Ethical Considerations

Ethical integrity formed the foundational bedrock of this research, ensuring complete transparency, safety, and respect for all participants. Formal ethical approval was obtained from the Gulu University Research Ethics Committee (GUREC), operating under strict national guidelines. Administrative permissions were also secured from the Nwoya District Local Government and the local council and community leaders of Lii Sub-county. Before commencing any interview, survey, or focus group, the research objectives, voluntary nature of participation, and right to withdraw at any time were clearly explained to each participant in Luo. Written or verbal informed consent was secured from every respondent.

To protect participant safety and privacy, strict anonymity and confidentiality protocols were enforced. No personal identifying information such as names or physical addresses was recorded in the questionnaires or analytical files. Instead, households were assigned unique alphanumeric identification codes. All completed physical questionnaires and digital recording devices were stored securely in locked cabinets and password-encrypted cloud folders, accessible only to the primary researcher.

3.12 Methodological Limitations

A major methodological limitation encountered during this study was the total absence of a centralized, up-to-date, or standardized local documentation system for recording human-wildlife conflict incidents at the village, sub-county, or district levels. Because there was no

official historical database, the quantitative crop and livestock losses recorded in this study were limited to self-reported, retrospectively recalled data from the 188 interviewed participants. While direct field observations and local leader verifications were deployed to mitigate recall bias, the lack of an official, continuous monitoring system restricts the capacity of local governments to validate historical trends and design predictive, landscape-wide mitigation policies. This programmatic gap is highlighted as a key structural challenge in the final recommendations of the dissertation.

CHAPTER FOUR

PRESENTATION OF FINDINGS / RESULTS

4.0 Introduction

This chapter presents the empirical findings and a detailed analytical discussion of the study on human–wildlife conflicts (HWC) and their multi-dimensional impacts on household livelihoods in Nwoya District, Northern Uganda. Grounded in the Sustainable Livelihoods Framework (SLF) (Scoones, 1998; DFID, 1999), the analysis captures the complex interactions between environmental shocks, household asset dynamics, community-level coping mechanisms, and transforming institutional policies. By examining these factors, the chapter reveals the underlying structures that shape rural vulnerability adjacent to Murchison Falls National Park (MFNP). The findings reported herein are derived from a robust, triangulated mixed-methods fieldwork design, encompassing a structured survey of 107 households (100% of the sample), 6 Key Informant Interviews (KIIs) with policy and local government actors, 5 Focus Group Discussions (FGDs) with community members and local leaders, and insights from a high-level Uganda Wildlife Authority (UWA)-stakeholders’ consultative meeting held at the Nwoya District Headquarters.

To provide a rigorous, dissertation-ready structure, this chapter presents findings alongside critical discussions, linking the empirical realities observed in Nwoya District with broader regional and global literature. It begins by establishing the demographic profile of the participants, which forms the baseline for analyzing livelihood capacity. It then examines the precise nature and extent of human-wildlife conflicts, maps these shocks directly onto the five core livelihood capitals (Natural, Financial, Human, Physical, and Social), evaluates the sustainability and opportunity costs of traditional community coping strategies, and concludes with a critical evaluation of the policy-to-practice divide governing Uganda’s wildlife management and compensation frameworks.

4.1 Demographic Profile of Participants

Understanding the demographic traits of respondents is fundamental to evaluating how Human–Wildlife Conflicts (HWCs) influence household livelihoods and coping decisions. In this study, the demographic characteristics of the participants were analyzed in terms of gender, age distribution, and household livelihood activities. These variables shed light on the social structure, labor availability, and baseline economic capacity of communities adjacent

to Murchison Falls National Park, all of which dictate a household's vulnerability to wildlife-induced shocks.

4.1.1 Gender and Livelihood Implications

The gender profile of the survey participants is summarized in Table 4.1. The quantitative data shows that out of the 188 surveyed participants, 64.9% (n = 122) of the respondents were male, while 35.1% (n = 66) were female. This gender ratio reflects the traditional socio-economic and cultural structures of rural communities in Nwoya District, where men are predominantly regarded as the heads of households and the primary representatives in matters concerning land ownership, formal agricultural decisions, and external engagement with park authorities and local government leaders.

Table 4. 1: Participants' Gender Profile

Variable	Number of Participants (n)	Percentage (%)
Male	122	64.9
Female	66	35.1
Total	188	100.0

Source: *Field Survey Report, 2025*

During qualitative interviews and focus groups, women participants noted that domestic responsibilities such as childcare, food preparation, farming, and domestic caregiving significantly limited their availability during interviews. Cultural norms also heavily influenced who spoke publicly on household assets and land issues. However, despite their lower numerical representation in the formal survey, women's narratives in Focus Group Discussions (FGDs) revealed their extensive, hands-on involvement in farming, food provision, and replanting crops destroyed by wildlife. Strikingly, women are also deeply involved in communal elephant-chasing efforts at night. They support their husbands by sounding alarms, beating saucepans, and preparing fires, which exposes them to severe physical and health hazards in the frontline boundary zones.

4.1.2 Age Distribution and Productive Capacity

The age structure of the study participants is presented in Table 4.2. The survey data shows that the majority of the respondents were aged between 30 and 49 years, accounting for 55.4% of the sample (n = 104 households, comprising 49 respondents aged 30-39 and 55 respondents aged 40-49). This concentration represents the most economically active, productive, and physically resilient segment of the local agricultural population. These

individuals are directly responsible for executing labor-intensive agricultural activities, such as land clearing, weeding, crop harvesting, and active crop protection at night, making them highly exposed to, and knowledgeable about, wildlife encounters and conflicts.

Table 4. 2: Age Distribution of Participants

Age Category (Years)	Number of Participants (n)	Percentage (%)
18–29	23	12.2
30–39	49	26.1
40–49	55	29.3
50–59	41	21.8
60 and above	20	10.6
Total	188	100.0

Source: *Field Survey Report, 2025*

The relatively low representation of younger respondents (18–29 years, 12.2%) is primarily attributed to rapid rural-urban youth migration to urban centers such as Gulu and Kampala in search of non-farm employment or educational opportunities, leaving behind an aging labor pool in frontline agricultural villages. Conversely, the small share of elderly respondents (60 years and above, 10.6%) reflects a reduced physical capability to engage in active farming and crop guarding in these high-conflict areas. This age-related labor gap has profound implications for community resilience, as the heavy physical and psychological demands of human-wildlife conflict mitigation specifically nightly guarding patrols fall disproportionately on middle-aged household heads, severely straining the community’s collective active labor pool.

4.1.3 Household Livelihood Activities and Vulnerability Baseline

The baseline sources of livelihood among the surveyed households are summarized in Table 4.3. The empirical data reveals an overwhelming reliance on agriculture. Specifically, 88.8% (n = 167) of households identified farming as their primary, and often sole, source of livelihood and survival. This structural concentration highlights the extreme socio-economic vulnerability of the local population. Proximity to Murchison Falls National Park, paired with a historical lack of market development and infrastructural investment, has severely restricted the opportunities for local households to diversify their income streams into non-farm activities.

Table 4. 3: Primary Household Livelihood Activities

Primary Source of Livelihood	Number of Participants (n)	Percentage (%)
Farming (Crop Production)	167	88.8
Small Businesses (Petty Trade)	11	5.9
Daily Wage Labor / Informal Work	7	3.7
Livestock Rearing	3	1.6
Total	188	100.0

Source: *Field Survey Report, 2025*

In addition to crop farming, small businesses (5.9%), daily wage labor (3.7%), and livestock rearing (1.6%) represent minor supplementary income sources. This overwhelming dependence on crop production creates a highly fragile agrarian economy where household survival is inextricably tied to seasonal yields. In the context of the SLF, any shock that disrupts agricultural output such as a single night-time elephant raid directly decimates the household's primary natural capital and financial security. As discussed during the UWA stakeholder consultative meeting, while there are minor perceived benefits of park proximity (such as limited revenue-sharing, youth ranger employment, and controlled firewood collection), these benefits are highly localized and unevenly distributed, failing to compensate for the continuous and severe crop destruction endured by the 167 farming households.

4.2 Extent and Nature of Human–Wildlife Conflicts

The empirical results confirm that human–wildlife conflict (HWC) in Lii sub-county, Nwoya District, is not an occasional, marginal, or localized phenomenon. Rather, it represents a widespread, pervasive, and chronic structural crisis. Every single one of the 107 surveyed households (100%) reported experiencing at least one severe wildlife-induced incident within the twelve months preceding the study. This near-universal rate of conflict was strongly corroborated by all 6 Key Informant Interviews (100% KIIs) and 5 Focus Group Discussions (100% FGDs) conducted across the frontline villages. From the perspective of the Sustainable Livelihoods Framework, this continuous and inescapable exposure converts HWC from a temporary environmental ‘shock’ into a persistent ‘vulnerability context’ that constantly erodes household asset portfolios.

4.2.1 Prevalence and Conflict Susceptibility

Frontline households located directly on the boundary of Murchison Falls National Park, particularly those adjacent to unfenced sections and wildlife corridors, suffer from a near-

constant state of threat. Qualitative narratives paint a stark picture of the fear and vulnerability dominating daily life. For instance, a female participant in a frontline village expressed her daily anxiety vividly (HH002/HHI, 2025): *“My life is very hard. I am always very scared and worried of attacks by wild animals because they do not only stop in the gardens, they even move into the compound.”*

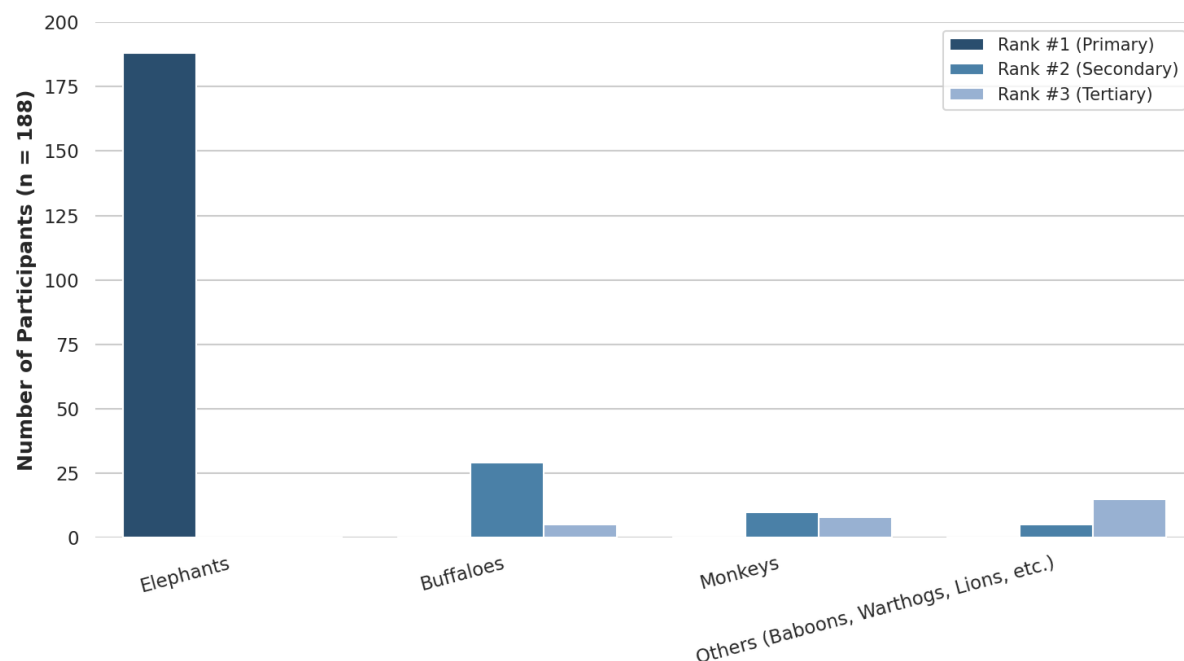
Another respondent drew a chilling historical parallel, highlighting the deep trauma associated with this ongoing exposure (HH004/HHI, 2025): *“I am always worried each time night is about to fall. I feel like we are back in the days of the Lord’s Resistance Army (LRA) rebels.”*

Such testimonies illustrate that the conflict represents a profound security threat. The constant exposure to large, wide-ranging wildlife, particularly at night, restricts household movement, prevents community members from accessing basic services, and limits the stability needed to accumulate assets and build resilience. This finding implies that without systemic, physical mitigation infrastructures, families in Nwoya District remain structurally trapped in poverty, unable to escape a cycle of continuous asset depletion.

4.2.2 Wildlife Species Involved and Conflict Hierarchy

While multiple animal species emerge from the park into communal areas, a clear, species-specific hierarchy dominates the conflict. African elephants (*Loxodonta africana*) were unanimously identified by 100% of the 188 interviewed participants as the primary source of agricultural and physical destruction. Elephants emerge from Murchison Falls National Park in search of highly nutritious cultivated crops. Herd sizes are substantial, typically ranging from small family groups of 4 to massive, highly destructive herds of up to 40 individuals during peak crop maturation periods. A single incursion by a herd of this size can completely decimate multiple household farms in a single night.

Figure 4. 1: Ranking of Wildlife Species Involved in Conflict. Source



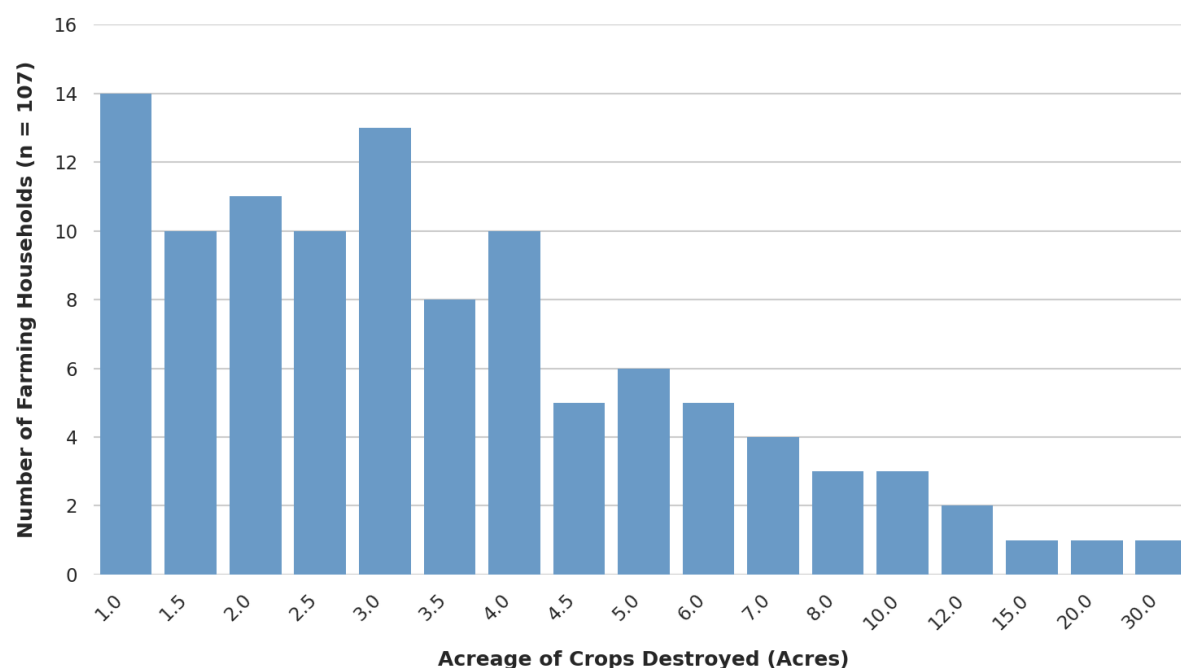
Source: *Field Data, 2025*

As illustrated in Figure 4.1, secondary species of conflict were identified but described as significantly less destructive and dangerous. These include African buffaloes, reported by 15.4% of households (n = 16), which degrade communal grazing pastures and destroy crops through trampling, and monkeys (5.3%, n = 5), which raid maize and fruit crops during daylight hours. Occasional cases involving baboons, warthogs, lions (predating on livestock), and chimpanzees were also reported. Because elephants are the dominant and most destructive species, traditional and generic wildlife deterrence strategies often fail. Effective conflict management must be elephant-centered, incorporating specialized physical, chemical, and behavioral ecology deterrents rather than generic approaches.

4.2.3 Crop and Property Destruction Patterns

The direct, tangible impacts of wildlife incursions are felt primarily through the widespread destruction of household food and cash crops. Frontline farmers report extensive losses of essential food staples, including maize, beans, cassava, and sweet potatoes, along with high-value fruit trees such as bananas, jackfruits (locally known as Ffene), and pawpaws. Because households in Lii sub-county are overwhelmingly agrarian, the destruction of these crops immediately decimates both their food security and expected cash income. Farms located near known wildlife corridors or within 0.5 km of the national park boundary suffer the most severe and frequent raids.

Figure 4. 2: Distribution of Crop Acreage Destroyed per Household



Source: *Field Data, 2025*

Figure 4.2 shows the distribution of crop acreages destroyed among the 107 farming households. Out of the 107 surveyed farming households, the vast majority experience recurrent losses ranging from 1 to 4 acres per season. Specifically, a detailed breakdown of the 107 households reveals that 14 households (13.1%) experienced a loss of 1.0 acre, 10 households (9.3%) lost 1.5 acres, 11 households (10.3%) lost 2.0 acres, 10 households (9.3%) lost 2.5 acres, 13 households (12.1%) lost 3.0 acres, 8 households (7.5%) lost 3.5 acres, and 10 households (9.3%) experienced a loss of 4.0 acres. In total, 76 households (71.0% of the sample) suffered crop destruction within this 1.0 to 4.0-acre range. Larger-scale losses were also common, with 15 households (14.0%) losing between 4.5 and 7.0 acres, and a further 16 households (15.0%) experiencing extreme, catastrophic losses ranging from 8.0 to 30.0 acres. For smallholder farmers, a loss of this scale is economically devastating. A qualitative quote from a frontline farmer illustrates the direct financial catastrophe and sunk credit costs of crop raiding (HH020/HHI, 2025): “I lost 3 acres of my maize plantation... I bought DK777 seeds at an expensive price of 17,500 shillings per kilogram and I ended up not getting anything.”

This quote highlights a critical dimension of rural vulnerability: many smallholders purchase improved seeds and inputs on credit, or lease land under the expectation of a profitable harvest. When wildlife raids decimate these crops, farmers are left with absolute crop failure,

zero income, and substantial, unpayable debts. Consequently, over 61.7% of surveyed households (n = 66) explicitly reported ‘lack of money’ or ‘lost capital’ as a direct consequence of HWC, severely constraining their ability to meet basic needs, access medical care, or pay school fees for their children. Furthermore, wildlife destruction is not limited to standing crops. Respondents reported extensive damage to physical structures, including domestic huts, crop storage granaries, solar panels, and fences. As narrated by HH010/HHI (2025), “the elephants broke down the hut in which we were sleeping,” demonstrating that HWC actively destroys physical capital, compromising basic human shelter and household safety.

4.2.4 Temporal Patterns and Conflict Seasonality

Wildlife incursions are heavily patterned by seasonal agricultural calendars and ecological cycles, making them highly predictable yet incredibly difficult to prevent. Conflict frequency peaks dramatically during the crop maturation and harvesting months, spanning from April through to January of the following year. During these periods, wildlife incursions become a nightly occurrence. This chronic instability has forced community members to completely reorganize their daily routines. Farmers are forced to sacrifice their nighttime rest to engage in exhausting and dangerous crop guarding, sleeping during the day to stay awake at night.

This exhausting shift in daily routines is captured in the qualitative narratives of frontline farmers. As stated by HH001/HHI (2025): *“My daily routine has changed. I now sleep during the day so that I am awake in the night to chase the elephants.”*

Another respondent added (HH009/HHI, 2025): *“My day is turned into nights while night turned into day because I have to stay awake to watch out for the elephants.”*

This temporal inversion illustrates a profound and often overlooked ‘opportunity cost’ of human-wildlife conflict. Time spent protecting crops at night consumes a vital livelihood asset: human labor time. The physical fatigue and severe sleep deprivation resulting from night guarding drastically reduce daytime agricultural productivity, limit the time available for child education and domestic caregiving, and prevent household heads from engaging in off-farm income diversification, further cementing their vulnerability.

4.2.5 Disease Transmission Risks and Ecological Concerns

In addition to crop and property damage, communities bordering the national park face critical ecological and health-related risks, particularly regarding zoonotic and wildlife-associated diseases. During Focus Group Discussions and the stakeholders' consultative meeting, participants expressed intense concern over the increasing prevalence of animal diseases. This increase is attributed to the uncontrolled, close-range interaction between wild animals and domestic livestock, which introduces ticks, tsetse flies, and other vectors into the domestic arena. A key informant (KII002/KII, 2025) summarized these community fears: *"There are also concerns coming from within the communities of animals falling sick in areas affected by wildlife conflicts, which might be related to wildlife-associated diseases or flies these wildlife come with to the community habitat."*

These concerns, particularly regarding tsetse flies emerging from the park's dense brush, present a severe risk to both human and animal health. The risk of trypanosomiasis (sleeping sickness in humans and nagana in livestock) directly threatens the viability of livestock rearing which is already a minor livelihood activity (1.6%) preventing households from utilizing cattle for animal traction, a physical capital that could otherwise expand agricultural output and enhance resilience.

4.2.6 Loss of Life and Physical Injuries

The most tragic and severe consequence of human-wildlife conflict in Nwoya District is the physical injury and loss of human life. Because frontline communities are forced to actively defend their fields from massive and dangerous wildlife, physical confrontations are common. The survey data reveals a grim reality: 83.0% of surveyed households (n = 88) reported that physical injuries or fatalities had occurred in their villages due to wildlife attacks, a statistic strongly supported by 85.7% of Key Informant accounts. Furthermore, 20.7% of surveyed households (n = 22) had a household member who had personally sustained a severe physical injury. Narratives of fatal encounters with elephants were a painful and frequent recollection, with community members noting that multiple local residents had been killed in recent years.

The profound and devastating emotional and structural impact of these losses is illustrated in the heart-wrenching testimony of a frontline widow (HH103/HHI, 2025): *"An elephant killed my husband and it is something that has completely destroyed my life and my household."*

Another participant displayed the physical scars of these encounters (FGD08/CAG, 2025): *“Today I am deformed on my left ear all because of elephants.”*

In the context of the SLF, physical injury and loss of life represent the ultimate and irreversible depletion of a household’s Human Capital. The death or permanent disability of a household head removes the primary agricultural labor supply, deprives dependents of essential economic support, and places an overwhelming labor burden on widows and children. Additionally, the immediate and substantial costs of medical treatment, funeral expenses, and follow-up care deplete the household’s scarce financial savings, forcing them to sell productive assets (such as small livestock or farm tools) and driving them deeper into a cycle of intergenerational poverty.

4.3 Multi-Dimensional Impacts of HWC on Household Livelihoods (SLF Perspective)

The empirical findings of this study demonstrate that the consequences of human-wildlife conflict extend far beyond simple agricultural damage. Rather, HWC acts as a systemic disruptor that degrades multiple, interconnected dimensions of household livelihoods, including food security, income stability, physical and mental health, gender relations, child education, and community social cohesion. By analyzing these multi-dimensional impacts through the Sustainable Livelihoods Framework, we can systematically trace how wildlife shocks deplete household assets and restrict long-term resilience.

4.3.1 Food Insecurity, Caloric Shocks, and Nutritional Distress

Widespread food insecurity is the most immediate and devastating livelihood outcome of HWC in Nwoya District. Because 88.8% of households depend entirely on agricultural yields for food, the immediate destruction of staple crops by elephants and other wildlife translates directly into acute household food shortages. To cope with these crop losses, the vast majority of surveyed households reported being forced to drastically reduce their meal frequency, cutting dietary intake from three nutritious meals per day to just one or two meals. This severe caloric deficit is captured in the painful narrative of HH043/HHI (2025): *“The conflict has made my household to become poor with no food. We are working to feed animals instead of my family. We now eat one meal a day.”*

This nutritional distress has severe, long-term consequences for human capital development. Chronic undernourishment, particularly among children and vulnerable household members, weakens physical health, lowers immune resistance, increases susceptibility to malaria and

other seasonal illnesses, and directly reduces adult agricultural labor productivity. This creates a highly damaging, self-reinforcing vulnerability loop: crop losses lead to nutritional deficits, which weaken physical labor capacity, resulting in lower crop yields in subsequent agricultural seasons and further entrenching the household in a state of chronic poverty.

4.3.2 Disrupted Livelihood Routines, Sleep Deprivation, and Human Capital Erosion

As established under the temporal scope, the mandatory requirement to defend crops from nightly wildlife invasions has significantly disrupted the sleep patterns and family routines of frontline households. Specifically, the survey data shows that 55.9% of households (n = 105) experience severely reversed sleep patterns, staying awake throughout the night to guard crops and attempting to rest during daylight hours. This chronic sleep deprivation has a debilitating impact on human health, resulting in persistent physical fatigue, severe headaches, dizziness, and chronic mental stress. As narrated by HH085/HHI (2025): *“All the energy I should use for digging in my gardens goes to chasing wild animals especially elephants. You wake up feeling so dizzy and tired due to having less sleep or sleepless nights.”*

This quote illustrates that night guarding severely erodes household labor efficiency. The physical fatigue accumulated during nightly guarding directly reduces the energy and time farmers can invest in essential daytime agricultural tasks, such as land clearing, timely planting, and thorough weeding. This operational inefficiency results in lower agricultural productivity, further reducing seasonal crop yields and undermining the household’s long-term capacity to recover from environmental shocks.

4.3.3 Psychosocial Strains, Anxiety, and Trust Breakdown

The constant, inescapable threat of wildlife invasions and the recurring loss of assets impose a profound psychosocial burden on frontline communities, causing widespread fear, chronic anxiety, and severe emotional exhaustion. Living under constant threat significantly strains family relationships, leading to increased domestic disputes and family instability. During a Focus Group Discussion with community leaders, a participant highlighted how HWC-induced food insecurity and the grueling night-guarding routine directly fuel domestic conflict (FGD005/CL, 2025): *“This conflict is causing domestic violence because when there is no food, people keep quarrelling in the house... Women have started accusing men of having extra-marital affairs under the pretext of going to chase elephants in the night.”*

These accounts illustrate how chronic environmental stress and resource scarcity damage a community's Social Capital. The persistent fear and emotional exhaustion breed feelings of despair and helplessness, summarized by qualitative comments such as *"I have nothing to do, I cannot wait for the elephants at night"* or deep-seated suspicion, with some farmers expressing beliefs like *"it's like someone is sending elephants here to us to destroy our crops."* This breakdown of trust and social cohesion limits community collective action, preventing farmers from organizing cooperative crop-guarding patrols or sharing mutual credit, which are vital safety nets during ecological crises.

4.3.4 Gendered Vulnerabilities and Domestic Conflict

The multi-dimensional impacts of human-wildlife conflict are highly gendered, placing a disproportionate and exhausting 'triple burden' on women in rural Nwoya District. In addition to their traditional responsibilities as primary subsistence cultivators, domestic caregivers, and food providers, women are increasingly forced to participate directly in dangerous nighttime elephant-chasing patrols. Furthermore, women face severe community sanctions and fines if they fail to participate in these communal crop-defense efforts. As explained by a female participant in a frontline Focus Group Discussion (FGD006/FHH, 2025): *"If I do not participate in chasing elephants at night, they will come and pick my saucepan if I cannot pay the fine which amount is decided by them, the leaders."*

This punitive local governance environment exacerbates the vulnerability of female-headed households, who often lack the physical labor and financial resources needed to defend their fields. When wildlife raids decimate crops, women bear the primary emotional and physical burden of sourcing alternative food supplies and replanting destroyed fields. As noted by another female respondent (FGD002/FHH, 2025): *"When elephants destroy the garden, it is the woman who suffers most because she must find food for the children and everyone else in the household."*

This disproportionate exposure to food insecurity, physical exhaustion, and local fines restricts women's participation in productive off-farm economic opportunities and community-level decision-making. This marginalization weakens household economic resilience and blocks access to formal conservation and development support, perpetuating systemic gender inequalities.

4.3.5 Educational Disruption and Intergenerational Poverty traps

Human-wildlife conflict severely undermines long-term human capital development by disrupting children's formal education. Frontline communities report high rates of school absenteeism and dropouts, driven by two primary factors: severe household financial constraints resulting from crop losses, and intense safety concerns during school commutes. When elephant herds or buffaloes are active near roads, parents refuse to allow children to walk to school. This double burden is reflected in the qualitative testimonies of frontline parents. As stated by HH059/HHI (2025): *"Our children are not going to school anymore due to poverty."*

Another parent added (HH048/HHI, 2025): *"The only school nearest to us is 5 kms away and we fear sending children to school alone because the time the children go to school is the same time the elephants move back to the park."*

This educational disruption is confirmed by regional demographic statistics from the Uganda Bureau of Statistics (UBOS, 2024), which show that in Lii sub-county, 32.6% of children aged 6–12 and 27.4% of children aged 13–17 are completely out of school. By restricting access to formal education, HWC directly impairs the future human capital of these communities, limiting livelihood opportunities and trapping future generations in a cycle of subsistence farming and chronic poverty.

4.4 Coping and Adaptation Strategies Mobilized by Households

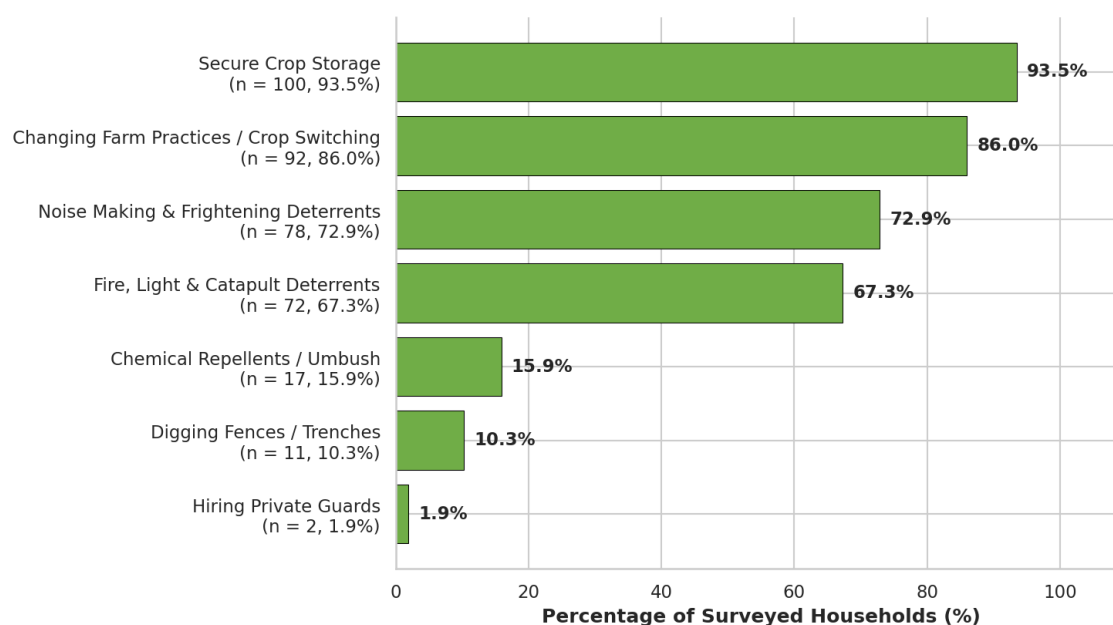
In response to the persistent threat of wildlife invasions, frontline communities do not remain passive victims. Rather, they demonstrate significant agency and local initiative, mobilizing their limited human, physical, and social capital to construct a diverse, multi-pronged array of coping and adaptive strategies. However, these strategies are heavily constrained by a lack of financial and institutional capital, rendering them largely reactive, labor-intensive, and increasingly ineffective against adaptive wildlife behavior.

4.4.1 Traditional Deterrents and Local Adaptation

Figure 4.3 illustrates the prevalence of different coping strategies utilized by the surveyed households. Communities depend heavily on traditional, low-cost, and labor-intensive deterrents. Storing crop harvests securely inside polythene bags and huts was the most widely adopted proactive adaptation, utilized by 93.5% of households (n = 100). Additionally,

86.0% of households (n = 92) reported switching to crop varieties that are less palatable to elephants, such as chili, soybeans, and okra.

Figure 4. 3: Household Mobilization of Coping & Adaptive Strategies



Source: *Field Data, 2025*

In terms of active defense, frightening away animals through loud noise making (such as beating drums, blowing vuvuzelas, and shouting) was reported by 72.9% of households (n = 78). This was closely followed by the use of fire, light, and projectiles (such as burning rubber tires, lighting torches, and using catapults or sling-shots), which was utilized by 67.3% of households (n = 72).

While proactive and traditional deterrents are common, other modern and physical strategies remain low. Chemical repellents (such as ‘umbush’ and rocket sprays) are used by 15.9% of households (n = 17), and digging farm trenches is practiced by 10.3% (n = 11). Hiring private wildlife guards is virtually non-existent, utilized by only 1.9% of households (n = 2) due to extreme cash constraints. The primary limitation of these local deterrents is that elephants rapidly habituate to them. As explained during Focus Group Discussions, elephants have become ‘clever’ and ‘familiar’ with noise and fire, frequently ignoring shouts and vuvuzelas, and even filling crop-defense trenches with soil to cross into agricultural fields. Consequently, while these strategies represent crucial community initiative, they remain fragile, short-term stopgaps that consume immense human labor time without guaranteeing crop protection.

4.4.2 Physical Barriers, Collective Vigilance, and Scout Mobilization

Beyond individual household deterrents, frontline communities bordering Murchison Falls National Park in Celpeke, Mwodo, Te-Obee, and Langele have mobilized collective defense mechanisms to mitigate elephant incursions. Facing shared ecological vulnerability, residents have pooled labor, local ecological knowledge, and physical resources to establish Community Action Groups (CAGs) and informal nocturnal patrol systems. Supported by rapid communication and locally organized alarm mechanisms, these patrols monitor elephant movements along the national park boundary. Upon detecting a herd, scouts alert neighboring households, who collectively mobilize to deter the animals before extensive agricultural damage occurs. As a community scout explained during a Focus Group Discussion:

“We coordinate our movements at night; when one garden is sounded, we all gather to beat the drums and assist.” (FGD006/CAG, 2025)

Through the lens of the Sustainable Livelihoods Framework (SLF), this collective vigilance represents a vital mobilization of social capital. By sharing real-time information and pooling labor, community networks function as a direct livelihood resource that buffers agricultural assets the core of household natural and financial capital against catastrophic depletion. However, these social defense mechanisms are physically bounded and must be reinforced with physical barriers. While some households construct deep trenches and fences to restrict wildlife access, their efficacy is severely constrained by the physical adaptability of elephants, which participants report can easily fill trenches with soil to create crossing points. Consequently, physical barriers offer only temporary, partial protection, demanding continuous, labor-intensive community maintenance to remain functional over time.

The mobilization of community scouts further illustrates local willingness to co-manage wildlife conflict, yet it exposes a critical institutional contradiction. Operating at the dangerous interface between state conservation authorities and affected communities, these voluntary scouts monitor wildlife movements without formal recognition, protective equipment, transport, or financial facilitation. This exposes them to direct physical danger and local social friction, leaving them vulnerable to community blame when raids succeed. A community scout captured this vulnerable position during a Focus Group Discussion:

“We are always caught in between the wild animals and the community but we are risking our lives without being recognized either by Uganda Wildlife Authority (UWA) or government... Even the communities blame us should a community member be harmed by the wild animals.” (FGD001/CAG, 2025)

This operational vacuum and lack of institutional compensation severely limit the scouts’ capacity, threatening the long-term sustainability and motivation of voluntary patrol arrangements.

Ultimately, these findings reveal both the adaptive strengths and structural limits of social capital under the SLF. While community solidarity and local knowledge can temporarily compensate for missing material resources, social capital cannot indefinitely substitute for formal financial, human, and institutional capital. Unpaid, voluntary community labor transfers severe physical risks and economic burdens onto already vulnerable households, raising serious doubts about the long-term sustainability of these arrangements. Rather than demonstrating successful local adaptation, this collective vigilance represents a survival response born of institutional neglect. While residents demonstrate remarkable agency, their efforts remain highly fragile stopgaps. To ensure long-term sustainability, conservation authorities must provide formal institutional integration, technical training, protective equipment, and regular financial facilitation, thereby transforming an informal risk-transfer mechanism into a secure, collaborative co-management framework.

4.4.3 Livelihood Diversification, Adaptive Enterprises and Structural Constraints

Severe agricultural losses have compelled border households to explore alternative livelihood strategies to mitigate environmental shocks. Within the SLF, livelihood diversification offers an essential pathway to reduce dependence on climate- and wildlife-vulnerable crop production. In the study area, this diversification occurs along a continuum ranging from positive, conservation-compatible adaptations to desperate, ecologically destructive coping mechanisms. Among positive adaptations, the integration of apiculture specifically beehive fences provides a critical socio-ecological dual benefit: the honeybees act as a biological deterrent against crop-raiding elephants, while honey harvests strengthen household financial capital. This is complemented by crop switching, with 86.0% of surveyed households (n = 92) proactively replacing highly vulnerable maize with unpalatable crops like chili, soybeans, and okra. These measures reflect significant local agency, where households modify their agricultural systems to prevent losses before they occur.

Despite their promise, the adoption of these sustainable alternatives is severely hindered by deep structural barriers, including a lack of agricultural credit, deficient road infrastructure, market isolation, and a heavy reliance on transient, donor-funded initiatives. Moreover, the exhausting physical and psychological demands of night guarding deplete household labor reserves, restricting the capacity to invest in alternative enterprises. Consequently, when crops are completely destroyed and financial assets are depleted, households are often forced to adopt desperate, short-term coping mechanisms, including commercial charcoal production and illegal bushmeat hunting within Murchison Falls National Park. While providing immediate food and income, these activities trigger a destructive “poverty–environment trap.” By depleting local forest and wildlife resources, these strategies trigger environmental degradation and expose households to severe legal sanctions, ultimately eroding the very natural assets required for long-term livelihood recovery.

In sum, livelihood diversification bordering Murchison Falls National Park is characterized by a precarious struggle between adaptive agency and structural paralysis. While apiculture and crop switching represent positive pathways to resilience, charcoal burning and poaching are distress indicators of systemic vulnerability. To enable a sustainable transition from survivalist coping to resilient diversification, public policies and conservation interventions must actively build local capacities by strengthening financial capital, expanding market access, and providing continuous technical and infrastructural support.

4.5 Policy, Regulations, and Transforming Institutional Processes

Within the SLF, ‘Transforming Structures and Processes’ represent the legal, policy, and institutional frameworks that govern resource access and mediate household vulnerability. In Uganda, while robust legal instruments exist on paper specifically the Uganda Wildlife Act of 2019 and the National Plan for Managing Wildlife Outside Protected Areas (2022–2031) empirical evidence from Nwoya District reveals a profound policy-to-practice divide. This institutional failure leaves local communities bearing the entire burden of wildlife damage with minimal state support.

4.5.1 Statutory Compensation and the Bureaucratic Process

The Uganda Wildlife Act of 2019 formally established a statutory Wildlife Compensation Scheme, designed to provide crucial financial relief to communities affected by crop damage, livestock loss, injuries, and deaths. In practice, however, this scheme is virtually paralyzed by

extreme bureaucratic centralization, extensive verification delays, and highly restrictive procedural hurdles. To claim compensation, poor rural farmers are required to file formal reports with local authorities, obtain multiple administrative signatures, and submit claims to the UWA headquarters in Kampala. This grueling verification pipeline typically takes over a year to process, and the vast majority of claims are ultimately rejected or ignored, leading many frustrated farmers to completely give up.

This administrative failure is reflected in the qualitative comments of local leaders and cultural heads. During the stakeholders' consultative meeting, a local cultural leader strongly critiqued the inadequate compensation amounts and the slow administrative response (SHCM011/UWA, 2025): *"The 2 million shillings given as compensation for losses like death is not commensurate... UWA should increase the threshold, otherwise, it is as if UWA and the government value animals more than human life."*

This widespread perception that conservation laws prioritize wildlife over human lives severely damages institutional legitimacy. The centralized, slow, and underfunded nature of the compensation program fails to restore depleted household capital, rendering this statutory instrument ineffective as a tool for enhancing local livelihood resilience.

4.5.2 Tourism Revenue-Sharing and local Benefit Capture

To offset the local costs of living alongside wildlife, Uganda's wildlife policy mandates that 20% of all national park entrance revenues must be shared directly with adjacent communities to fund local development projects. While these funds are occasionally released, community members report that they are frequently subject to elite capture and poorly aligned with actual household losses. Rather than funding household-level agricultural restoration or physical crop deterrents, revenue-sharing funds are overwhelmingly diverted or replanned by local government officials to fund macro-level infrastructure projects, such as the construction of sub-county offices.

This structural disconnect means that the frontline agricultural households who bear the direct, devastating costs of elephant raids receive virtually no direct financial assistance or benefits from park-level tourism. This unequal distribution of benefits fuels deep-seated political resentment, as community members perceive that tourism revenues are captured by wealthy elites and government agencies, while the poorest and most vulnerable households endure the entire economic and physical burden of wildlife conflict.

4.5.3 Ranger Capacity and Park Infrastructure Constraints

The physical capacity of the Uganda Wildlife Authority to respond to emergency wildlife incursions is severely constrained by acute human resource shortages and inadequate funding. In Lii sub-county, which shares a massive 41 km agricultural border with the national park, there are only two active ranger posts, with only three game rangers deployed per post. This microscopic deployment makes it physically impossible to monitor and secure the park boundary. Consequently, when emergency calls are placed, rangers are unable to respond due to a lack of fuel, transport, or personnel, frequently asking affected farmers to provide transportation themselves.

Furthermore, physical infrastructure in Lii sub-county remains critically incomplete. Out of the 41 km porous park border, only 10 km of electric fencing have been installed. This incomplete barrier is highly ineffective, as elephants simply bypass the fenced section, crossing into community gardens in unfenced areas and concentrating their destruction on previously untouched frontline farms. This infrastructural failure is exacerbated by termite damage to fence poles, illustrating the critical lack of routine maintenance and technical oversight governing park physical capital.

4.5.4 Stakeholder Collaboration and External Support Gaps

The study reveals a profound gap in external stakeholder engagement and institutional coordination. Frontline communities remain virtually isolated, receiving no reliable support from local government, non-governmental organizations (NGOs), or international development agencies in managing wildlife conflict. Specifically, 41.5% of surveyed households (n = 78) reported that they had never received any form of financial, technical, or agricultural assistance from any external actor. The only notable external intervention was a short-term project led by USAID ICAN, which trained local scouts and grouped households with promises of project support; however, all operations ceased entirely when the project ended in 2023, leaving community scouts completely unfacilitated and without basic protective gear, identification, or transport.

4.5.5 Community Perceptions of Conservation Legitimacy

The cumulative result of these institutional failures, delayed compensation programs, and incomplete physical infrastructures is a profound legitimacy deficit and widespread local dissatisfaction with park management. The survey results show an overwhelming, near-

universal negative perception of current wildlife conflict management efforts, summarized in Table 4.4.

Table 4. 4: Satisfaction with Current Wildlife Conflict Management Efforts

Satisfaction Level	Number of Households (n)	Percentage (%)
1. Very dissatisfied	186	98.9
2. Somewhat dissatisfied	1	0.5
3. Neutral	0	0.0
4. Somewhat satisfied	1	0.5
5. Very satisfied	0	0.0
Total	188	100.0

Source: *Field Data, 2025*

As shown in Table 4.4, an overwhelming majority of 98.9% of interviewed participants (n = 186) reported being ‘Very dissatisfied’ with current management efforts. Only one household reported being ‘Somewhat satisfied’, and no household was ‘Very satisfied’. This profound dissatisfaction underscores an urgent, critical need for systemic policy reforms and tangible, localized interventions from responsible conservation authorities. This widespread feeling of exclusion and abandonment fuels intense hostility toward conservation efforts, with community members believing that ‘the government is protecting the animals more than us,’ deeply undermining long-term park-community relationships and threatening the viability of local biodiversity conservation.

4.6 Chapter Summary

In summary, the empirical findings of this chapter reveal that human–wildlife conflict in Nwoya District represents a complex, dynamic landscape where severe livelihood crises exist in constant tension with community resilience and local agency. On one hand, wildlife incursions dominated by African elephants emerging from Murchison Falls National Park affect 100% of the surveyed frontline households (n = 107), acting as chronic environmental shocks that systematically deplete natural capital through crop destruction, financial capital through lost agricultural revenue, and physical capital through damaged housing and granaries. Furthermore, the grueling demands of nightly crop protection place an exhausting triple burden on women, strain family relationships, and disrupt child education.

On the other hand, frontline communities do not remain passive victims; they actively mobilize their limited human, social, and physical capitals to construct a diverse, multi-pronged array of coping and adaptive strategies. This local agency is demonstrated by the

voluntary organization of community scouts (CAGs) who build grassroots social capital through collective night patrols, and the adoption of modern apiculture and proactive crop-switching (such as chili, okra, and soybeans) by 86.0% of households (n = 92).

However, these localized adaptive strategies remain fragile stopgaps because elephants rapidly habituate to traditional deterrents, and community-led initiatives lack formal technical, financial, and logistical backing. This vulnerability is severely compounded by a profound policy-to-practice divide, where the statutory compensation scheme under the Wildlife Act of 2019 and local tourism revenue-sharing models remain centralized, bureaucratic, and highly vulnerable to local government elite capture. Consequently, frontline agrarian households continue to bear the unequal burden of conservation costs, resulting in a near-universal negative perception of current wildlife management.

CHAPTER FIVE

FINDINGS, ANALYSIS, AND THEORETICAL DISCUSSIONS ON HUMAN-WILDLIFE CONFLICT AND LIVELIHOOD VULNERABILITY

5.1 Context of Human-Wildlife Conflict (HWC)

5.1.1 High Prevalence of Conflict

The study established an exceptionally high prevalence of human–wildlife conflict (HWC) in the study area, with all 107 surveyed households (100%) and 40 FGD(100%) participants reporting having experienced at least one wildlife-related incident during the period under review. This empirical finding demonstrates that HWC is not an isolated, episodic, or occasional occurrence for households in Nwoya District; rather, it has become a persistent, pervasive, and structurally embedded livelihood condition. The universality of exposure is particularly significant from an analytical standpoint, as it suggests that virtually every household, irrespective of its socioeconomic differentiation, landholding size, or individual capacity, is highly vulnerable to wildlife-related shocks. In practical terms, living, residing, and farming within this socio-ecological landscape has become functionally inseparable from the severe risk of encountering wildlife and suffering consequent resource losses. The empirical universality observed in this study reflects a severe and highly concentrated conflict environment.

This finding is consistent with the broader landscape-level literature, which indicates that farming households located adjacent to protected area boundaries and historical wildlife movement routes tend to experience disproportionately higher levels of conflict. However, the absolute 100% prevalence rate observed in the current study is considerably higher than the 86% to 88% range reported by previous studies conducted among agricultural communities in Uganda and Tanzania (Mackenzie et al., 2012; Matseketsa et al., 2019). While those prior studies demonstrated substantial and severe exposure to crop raiding, the universal exposure documented in Nwoya indicates an exceptionally high geographical concentration of conflict. This discrepancy can be attributed to the specific geographical characteristics of the study area, where households are established in immediate proximity to Murchison Falls National Park and within historical wildlife foraging corridors. Consequently, these farming communities have limited spatial opportunities to establish a

safe physical separation between their essential agricultural activities and wildlife habitats, exposing their entire livelihood system to chronic environmental shocks.

Under the analytical lens of the Sustainable Livelihoods Framework (SLF), the 100% prevalence rate of HWC provides a compelling illustration of how the vulnerability context directly shapes household livelihood outcomes. The SLF conceptualizes shocks, trends, and seasonality as crucial external influences that govern people's ability to access and convert livelihood assets. In this context, wildlife incursions function as severe, recurrent, and covariant livelihood shocks that interact dynamically with seasonal agricultural cycles. The fact that every single sampled household experienced HWC confirms that conflict has transitioned from an external disturbance into an embedded, chronic stressor. The consequences are observed as systemic erosion across multiple capitals. Natural capital is directly threatened as farmland becomes the contested interface; financial capital is severely depleted by the immediate loss of crops; and human capital is compromised by the physical and psychological demands of intensive crop guarding. Consequently, household-level coping strategies alone are structurally inadequate to address this landscape-level ecological challenge, highlighting a profound mismatch between the scale of the problem and the localized nature of the response.

5.1.2 Wildlife Species – Elephants as the Predominant Conflict Species

The study established that African elephants (*Loxodonta africana*) were overwhelmingly the predominant wildlife species responsible for human–wildlife conflict in the study area, with 100% of respondents identifying elephants as the primary source of agricultural and physical threat. Reported elephant herd sizes ranged dynamically from 4 to approximately 40 individuals during individual agricultural incursions. This finding is analytically important because it demonstrates that the local conflict landscape is not characterized by multiple species contributing symmetrically to household losses. Instead, the landscape is powerfully dominated by a single, large-bodied, highly cognitive, and mobile species whose ecological requirements and foraging behaviors make interaction with subsistence agricultural communities exceptionally destructive. The absolute dominance of elephants provides a critical entry point for analyzing the severity, persistence, and systemic livelihood impacts of HWC in Nwoya District, as a single elephant incursion can effectively decimate the entire seasonal production of multiple households simultaneously.

This empirical predominance is strongly aligned with previous wildlife research across sub-Saharan Africa, which positions elephants as the most significant crop-raiding species around protected-area edges. As Hoare (1999) observed, elephants cause extensive and irreversible damage over short durations due to their massive body size, high forage intake requirements, and extreme mobility. Similarly, Barirega (2010) documented extensive, highly destructive impacts of elephant crop-raiding on rural farming households bordering Queen Elizabeth National Park in western Uganda. The findings of the current study reinforce this empirical consensus, showing that elephant conflicts are particularly devastating because they introduce a destructive multiplier effect. Unlike smaller herbivores or primates, elephants do not merely consume crops; their physical movement through cultivated fields results in extensive trampling, uprooting, and breakage of plants. Consequently, the actual economic losses reported by households significantly exceed the volume of crops consumed, as vast swathes of agricultural fields are physically destroyed during foraging and movement.

Applying the Sustainable Livelihoods Framework, elephants represent a major, highly unpredictable shock within the household vulnerability context, directly eroding natural, financial, human, and social capitals. Natural capital is directly eroded through crop destruction, while financial capital is depleted by loss of agricultural sales and high expenditures on deterrents. Human capital is severely compromised by physical injuries, fatalities, intense fatigue, and acute psychological trauma. Furthermore, the qualitative data reveals that elephant behavior is highly dynamic rather than static. Elephants demonstrate rapid cognitive adaptation and behavioral habituation to traditional deterrents, meaning strategies that were previously effective such as noise-making or lighting fires gradually lose their efficacy (Goodyear & Schulte, 2015; Montgomery et al., 2021). This behavioral adaptation forces farmers to adopt increasingly aggressive and risky defensive measures, elevating the risk of dangerous physical confrontations. The study also noted a multi-species conflict dimension, with 15.5% of respondents reporting buffalo conflicts and 5.1% reporting monkeys, but elephants remain the absolute structural driver of local vulnerability (Dupuis-Desormeaux et al., 2023). Reducing this vulnerability requires moving beyond household-level coping and implementing integrated, landscape-level spatial planning (Galley et al., 2024).

5.1.3 Crop Types Impacted and Regional Alignment

The study established that HWC in Nwoya District exerts a direct, devastating impact on local agricultural production, specifically through the targeted destruction of staple food crops and high-value cash crops. The crops most frequently reported as being severely affected included maize, beans, cassava, sweet potatoes, bananas, and rice. The critical significance of this finding lies not merely in the physical volume of agricultural biomass destroyed, but in the central, non-substitutable role that these specific crops play in rural household survival. For agricultural communities characterized by high subsistence dependence, these crops constitute food security, household savings, seasonal income, and the primary safety net against external shocks. Consequently, their targeted destruction by wildlife represents a simultaneous and catastrophic loss of multiple key livelihood functions, undermining the core socio-economic foundation of the household.

This specific pattern of crop vulnerability exhibits strong alignment with regional empirical literature. Barirega (2010) documented the extreme vulnerability of staple food crops to elephant raids around Queen Elizabeth National Park, while Kiffner et al. (2021) confirmed that crop types and their spatial configuration relative to protected area boundaries dictate the probability of raiding. As Sitati et al. (2005) demonstrated, elephants are highly attracted to agricultural crops because cultivated fields present highly concentrated, nutritious, and easily digestible forage compared to scattered, unpalatable natural vegetation. The findings from the current study reinforce this spatial-ecological perspective, showing that the high vulnerability of maize and bananas is directly linked to their attractive nutritional profiles, which draw elephants out of the park. This concentrated destruction near harvest time represents an extreme loss of invested capital, as households lose their cumulative seasonal investments in seeds, land preparation, and intensive manual labor.

Under the Sustainable Livelihoods Framework, this concentrated crop raiding constitutes a direct, catastrophic erosion of natural capital (agricultural crops and productive land), which rapidly triggers a cascading depletion of other capitals. Financial capital is directly undermined as households lose expected market income and are forced to spend scarce financial reserves purchasing replacement foods. Human capital is depleted as children's education and family healthcare are compromised due to absolute income shortages. This situation places households in a severe 'livelihood–risk dilemma' (Sitati et al., 2005): they cannot abandon their essential staple food crops because they are critical for survival, yet

continuing to cultivate these highly palatable crops in high-risk zones perpetually exposes them to catastrophic elephant raiding. Crop diversification alone is insufficient to resolve this dilemma because poorer households lack the financial capital, quality seeds, agricultural extension support, and accessible markets required to transition to less palatable but economically viable alternative crops.

5.1.4 Food Security, Nutrition, and Livelihood Impacts

The study established that human–wildlife conflict has profound, highly debilitating consequences for household food security, dietary nutrition, and general livelihood well-being in Nwoya District. A substantial proportion of surveyed households reported experiencing chronic food shortages following repeated, devastating wildlife incursions. The qualitative data revealed that the sheer frequency and magnitude of crop destruction forced many households to reduce their meal frequency from three full meals to only one or two meals per day, severely compromising nutritional intake. This extreme vulnerability was vividly articulated by a 42-year-old female participant who stated, ‘We are working to feed animals instead of my family.’ This poignant statement reveals how chronic wildlife conflict completely subverts the expected relationship between agricultural labor and household welfare, transforming hard agricultural effort into an involuntary subsidy for protected wildlife.

This finding is highly consistent with empirical findings from across East Africa, where crop raiding is documented as a primary driver of acute food insecurity and nutritional vulnerability among communities adjacent to national parks. Barirega (2010) reported that elephant raids around Queen Elizabeth National Park directly undermined subsistence household food security, while Raphela et al. (2021) highlighted the severe nutritional and financial shocks borne by subsistence farmers in South Africa due to crop-raiding wildlife. The current study reinforces this body of evidence, demonstrating that HWC-induced food insecurity operates as a double loss. Households lose the primary source of direct food consumption and simultaneously lose the agricultural surplus needed to generate cash income. Consequently, even when food is physically available in local markets, affected households are structurally barred from accessing it due to the absolute collapse of their purchasing power.

Through the theoretical lens of the Sustainable Livelihoods Framework, HWC-induced food insecurity demonstrates how a severe shock to natural capital (crops) propagates a downward

spiral across all other capitals. The collapse of natural capital depletes financial capital, which in turn erodes human capital as chronic malnutrition and physical exhaustion reduce labor productivity. To survive, families are frequently forced to adopt erosive, short-term coping strategies, such as selling key productive assets (e.g., small livestock or agricultural tools) or borrowing from informal networks under highly unfavorable terms. While these coping mechanisms prevent immediate starvation, they deplete the household's productive asset base and systematically locking them into a chronic, intergenerational poverty and vulnerability cycle (Naughton-Treves & Treves, 2005). Thus, resolving this vulnerability demands integrated policy interventions that actively position crop protection and household food security as indispensable, co-equal pillars of national biodiversity conservation strategies.

5.1.5 Conflict Frequency and Trend

The study findings demonstrate that human–wildlife conflict in Nwoya District has undergone a severe temporal escalation, shifting from an occasional, manageable disturbance into a highly frequent, chronic, and persistent livelihood threat. A critical empirical finding is the near-unanimous identification of the year 2025 as the ‘worst year’ of conflict by household respondents, Key Informants, and Focus Group Discussions. Participants described a dramatic escalation in conflict intensity, with elephants entering community farms on an almost daily basis, frequently in extremely large, intimidating herds of 35 to 40 individuals. This empirical trend suggests a shifting conflict regime that has overwhelmed traditional household coping capacity, transforming HWC from an acute environmental shock into an ongoing, chronic stressor that dominates everyday livelihood decision-making (Galley et al., 2024; Matsika et al., 2023).

The temporal analysis revealed a highly pronounced seasonal pattern, with conflict frequency escalating dramatically from April through January. This high-risk window directly overlaps with the primary agricultural cropping, maturing, and harvesting calendar of the study area, indicating that the occurrence of HWC is not randomly distributed. Instead, there is a tight, predictable temporal synchronization between wildlife foraging movements and the availability of attractive, high-nutrient agricultural crops in community fields. This seasonal alignment effectively transforms the local agricultural calendar into a conflict-risk calendar, leaving households highly exposed during periods when their dependence on land is greatest. Similar seasonal crop-raiding patterns have been documented in other elephant-impacted

landscapes in East Africa, where crop maturing cycles act as strong ecological magnets drawing wildlife out of protected zones (Matsika et al., 2023; Tiller et al., 2021).

Under the Sustainable Livelihoods Framework, this extreme frequency and predictable seasonality represent a massive intensification of the local vulnerability context. When wildlife incursions occur with chronic, daily frequency, households are deprived of the essential ‘recovery window’ required to rebuild their depleted natural, financial, and human capitals between agricultural seasons. Instead of recovering, households must continuously redirect their scarce labor and financial resources toward farm defense, creating a cumulative process of asset depletion. However, the high seasonal predictability of conflict also presents a vital opportunity for proactive environmental management. Rather than relying on late, reactive compensation or ranger responses, conservation authorities should integrate community temporal knowledge with systematic, longitudinal monitoring to deploy ranger patrols and early-warning resources strategically before peak conflict months, shifting HWC governance from reactive crisis management to seasonally informed, preventive landscape planning.

5.1.6 Nature of Conflicts and Associated Impacts

The study findings indicate that human–wildlife conflict in the study area manifests through multiple, analytically distinct pathways, although crop destruction is empirically established as the most pervasive and economically devastating form of interaction. Crop damage was universally recorded across all surveyed households, concentrated primarily on essential dietary and cash crops. This pervasive pattern confirms that the primary socio-ecological interface between the community and protected wildlife occurs directly within agricultural land. Because agricultural fields are not merely physical spaces but are the core engine of rural subsistence, wildlife invasions represent an immediate disruption to the household’s primary livelihood system, explaining why local perceptions of HWC are exceptionally intense (King et al., 2011; Matsika et al., 2023).

Importantly, the findings reveal that HWC is multidimensional and extends far beyond crop loss to encompass severe physical safety risks and public health challenges. A significant proportion of respondents and Key Informants reported fatal or injurious encounters with wildlife, particularly elephants. This occurrence of human injury and death fundamentally transforms the character of HWC from a material resource loss into an existential threat to human survival and physical security. The constant threat of physical attacks creates a

pervasive climate of fear, forcing households to alter their daily routines, abandon highly productive land near forest edges, and restrict their mobility during peak wildlife hours (Mudumba, 2023; WCS, 2015). Additionally, participants highlighted wildlife-associated health risks, specifically exposure to disease vectors such as tsetse flies. This introduces a hidden public health dimension that imposes heavy indirect costs on households through human and livestock illness, medical expenses, and lost working time (Rascón-García et al., 2023; Waiswa et al., 2020).

Viewed through the Sustainable Livelihoods Framework, these diverse conflict pathways do not operate in isolation; instead, they interact recursively to form a compound livelihood challenge. A single household is frequently forced to bear crop destruction, property damage, and severe public health or physical safety risks simultaneously. Crop loss erodes natural and financial capital, physical injury directly incapacitates human labor, and public health threats drain scarce financial capital through healthcare expenditures. This systemic interaction highlights the limitations of relying on simplistic, single-sector interventions. To be effective, HWC policies must disaggregate the conflict into its distinct physical, economic, and public health dimensions, ensuring that crop protection, community safety, and public health initiatives are integrated into a coordinated, multi-sectoral institutional response.

5.1.7 Drivers of Increasing Conflicts

The study findings demonstrate that the severe escalation of HWC in Nwoya District is driven by a highly complex, interlocking configuration of ecological, human, developmental, and institutional factors. Crucially, these drivers cannot be understood as isolated causes; rather, they interact dynamically to increase the probability of wildlife movement into agricultural spaces. At the ecological level, participants identified acute food and forage scarcity within Murchison Falls National Park as a primary driver. This food scarcity is further exacerbated by the rapid, uncontrolled spread of invasive plant species within the protected area, which systematically degrades and reduces the availability of palatable forage for large herbivores like elephants. Consequently, highly nutritious agricultural crops outside the park boundary act as powerful ecological attractors, drawing wildlife out of their degraded natural habitats in search of digestible forage (Plumptre et al., 2014; Tiller et al., 2021).

Simultaneously, human and developmental drivers have intensified spatial competition along the park boundary. Rapid human population growth and the associated expansion of

agriculture and human settlements have increasingly encroached upon historical wildlife movement routes and foraging corridors. Furthermore, major developmental interventions, specifically oil and gas exploration activities within the Murchison Falls ecosystem, have introduced severe physical disruptions. The construction of roads, heavy infrastructure, persistent noise, and human activity have fundamentally altered wildlife movement patterns, occasionally displacing elephant herds directly into community farmland (Plumptre et al., 2014; Tiller et al., 2021). These developmental and spatial pressures occur alongside an increasing elephant population, estimated at approximately 1,340 individuals, which further elevates ecological competition for space and resources within the constrained national park boundaries.

Under the Sustainable Livelihoods Framework, these drivers are compounded by profound institutional and physical capital limitations, which form part of the transforming structures and processes. The physical boundary protection is severely incomplete; in Lii Sub-county, the existing electric fence covers only 10 km of the 41 km boundary (with that 10 km section positioned close to the Oyam district border), leaving the vast majority of farmland completely exposed. This physical capital deficit is exacerbated by limited ranger presence, stemming from inadequate staffing, severe transport bottlenecks, and chronic fuel shortages within the Uganda Wildlife Authority (UWA) (Matata et al., 2022). These institutional deficiencies create a profound mismatch: the drivers of HWC are macro-level, structural, and ecological, yet the practical burden of mitigation is almost entirely transferred to resource-poor individual households. Sustainable HWC management therefore demands a holistic, landscape-level approach that integrates invasive species management, corridor protection, developmental planning, and robust physical boundary infrastructure.

5.1.8 Section Conclusion & Landscape Policy Implications

The findings presented under the first objective conclusively demonstrate that human–wildlife conflict in Nwoya District has become a chronic, structurally embedded livelihood condition rather than a series of episodic environmental shocks. The absolute 100% household exposure rate, the clear dominance of elephants as the primary threat, the severe destruction of vital staple crops, the daily frequency of incursions during peak harvest months, and the complex interaction of ecological, developmental, and institutional drivers collectively confirm that HWC is a fundamental driver of rural livelihood vulnerability. By operating at the direct interface of agricultural production and wildlife conservation, HWC

poses a continuous, systemic threat to household asset portfolios, food security, and physical survival, necessitating a paradigm shift in how the conflict is conceptualized and managed.

These findings carry profound implications for regional conservation and development policy. The multidimensional character of HWC encompassing crop destruction, physical injuries, property loss, and public health risks proves that conventional, narrow interventions focused solely on agricultural damage are structurally inadequate. For instance, evaluating HWC purely through agricultural metrics ignores the extensive human capital costs associated with guarding, sleep deprivation, and psychological trauma. Furthermore, the strong seasonal concentration of conflict provides a clear entry point for anticipatory policy design. Rather than relying on slow, reactive compensation schemes, policy-makers and wildlife authorities must deploy ranger patrols, early-warning technology, and mobile surveillance units in a seasonally targeted, preventive manner before peak conflict months, thereby optimizing the use of limited institutional resources.

From the perspective of the Sustainable Livelihoods Framework, sustainable coexistence along the park boundary cannot be achieved by merely trying to bolster household-level coping mechanisms. While communities exhibit immense local knowledge and resilience, they are structurally incapable of resolving macro-ecological and developmental pressures such as park food scarcity, oil and gas infrastructure disruptions, and incomplete electric fencing. Therefore, national policy must transition from reactive, centralized enforcement models toward proactive, landscape-level socio-ecological governance. This governance framework must expand physical capital by completing the boundary fence, strengthen human capital by formalizing community scouts, and enhance social capital through participatory, community-driven planning, ensuring that rural livelihood protection is positioned as a central, non-negotiable objective of biodiversity conservation.

5.2 Impact of Human–Wildlife Conflicts on Household Livelihoods

5.2.1 Food Insecurity, Crop Loss, and Economic Deprivation

The study findings establish food insecurity as one of the most immediate, severe, and widespread livelihood consequences of human–wildlife conflict in the study area. This is supported by robust empirical data, with 57.7% of surveyed households experiencing severe, chronic food shortages directly following wildlife incursions, while 85.7% of Key Informants identified food insecurity as the most critical consequence of recurrent crop raiding. This

confirms that crop raiding is not merely an agricultural nuisance; it directly threatens the primary biological survival mechanism of rural families by obliterating vital starch and protein crops like maize, beans, cassava, and sweet potatoes. Because these crops represent both direct household food consumption and the agricultural surplus needed for market exchange, their destruction immediately deprives households of their primary nutritional and financial resources, forcing families to reduce daily meal frequency from three to one or two meals.

Furthermore, the study documented severe economic deprivation, with annual household financial losses ranging from UGX 800,000 to an astronomical UGX 40,000,000, yielding a substantial average annual loss of UGX 5,823,636. For rural households with highly constrained income-generating opportunities, a financial shock of this magnitude is catastrophic, representing the near-total collapse of their seasonal productive assets. This finding is highly consistent with Nyhus (2016), who identifies crop raiding as a primary driver of absolute economic deprivation among subsistence agricultural communities bordering protected areas globally. The critical timing of incursions, which commonly peak near harvest time, further exacerbates the loss. Consequently, households lose their entire seasonal investment in seed, fertilizer, and intensive manual labor, resulting in high opportunity costs that cannot easily be recovered, thereby severely eroding household purchasing power.

Under the Sustainable Livelihoods Framework, food insecurity and economic deprivation represent a simultaneous, devastating erosion of natural capital (crops) and financial capital (income). Although agricultural land remains physically present, its productive value is continuously undermined, preventing households from accumulating assets. The collapse of natural capital forces households to spend their extremely scarce financial resources purchasing replacement food from markets rather than investing in improved agricultural inputs or livelihood diversification. This creates a chronic vulnerability cycle where households enter successive agricultural seasons with depleted financial capital, rendering them increasingly sensitive to subsequent wildlife incursions. Short-term coping mechanisms like meal reductions or asset sales prevent immediate starvation but fail to restore the lost asset base, highlighting the critical need for policy interventions that integrate food assistance and economic recovery support directly into HWC mitigation strategies.

5.2.2 Disrupted Routines, Sleep Deprivation, and Human Health

The study findings reveal that human–wildlife conflict severely disrupts the daily routines and physical well-being of affected households, with a notable 55.8% of surveyed households reporting that they completely restructured their sleeping patterns to engage in nocturnal crop guarding. This empirical finding demonstrates that the livelihood impacts of HWC extend far beyond tangible crop destruction to actively reshape the daily temporal organization of rural household life. To protect their essential food and income, household members are forced to extend their physical working hours into the night, constructing makeshift watchtowers or shelters and remaining awake in high-risk fields to deter nocturnal elephant herds. This intensive nocturnal guarding creates a state of chronic, severe sleep deprivation that function as a major, hidden human capital cost.

This finding aligns with previous research by Yeshey et al. (2022), which emphasizes that sleep deprivation, constant physical fatigue, and disruption of daily routines represent profound, non-material costs of HWC that are rarely quantified in conventional economic assessments. In Nwoya District, this sleep deprivation has debilitating consequences for human health and agricultural productivity. Chronic fatigue severely impairs physical functioning, concentration, and cognitive alertness, directly reducing the efficiency of manual agricultural labor during the daytime. Furthermore, because crop guarding is a collective household responsibility, the burden is not restricted to adult males; women and school-age youth are frequently mobilized to participate in night guarding, leading to widespread family exhaustion, compromised healthcare, and severely disrupted educational outcomes.

From the perspective of the Sustainable Livelihoods Framework, chronic sleep deprivation and disrupted routines represent a direct and severe erosion of human capital. Human capital comprising physical labor capacity, intellectual skills, and health is the primary asset through which rural households convert all other capitals into productive livelihood outcomes. When HWC forces families to systematically sacrifice rest and physical safety to defend their natural capital (crops), their labor capacity is severely degraded, rendering daytime agricultural operations increasingly inefficient. This creates a highly unfavorable livelihood trade-off where the labor spent protecting existing crops directly reduces the household's capacity to undertake other productive, income-generating activities. Policy assessments of HWC must therefore look beyond physical damage and actively calculate these substantial labor opportunity costs, prioritizing the deployment of continuous, non-labor-intensive

physical barriers like electric fencing to relieve households of this dangerous nocturnal burden.

5.2.3 Psychological Distress and Mental Health Impacts

The study findings demonstrate that human–wildlife conflict imposes a profound, highly debilitating psychological burden on affected households, manifesting through chronic stress, persistent fear, acute anxiety, hopelessness, and trauma. The qualitative data reveals that psychological distress is not merely an acute reaction to an active crop-raiding incident; rather, it operates as a continuous, background mental health stressor. Households living in close proximity to Murchison Falls National Park experience severe anticipatory anxiety, constantly worrying about potential nocturnal elephant incursions, physical attacks, and the sudden, catastrophic destruction of their seasonal livelihoods. This continuous state of heightened alertness and psychological tension represents a major but highly neglected dimension of livelihood vulnerability.

This psychological erosion is particularly severe when analyzed in relation to the unpredictability and destructive capacity of elephants. The sheer physical size, immense power, and cognitive adaptability of elephants generate a level of fear and personal insecurity that is qualitatively distinct from conflicts involving smaller species. The persistent risk of physical injury or death during accidental encounters or crop-defense activities creates a pervasive state of fear that restricts community mobility, occasionally forcing farmers to abandon highly productive land (Naughton-Treves & Treves, 2005). Furthermore, repeated crop destruction despite intensive defense efforts breeds deep feelings of hopelessness, as farmers perceive that their actions have no influence over their economic survival. This chronic psychological trauma is strongly corroborated by broader mental health literature, such as Charlson et al. (2016), which associates prolonged exposure to threatening and disruptive environments with clinical depression, generalized anxiety, and post-traumatic stress disorders.

Under the Sustainable Livelihoods Framework, this chronic psychological distress represents a direct weakening of human capital, which in turn severely compromises household adaptive capacity. The effective utilization of human capital depends heavily on mental well-being, cognitive motivation, confidence, and decisive decision-making. Persistent fear and stress directly undermine these cognitive capacities, reducing the motivation and energy required to manage farms, engage in trade, or invest in future productivity. The mental health burden is

also highly differentiated; poorer households with fewer asset reserves experience extreme stress because they lack the financial capital to absorb crop losses, whereas wealthier households exhibit greater psychological resilience. Recognizing psychological distress as a core component of livelihood vulnerability is crucial, and national policy must actively integrate psychosocial counseling and trauma support services alongside crop protection and financial compensation (UBOS, 2024).

5.2.4 Disruption of Livelihood Activities and Labour Allocation

The study findings establish that human–wildlife conflict profoundly disrupts the internal organization and allocation of household labor, introducing severe operational constraints on rural livelihoods. In Nwoya District, where crop production is the primary source of food and income, households depend almost exclusively on the consistent, timely application of family labor for critical operations like land preparation, planting, weeding, and harvesting. However, recurrent wildlife incursions force households to divert a substantial portion of this labor away from productive agricultural activities toward unproductive, defensive crop-guarding responsibilities. This involuntary reallocation of labor is highly problematic because it extracts vital human resources without generating any positive economic return, operating as a direct tax on the household’s primary productive asset.

This labor diversion creates highly unfavorable trade-offs within the household unit, disrupting the delicate division of labor essential for subsistence survival. Activities that would ordinarily generate income or support household welfare such as petty trade, livestock husbandry, domestic work, and child education are systematically postponed or abandoned because family members must remain physically present in the fields to deter elephants. The qualitative data indicates that recurrent crop raids transform temporary defense into a permanent household obligation, resulting in a substantial cumulative loss of productive time. This time loss directly undermines general agricultural productivity, as delays in weeding, planting, or harvesting due to exhaustion and guarding duties result in severely reduced crop yields, even in fields that are not directly raided by wildlife.

Viewed through the Sustainable Livelihoods Framework, this severe labor disruption represents a structural drain on human capital, directly undermining the household’s ability to convert its natural capital (land) into sustainable financial capital. Expected natural capital returns are systematically reduced as agricultural operations are compromised by labor shortages and physical exhaustion. This labor constraint is particularly devastating for labor-

poor households, such as female-headed or elderly-headed families, who lack the physical capacity to balance intensive crop guarding with standard agricultural labor demands. To mitigate this structural vulnerability, national conservation policies must actively support community-level, collaborative defense mechanisms such as formalized, government-funded community scout programs to relieve individual families of the crippling labor burden of personal farm defense, thereby restoring productive household labor capacity.

5.2.5 Loss of Productive Assets and Household Economic Resilience

The study findings indicate that human–wildlife conflict progressively undermines household economic resilience by driving the direct loss and systemic depletion of key productive assets. For rural households dependent on agriculture, crops, stored grains, farm tools, and domestic livestock represent critical accumulated investments and the primary foundation of household wealth. When elephants raid farms, they do not merely consume standing crops; they physically destroy agricultural infrastructure, including protective fences, granaries, and food stores, while trampling essential agricultural tools. This direct destruction of physical and biological assets converts months of intensive household investment into immediate financial losses, severely weakening the household’s basic productive capacity and reducing its resilience to future environmental shocks.

Crucially, when crop losses occur repeatedly, households are unable to rebuild their depleted asset base, initiating a dangerous process of asset liquidation. To purchase essential replacement food, pay outstanding school fees, or meet urgent medical expenses, families are frequently compelled to sell off their remaining productive assets, such as small livestock (goats, pigs) or critical agricultural implements. This distress liquidation of assets provides short-term relief but severely compromises the household’s long-term income-generating capacity, systematically trapping them in a state of chronic poverty. This empirical pattern is highly consistent with broader economic literature on rural vulnerability, which demonstrates that coping through distress asset sales inevitably reduces household adaptive capacity and increases sensitivity to subsequent environmental shocks.

Under the Sustainable Livelihoods Framework, this asset depletion represents a simultaneous erosion of physical capital (granaries, tools, livestock), natural capital (crops), and financial capital (savings). As these vital capitals are depleted, the household’s economic safety net completely collapses, leaving them highly exposed to subsequent wildlife raids or climatic fluctuations. Furthermore, because limited financial resources must be continuously

redirected toward food consumption, households lack the capital required to purchase high-quality seed, fertilizer, or improved farming implements for the next agricultural season. To break this destructive cycle, policy interventions must move beyond late, symbolic crop compensation and actively deliver asset-restoration support, such as agricultural restocking programs and subsidized input schemes, to help affected families rebuild a resilient, diversified productive asset base.

5.2.6 Reduced Income and Increased Financial Vulnerability

The study findings establish that human–wildlife conflict is a primary driver of reduced household income and severe financial vulnerability in Nwoya District. In the study area, crop production is not merely a subsistence activity; it is the primary commercial channel through which households generate cash income to meet vital socio-economic needs. Consequently, when elephant herds raid and destroy fields, households suffer a devastating dual economic shock. They lose the food crops intended for direct household consumption and simultaneously lose the high-value cash crops (such as rice, maize, and cassava) intended for market sale. This dual shock results in a catastrophic collapse of household cash income, severely restricting the household’s financial capacity to purchase essential market goods, finance healthcare, or reinvest in agricultural production.

This severe financial vulnerability is further compounded by the upfront nature of agricultural investment. Rural farmers must invest substantial financial capital into land preparation, seed purchase, tractor hire, and hired labor long before receiving any agricultural returns. When wildlife decimates crops immediately prior to harvest, these substantial upfront investments are completely lost. This makes HWC-induced losses fundamentally more economically damaging than standard agricultural price fluctuations, as the entire invested capital is permanently obliterated. The qualitative data reveals that the resulting income collapse forces households to rely on highly unfavorable coping strategies, such as borrowing from high-interest informal moneylenders, seeking casual labor on wealthier farms, or reducing expenditure on critical family needs, all of which deepen long-term financial vulnerability.

From the perspective of the Sustainable Livelihoods Framework, this chronic income collapse represents a major erosion of financial capital, which in turn severely constrains the productivity of other capitals. Financial capital is the primary facilitator of rural livelihood adaptation; without it, households cannot purchase inputs to enhance natural capital (land) or

finance education to build human capital. The unpredictability of elephant raids further undermines financial planning, as households are unable to forecast cash flows, severely limiting their ability to access formal credit markets. To address this financial vulnerability, national conservation policies must establish rapid, transparent, and legally binding crop compensation systems that deliver payouts commensurate with actual market losses, while local governments must facilitate access to low-interest agricultural insurance and microfinance programs designed specifically for HWC-affected communities.

5.2.7 Increased Household Expenditure and Costs of Defense

The study findings indicate that human–wildlife conflict imposes a heavy, disproportionate financial burden on rural households by driving a substantial increase in expenditures associated with crop defense and recovery. While crop destruction represents the most visible economic cost of HWC, the ongoing financial expenses incurred by households attempting to prevent further damage are equally catastrophic. To protect their remaining fields, resource-constrained families are forced to constantly purchase defensive materials, such as flashlights, batteries, fuel for bonfires, metallic objects for noise-making, chili pepper, and chemical repellents. These continuous, cumulative defensive expenditures extract scarce cash reserves directly from the household budget, severely restricting the money available for essential needs like food, education, and healthcare.

Importantly, these defensive expenditures are not one-off investments; rather, they require constant, expensive replenishment throughout the peak seasonal conflict months. For instance, chemical and chili-based repellents require frequent, labor-intensive reapplication, while batteries and bonfire fuel must be purchased on a weekly basis, representing a massive financial drain over time. Furthermore, households must bear substantial physical recovery costs, including repairing collapsed granaries, rebuilt protective fences, and damaged home structures following elephant incursions. Additionally, when physical confrontations lead to injuries, families must cover immediate medical bills, transportation to distant healthcare facilities, and purchase expensive pharmaceuticals, frequently forcing them into severe debt that undermines future livelihood security.

Under the Sustainable Livelihoods Framework, these escalating defensive costs represent a severe, ongoing depletion of financial capital. Instead of using cash reserves to accumulate productive assets, diversify livelihoods, or build a buffer against shocks, households are forced to systematically consume their financial capital defending existing assets that remain

highly vulnerable. This is highly regressive, as poorer households with limited cash must rely exclusively on their own manual labor and low-cost, inefficient deterrents, whereas wealthier households can hire dedicated guards (0.95%) or purchase highly effective deterrent systems, further widening socio-economic inequality. To rectify this inequity, national conservation policies must cease transferring the financial burden of wildlife defense to individual families, and instead establish fully funded, community-managed deterrent initiatives supported by the Uganda Wildlife Authority.

5.2.8 Reduced Access to Education, Healthcare, and Social Services

The study findings demonstrate that the impacts of human–wildlife conflict propagate far beyond the agricultural domain to severely constrain household access to vital social services, specifically education and healthcare. When crop raiding decimates household income and drives escalating defensive expenditures, families are forced to make highly agonizing budgetary compromises. Because immediate food consumption and survival must be prioritized under conditions of severe resource constraint, investments in critical social services are systematically postponed or abandoned. Consequently, HWC directly undermines the long-term human development trajectory of rural households by stripping families of the financial resources required to cover school fees, purchase scholastic materials, and finance essential healthcare services.

The negative impact on education is particularly severe and manifests through both financial and labor pathways. Agricultural sales are the primary source of cash used by rural parents to pay school fees; consequently, crop raiding directly triggers widespread school dropouts or chronic absenteeism due to non-payment of fees. Simultaneously, the extreme labor demands of nocturnal crop guarding frequently force parents to reallocate children’s labor away from schooling toward farm defense, particularly during peak harvest seasons. Children who participate in night guarding suffer from severe exhaustion, leading to extremely poor classroom concentration, high failure rates, and eventual dropouts. Similarly, healthcare access is severely restricted, as families lacking cash cannot afford transportation to medical facilities or purchase essential medicines, occasionally postponing treatment for serious illnesses, which severely compromises family physical health and productivity.

Applying the Sustainable Livelihoods Framework, this restricted access represents a profound, highly damaging erosion of human capital. Financial capital is the primary engine used by rural households to purchase and build human capital; when HWC systematically

depletes financial capital, human capital development is severely stunted. This stunting carries a dangerous intergenerational dimension: children who are withdrawn from school or receive compromised education due to crop raiding are structurally barred from accessing high-paying, non-agricultural livelihoods in the future, locking the next generation into the same high-exposure, vulnerable farming cycle. To prevent this intergenerational transmission of vulnerability, national policy must actively integrate targeted educational subsidies, school fee waivers, and free community healthcare clinics directly into conservation-adjacent sub-counties, cushioning vulnerable families against HWC-induced financial shocks.

5.2.9 Reduced Livelihood Diversification

The study findings establish that human–wildlife conflict actively constrains the ability of rural households to diversify their livelihoods, locking them into a state of chronic vulnerability. In rural development theory, livelihood diversification is recognized as the most effective mechanism through which households spread environmental risks, as income from non-agricultural enterprises can effectively cushion the family against shocks to their primary agricultural natural capital. However, in Nwoya District, the chronic and devastating destruction of agricultural crops systematically deprives households of the vital investable surplus required to establish, finance, and sustain alternative, non-agricultural livelihood activities. This creates a highly problematic paradox: the very shock that demonstrates the urgent need for diversification simultaneously strips households of the capacity to diversify.

Establishing non-farm enterprises such as petty trade, agro-processing, tailoring, or retail shops requires an initial injection of financial capital, which rural households typically accumulate by selling surplus crops. When elephant herds repeatedly obliterate standing crops prior to harvest, this financial surplus is permanently lost. Instead of accumulating investable capital, households must continuously redirect their scarce cash reserves and available credit toward immediate food purchases and recovering from agricultural damage. Consequently, poorer households remain trapped in high-risk, subsistence agricultural production, which is increasingly insecure due to constant crop raids, while only a small fraction of wealthier households (0.95%) can leverage non-agricultural assets to buffer their livelihoods, thereby driving extreme wealth-differentiated vulnerability across the landscape.

Under the Sustainable Livelihoods Framework, restricted diversification represents a structural barrier to the accumulation of multiple livelihood capitals. Diversification requires the active conversion of financial and human capital into physical and social capital; by

systematically depleting household financial capital, HWC prevents this crucial asset conversion. The household's portfolio remains highly concentrated in vulnerable natural capital, increasing their sensitivity to subsequent wildlife shocks. To overcome this structural barrier, government and conservation institutions must move beyond passive compensation and actively deliver structured diversification support, including low-interest microfinance schemes, tailored vocational training, and direct start-up capital for non-farm, conservation-compatible enterprises like beekeeping, value-addition processing, or ecotourism, thereby enabling families to build a resilient, diversified livelihood portfolio.

5.2.10 Erosion of Household Resilience and Vulnerability Cycles

The study findings demonstrate that human–wildlife conflict does not merely produce isolated, easily recoverable agricultural setbacks; instead, repeated exposure progressively erodes household resilience and locks rural families into persistent vulnerability cycles. Livelihood resilience refers to the structural capacity of a household to absorb severe environmental disturbances, maintain essential livelihood functions, and fully recover without permanently liquidating the productive assets required for future production. In Nwoya District, the cumulative impacts of crop destruction, severe food insecurity, income collapse, escalating defensive expenditures, and labor disruption interact recursively to systematically strip households of this resilient capacity, leaving them increasingly sensitive to subsequent environmental or economic shocks.

This progressive erosion of resilience is driven by the high frequency of conflict, which deprives households of the essential ‘recovery window’ required to rebuild assets between successive crop raids. While a family may successfully absorb a single, isolated crop-raiding incident by utilizing basic savings, a rapid succession of raids quickly exhausts their financial reserves and food stocks. To survive, the household is forced to adopt increasingly desperate and erosive coping strategies, such as liquidating key productive assets (livestock, tools), withdrawing children from school, or accumulating heavy, high-interest informal debt. While these coping strategies prevent immediate starvation, they systematically deplete the household's productive asset base, guaranteeing that the next wildlife raid will find them in an even weaker economic position, ultimately pushing them from temporary coping into chronic, structural poverty.

Viewed through the Sustainable Livelihoods Framework, this progressive stunting of resilience represents systemic, simultaneous erosion across natural, financial, human,

physical, and social capitals. As these vital capitals are depleted, the household's capacity to adapt is completely compromised, converting vulnerable households into chronically vulnerable households. This analytical finding emphasizes the absolute futility of relying on short-term coping mechanisms to manage a landscape-level conservation challenge. Genuine resilience cannot be built by individual families operating in isolation; instead, it demands robust, long-term institutional intervention. National conservation policy must actively protect the community's asset base by establishing reliable institutional safety nets, including index-based crop insurance, timely and proportionate compensation, and structural boundary protection, thereby shielding households from cumulative livelihood crises.

5.2.11 Section Conclusion & Conceptual Synthesis

The findings presented under the second objective provide a comprehensive, highly explained empirical demonstration of the multi-dimensional and cumulative impacts of human-wildlife conflict on rural household livelihoods. The empirical data conclusively establishes that HWC is not a localized, technical agricultural challenge that can be resolved by simple crop-guarding adjustments. Instead, it operates as a profound, systemic livelihood crisis that simultaneously undermines food security, financial stability, physical and mental health, labor allocation, educational attainment, asset accumulation, and long-term economic resilience, systematically stunting the overall human development trajectory of communities living adjacent to the protected area boundary.

This multidimensional erosion is powerfully synthesized through the theoretical lens of the Sustainable Livelihoods Framework (SLF). As HWC shocks propagate through the household livelihood system, they trigger a devastating, cascading depletion across all five livelihood capitals. The direct destruction of crops represents a severe erosion of natural capital, which immediately depletes financial capital by obliterating expected market income. This financial collapse subsequently stunts human capital development by restricting access to healthcare and education, while the extreme physical and psychological demands of night guarding directly weaken labor productivity. Simultaneously, physical capital is damaged through infrastructure destruction, and social capital is strained as chronic resource scarcity breeds intense social disputes, demonstrating the deep interconnectedness of capital assets under the SLF.

This conceptual synthesis highlights the absolute necessity of transitioning from a narrow, crop-centric policy paradigm to a holistic, livelihood-centered approach to HWC

management. National and regional policies must recognize that protecting crops is fundamentally synonymous with protecting household nutrition, children's education, family health, productive labor, and future economic capacity. Therefore, sustainable HWC mitigation must integrate agricultural support, microfinance, psychosocial counseling, educational subsidies, and structural boundary protection into a single, cohesive, livelihood-protection policy. This integrated approach will ensure that conservation objectives are pursued in complete harmony with the fundamental human right of adjacent communities to secure dignified, productive, and resilient livelihoods.

5.3 Household Coping and Mitigation Strategies

5.3.1 Community-Based Deterrent Measures

The study findings reveal that local communities in Nwoya District actively employ a highly diverse, traditional suite of community-based deterrent measures as the primary, immediate response to human–wildlife conflict. All 188 surveyed households (100%) reported actively utilizing at least one form of localized deterrence to protect their fields. These traditional measures include noise-making (such as beating metallic utensils, blowing loud whistles or vuvuzelas, shouting, and sounding community alarms), lighting large bonfires, and using hand-held torches (reported by 67.3% of households), burning dried elephant dung, and applying localized chemical or chili-based repellents around farm perimeters. This universal reliance on traditional deterrents demonstrates the extensive agency and localized resourcefulness of communities operating in the complete absence of reliable, prompt institutional intervention.

These findings exhibit strong alignment with historical HWC literature, which documents similar, low-cost community-based deterrents among rural agriculturalists bordering protected areas in Tanzania and Uganda (Loibooki et al., 2002; Hill, 2017). Such measures are widely favored by local populations because they rely on readily available materials and can be mobilized immediately when wildlife is spotted. However, the qualitative and quantitative data confirms that the long-term effectiveness of these traditional measures is increasingly inconsistent and rapidly declining. Because elephants are highly intelligent and adaptive, they quickly habituate to repeated, non-lethal sensory disturbances. Over time, herds learn to ignore loud noises, torches, and fires, rendering these traditional scare tactics increasingly useless, a worrying behavioral adaptation also documented in Kenya and Nepal (Graham & Ochieng, 2008; Neupane et al., 2017).

Under the Sustainable Livelihoods Framework, community-based deterrents operate as reactive coping mechanisms that demand an unsustainable trade-off across livelihood capitals. While they temporarily safeguard natural capital (crops), they severely deplete human capital by extracting massive quantities of family time and physical energy, particularly at night. This intense nighttime guarding burden directly induces chronic sleep deprivation, severe physical exhaustion, and extreme mental stress among women and youth, which in turn severely compromises daytime agricultural labor productivity and educational outcomes. Consequently, while these deterrents reflect admirable local ingenuity, they ultimately deepen household vulnerability by stunting human capital development. Sustainable mitigation therefore requires integrating local knowledge with technically advanced, institutionally supported early-warning and rapid-response systems.

5.3.2 Physical Barriers and Collective Action

The study findings indicate that physical barriers, specifically deep perimeter trenches, remain a key component of traditional community mitigation, although their practical utilization has declined significantly, with only 10.6% of surveyed households actively employing them. This sharp decline in trench utilization is directly linked to their rapidly diminishing physical effectiveness. Participants reported that elephants have developed highly adaptive physical behaviors, easily refilling trench edges with their feet or physically crossing them to access community gardens. This rapid adaptive behavior is highly consistent with historical HWC literature from Kenya and Zimbabwe, which documents how elephants quickly adapt to and bypass static physical perimeters (Hoare, 2015; Sitati et al., 2005).

Despite these physical limitations, communities actively engage in robust collective action and grassroots mobilization to enhance farm defense. This collective action manifests through the voluntary establishment of community crop-guarding scouts and the collaborative use of simple defensive implements like slingshots, percussive bunkers, and shared alarm perimeters. Similar community-led collective action initiatives have demonstrated significant short-term success in elephant-dense landscapes in Amboseli and Tsavo, Kenya, by fostering strong social cohesion and mutual defense (Kioko et al., 2008; Naughton-Treves et al., 2011). However, in Nwoya District, the long-term effectiveness of these grassroots scouts is severely undermined by a complete lack of formal training, inadequate protective gear, and the total absence of continuous government or institutional facilitation (Webber et al., 2007).

From an SLF perspective, these collective defense measures temporarily safeguard natural and physical capital but fail to enhance long-term household adaptive capacity due to the rapid exhaustion of social and human capital. In the absence of formal institutional backing, the morale and participation of community scouts rapidly erode, transforming collective perimeters into sporadic, highly fragile responses. This leaves households highly exposed to recurrent, unpredictable wildlife shocks. Relying exclusively on exhausting collective manual labor to manage a landscape-level ecological challenge is structurally unsustainable. To build genuine adaptive capacity, national conservation policies must actively formalize, equip, and financially support these grassroots scouts, integrating collective community action with professional wildlife management structures.

5.3.3 Livelihood Adaptation and Diversification

The study findings reveal that households in the study area attempt to pursue proactive, micro-level adaptive strategies to minimize wildlife-related agricultural losses. These local adaptations include modifying crop selection (such as replacing highly palatable maize with less attractive crops like okra or chili pepper), storing harvested food crops securely inside residential homes rather than in exposed outdoor granaries, and confining vulnerable livestock within secure enclosures or domestic huts during the night. These micro-level adjustments demonstrate a clear attempt by local farmers to safeguard their natural capital and physical assets by reducing their visual and olfactory palatability to wandering wildlife, reflecting valuable adaptive knowledge (Johnston et al., 2006; Yihunie et al., 2014).

However, the findings establish that meaningful, non-agricultural livelihood diversification remains extremely limited across the landscape. The vast majority of households remain deeply trapped in high-risk, subsistence crop production, which is increasingly insecure due to constant elephant raids. The quantitative data reveals a stark socio-economic disparity: only a tiny fraction of wealthier households (0.95%) have the financial capital required to hire dedicated private wildlife ‘guards’ to defend their perimeters. This wealth-differentiated defense capacity leaves poorer households disproportionately exposed to catastrophic crop losses (Nyhus, 2016). Lacking alternative income-generating enterprises, poorer families cannot accumulate the savings needed to escape agricultural dependence, locking them into a chronic vulnerability trap that severely restricts human capital development.

Under the SLF, this restricted diversification directly stunting household economic resilience. True adaptive capacity requires households to maintain a balanced, diverse portfolio of

capital assets; by repeatedly destroying crops, HWC prevents the accumulation of the financial capital required to diversify. Consequently, households remain highly sensitive to wildlife shocks, as a single crop raid can completely obliterate their entire annual income. To enhance adaptive capacity, national conservation policies must move beyond reactive crop guarding and actively deliver structured diversification support. This must include micro-credit access, market linkages, and direct start-up subsidies for conservation-compatible non-farm enterprises, enabling vulnerable families to build resilient livelihood portfolios that can withstand environmental shocks.

5.3.4 Government and Institutional Interventions

The study findings indicate that existing government and institutional interventions designed to mitigate human–wildlife conflict and protect rural livelihoods are severely inadequate, inconsistently implemented, and highly contested. The Uganda Wildlife Authority (UWA) has established key policy instruments specifically the 20% community revenue-sharing scheme, a formal wildlife compensation policy, and targeted electric fencing to offset local conservation costs and enhance household economic resilience. However, in practice, these interventions are characterized by severe implementation gaps, including delayed disbursements, heavy bureaucratic hurdles, and extremely limited geographical coverage, which systematically undermine their value as livelihood safety nets (Sifuna, 2010; Twinamatsiko et al., 2014).

A critical physical constraint is the extremely limited coverage of electric fencing. In Lii Sub-county, the existing electric fence covers only 10 km of the 41 km park boundary (positioned close to the Oyam district border), leaving the vast majority of agricultural perimeters completely exposed and failing to prevent crop raiding across the wider landscape (Chiyo et al., 2005). Furthermore, the 20% revenue-sharing policy is perceived as poorly implemented. Respondents reported receiving minimal direct benefits, as shared revenues are commonly captured by local governments and spent on public infrastructure projects such as constructing Lii Sub-county administrative offices which fail to compensate individual households for direct crop losses. This inequitable distribution of benefits breeds deep resentment, erodes social capital, and severely damages community-trust in conservation authorities (Wright et al., 2015).

Applying the Sustainable Livelihoods Framework, these institutional failures represent severe deficiencies in the transforming structures and processes. Rather than enhancing local capital

assets, these poorly implemented policies inadvertently weaken financial and social capital by breeding social tension, disappointment, and profound distrust. This institutional legitimacy crisis undermines collective conservation action, as communities perceive that state structures value wildlife survival over human welfare. To restore trust and enhance coexistence, the Uganda Wildlife Authority must urgently reform its benefit-sharing and compensation systems. This requires ensuring timely, transparent, and direct financial payouts to affected families, alongside expanding strategic electric fencing and supporting collaborative community-managed deterrent perimeters.

5.3.5 Mitigation Effectiveness

The study findings establish that the current, highly fragmented approach to human–wildlife conflict mitigation exhibits extremely low practical effectiveness, leaving rural livelihoods highly exposed to chronic shocks. Respondents reported near-total dissatisfaction with the efficacy of conventional, stand-alone deterrents (such as noise-making, torches, or incomplete perimeters), which demand immense manual labor but deliver highly inconsistent, temporary protection. This technical ineffectiveness is highly consistent with contemporary HWC literature in Uganda and East Africa, which demonstrates that isolated, household-level coping strategies are fundamentally insufficient to prevent extensive crop raiding by highly mobile and adaptive wildlife (Matata et al., 2022; Luwaga, 2025).

Furthermore, robust conservation science confirms that static, single-method mitigation strategies such as relying exclusively on trenches or noise-making inevitably fail over time due to rapid elephant cognitive adaptation. In contrast, contemporary evidence strongly supports the deployment of integrated, site-specific, and multi-layered mitigation systems. As documented by King et al. (2011, 2024), combining physical perimeters with active biological deterrents (such as beehive fences or chili-grease perimeters) and advanced early-warning technology produces highly synergistic protection, significantly reducing crop damage while providing valuable alternative income (honey). Additionally, addressing in-park resource drivers including managing invasive vegetation and restoring natural water points is critical to reduce the ecological push-factors driving wildlife out of protected zones (Montgomery et al., 2021; Robertson et al., 2023).

Under the SLF, the low efficacy of current mitigation measures represents a structural failure to protect natural and financial capital, forcing households to spend massive quantities of human capital (labor, sleep) on inefficient defense. Despite intensive crop-guarding efforts,

families continue to suffer devastating agricultural losses, which systematically erode their economic resilience and locks them into chronic food insecurity. Relying on uncoordinated household-level labor to manage a landscape-level ecological challenge is structurally unsustainable (King et al., 2024). To enhance adaptive capacity and foster sustainable coexistence, national policies must transition from uncoordinated, single-method interventions toward the structured, co-funded implementation of integrated, site-specific, and multi-layered mitigation perimeters supported by professional training and continuous logistical facilitation.

5.3.6 Section Conclusion

The findings analyzed under the third objective demonstrate that while rural communities in Nwoya District exhibit extraordinary agency, local knowledge, and short-term resilience, their coping and mitigation strategies are characterized by severe limitations, high human costs, and declining technical effectiveness. The universal reliance on exhausting, labor-intensive traditional deterrents such as night guarding, noise-making, and fires reflects precarious survival equilibrium. Under this precarious equilibrium, households are desperately surviving but not thriving, as their intensive defensive efforts are continuously undermined by rapid elephant habituation, leaving their principal livelihood assets exposed to chronic, unpredictable shocks.

This precarious state is highly consistent with the conceptual assertions of Dickman (2010) and Nyhus (2016), who emphasize that in the absence of robust institutional support, reliable safety nets, and viable non-farm diversification opportunities, rural communities adjacent to protected area boundaries inevitably remain locked in chronic vulnerability cycles. The current mitigation framework effectively transfers the primary physical and financial costs of managing a national biodiversity asset to the poorest segment of the population. This regressive burden systematically erodes the household's human and financial capitals, stunting educational outcomes, compromising healthcare, and preventing the accumulation of productive wealth, which in turn severely damages social relationships and community willingness to cooperate in conservation initiatives.

From the perspective of the Sustainable Livelihoods Framework, transforming this vulnerable coping equilibrium into sustainable adaptation demands a fundamental restructuring of the institutional arrangements governing HWC. National conservation policy must actively invest in building adaptive capacity across all five livelihood capitals. This requires

expanding physical capital through complete electric fencing, strengthening human capital by formalizing and equipping community scouts, and enhancing social capital through participatory governance. Crucially, the government must facilitate financial capital accumulation by implementing direct, accessible crop insurance and actively supporting diversified, conservation-compatible non-farm enterprises, thereby establishing a resilient, holistic socio-ecological foundation for genuine human–wildlife coexistence.

5.4 Policy and Institutional Effectiveness

5.4.1 Community Perceptions and Satisfaction with HWC Policies

The study findings establish an exceptionally high level of community dissatisfaction and frustration with existing HWC policies, regulations, and institutional management strategies in Nwoya District. An overwhelming 99.05% of surveyed households reported being ‘very dissatisfied’ with current mitigation efforts, while only one household out of 188 expressed any level of satisfaction. This extreme empirical dissatisfaction reveals a profound, highly worrying gap between the formal existence of statutory HWC management mechanisms and the practical, lived experiences of agricultural households bearing the immediate physical and financial costs of conservation. This findings suggests a total collapse of local policy legitimacy, as communities perceive existing state structures as completely unresponsive to their critical livelihood and security needs

This low level of satisfaction is highly consistent with broader wildlife management literature across East Africa, which documents chronic community dissatisfaction stemming from exclusionary conservation policies that systematically prioritize wildlife preservation over human welfare (Barua, 2011; Kideghesho, 2008). This sense of institutional abandonment was vividly captured during the UWA stakeholders’ consultative meeting, where a prominent community leader stated; *‘the government is protecting the animals more than us.’* This powerful statement reflects a deep-seated perception that state conservation institutions are actively hostile to local livelihoods. Similar studies around Kibale National Park have documented that declining perceptions of conservation legitimacy are directly linked to escalating crop raiding and a total lack of responsive community consultation (Drake et al., 2017; Naughton-Treves et al., 2003).

Under the Sustainable Livelihoods Framework, these negative perceptions and the underlying loss of trust represent a severe erosion of social capital, directly undermining the

transforming structures and processes essential for sustainable development. When communities perceive conservation institutions as unfair, opaque, and exclusionary, their willingness to collaborate in biodiversity protection or comply with wildlife regulations collapses. Crucially, improving satisfaction cannot be achieved through simple public relations campaigns; it demands visible, prompt responsiveness, transparent benefit-sharing, and meaningful community inclusion in the co-management of park boundaries. National conservation policy must actively incorporate community feedback into strategic planning, positioning local satisfaction as a central, statutory indicator of institutional effectiveness (Sheil & Akampurira, 2026).

5.4.2 Effectiveness and Limitations of Traditional and Community-Led Deterrents

The study findings demonstrate that while traditional, community-led deterrents (such as noise-making, torches, dung burning, and basic scare tactics) are universally utilized due to their immediate accessibility, their actual technical effectiveness is severely limited and rapidly declining. Respondents described a highly challenging ecological scenario, noting that elephants have rapidly adapted to these familiar sensory disturbances, easily crossing deep perimeter trenches and actively ignoring shouting, vuvuzelas, and bonfires. This rapid behavioral habituation is characterized by local farmers as elephants ‘out-reasoning’ human defense, confirming that simple, uncoordinated household perimeters are structurally inadequate to deter highly cognitive, large-bodied mammals over the long term (Graham & Ochieng, 2008; Neupane et al., 2017).

This decline in traditional deterrent effectiveness has profound, highly regressive socio-economic consequences for rural communities. Because these reactive measures are technically inefficient, they demand an extremely high, continuous input of manual labor and time from household members. As Madden (2004) and Sitati and Walpole (2006) observe, this relentless crop-guarding burden systematically results in sleepless nights, chronic physical exhaustion, and severe health-related vulnerabilities. This labor drain reallocates vital human capital away from productive daytime pursuits, leading to severely compromised agricultural yields, collapsed cash incomes, and a pervasive climate of frustration and hopelessness. Consequently, the apparent low financial cost of traditional deterrents is highly deceptive, as it conceals massive, unquantified social and human capital opportunity costs borne directly by vulnerable families.

From an SLF perspective, these traditional perimeters function as temporary survival adaptations rather than sustainable, transformative solutions, as they systematically exhaust human and social capital to defend natural capital. To enhance long-term livelihood security, national policy must actively support a transition from reactive, labor-intensive manual defense toward technically sound, integrated perimeters. Traditional local knowledge must be systematically coupled with institutional resources, combining community-led perimeter monitoring with advanced early-warning sensors, strategic fencing perimeters, and rapid-response UWA patrol units. This integrated mitigation framework will significantly reduce crop damage while relieving resource-poor households of the crippling physical and temporal burden of personal nighttime farm defense.

5.4.3 Effectiveness and Challenges of Compensation and Revenue-Sharing Policies

The study findings establish that existing statutory compensation and revenue-sharing policies are characterized by severe implementation bottlenecks, delayed timelines, and an absolute lack of financial adequacy, which severely undermines their effectiveness as livelihood perimeters. Compensation and revenue sharing are distinct policy instruments: compensation is designed to address direct, individual losses (such as crop raids, injuries, or deaths), whereas revenue sharing is designed to distribute broader economic benefits from conservation (20% of park entrance fees) to neighboring communities. However, in Nwoya District, both instruments are perceived as highly deficient, failing to restructure the inequitable distribution of conservation costs across the landscape (Archabald & Naughton-Treves, 2001).

A critical, highly controversial finding is the absolute inadequacy of direct crop and life compensation. A prominent cultural leader vividly articulated this severe frustration during the UWA consultative meeting, stating, ‘The 2 million shillings given as compensation for losses-death is not commensurate. UWA and the government value animals more than human life.’ This poignant critique highlights how bureaucratic delays, complex verification procedures, and insufficient funding fail to restore household assets following severe shocks, breeding deep resentment (Osborn, 2004). Simultaneously, the revenue-sharing policy is heavily compromised, as funds are commonly reallocated by local governments to public administrative projects such as constructing Lii Sub-county offices which completely fail to provide direct, tangible economic benefits to the specific families suffering chronic elephant raids (Wright et al., 2015).

Under the Sustainable Livelihoods Framework, these implementation gaps represent severe deficiencies in the transforming structures and processes, which actively deplete household financial and social capital. When compensation is delayed or grossly inadequate, households are barred from recovering their natural assets, while exclusionary revenue-sharing structures breed intense social division and deep distrust in state institutions. This findings is strongly corroborated by Muhindo (2021) and Castro Mayo et al. (2026), who demonstrate that successful HWC policies depend on low transaction costs, rapid verification, and equitable benefit-distribution. To restore legitimacy, UWA must urgently restructure these instruments, delivering direct, transparent, and timely cash payouts proportional to actual market losses, while ensuring community-led control over shared conservation revenues.

5.4.4 Infrastructure and Physical Capital Constraints

The study findings demonstrate that severe deficiencies in physical capital and regional infrastructure substantially limit the effectiveness of existing HWC management policies, leaving rural livelihoods highly exposed to wildlife threats. Participants universally identified modern electric fencing as the single most effective mitigation technology, with 100% of respondents expressing strong, enthusiastic support for its immediate expansion. However, the existing electric fence covers only 10 km of the 41 km boundary in Lii Sub-county, leaving the vast majority of agricultural fields completely unprotected. This massive physical coverage gap allows elephants to easily bypass the fenced section and access community crops, illustrating that the core challenge is not the absence of technology, but rather insufficient scale, continuity, and financial commitment from the state.

Infrastructure limitations are further compounded by poor access roads, an absolute lack of ranger posts near conflict hotspots, and inadequate communication systems. When elephants enter agricultural fields at night, these severe infrastructural deficits prevent rapid emergency reporting and delay UWA intervention. In a context where elephant herds move rapidly and can decimate entire fields within hours, response delays of even a few hours allow minor incursions to escalate into catastrophic, landscape-level crop destruction. Consequently, the practical effectiveness of any statutory mitigation policy depends heavily on the physical capital available to operationalize it, as poor roads and delayed response systems render even well-designed regulations practically useless (Chiyo et al., 2005).

Applying the Sustainable Livelihoods Framework, these infrastructure deficits represent severe gaps in physical capital, which recursively undermine and deplete natural, financial,

and human capital. When a lack of boundary protection leaves agricultural land exposed, natural capital (crops) is destroyed, directly depleting household financial capital and draining human capital through intensive nighttime guarding. To protect rural livelihoods, boundary infrastructure must be conceptualized as a vital livelihood-protection mechanism rather than a separate conservation facility (Sheil & Akampurira, 2026). National policies must actively prioritize immediate funding to complete the 41 km electric fence perimeter in Lii, while local governments must construct functional access roads and establish early-warning communication perimeters to ensure rapid, effective emergency responses.

5.4.5 Human Resource and Community Participation Constraints

The study findings establish that existing HWC mitigation is severely constrained by critical institutional human resource deficits and a total lack of meaningful community participation. These two dimensions are related but analytically distinct: human resource capacity concerns whether conservation institutions possess sufficient staff, equipment, and logistics, whereas community participation concerns the extent to which local populations are actively involved in decision-making and co-management. At the institutional level, the Uganda Wildlife Authority faces severe resource constraints, including extremely limited ranger staffing, inadequate transport, and chronic fuel shortages. These operational deficits prevent rangers from executing timely patrols, particularly when elephants raid multiple community fields simultaneously at night.

Simultaneously, the critical frontline actors community wildlife scouts face severe exploitation, receiving poor financial facilitation, no protective gear, and zero formal recognition within UWA's statutory structure. A male scout vividly described this dangerous situation, stating, 'We are always caught in between the wild animals and the community but we are risking our lives without being recognized either by UWA or government.' This lack of support erodes scout morale, exacerbates community frustration, and severely limits the effectiveness of grassroots perimeters. Furthermore, community participation is strictly superficial, with residents treated as passive recipients of externally imposed programs rather than equal co-management partners, directly violating the statutory commitments of the UWA Community Conservation Policy (UWA, 2019; Treves et al., 2006).

Under the Sustainable Livelihoods Framework, these constraints represent a severe stunting of human and social capital, directly undermining the transforming structures and processes. Inadequate ranger staffing and unequipped scouts represent major human capital deficits,

while the total exclusion of communities from decision-making decimates social capital (trust, cooperation, collective action). This stunting is highly consistent with Dickman (2010), who emphasizes that successful HWC resolution depends on institutional and social factors rather than technical fixes. To improve policy effectiveness, the state must aggressively invest in human resource capacity providing UWA with adequate staff, fuel, and transport while formalizing community scouts within the statutory conservation structure and establishing decentralized, participatory co-management perimeters (Sheil & Akampurira, 2026).

5.4.6 Distinguishing Policy Effectiveness from Community Satisfaction

A key analytical conclusion of this study is the critical necessity of distinguishing between policy effectiveness and community satisfaction within HWC governance. Although these two concepts are closely related, they are analytically distinct, answer fundamentally different empirical questions, and must therefore be assessed independently. Policy effectiveness is concerned with objective results, asking whether a specific statutory intervention achieves its intended operational outcomes, such as reducing the absolute frequency of elephant incursions, protecting crop acreage, or delivering prompt compensation. Community satisfaction, by contrast, is concerned with local perceptions and lived experiences, capturing how households evaluate the equity, responsiveness, accessibility, and legitimacy of policy implementation.

This conceptual distinction is clearly illustrated by the electric fencing intervention in Nwoya District. At the technical point of application, electric fencing is highly effective, successfully preventing elephants from crossing the fenced perimeter. However, community satisfaction remains extremely low because the physical installation is severely incomplete (covering only 10 km of the 41 km boundary in Lii Sub-county). Consequently, the broader policy intervention is perceived as highly inadequate, as it simply displaces elephant raids to adjacent, unprotected agricultural fields (Chiyo et al., 2005). Similarly, a compensation scheme may be formally established by statutory mandate, yet generate intense community dissatisfaction due to delayed payouts, complex bureaucratic procedures, and financially inadequate disbursements that fail to cover direct household losses (Drake et al., 2017).

Under the Sustainable Livelihoods Framework, this distinction is highly significant for the design of sustainable coexistence models. To protect rural livelihoods, HWC policies must be both operationally effective (achieving technical outcomes) and socially satisfactory

(perceived as fair, participatory, and responsive). In Nwoya District, these two dimensions currently converge: extremely low community satisfaction is accompanied by robust empirical evidence of continued crop raiding, severe financial loss, and inadequate institutional capacity. This convergence suggests that local dissatisfaction is directly rooted in substantive, structural policy failures. Therefore, a rigorous assessment of HWC governance must evaluate technical policy outcomes and community implementation experiences independently, ensuring that both technical effectiveness and socio-ecological legitimacy are positioned as co-equal indicators of conservation success.

5.4.7 Chapter Conclusion

In conclusion, this study has provided a rigorous, empirical, and theoretically grounded analysis of human–wildlife conflict and livelihood vulnerability in Nwoya District, Uganda. By systematically applying the Sustainable Livelihoods Framework, the findings demonstrate that chronic elephant conflict is not an isolated, episodic conservation challenge. Instead, HWC operates as an embedded, highly destructive livelihood shock that systematically erodes the natural, financial, human, physical, and social capital perimeters of rural families living adjacent to Murchison Falls National Park, driving progressive asset depletion and trapping households in chronic vulnerability cycles.

The analysis of household-level coping mechanisms including traditional deterrents, perimeter trenches, and crop adaptations reveals a state of precarious survival equilibrium. While communities exhibit extraordinary local knowledge, agency, and short-term resilience, their labor-intensive coping strategies are structurally incapable of resolving macro-ecological and developmental drivers such as park food scarcity, invasive vegetation, developmental exploration, and incomplete fencing perimeters. Instead of fostering adaptation, the regressive physical and financial burden of farm defense is almost entirely transferred to resource-poor families, stunting human capital development through sleep deprivation, fatigue, and severe stunting of children’s education.

Ultimately, the study confirms that transforming this vulnerable coping equilibrium into sustainable, long-term coexistence demands a fundamental restructuring of the transforming structures and processes governing HWC. National conservation policy must abandon reactive, centralized enforcement models and actively transition toward proactive, landscape-level socio-ecological governance. This governance framework must expand physical capital by completing the boundary fence, strengthen human capital by formalizing community

scouts, and enhance social capital through participatory planning. Crucially, the state must facilitate financial capital accumulation by implementing direct, accessible crop insurance and supporting diversified, conservation-compatible non-farm enterprises, thereby establishing a resilient, holistic socio-ecological foundation for genuine human–wildlife coexistence.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.0 Introduction

This chapter presents the overall conclusions and strategic recommendations derived from the empirical investigation of Human–Wildlife Conflicts (HWCs) and their multi-dimensional implications for household livelihoods in Nwoya District, Northern Uganda. Grounded in the empirical findings and thematic discussions detailed in Chapter Five, these conclusions are systematically structured around the study’s four specific research objectives:

1. To assess the extent and nature of human-wildlife conflicts in Nwoya district.
2. To investigate the impact of human-wildlife conflicts on household livelihoods.
3. To analyze the existing livelihood strategies employed by households to cope with and mitigate human-wildlife conflicts.
4. To evaluate the effectiveness of existing policies, regulations, and management strategies aimed at mitigating human-wildlife conflicts in Nwoya district.

Based on these objectives, the recommendations that follow offer a robust, evidence-based roadmap designed to inform policymakers, conservation practitioners, and community stakeholders. These recommendations emphasize transition pathways from reactive, adversarial physical mitigation toward inclusive, sustainable, and livelihood-sensitive human-wildlife coexistence.

6.1 Conclusions

6.1.1 Extent and Nature of Human–Wildlife Conflicts

The study concludes that Human–Wildlife Conflicts (HWCs) in Nwoya District are not merely sporadic, isolated occurrences, but are pervasive, chronic, and actively intensifying. Empirical evidence confirms that 100% of the 107 surveyed households experienced direct wildlife-related damage within the 12 months preceding the study. This universal prevalence underscores the extreme and inescapable nature of wildlife conflict in frontline agrarian communities bordering Murchison Falls National Park (MFNP). Among the problematic species, the African elephant (*Loxodonta africana*) represents the primary catalyst for high-intensity, catastrophic agricultural devastation. Elephants inflict extensive damage to both food and cash crops, frequently destroying entire fields in a single nighttime raid. This

primary threat is compounded by smaller, wide-ranging species including warthogs, baboons, and bush pigs, which execute frequent, low-intensity diurnal raids that systematically deplete household food reserves.

Furthermore, the study concludes that the spatial and temporal patterns of these conflicts are highly dynamic, governed by agricultural crop maturation calendars, boundary proximity, and wildlife migration corridors. The overlapping pressures of habitat encroachment, agricultural expansion directly adjacent to the park boundary, drive the rising frequency and intensity of incursions and natural seasonal movements of wildlife looking for forage. This escalating trend highlights the increasingly fragile balance between state-enforced wildlife conservation objectives and local agrarian survival. Frontline agricultural communities are forced to bear the direct, concentrated ecological and financial costs of national biodiversity conservation, a structural imbalance that fuels deep-seated community resentment and distrust toward both the wildlife and protected area authorities.

6.1.2 Impacts of HWC on Household Livelihoods

By applying the Sustainable Livelihoods Framework (SLF), this study concludes that HWCs do not merely destroy physical crops, but exert compounding, multi-dimensional shocks that systematically erode all five core household livelihood capitals.

Natural Capital: Direct and severe depletion is experienced through crop destruction, agricultural land degradation, and the forced, risk-averse abandonment of highly productive agricultural land located close to protected area boundaries, which severely limits agricultural productivity.

Financial Capital: Immediate and long-term depletion occurs due to the direct loss of seasonal crop revenues, high financial outlays for crop defense materials (such as flashlights, batteries, and ropes), and the forced, undervalued distress sales of productive assets (e.g., livestock and agricultural tools) to cope with crop failures.

Human Capital: This capital is eroded through severe food insecurity, nutritional deficits, and physical injuries or fatalities from wildlife encounters. This is compounded by chronic physical exhaustion, sleep deprivation, and high malaria vulnerability contracted during compulsory night guarding, which also drives school absenteeism among children kept to guard fields.

Physical Capital: Direct physical destruction of household assets occurs when wide-ranging elephants demolish crop storage granaries, residential housing, family fences, and expensive physical infrastructure such as solar panels and clean-water installations.

Social Capital: The conflict severely fractures community cohesion, inducing internal community finger-pointing, mutual blame, and high levels of local socio-political tension and distrust between the community, local leaders, and the Uganda Wildlife Authority (UWA) due to uncompensated wildlife damages.

Ultimately, the research concludes that the cumulative effect of these multi-dimensional capital losses severely restricts the long-term adaptive capacity and socio-economic resilience of rural smallholders, trapping already marginalized frontline agricultural households in a self-reinforcing poverty cycle.

6.1.3 Existing Household Strategies for Coping and Mitigation

Frontline households in Nwoya District demonstrate significant agency and adaptive capacity by deploying a wide array of both traditional and modern coping mechanisms. These strategies include constructing elevated watchtowers, night-time guarding of boundaries, utilizing auditory and visual deterrents (such as noise-making, fire, shouting, and metal drumming), erecting grease-and-chili-greased rope fences, forming community scout patrol groups, and directly petitioning park authorities for intervention.

However, the study concludes that while these strategies demonstrate impressive community agency, they are overwhelmingly reactive, labor-intensive, and economically exhausting in the long run. The sustainability of these coping strategies is severely constrained by chronic financial resource scarcity, extreme physical fatigue, and the highly unpredictable, adaptive nature of wildlife behaviors. Most critically, the burden of these mitigation efforts is unevenly distributed within the household. It falls disproportionately on vulnerable members, particularly women and children, who endure extensive night-guarding hours. This labor diversion severely disrupts children's academic development due to chronic school absenteeism and restricts women from pursuing alternative, non-farm economic enterprises, thereby deepening structural gender inequalities and poverty.

6.1.4 Effectiveness of Policies, Regulations, and Management Strategies

The study concludes that although Uganda has established a highly sophisticated statutory and institutional framework led by the Uganda Wildlife Act (2019), the Uganda Wildlife Authority (UWA) Community Conservation Policy, and community revenue-sharing initiatives, its implementation at the local, frontline level is profoundly weak, fragmented, and ineffective. The statutory compensation scheme formally established under the 2019 Act remains practically non-functional for local farmers, paralyzed by extreme bureaucratic delays, complex verification procedures, and restrictive payout structures that leave affected agrarian households without timely, equitable relief.

Furthermore, institutional coordination between UWA, Nwoya District local government authorities, and frontline agrarian communities is fragmented and top-down. This division results in restricted information flow, a lack of institutional transparency, and the exclusion of affected households from active, participatory conservation decision-making. Consequently, the current policy environment, although progressive on paper, fails to protect local livelihood security. This critical divide highlights the immediate need to reform conservation governance, transitioning from centralized enforcement toward highly transparent, decentralized, and community-led accountability models.

6.2 Recommendations

Based on the empirical findings, multi-dimensional livelihood impact mapping, and local coping assessments detailed in this dissertation, a reactive, adversarial approach to managing human-wildlife conflict is structurally unsustainable. To resolve the intense socio-ecological friction along the boundary of Murchison Falls National Park (MFNP) in Nwoya District, national and regional policy must undergo a fundamental paradigm shift. Conservation governance must transition from centralized, top-down enforcement toward highly decentralized, community-led, and livelihood-sensitive coexistence frameworks. By actively integrating the community's extraordinary local agency, latent social capital, and innovative adaptations (such as apiculture and unpalatable crop switching) into the formal institutional fabric of wildlife management, the state can protect biodiversity while safeguarding the fundamental human rights of border communities to secure dignified, productive, and resilient livelihoods. Accordingly, the following evidence-based recommendations are proposed as a strategic roadmap for policy-makers, conservation practitioners, and community stakeholders.

6.2.1 Strengthen Community-Based HWC Management (Social & Human Capital Expansion)

Formalize and Integrate Community Scouts (CAGs) into Statutory Patrols. A primary priority is to formally recognize and integrate the voluntary Community Action Groups (CAGs) and community scouts into the Uganda Wildlife Authority's (UWA) community conservation and boundary-monitoring structures. Currently, these frontline actors operate as unequipped, uncompensated, and unauthorized volunteers who risk their lives nightly along the 41 km porous park border in Lii sub-county (as lamented in FGD001/CAG, 2025). UWA and Nwoya District should establish formal Memorandums of Understanding (MoUs) with local CAGs to register and formalize their operations. Under this formal partnership, scouts should be systematically provided with standard protective patrolling gear (including high-powered flashlights, raincoats, protective boots, and communication radios), clear identification badges, and regular monthly stipends or mobilization allowances funded through a ring-fenced community conservation budget. Formalizing community scouts converts informal, exhausting night labor into a formalized, recognized livelihood service, drastically enhancing local social capital, improving patrol morale, and establishing a secure, collaborative boundary defense perimeter.

Build Local Technical and Conflict-Resolution Capacity. To maximize the human capital of community-based structures, there is need for continuous, practical capacity-building programs. These training workshops should be delivered at the parish level to equip members of Community Wildlife Committees (CWCs) and CAGs with advanced technical skills in non-lethal, biological crop-defense techniques, early-warning communication protocols, and standardized GPS-based incident reporting. Furthermore, because HWC-induced food security crises and night-guarding exhaustion routinely fuel domestic disputes, family instability, and school absenteeism (as established in FGD005/CL, 2025), the training curriculum must integrate modules on conflict resolution, gender-sensitive household communication, and community-led psychosocial support, thereby building resilient human and social capitals capable of mitigating both ecological and social dimensions of conflict.

6.2.2 Enhance Livelihood Diversification and Resilience (Financial & Natural Capital Accumulation)

Scale Up and Commercialize Apiculture (Beekeeping) Enterprises. To reduce absolute agricultural vulnerability close to the park boundary, UWA, Nwoya District Local Government, and international development partners should launch a comprehensive apiculture development program in Ceke village. Modern beekeeping represent a powerful local adaptation that yields double-layer benefits: acting as an active, highly effective biological deterrent against crop-raiding elephants (beehive fences) while simultaneously generating high-value honey and beeswax that can be sold to stabilize household finances (King et al., 2011; 2024). This study recommends distributing subsidized modern top-bar beehives, honey extractors, and protective harvesting gear directly to border agricultural households, with strict targeting criteria that prioritize highly vulnerable, labor-constrained, and female-headed households (FHH). To ensure long-term commercial sustainability and prevent project collapse after donor exit, partners must establish a community-run honey collection and processing cooperative in Langele Parish, providing farmers with value-addition equipment, storage packaging, and direct, secure market linkages to pharmaceutical and commercial buyers in Gulu, Kampala, and regional markets.

Strengthen Value Chains for Unpalatable Cash Crops. The empirical findings of Chapter Four demonstrate that local communities exhibit remarkable initiative, with 86.0% of surveyed households (n = 92) switching to crops less palatable to elephants including chili, soybeans, and okra to proactively minimize wildlife attraction. However, the long-term effectiveness of this adaptation is critically restricted by poor post-harvest storage, lack of processing equipment, and highly volatile local prices, leaving farmers economically vulnerable. The Nwoya District Agricultural Department, in partnership with agricultural NGOs, must support these local crop-switching adaptations by establishing specialized agricultural cooperatives within Lii sub-county. These cooperatives should provide farmers with subsidized high-quality seeds, solar drying facilities, and value-addition machinery (such as chili-grinding mills and soybean-oil expellers). By enabling smallholders to process raw crops into high-value powders and oils locally, the district can secure profitable contract farming agreements with national exporters, insulate rural financial capital from elephant-induced shocks, and transform HWC mitigation into a robust driver of local economic growth.

6.2.3 Improve Compensation and Incentive Mechanisms (Transforming Processes & Trust Building)

Decentralize and Streamline the Statutory Compensation Scheme. The statutory compensation scheme formally established under the Uganda Wildlife Act (2019) is practically non-functional for local farmers, paralyzed by extreme bureaucratic centralization, delayed payment timelines exceeding a year, and inaccessible verification protocols that require poor farmers to file claims directly to Kampala (Muhindo, 2021). The Ministry of Tourism, Wildlife, and Antiquities must urgently amend and decentralize this verification and payout pipeline. It is recommended to establish decentralized, sub-county verification taskforces composed of the local LC I Chairperson, the sub-county Agricultural Officer, and CWC representatives. Under this streamlined model, crop and property damage should be inspected, digitally certified, and reported directly to UWA's park headquarters. Payments must be legally mandated to be processed and disbursed directly to the affected farmer's mobile money account within four weeks of the certified incident, with compensation rates dynamically pegged to prevailing market values to ensure fair and transparent asset restoration.

Pilot Community-Managed Wildlife Damage Relief Funds. To bridge the gap left by delayed central government payouts, UWA, in partnership with local VSLAs and conservation NGOs, should pilot community-managed wildlife damage relief funds in Langele Parish. This fund should be capitalized through a dedicated, seed-funding allocation from UWA's community conservation budget and matched by donor contributions. Managed locally by a representative board of community leaders, scouts, and VSLA officers, the fund can bypass central bureaucracy to deliver rapid, immediate micro-relief payouts (within 48 hours of an incident) to frontline families who suffer catastrophic crop losses. These rapid payouts, while smaller than final compensation, will provide an invaluable financial cushion, allowing vulnerable households to purchase emergency food staples, pay outstanding school fees, and meet urgent medical costs without being forced into distress sales of productive assets (such as goats or tools) or high-interest informal debt.

Restructure and Target the 20% Tourism Revenue-Sharing Scheme. The current administration of the statutory 20% tourism revenue-sharing scheme is heavily compromised, as funds are regularly captured by district and sub-county officials and spent on centralized administrative capital projects such as constructing sub-county administrative offices which

completely fail to provide direct economic relief to the frontline households bearing the direct costs of HWC (Sabuhoro et al., 2023). UWA must restructure the revenue-sharing governance framework to mandate that shared revenues are directed exclusively to frontline parishes (such as Langele Parish). At least 50% of the allocated parish-level revenue must be ring-fenced for household-level livelihood restoration, including purchasing modern beekeeping hives, establishing unpalatable crop seed banks, and directly funding the CAG patrol gear. The remaining 50% should be managed through highly transparent, community-voted projects such as village boreholes and school-fee bursary schemes, ensuring that those who endure the costs of conservation directly capture its economic benefits.

6.2.4 Promote Collaborative Land-Use Planning and Buffer Zone Management (Spatial Friction Reduction)

Establish Participatory Spatial Buffer Zones. Long-term conflict mitigation requires reducing spatial friction between human agricultural development and wildlife conservation borders. The Nwoya District Physical Planning Department, in close collaboration with UWA GIS specialists, district land officers, and local council leaders, should establish a clearly demarcated, participatory buffer zone of 0.5 km along the park boundary in Ceke village. Within this designated high-risk corridor, cultivating highly palatable cereal crops (such as maize and sorghum) and fruiting trees (such as sweet bananas and jackfruit) should be legally restricted. Instead, local landowners should be supported to utilize this buffer land exclusively for highly unpalatable agro-forestry and commercial apiculture perimeters. Placing beehive fences and unpalatable chili plantations closest to the park border creates a highly productive, defensive biological barrier that deters elephant movement while preserving the farmer's land ownership and income.

Complete and Maintain Boundary Fencing Infrastructure. While electric fencing is universally supported by 100% of surveyed households as the most effective physical capital mitigation, the current electric fence is critically incomplete, covering only 10 km of the 41 km boundary in Lii sub-county. This incomplete barrier is ineffective, as elephant herds easily bypass the fenced section to execute concentrated raids on unprotected frontline farms. The Ministry of Tourism, Wildlife, and Antiquities must prioritize and secure immediate capital funding to complete the remaining 31 km of electric fencing. Furthermore, to prevent the current fence decay caused by termite damage and falling trees, UWA must establish community-based fence maintenance teams in Celpeke and Langele, training and equipping

local youth to perform weekly inspections, clear encroaching brush, and replace broken poles, thereby building durable, long-term boundary physical capital.

6.2.5 Enhance Institutional Coordination and Policy Implementation (Multi-Stakeholder Synergy)

Establish an Active Multi-Stakeholder HWC Coordination Taskforce. Managing HWC is a cross-cutting development challenge that requires cohesive institutional cooperation, yet current mitigation efforts remain fragmented and uncoordinated (Matata et al., 2022). Gulu University, Nwoya District Local Government, and UWA should jointly establish a formal, active HWC Multi-Stakeholder Coordination Taskforce. This taskforce must include park wardens, district agricultural and community development officers, sub-county administrative heads, local council chairpersons, CAG scout representatives, and active conservation NGOs. Meeting quarterly at the Lii sub-county headquarters, this taskforce will serve as the primary institutional vehicle to align policies, share field data, coordinate joint ranger-scout patrols, review electric fence maintenance, and ensure the transparent administration of compensation claims and revenue-sharing projects, replacing top-down enforcement with a collaborative co-management model.

Create a Centralized, Village-Level HWC Documentation Database. A critical programmatic constraint identified in this study is the complete absence of a standardized, village-level incident documentation system, which forces local governments to rely on retrospective, self-reported data that is highly vulnerable to recall bias (Aloyo, 2026). Nwoya District should partner with Gulu University's computer science and peace departments to design and deploy a localized, mobile-based HWC documentation database. Trained community scouts (CAGs) should be equipped with basic smartphones loaded with open-source offline spatial logging applications (such as ODK or KoboToolbox). When an incursion occurs, scouts can record real-time GPS coordinates, photograph crop damage and footprints, and log the specific wildlife species involved. This centralized, village-level database will eliminate recall bias, provide robust empirical baselines for district development plans, and support predictive, landscape-wide mitigation strategies.

6.2.6 Promote Awareness, Education, and Applied Research (Coexistence and Scientific Monitoring)

Execute Continuous, Culturally Tailored Community Sensitization. To build a localized culture of coexistence and reduce high-intensity community hostility toward wildlife and park authorities, Nwoya District, in partnership with local FM radio stations (such as Gulu FM and Mega FM), cultural institutions (the Acholi Chiefdom), and religious bodies, should implement continuous, bilingual (Luo and English) sensitization campaigns. These educational programs should focus on animal behaviors, migratory corridors, and non-lethal, eco-friendly crop-protection deterrents. Educating communities on seasonal patterns, safe boundary distances, and safety protocols during elephant encounters is essential to reduce physical safety risks, prevent human fatalities and injuries, and actively eliminate retaliatory wildlife killings along the park margin.

Fund and Support Collaborative Applied Research. To ensure HWC policy remains evidence-based, UWA, learning institutions, and international conservation research bodies should establish collaborative research grants to fund applied, longitudinal socio-ecological studies bordering MFNP. Priority research areas should include: (1) tracking elephant cognitive adaptation and behavioral habituation to traditional and chemical deterrents over a multi-year period, (2) conducting rigorous micro-economic cost-benefit valuations of integrated beehive-chili fences under varying smallholder farming conditions, and (3) performing in-depth, gender-disaggregated studies to document the long-term, non-material impacts of nocturnal crop guarding on maternal health, domestic stability, and child educational development in frontline agricultural areas. Continuous scientific monitoring guarantees that conservation policy can adapt dynamically to shifting socio-ecological realities, ensuring the long-term security of both wildlife and human livelihoods.

6.3 Final Reflection

This study ultimately reaffirms that the persistent crisis of Human–Wildlife Conflicts in Nwoya District is not merely a biological or technical management challenge, but rather a manifestation of deeper, structural tensions between national conservation imperatives and local household survival. Sustainable, long-term resolution cannot be achieved through short-term, reactive physical deterrents alone. Instead, durable coexistence depends on actively addressing the underlying socio-economic vulnerabilities, asset deficits, and institutional governance gaps that characterize frontline agricultural communities.

A harmonious future of peaceful coexistence between the people of Nwoya District and the wildlife of Murchison Falls National Park depends on transitioning toward an inclusive, livelihood-sensitive model. In this framework, biodiversity conservation is not perceived as an adversarial force that threatens survival, but as an equitable, shared opportunity for sustainable development, poverty reduction, and community-led growth.

6.4 Contribution to Knowledge

This research makes several distinct contributions to the empirical, theoretical, and policy-oriented scholarship on conservation and rural development in Sub-Saharan Africa: Theoretical Integration of the Sustainable Livelihoods Framework (SLF): By applying the SLF to HWC in Uganda's conservation-agriculture interface, this study moves beyond simple, descriptive crop-damage metrics. It provides a robust, multi-dimensional analytical model that maps the cascading, long-term impacts of environmental shocks across all five capitals of rural well-being, highlighting the complex, non-monetary dimensions of vulnerability.

Empirical and Contextual Depth: The study generates highly granular, household-level empirical evidence of conflict frequency, localized spatial dynamics, and coping costs specific to frontline agricultural communities in Nwoya District, filling a critical geographical and analytical gap in regional conservation literature.

Critical Policy-to-Practice Analysis: By analyzing the live experiences of smallholder farmers adjacent to MFNP, the research exposes the operational bottlenecks, administrative delays, and local legitimacy gaps in national legislative instruments (such as the Uganda Wildlife Act of 2019). It provides concrete, actionable guidelines for building collaborative, inclusive, and decentralized conservation-governance systems.

6.5 Areas for Further Research

To build upon the findings and address the boundaries of this research, several critical areas for future academic and policy-oriented scholarship are proposed:

Longitudinal Conflict Analysis: Conduct multi-year, longitudinal studies to evaluate how HWC patterns, land-use land-cover transitions, and accelerating climate change variability interact over a sustained period around protected boundaries.

Gender-Disaggregated and Youth-Focused Studies: Undertake focused, qualitative research to explore the highly gendered and age-specific dimensions of wildlife conflict, analyzing how women, men, and youth uniquely navigate, experience, and bear the physical and labor burdens of conflict mitigation.

Macro- and Micro-Economic Assessments: Perform comprehensive financial valuations of direct and indirect agricultural and infrastructural losses to inform the design of functional, commercial agricultural insurance models and sustainable state-supported compensation frameworks.

Evaluation of Smart Mitigation Technologies: Investigate the economic viability, cultural acceptability, and long-term efficacy of emerging smart technologies such as bio-fences, acoustic sensor arrays, and drone-assisted animal tracking in fostering human-wildlife coexistence and protecting smallholder assets.

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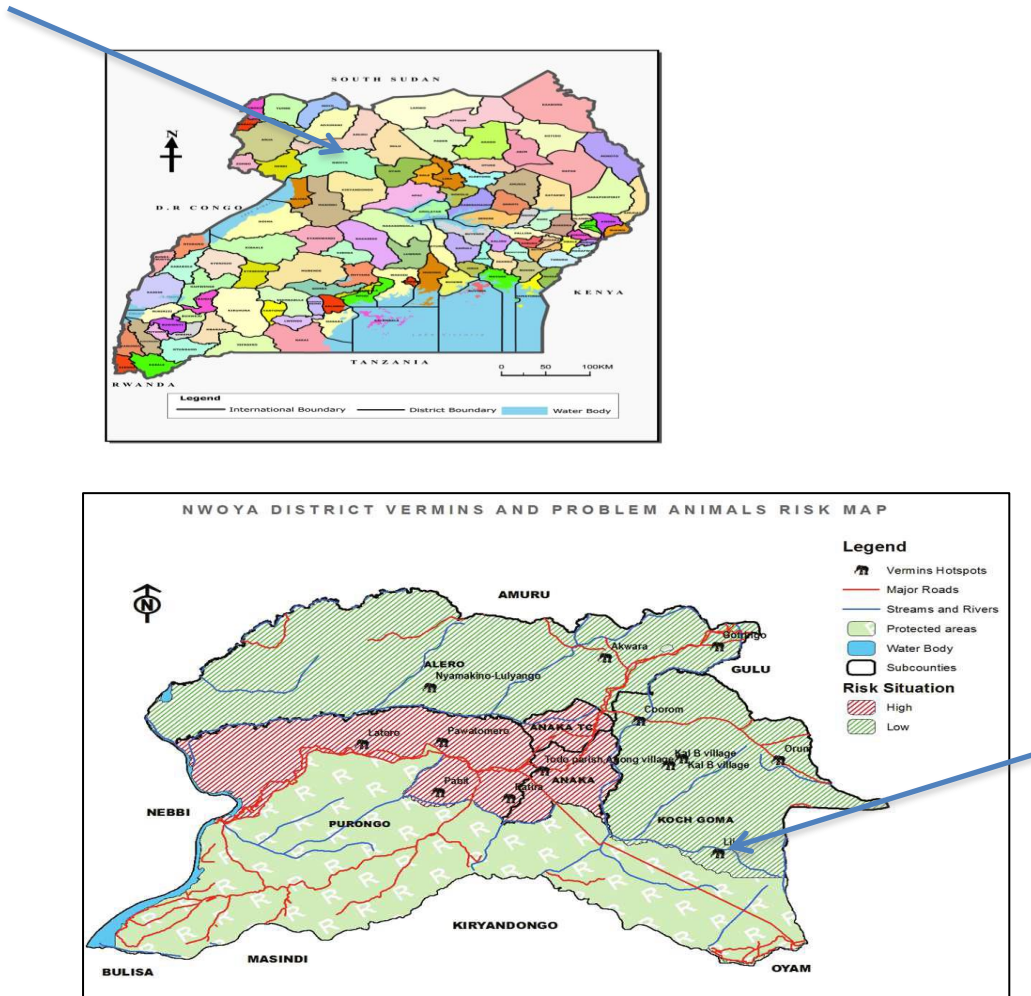
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Appendix 1: Map of Uganda showing Nwoya district and Map of Nwoya district showing the location of Lii Sub-county



Map of Nwoya district showing the location of Lii subcounty (Adopted from the District report on the Disaster Situation in Nwoya District presented by the District CDO – Nwoya District, 2022)

Appendix 2: Informed Consent Form

Appendix 2.1: Informed Consent Form For (Household Interviews)

Study Title: Exploring Human-Wildlife Conflicts through the Livelihoods Framework in Nwoya District.

Introduction:

You are being invited to participate in a research study that aims to understand how human-wildlife conflicts (HWCs) are impacting your livelihoods and what strategies you use to cope with these challenges. Ms. Aloyo Innocent Jessie from Gulu University, Institute of Peace and Strategic Studies is conducting this study

Procedures:

Your participation in this study will involve providing answers to the questions I will ask you. I would also like to audio-record the conversation we have, take photos and video record Features so that I can listen to our discussion again, and so the recording can be transcribed into writing. The recording and the transcription will not be accessible by anyone else, except myself, the research team and the GUREC team upon request.

Participation:

Your participation in this study will take approximately 60 minutes. A total of 126 households will take part in this survey. The questionnaire will ask you questions about your household, farming practices, experiences with HWCs, and coping strategies.

Voluntary Participation:

Participation in this study is entirely voluntary. You have the right to refuse to participate or withdraw from the study at any time without any consequences.

Confidentiality:

All information you provide will be kept confidential. Your name and any other identifying information will not be associated with your responses. The data collected will be stored securely and only used for research purposes.

Benefits:

This research aims to better understand the impacts of HWCs on local communities and inform the development of more effective mitigation strategies.

Cost and remuneration to participants: Participants who complete the household questionnaire will receive a token of appreciation of 5,000 Uganda Shillings.

Contact Information:

If you have any questions or concerns about this study, please contact: 1.Ms. Aloyo Innocent Jessie

Mobile: 0774 002070 / Email: jessaopoka@gmail.com

2.Dr. Julaina A. Obika

Tel: +256772964491 / Email address: j.obika@gu.ac.ug **Consent:**

By signing below, you acknowledge that you have read and understood this information and agree to participate in this study.

Name of participant.....Signature/thumbprint.....Date.....

Name of witness.....Signature.....Date.....

Name of interviewer.....Signature.....Date.....

Appendix 2.1.1: Karatac Me Yeyo Me Bedo I Kikweda Man Pi Dok Keno (Translated Version - Luo)

WIC ME KWAN MADITO: “Ngino matut kukukuku ikin lee tim ki dano iyoo me yenyo kwo mapatpat i Nwoya district”

TYEN KWAN MAN:

Lwongo tye boti me ribe kwedwa kikweda ma tye me niang matut kit adwogi ma kukukuku ikin lee tim ki lwak me kabedo man tye kwede ikit me yoo kwo mapatpat pa lwak me kabedo man ki me niang kwayi yoo magi ma lwak tye katic kwede me dok I peko man. Lakwed man tye Ms. Aloyo Innocent Jessie, latin kwan me Gulu University, Institute of Peace and Strategic Studies.

KIT MA KIKWEDE MAN OBI TIME KEDE:

Procedures:

Bedo ni I kikweda man obi bedo iyoo me miyo lagam ikom lapeny ma an abi penyo.^[1] Atye bene ki miti me mako dwon wa ma lube ki lok ma wabi bedo kwede, mako cal ki video pi jami mogo wek abed ki kare me winyo lok ma wanywako lacen wek nyig lok ma iwaco kuco-ne piny. Dwon ma abimako ki nyig lok ma abi coyo abigwoko maber dok an, ki lutim kikweda man kacel ki dul me GUREC aye bibedo ki kare me nongo ne kace inen kipenyo pire.

Nywako tam man obitero kine ka wang dakika 60 (caa 1). Odi 126 obi bedo I kikweda man. Kikweda man obi penyo lapeny ikom ngec ma dok ikom oti, kit yoo me pur, kwayi kwo ma ikato ki iye ilok me kukukuku ikin lee tim ki lwak me kabedo man, dok ki kit yoo ango ma itye ka tic kwede me dok ikom peko man.

BEDO I KIKWEDA MAN:

Bedo ni I kikweda man tye me dyere. Itye ki twero dok angonya me kwero bedo I kikweda man onyo me aa woko onyo tenyo bedo ikikweda man caa mo keken labongo kit peko mo keken.

MUNG:

Ngec mo keken ma ibi miyo I kikweda man ki bi gwoko maber dok imung. Nyingi onyo kit ngec mo keken ma dok ikomi pe ki bi tiyo kwede medok I kom lagami. Ngec ma kibicoko ki bi gwoko maber dok ki bi tiyo kwede pi kikweda man keken.

PEKO.

Pe tye kit peko mo ma lube ki kit kikweda man pien pe tye kit pim mo keken ma obi timo ikom ngat mo keken ma oyee me bedo i kikweda man.

MAGOBA:

Pe tye kit magoba mo atir ma ibinongo ki bedo I kikweda man. Ento lok ma wabinongo ki ikikweda man obikonyowa nongo magoba pi lwak ma dwong. Kikweda man tye me niang matut kit kwayi adwogi me kukukuku ikin lee tim ki lwak me kabedo man dok me miyo ngec ma opore ikit me nongo yoo mapatpat me dok ikom peko man.

Dano ma bibedo I kikweda man dok bityeko gamo lapeny ma tye obi gamo pwoc pi caa ma omyo pi gamo lapeny ciling 5,000, cente me Uganda.

ANGA MA ROMO GAMO LAPENY IKOM KIKWEDA MAN?

Ka itye ki lapeny onyo dwon mo ma dok ikom kikweda man, tim ber ikube ki:^[1]1. Ms. Aloyo Innocent Jessie ^[2]Tel: +256774 002070 / Email: jescaopoka@gmail.com^[2]2. Dr. Julaina A. Obika (Wonkom me Gulu University Research and Ethics Committee) Tel: +256772964491 / Email address: j.obika@gu.ac.ug

YEYO ME BEDO I KIKWEDA MAN:

Keto cingi piny kany, nyutu ni itye ki yeyo ni ikwano dok inyang ngec man dong iyee me bedo I kikweda man.

Nying Lagam Lapeny.....Cing.....Nino dwe.....

Nying Caden.....Cing.....Nino dwe.....

Nying Latim Kikweda.....Cing.....Nino dwe.....

Appendix 2.2: Informed Consent Form For Key Informant Interviews (ICF-KII)

Project Title: Exploring Human-Wildlife Conflicts through the Livelihoods framework in Nwoya District

Introduction:

You are being invited to participate in a research study that aims to gain a deeper understanding of the impacts of human-wildlife conflicts (HWCs) on local communities and identify effective mitigation strategies. Ms. Aloyo Innocent Jessie from Gulu University, Institute of Peace and Strategic Studies is conducting this study

Procedures:

Your participation in this study will involve providing answers to the questions I will ask you. I would also like to audio-record the conversation we have, take photos and video record Features so that I can listen to our discussion again, and so the recording can be transcribed into writing. The recording and the transcription will not be accessible by anyone else, except myself, the research team and the GUREC team upon request.

Participation:

Your participation in this study will involve a one-on-one interview that will last approximately 60 minutes. The interview will focus on your knowledge and experiences related to HWCs, local coping mechanisms, and community perspectives on conservation. 10 participants for KIIs identified from UWA, NGOs, Community and Nwoya District leadership have been identified for this interview.

Voluntary Participation:

Participation in this study is entirely voluntary. You have the right to refuse to participate or withdraw from the study at any time without any consequences. You may also choose to decline to answer any questions that you do not feel comfortable answering.

Confidentiality:

All information you provide during the interview will be kept confidential. Your name and any other identifying information will not be associated with your responses in any published

reports or presentations. Any identifying information will be removed from the data before analysis.

Benefits:

This research aims to better understand the impacts of HWCs on local communities and inform the development of more effective mitigation strategies.

Cost and remuneration to participants: Key informants who participate in an interview will receive a token of appreciation of 20,000 Uganda Shillings to compensate for their time and travel.

Contact Information:

If you have any questions or concerns about this study, please contact: 1.Ms. Aloyo Innocent Jessie

Mobile: 0774 002070 / Email: jessaopoka@gmail.com 2.Dr. Julaina A. Obika^[L]_{SEP} Tel: +256772964491 / Email address: j.obika@gu.ac.ug

Consent:

By signing below, you acknowledge that you have read and understood this information and agree to participate in this study.

Name of participant.....Signature/thumbprint.....Date.....

Name of witness.....Signature.....Date.....

Name of interviewer.....Signature.....Date.....

Appendix 2.2.1: Karatac Me Yeyo Me Bedo I Kikweda Man Pi Dano Matye Ki Ngec Matut (Key Informant Interview – Translated Version)

WIC ME KWAN MADITO: “Ngino matut kukukuku ikin lee tim ki dano iyoo me yenyo kwo mapatpat i Nwoya district”

TYEN KWAN MAN:

Lwongo tye boti me ribe kwedwa kikweda ma tye me niang matut kit adwogi ma kukukuku ikin lee tim ki lwak me kabedo man tye kwede ikit me yoo kwo mapatpat pa lwak me kabedo man ki me niang kwayi yoo magi ma lwak tye katic kwede me dok I peko man. Lakwed man tye Ms. Innocent Jessie Aloyo, latin kwan me Gulu University, Institute of Peace and Strategic Studies.

KIT MA KIKWEDE MAN OBI TIME KEDE:

Bedo ni I kikweda man obi bedo iyoo me miyo lagam ikom lapeny ma an abi penyo.^[1] Atye bene ki miti me mako dwon wa ma lube ki lok ma wabi bedo kwede, mako cal ki video pi jami mogo wek abed ki kare me winyo lok ma wanywako lacen wek nyig lok ma iwaco kuco-ne piny. Dwon ma abimako ki nyig lok ma abi coyo abigwoko maber dok an, ki lutim kikweda man kacel ki dul me GUREC aye bibedo ki kare me nongo ne kace inen kipenyo pire.

Nywako tam man obitero kine ka wang dakika 60 (caa 1). Dano 10 bedo I kikweda man. Kikweda man obi penyo lapeny ikom ngec ma dok ikom oti, kit yoo me pur, kwayi kwo ma ikato ki iye ilok me kukukuku ikin lee tim ki lwak me kabedo man, dok ki kit yoo angoma itye ka tic kwede me dok ikom peko man.

BEDO I KIKWEDA MAN:

Bedo ni I kikweda man tye me dyere. Itye ki twero dok angonya me kwero bedo I kikweda man onyo me aa woko onyo tenyo bedo ikikweda man caa mo keken labongo kit peko mo keken.

MUNG:

Ngec mo keken ma ibi miyo I kikweda man ki bi gwoko maber dok imung. Nyingi onyo kit

ngec mo keken ma dok ikomi pe ki bi tiyo kwede medok I kom lagami. Ngec ma kibicoko ki bi gwoko maber dok ki bi tiyo kwede pi kikweda man keken.

PEKO.

Pe tye kit peko mo ma lube ki kit kikweda man pien pe tye kit pim mo keken ma obi timo ikom ngat mo keken ma oyee me bedo i kikweda man.

MAGOBA:

Pe tye kit magoba mo atir ma ibinongo ki bedo I kikweda man. Ento lok ma wabinongo ki ikikweda man obikonyowa nongo magoba pi lwak ma dwong. Kikweda man tye me niang matut kit kwayi adwogi me kukukuku ikin lee tim ki lwak me kabedo man dok me miyo ngec ma opore ikit me nongo yoo mapatpat me dok ikom peko man.

Dano ma bibedo I kikweda man dok bityeko gamo lapeny ma tye obi gamo pwoc pi caa ma omiyo pi gamo lapeny ciling 20,000, cente me Uganda.

ANGA MA ROMO GAMO LAPENY IKOM KIKWEDA MAN?

Ka itye ki lapeny onyo dwon mo ma dok ikom kikweda man, tim ber ikube ki:^[1]1.Ms. Aloyo Innocent Jessie Tel: +256774 002070 / Email: jescaopoka@gmail.com^[2]2.Dr. Julaina A. Obika (Wonkom me Gulu University Research and Ethics Committee) Tel: +256772964491 / Email address: j.obika@gu.ac.ug

YEYO ME BEDO I KIKWEDA MAN:

Keto cingi piny kany, nyutu ni itye ki yeyo ni ikwano dok iniang ngec man dong iyee me bedo I kikweda man.

Nying Lagam Lapeny.....Cing.....Nino dwe.....

Nying Caden.....Cing.....Nino dwe.....

Nying Latim Kikweda.....Cing.....Nino dwe.....

Appendix 2.3: Informed Consent Form for Focus Group Discussions (FGDs)

Project Title: Exploring Human-Wildlife Conflicts through the Livelihoods framework in Nwoya District

Introduction:

You are being invited to participate in a Focus Group Discussion (FGD) that aims to explore community perspectives on human-wildlife conflicts (HWCs) and identify collective coping strategies. Ms. Innocent Jessie Aloyo from Gulu University, Institute of Peace and Strategic Studies is conducting this study

Procedures:

Your participation in this study will involve providing answers to the questions I will ask you. I would also like to audio-record the conversation we have, take photos and video record Features so that I can listen to our discussion again, and so the recording can be transcribed into writing. The recording and the transcription will not be accessible by anyone else, except myself, the research team and the GUREC team upon request.

Participation:

You will participate in a group discussion with other community members. The discussion will last approximately 90 minutes and will focus on experiences with HWCs, community-based solutions, and local knowledge. 54 participants from 54 households will take part in six (6) FGDs with average of 9 participants per FGD.

Voluntary Participation:

Participation in this study is entirely voluntary. You have the right to refuse to participate or withdraw from the discussion at any time without any consequences. You may also choose to decline to answer any questions that you do not feel comfortable answering.

Confidentiality:

All information shared during the FGD will be kept confidential. Group discussions will be audio-recorded, but individual participants will not be identified by name in any research reports or presentations. All identifying information will be removed from the data before

analysis.

Benefits:

This research aims to better understand the impacts of HWCs on local communities and inform the development of more effective mitigation strategies.

Cost and remuneration to participants: Participants in the Focus Group Discussions will receive a token of appreciation of 10,000 Uganda Shillings to compensate for their time and travel. Refreshments will be provided during the FGD sessions.

Contact Information:

If you have any questions or concerns about this study, please contact: 1.Ms. Aloyo Innocent Jessie

Mobile: 0774 002070 / Email: jessaopoka@gmail.com 2.Dr. Julaina A. Obika^[1]_{SEP} Tel: +256772964491 / Email address: j.obika@gu.ac.ug

Consent:

By signing below, you acknowledge that you have read and understood this information and agree to participate in this study.

Name of participant.....Signature/thumbprint.....Date.....

Name of witness.....Signature.....Date.....

Name of interviewer.....Signature.....Date.....

Appendix 2.3.1: Karatac Me Yeyo Me Bedo I Kikweda Man Pi Nywako Tam Idul (Focus Group Discussions)

WIC ME KWAN MADITO: “Ngino matut kukukuku ikin lee tim ki dano iyoo me yenyo kwo mapatpat i Nwoya district”

TYEN KWAN MAN:

Lwongo tye boti me ribe kwedwa kikweda ma tye me niang matut kit adwogi ma kukukuku ikin lee tim ki lwak me kabedo man tye kwede ikit me yoo kwo mapatpat pa lwak me kabedo man ki me niang kwayi yoo magi ma lwak tye katic kwede me dok I peko man. Lakwed man tye Ms. Aloyo Innocent Jessie, latin kwan me Gulu University, Institute of Peace and Strategic Studies.

KIT MA KIKWEDE MAN OBI TIME KEDE:

Bedo ni I kikweda man obi bedo iyoo me miyo lagam ikom lapeny ma an abi penyo^[1] Atye bene ki miti me mako dwon wa ma lube ki lok ma wabi bedo kwede, mako cal ki video pi jami mogo wek abed ki kare me winyo lok ma wanywako lacen wek nyig lok ma iwaco kuco-ne piny. Dwon ma abimako ki nyig lok ma abi coyo abigwoko maber dok an, ki lutim kikweda man kacel ki dul me GUREC aye bibedo ki kare me nongo ne kace inen kipenyo pire.

Nywako tam man obitero kine ka wang dakika 60 (caa 1). Odi 126 obi bedo I kikweda man. Kikweda man obi penyo lapeny ikom ngec ma dok ikom oti, kit yoo me pur, kwayi kwo ma ikato ki iye ilok me kukukuku ikin lee tim ki lwak me kabedo man, dok ki kit yoo ango ma itye ka tic kwede me dok ikom peko man.

BEDO I KIKWEDA MAN:

Bedo ni I kikweda man tye me dyere. Itye ki twero dok angonya me kwero bedo I kikweda man onyo me aa woko onyo tenyo bedo ikikweda man caa mo keken labongo kit peko mo keken.

MUNG:

Ngec mo keken ma ibi miyo I kikweda man ki bi gwoko maber dok imung. Nyingi onyo kit ngec mo keken ma dok ikomi pe ki bi tiyo kwede medok I kom lagami. Ngec ma kibicoko ki

bi gwoko maber dok ki bi tiyo kwede pi kikweda man keken.

PEKO.

Pe tye kit peko mo ma lube ki kit kikweda man pien pe tye kit pim mo keken ma obi timo ikom ngat mo keken ma oyee me bedo i kikweda man.

MAGOBA:

Pe tye kit magoba mo atir ma ibinongo ki bedo I kikweda man. Ento lok ma wabinongo ki ikikweda man obikonyowa nongo magoba pi lwak ma dwong. Kikweda man tye me niang matut kit kwayi adwogi me kukukuku ikin lee tim ki lwak me kabedo man dok me miyo ngec ma opore ikit me nongo yoo mapatpat me dok ikom peko man.

Dano ma bibedo I kikweda man dok bityeko gamo lapeny ma tye obi gamo pwoc pi caa ma omiyo pi gamo lapeny ciling 5,000, cente me Uganda.

ANGA MA ROMO GAMO LAPENY IKOM KIKWEDA MAN?

Ka itye ki lapeny onyo dwon mo ma dok ikom kikweda man, tim ber ikube ki: ^[1]_{SEP}1. Ms. Aloyo Innocent Jessie ^[1]_{SEP}Tel: +256774 002070 / Email: jescaopoka@gmail.com ^[2]_{SEP}2. Dr. Julaina A. Obika (Wonkom me Gulu University Research and Ethics Committee) Tel: +256772964491 / Email address: j.obika@gu.ac.ug

YEYO ME BEDO I KIKWEDA MAN:

Keto cingi piny kany, nyutu ni itye ki yeyo ni ikwano dok iniang ngec man dong iyee me bedo I kikweda man.

Nying Lagam Lapeny.....Cing.....Nino dwe.....

Nying Caden.....Cing.....Nino dwe.....

Nying Latim Kikweda.....Cing.....Nino dwe.....

Appendix 3.0 Research Instruments/Tools

Appendix 3.1 Structured Household Questionnaire Guide

Introduction

This study uses structured questions to gather data from the selected households. This will allow for comparisons of experiences and the establishment of a baseline understanding of HWC and household livelihoods

Dear Sir/Madam,

My name is **Aloyo Innocent Jessie**; I am a student at Gulu University pursuing a Master's degree in Conflict Transformation Studies. I am conducting my study research titled “**Exploring Human-Wildlife Conflicts through Livelihoods Framework in Nwoya District**”. I would be grateful if you could answer the following questions related to this study. Your responses will be kept confidential and used solely for academic purposes.

1. Household Information

- Village: _____
- Number of people living in your household: _____
- Age range of household members (check all that apply):
 - ☐ Under 5 years old
 - ☐ 5-17 years old
 - ☐ 18-30 years old
 - ☐ 31-50 years old
 - ☐ 51+ years old
- The primary source of income for your household (check one):
 - ☐ Farming
 - ☐ Livestock rearing
 - ☐ Fishing

- ☐ Daily wage labor
- ☐ Small business
- ☐ Other (please specify): _____
- Distance from nearest protected area: _____

2. Wildlife Encounters

- In the past year, has your household experienced any conflicts with wildlife? (Yes/No)
- If yes, which type(s) of wildlife have you had conflicts within the past year? (Check all that apply)

☐ Elephants

☐ Lions ☐ Buffaloes ☐ Monkeys ☐ Baboons ☐ Other (please specify): _____

- Which wildlife species are causing the most problems? (Rank 1 as most problematic, 2 as second-most, etc.)

☐ Elephants

☐ Lions

☐ Buffaloes

☐ Monkeys

☐ Baboons

☐ Other (please specify): _____

- How often do you experience conflicts with wildlife? (Check one)

☐ Never

☐ Less than once a month

☐ Once a month

☐ A few times a month

☐ Weekly

☐ Daily

3. Impacts of Wildlife Conflicts

• How have wildlife conflicts impacted your household in the past year? (Check all that apply)

☐ Crop damage

☐ Livestock depredation (loss of animals)

☐ Injuries to people

☐ Fear and anxiety

☐ Damage to property

☐ Other (please specify): _____

• On average, how much money (in Ugandan Shillings) have you lost due to wildlife conflicts in the past year? _____ UGX

• On average, how much acreage of crops have you lost due to wildlife conflicts in the past year? _____ List the crop and acreage destroyed.

4. Coping Strategies

• Does your household use any strategies to prevent or minimize wildlife conflicts? (Yes/No)

• If yes, which strategies do you use? (Check all that apply)

☐ Building fences or barriers

☐ Storing crops securely

☐ Changing farming practices (e.g., planting less desirable crops)

o Frightening away animals (e.g., banging drums)

o Hiring wildlife guards

o Other (please specify): _____

5. Perceptions and Management

- How satisfied are you with the current efforts to manage wildlife conflicts in your community? (Very dissatisfied, Somewhat dissatisfied, Neutral, Somewhat satisfied, Very satisfied)
- In your opinion, what are the most effective ways to reduce human-wildlife conflicts in your community? (Please provide a brief answer)
- **Optional:** Would you be interested in participating in a follow-up focus group discussion about human-wildlife conflicts? (Yes/No)
- If yes, please provide your contact information (phone number or email address):

Appendix 3.1.1 Structured Household Questionnaire Guide (Translated Version)

1. Ngec madok inkom ot (keno acel acel)

- Dog Gang (Village): _____
- Wel dano ma in dog ot (keno man): _____
- Mwaka pa dano ma I ot man (Gwet ma tye weng):

o Mwaka 5 odwogo piny

o Mwaka 5-17

o Mwaka 18-30

o Mwaka 31-50

o Mwaka 51- oceto anyim

- Tic ango ma kelo cente I ot man (Gwet acel):

o Pur

o Gwoko Lee

o Mako /cato rec

o Tic Olec

o Cat ma tino tino

o Mukene (nyut nyinge): _____

- Boo pa gang man ki ka gwoke lee tim ma ki rumu ki cel tye romani? _____

2. Kukukuku ikin ot ma meggi ki lee (Wildlife Encounters)

- I mwaka ma okato anged, ot ma meggi okato gwok ki I peki ma lee tim aye kelo? (Kakare / kur)
- Ka kakare, kit kwayi lee tim mani ma oti obedo kwede ki peko in mwaki man ma okato

anged? (Gwet weng ma rwate)

o Elephants (Lec)

o Lions (Labwor)

o Buffaloes (Atunya)

o Monkeys (Ayom)

o Baboons (Ongera)

o Mukene (Tit nyinge): _____

• Lee mani ma dong kelo peko ma loyo? (Coo 1 pi lee ma dog layela ma loyo, 2 pi lee me numa ma lubu, 3,4 kit eno)

o Elephants Lec

o Lions Labwor

o Buffaloes Atunya

o Monkeys Ayom

o Baboons Ongera

o Mukene (Tit nyinge): _____

• Peko man me lee tim, oyelo oti ki dir? (Kwet acel)

- Pe matwal
- Tyen ma pe kato acel I dwe
- Kicel I dwe
- Tyen mapol pol in dwe acel
- Cabit ki cabit
- Nino ki nino

3. (Impacts of Wildlife Conflicts) Kukukuku ikin Lee tim ki dano oyelo oti nining I mwaka ma okato? (Kwet weng ma opore)

- Balo cam
 - Too pa lee ma ipaco
 - Awano ikom dano
 - Lworo ki arem me cwiny
 - Bale pa jami^[1]_{SEP} Mukene (Tit nyinge): _____
- Wel ciling adii (I cente me Uganda) ma irwenyo pi adwogi me peko pa lee tim imwaka ma okato? _____ UGX
 - Wel acre me cam apura adii ma irwenyo pi adwogi me peko pa lee tim I mwaka ma okato? _____ Wac nying cam ki wel acre ma obale

4. Kit yoo ma papatpat me dok ikom kukukuku man (Coping Strategies)

- Tye kit yoo moo ma ot ma megii tiyo kwede me gengo onyo dwogo piny peki ma lee tim kelo? (Tye/ Kur)
 - Ka tye, kit yoo mani ma wutiyo kwede? (Kwet weng ma rwate)
- Gedo cel onyo lageng
 - Gwoko cam kama ber
 - Loko kit me pur
 - Buru lee tim ki jami ma woo/mwoc
 - Pango ugwok lee
 - Mukene (Tit kite): _____

5. Neno/ Tam ki kit me doro kukukuku (Perceptions and Management)

- Yengo ni i kit ma kitye ka dok kwede ikom peki ma lee tim tye ka bolo I kabedo ni tye irwom mane? (Pee anyeng matwal, Pe ayeny lakite mo, yengo na tye ladyere, ayeng lakite mo, , ayeng matek)
- Ineno ni, yoo mani ma opore me dwoko piny rwom me peko ma lee tim kelo I kabedo ni? (Timber mi lagam ma megii iyoo ma cek)

Appendix 3.2. Open-Ended Household Questionnaire Guide

Introduction

This study uses open-ended questions to gather data from the selected households. This will allow for comparisons of experiences and the establishment of a baseline understanding of HWC and household livelihoods

Dear Sir/Madam,

My name is **Aloyo Innocent Jessie**; I am a student at Gulu University pursuing a Master's degree in Conflict Transformation Studies. I am conducting my study research titled **“Exploring Human-Wildlife Conflicts through Livelihoods Framework in Nwoya District”**. I would be grateful if you could answer the following questions related to this study. Your responses will be kept confidential and used solely for academic purposes.

1. Living Alongside Wildlife

- Can you describe your experiences living near wild animals?
- How has wildlife impacted your daily activities (farming, herding, etc.)?
- Do you have any specific incidents of wildlife conflict stand out in your memory? (If yes, please elaborate)

2. Impact on Livelihoods

- How do human-wildlife conflicts affect your ability to earn a living and support your family?
- Can you share any stories or examples of how wildlife has damaged your crops or livestock?
- How do these conflicts impact your household's food security and income?

3. Coping Strategies

- What methods, if any, do you currently use to protect your crops, livestock, and property from wildlife?

- Are there any traditional practices or knowledge in your community for managing human-wildlife conflict?
- Are these methods effective? Why or why not?
- Have you received any assistance from the government, NGOs, or other organizations in managing wildlife conflicts? (If yes, please elaborate on the assistance and its effectiveness)

4. Perceptions and Solutions

- In your opinion, what are the main reasons for the increasing human-wildlife conflict in this area?
- What are your thoughts on the effectiveness of current efforts to manage these conflicts?
- Do you have any ideas or suggestions for how to better manage human-wildlife conflicts and promote peaceful coexistence?

5. Concluding Thoughts

- Is there anything else you would like to share about your experiences with human- wildlife conflict?

Thank you for your valuable insights!

Appendix 3.2.1 Open-Ended Household Questionnaire Guide (Translated Luo Version)

Introduction. Kikweda man tiyo ki lapeny ma miyo kare me tito matut dok me koko ngec ki bot odi(dog keno) ma kihero. Eni obi miyo kare me poro kit kwayi kwo ma dano okato iye ki me miyo niang ikom kukukuku ikin lee tim ki dano kacel ki yoo ma kwo I odi.

Dear Sir/Madam,

Nyinga Aloyo Innocent Jessie, atye latin kwan me Gulu University ma tye ka kwano Master's degree in Conflict and Transformation Studies. Atye ka timo kikweda “ Ngino matut kukukuku I kin lee tim ki dano ikit me yoo kwo” I Nwoya district. Iya bibedo yom dok abi pwoyo matek ka itwero gamo lapeny magi malube ki kikweda man. Lagam ma meggi abi gwoko calo mung dok abi tiyo kwede pi tic me kwan keken

1. Living Along side Wildlife

- Iromo tita kit ma kwo nitte kwede ma lube ki bedo inget lee tim?
- Tye pa lee tim yelo tici me nino acel acel calo pur ki tic mukene nining?
- Itye ki kit labol mo malube ki kukukuku ikin lee tim ki dano ma wii pe room wil iye? (ka tye timber tita)

2. Impact on Livelihoods

- Kukukuku ikin lee tim ki dano dwogo kero ni me nongo yoo kwo ki kit me miyo kony ki oti ninining?
- Itwero tita labol kit ma lee tim obalo cam ma ipuro onyo lee ma igwoko?
- Kukukuku man kelo kit adwogi ango ikit me bedo ki cam iot dok ki lim?

3. Coping Strategies

- Yoo mani, ka tye ma in kombedi utye ka tic kwede me gwoko cam ma ipuru, lee ma gang ki jami ma meggi ki ikom lee tim?
- Tye yoo mogo me tekwaro or nyo ngec I kabedo wu kany me doro/ dok kwede ikom

kukukuku ikin lee tim ki dano?

- Kwayi yoo magi tiyo maber? Pingo tiyo maber/ pingo pe tiyo maber?
- Tye ki kony mo ma inongo ki bot gamente, NGO onyo dul mo keken ikit me dok kwede ikom kukukuku man? (ka tye, timber, tit kom ikom kony meno ki kit ma ber ne tye kwede)

4. Perceptions and Solutions

- Ingec ma megì, kwayi lok ango ma omedo rwom me kukukuku ikin lee tim ki dano malo I kabedo man?
- Tami tye ni ngo ikom kit yoo mapatpat ma kitye ka tic kwede me doro / dok ikom kukukuku man?
- Do you have any ideas or suggestions for how to better manage human-wildlife conflicts and promote peaceful coexistence?
- Itye gwok ki tam mo ikit ma ki romo doro / dok kwede ikom kukukuku ikin lee tim ki dano wek kiyub kit me bedo maber?

5. Concluding Thoughts

- Tye ngec mo ma imito nywako kweda ma lube ki kwo ni ma dok ikom kukukuku ikin lee tim ki dano?

Afwoyo matek pi ngec ma imiyo!

Appendix 3.3 Focus Group Discussion (Fgd) Guide

Appendix 3.3.1 Female Headed Households

This convenes only members of female-headed households to investigate their experiences with the HWC to better understand how HWC impact their household livelihoods.

Introduction

Dear Sir/Madam,

My name is **Aloyo Innocent Jessie**; I am a student at Gulu University pursuing a Master's degree in Conflict Transformation Studies. I am conducting my study research titled “**Exploring Human-Wildlife Conflicts through Livelihoods Framework in Nwoya District**”. I would be grateful if you could answer the following questions related to this study. Your responses will be kept confidential and used solely for academic purposes.

1. Living with Wildlife & Impacts:

- How does living with wildlife impact your daily life and your ability to care for your family?
- What specific challenges do you face due to human-wildlife conflict that are unique to women? (This includes safety concerns and the burden of managing threats.)

2. Coping Strategies:

- What methods do you use to protect yourselves and your property from wildlife? How effective are they?
- What support have you received from external sources to manage HWC? Was it helpful?

3. Support Needs & Solutions:

- What support do you need from local authorities, NGOs, or other organizations to better manage HWC?
- What are the main causes of HWC in your opinion, and how can we better address them while ensuring women's safety and livelihoods?

4. Looking Forward:

- What are your hopes and concerns for the future regarding human-wildlife coexistence in Nwoya District, especially for women?

Thank you for your participation!

Appendix 3.3.1 Focus Group Discussion (Fgd) Guide: Female-Headed Households (Translated Luo Version)

Introduction: Lapeny man guru mege matye wegi odi kengi me niang kit kwayi kwo ma gi kato iye ma lube ki kukukuku ikin lee tim ki dano me niang adwogi kukukuku man ikom yoo kwo gi.

Dear Sir/Madam,

Nyinga Aloyo Innocent Jessie, atye latin kwan me Gulu University ma tye ka kwano Master's degree in Conflict and Transformation Studies. Atye ka timo kikweda “ Ngino matut kukukuku I kin lee tim ki dano ikit me yoo kwo” I Nwoya district. Iya bibedo yom dok abi pwoyo matek ka itwero gamo lapeny magi malube ki kikweda man. Lagam ma meggi abi gwoko calo mung dok abi tiyo kwede pi tic me kwan keken

1.Living with Wildlife & Impacts:

- Bedo kacel ki lee tim yelo kwo ma megwu me nino ducu ki kero ma megwu me gwoko odi wu nining?
- Kit kwayi peki ang'o ma wu nongo calo adwogi me kukukuku ikin lee tim ki dano madok pat tutwale pi wun calo mon/mege? (Eni kwako bedo labongo lwor'o awano onyo lwor'o)

2. Coping Strategies:

- Kit yoo ang'o ma wutiyo kwede me gwoke dok me gwoko jami ma megwu ki ikom lee tim? Ber gi tye nining?
- Kit kony ang'o ma wunongo ki woko me dok ikom kukukuku ikin lee tim ki dano? Kony man onyago nyinge/ obedo ber?

3. Support Needs & Solutions:

- Kit kwayi kony ang'o ma omito ki bot lutela makany, NGOs, onyo dul mo keken wek dok ikom kukukuku maber?
- Itam ma megwu, ngo ma kelo kukukuku ikin lee tim ki dano dok yoo mani ma waromo dok kwede ikom kukukuku man kun nongo waneno ni ber bedo ki yoo kwo pa mege tye maber?

4. Looking Forward:

- Genwu kacel ki dwon wu pi anyim ma lube ki bedo maber ikin lee tim ki dano I Nwoya distrik tutwale pi mege tye ngo?

Apwoyo Matek!

Appendix 3.4 Focus Group Discussion (FGD) Guide - General Community

This convened diverse stakeholders – community leaders, spiritual leaders, opinion leaders and community members. This methodology facilitates in-depth discussions and a comprehensive understanding of both communities’ perspectives.

Introduction

Dear Sir/Madam,

My name is **Aloyo Innocent Jessie**, I am a student at Gulu University pursuing a Master’s degree in Conflict Transformation Studies. I am conducting my study research titled “**Exploring Human-Wildlife Conflicts through Livelihoods Framework in Nwoya District**”. I would be grateful if you could answer the following questions related to this study. Your responses will be kept confidential and used solely for academic purposes.

1. Living with Wildlife

- Describe your daily experiences living with wildlife in Nwoya District. How has this impacted your traditional ways of life?
- Which wildlife species pose the greatest threats to your livelihoods and safety?

2. Impacts on Livelihoods

- How have human-wildlife conflicts affected your ability to earn a living? (Includes farming, livestock, etc.)
- Provide specific examples of how wildlife has damaged your property or resources.
- How have these conflicts impacted your household’s food security and income?
- Do women and men in your community face different challenges due to wildlife conflicts?

3. Coping Strategies

- What methods do you use to protect yourselves and your livelihoods from wildlife? (Includes traditional knowledge)

- How effective are these methods? What are their limitations?
- What support have you received from government or NGOs in managing HWC? How helpful was it?

4. Perceptions and Solutions

- What are the main causes of human-wildlife conflict in Nwoya District?
- How can we achieve a better balance between human needs and wildlife conservation?
- What are your ideal solutions for managing human-wildlife conflict effectively?

5. Looking Ahead

- What are your hopes for the future regarding human-wildlife coexistence in Nwoya District?
- Is there anything else you would like to share about your experiences or concerns?

Thank you for your participation!

Appendix 3.4.1 Focus Group Discussion (FGD) Guide: General Community (Translated Version- Luo)

Introduction: Lapeny man guru lwak mapatpat- Lutela pa lwak, lutela dini, lumitam,ki dano me kebedo meno. Kit yoo man me nongo ngec miyo karec me nywako matut dok me niang matut tam pa lwak me kabedo ma kikweda time iye.

Dear Sir/Madam,

Nyinga Aloyo Innocent Jessie, atye latin kwan me Gulu University ma tye ka kwano Master's degree in Conflict and Transformation Studies. Atye ka timo kikweda “ Ngino matut kukukuku I kin lee tim ki dano ikit me yoo kwo” I Nwoya district. Iya bibedo yom dok abi pwoyo matek ka itwero gamo lapeny magi malube ki kikweda man. Lagam ma meggi abi gwoko calo mung dok abi tiyo kwede pi tic me kwan keken

1. Living with Wildlife

- Itwero tito kit kwo ma megwu me nino acel acel ikit me kwo ki lee tim I Nwoya distrik?
Kit kwo man oyelo kit me kwo tekwaro ma megwu nining?
- Kit lee tim mani ma dong kelo ayela onyo lworu ikwo wu dok ikit me yoo kwo wu?

2. Impacts on Livelihoods

- Kukukuku ikin lee tim ki dano obalo kero wu me nongo gin kwo nining?
- Wutwero tito kit ma lee tim obalo kwede jami ma megwu onyo jami pa lwak tiyo kwede?
- Kukukuku man oyelo lok me cam ki lim I ot ma megwu nining?
- Mon ki coo I kabedo wu kany tye ki peki ma patpat ma lube ki adwogi me kukukuku ikin lee tim ki dano?

3. Coping Strategies

- Kit yoo mani ma otiyo kwede me gwoke ki me gwoke jami me yoo kwo wu ki ikom lee tim? (loko bene ikom ngec me tekwaro)

- Kwayi yoo magi tiyo maber? Goro gi tye nining?
- Kit kwayi kony ang ma onongo ki bot garmente onyo NGO ikit me dok ikom kukukuku ikin lee tim ki dano? Konyo?

4. Perceptions and Solutions

- Gin ang ma kelo kukukuku ikin lee tim ki dano I Nwoya distrik?
- Waromo nongo ber pa miti pa dano ki gwoko lee tim nining?
- Yoo mani maber botwu ikit me dok ikom kukukuku ikin lee tim ki dano?

5. Looking Ahead

- Gen-wu pi anyim madok ikom ber bedo ikin lee tim ki dano I Nwoya distrik tye nining?
- Tye gino mo gwoki ma dok wumito nywako kweda ma dok ikit me kwo wu onyo dwon mo?

Thank you for your participation!

Appendix 3.5 Focus Group Discussion (FGD) Guide - Community Action Group

This convenes members of community Action groups engaged in mitigating HWC. This methodology facilitates in-depth discussions and a comprehensive understanding of both communities' perspectives.

Introduction

Dear Sir/Madam,

My name is **Aloyo Innocent Jessie**, I am a student at Gulu University pursuing a Master's degree in Conflict Transformation Studies. I am conducting my study research titled “**Exploring Human-Wildlife Conflicts through Livelihoods Framework in Nwoya District**”. I would be grateful if you could answer the following questions related to this study. Your responses will be kept confidential and used solely for academic purposes.

1. Group Formation & Collaboration

- Describe your community action group's formation, purpose, and how you collaborate with community members to address HWC.

2. Understanding the Conflict

- What are the main types of HWC faced by your community? What are their root causes?
- How have these conflicts evolved over time?

3. Strategies and Actions

- What strategies has your group implemented to manage HWC? What methods have been most effective?
- Describe your partnerships with government agencies or NGOs. How effective were these collaborations?
- Share any success stories resulting from your group's efforts.

4. Challenges and Gaps

- What are the biggest obstacles your group faces in managing HWC?
- What resources or support does your group lack?
- How can research initiatives contribute to your work and the well-being of your community?

5. Looking Ahead

- What are your group's goals and aspirations for the future regarding HWC management?
- What recommendations do you have for policymakers and other stakeholders?
- What kind of support would be most helpful for your group?
- Is there anything else you would like to share?

Thank you for your valuable contribution!

Appendix 3.5.1 Focus Group Discussion (FGD) Guide- Community Action Group (Translated Version – Luo)

Introduction: Lapeny man guru lumemba me Community Action Group. Kit yoo man me nongo ngec miyo karec me nywako matut dok me niang matut tam pa lwak me kabedo ma kikweda time iye.

Dear Sir/Madam,

Nyinga Aloyo Innocent Jessie, atye latin kwan me Gulu University ma tye ka kwano Master's degree in Conflict and Transformation Studies. Atye ka timo kikweda “ Ngino matut kukukuku I kin lee tim ki dano ikit me yoo kwo” I Nwoya district. Iya bibedo yom dok abi pwoyo matek ka itwero gamo lapeny magi malube ki kikweda man. Lagam ma meggi abi gwoko calo mung dok abi tiyo kwede pi tic me kwan keken

1. Group Formation & Collaboration

- Oromi tito kit ma dul ma megwu ni ocake kwede? Tice ki kit ma okube kwede ki lwak me kabedo man ikit me dok ikom kukukuku ikin lee tim ki dano?

2. Understanding the Conflict

- Kit kwayi kukukuku angoma tye ikin lee tim ki dano me kabedo man? Ngo ma kelo gi?
- Kukukuku man omede nining ikin kare mapatpat?

3. Strategies and Actions

- Kit kwayi tic angoma dul ma megwu otimo me dok ikom kukukuku ikin lee tim ki dano?
Yoo mani ma obedo ber makato?
- Oromo tito kit ma wat dok kube ki jang garmente mapatpat onyo NGOs tye kwede? Kube man obedo ber nining?
- Oromo tito kwayi jami mabeco ma otime malube ki adwogi tic pa dul wu?

4. Challenges and Gaps

- Kit lageng onyo peki angoma dul ma megwu nongo ikit me dok ikom kukukuku ikin lee

tim ki dano?

- Kit jami ango me tic onyo kit kony ango ma dul wu pe kwede?
- Yoo mani ma kikweda mapatpat twero medo kero me tic wu ki ber bedo pa lwak me kabedo wu?

5. Looking Ahead

- Neno pa dul wu ki miti wu pi anyim ma lube ki kit me dok ikom kukukuku ikin lee tim ki dano tye ni ngo?
- Kit dwon ango ma wutye kwede pi joo ma moko cik ki dul mukene?
- Kit kony ango ma wu tamo ni room bedo ber pi dul ma megwu ni?
- Tye gino mo ma pud gwok omito nywako kweda?

Thank you for your valuable contribution!

Appendix 3.6 Key Informant Interviews (KIIs) Guide

Key Informant Interviews (KIIs) will provide more comprehensive insights. The researcher will conduct individual discussions with key figures at the district, Sub-county, development Partners, and UWA's level. These include district officials (RDC, LCV, Environment Officer), local leaders (LCIII, LCII, CDOs), opinion leaders (Elders Forum, Cultural leaders), UWA representatives and NGO representatives. Selecting individuals with specialized knowledge facilitates focused exploration of specific topics and enhances the study's understanding of the situation.

Introduction

Dear Sir/Madam,

My name is **Aloyo Innocent Jessie**; I am a student at Gulu University pursuing a Master's degree in Conflict Transformation Studies. I am conducting my study research titled “**Exploring Human-Wildlife Conflicts through Livelihoods Framework in Nwoya District**”. I would be grateful if you could answer the following questions related to this study. Your responses will be kept confidential and used solely for academic purposes.

1: Introduction and Icebreaker Questions

Kindly introduce yourself and share your background and experiences within this community.

2. Background and Role

- Briefly describe your role and experience related to human-wildlife conflicts in Nwoya District. (e.g., government official, NGO representative, community leader, wildlife researcher)
- For how long have you been involved in this area?

3. Understanding the Conflict

- In your experience, what are the main types of human-wildlife conflicts occurring in Nwoya District?
- What factors contribute to these conflicts? (e.g., habitat loss, resource competition, human encroachment)
- How have human-wildlife conflicts changed over time in Nwoya District?

4. Impacts on Livelihoods

- How do human-wildlife conflicts impact the livelihoods of local communities? (e.g., agriculture, livestock herding, tourism)
- Can you share specific examples of how these conflicts affect people's ability to earn a living and ensure food security?
- Are there specific groups or communities that are more affected? Why?
- Are there any social or cultural aspects of human-wildlife conflict that are important to consider?

5. Existing Management Strategies

- What are the current approaches used to manage human-wildlife conflicts in Nwoya District? (e.g., government interventions, community initiatives)
- In your opinion, how effective are these current strategies?
- Are there any challenges or limitations associated with existing approaches?

6. Seeking Solutions

- Considering the livelihoods framework, what strategies could be implemented to better address human-wildlife conflicts while also supporting sustainable livelihoods?
- Are there any successful examples of conflict management from other regions that could be adapted to Nwoya District?
- What role can different stakeholders (government, communities, NGOs) play in addressing this issue?

7. Additional Thoughts

- Is there anything else you would like to share about your experiences with human-wildlife conflict in Nwoya District?
- Do you have any recommendations for further research or initiatives related to this topic?

Thank you for your time

Appendix 3.6.1 Key Informant Interviews (KIIs) Guide (Translated Version –Luo)

Introduction: Key Informant Interviews (KIIs) obi miyo kare me nongo ngec matut ki neno pa dano ma tye ki ngec ma dok I kom kukukuku ikin lee tim ki dano. Latim kikweda obi nywako tam ki dano ma ki yero ki I distrik, sub-county, bot NGO, ki UWA. Jo magi aye LCV, Enviroment officer, Production Officer,DCDO? Lutela mapiny I subcounty- (LCIII, CDO, Agriculture Officer), jo ma miyo tam (Lutela tekwaro, Joo mutegi), lawang UWA ki NGO. Lok ki joo magi konyo me niang ikom tam ma opera, dok kony kikweda man me niang matut ikom kukukuku man

Dear Sir/Madam,

Nyinga Aloyo Innocent Jessie, atye latin kwan me Gulu University ma tye ka kwano Master’s degree in Conflict and Transformation Studies. Atye ka timo kikweda “ Ngino matut kukukuku I kin lee tim ki dano ikit me yoo kwo” I Nwoya district. Iya bibedo yom dok abi pwoyo matek ka itwero gamo lapeny magi malube ki kikweda man. Lagam ma meggi abi gwoko calo mung dok abi tiyo kwede pi tic me kwan keken

1: Introduction and Icebreaker Questions

Itero tita I ibedo anga, tici ki ngec ma itye kwede I kom kabedo man?

2. Background and Role

- Iromo tita tici ki ngeci ma dok ikom kukukuku ikin lee tim ki dano I Nwoya?
- I bedo I tic man pi kare ma rom mene?

3. Understanding the Conflict

- I nge ma meggi, kit kwayi kukukuku anga ikin lee tim ki dano ma tye ka time I Nwoya districk?
- Gin anga ma weko kukukuku man tye ka time? (lok me kabedo, laro resources, bedo pa dano I kabedo pa lee tim)
- Kukukuku ikin lee tim ki dano oloke I yoo ma nining I Nwoya distrik?

4. Impacts on Livelihoods

- Kukukuku ikin lee tim ki dano balo kit me kwo pa lwak me kabedo man iyoo ma nining?(ka waneno iyoo me pur, gwoke lee)
- Itwero lok ikom kit ma kukukuku man dwoko kwede kero pa dano me nongo gin kwo ki me weko cam obed tye muromo pi kare ducu?
- Tye gwok dul mo onyo lwak ma peko man dok diyo gi kato? Pingo?

- Tye gwok kit jami mogo makwako lwak onyo tekwaro ma dok ikom kukukuku ikin lee tim ki dano ma pigi tego ma omyera ki tam pire?

5. Existing Management Strategies

- Kwayi yoo ango ma kit ye ka tic kwede ikare ni me dok ikom kukukuku ikin lee tim ki dano I Nwoya distrik? (pa garmente, lutedero)
- I tam ma megii, ber pa yoo magi mapatpat ma gitye ka tic kwedgi ikare ni tye?
- Tye gwok peki onyo angenga- genga malube ki yoo mapatpat ma kit ye ka tic gwedgi ikare ni?

6. Seeking Solutions

- Ma lube ki lok me yenyo yoo kwo, kit kwayo yoo ango ma ki room tic kwede me dok ikom kukukuku ikin lee tim ki dano kun nongo konyo lok me ilo rwom meneno ni yoo me kwo tye kamede?
- Tye gwok labol mogo mabeco ma dok I kit me jo cobu kukukuku I kin lee tim ki dano ma aa I kabedo mukene ma nwoya distrik room kwanyo me tic kewde?
- Kit kwayi tic ango ma dul mapatpat(garmente, lwak me kabedo acel acel, NGOs) ma gi room timo me dok ikom lok man?

7. Additional Thoughts

- Tye gwok tamo ma imito nywako ma lube ki kit kwo ma ikato ki iye ma dok ikom kukukuku ikin lee tim ki dano I Nwoya distrik?
- Itye gwok ki tamo ma dok ikom kikweda I anyim onyo tic mo ma lube ki kin ma wanywako?

Appendix 4: Observation Checklist

Study: Exploring Human–Wildlife Conflicts through the Livelihoods Framework in Nwoya district

Date: _____

Village: _____

Parish: _____

Sub-county: Lii Sub-county

Observer: _____

Observation Item	Observed (✓/✗)	Remarks
Evidence of crop damage by wildlife		
Type(s) of crops damaged		
Estimated extent of crop damage		
Livestock injuries or predation		
Damaged livestock enclosures (kraals)		
Wildlife footprints, dung, or feeding signs		
Presence of elephants or other wildlife nearby		
Wildlife access routes/corridors identified		
Trenches constructed around farms		
Electric fence or wire fence present		
Beehive fences installed		
Chili barriers or deterrents used		
Watchtowers/platforms for guarding crops		
Farmers actively guarding fields		
Use of drums, whistles, fire, or other scare devices		
Community warning or reporting system available		
Evidence of damaged houses or property		
Availability of alternative livelihood activities		
Visible environmental degradation (deforestation, bush burning, encroachment)		
Other observations relevant to HWC		
General Comments		

Photographic Evidence (if applicable)

Photograph 1: _____

Photograph 2: _____

GPS Coordinates (Optional): _____

Appendix 5: Work Plan (Proposal Development, Data Collection And Reporting)

S/No	Timeframe	Activities
1	August-December 2024	Proposal Development
2	January –March 2025	Securing necessary research approval
3		Recruit the research team and conduct training
4	April 2025	Conduct Pilot study
5	May- June 2025	Begin data collection activities, including surveys, interviews, and on-site observations.
6		Start data entry and analysis.
7		Prepare preliminary findings and insights.
8		Presentation of draft report
9	July-December 2025	Final Report Writing
10	January - February 2026	Report Approval and Submission for examination
11	July- September 2026	Report Dissemination to different stakeholders

Appendix 6: Research Budget

Study Title: Exploring Human - Wildlife Conflicts Through The Livelihoods Framework In Nwoya District

S/No	Particulars	Amount (Ugx)	Narrative
1	Materials & Supplies		
1.1	Stationeries	683,000	Flipcharts- 45,000; Marker pens- 15,000; Notebooks-15,000; pens-8000; Printing/Photocopy (600,000)
1.2	Equipment	200,000	Audio Recorder (150,000) /Dry cells (50,000)
	Sub-Total	883,000	
2	Travels		
2.1	Hire of Bikes/Fuel	800,000	Facilitate transport and movement during data collection (2 bikes- 500,000; fuel -300,000)
2.2	RAs' Accommodation	540,000	Accommodation during data collection within Lii sub county and 1 night in Orom subcounty – Kitgum district
	Sub-total	1,340,000	
3	Participants' Compensation		
3	Refreshments (Soda, biscuits)	378,000	Refreshments for 126 participants during FGDs (Each participant cost at 3000 Uganda shillings)
	Households (Time Compensation)	540,000	Compensation for 54 participants. Each participant cost at 10,000 Uganda shillings
	KIIs (Time Compensation)	160,000	Time compensation for 08 participants. Each participant is compensated 20,000 Uganda shillings each
	Sub-total	1,078,000	
4	Administration		
4.1	(GUREC clearance)	100,000	Administrative Clearence
4.2	Hire of RAs	600,000	Salary for services offered for 3 RAs at 20,000 Uganda shillings for 10 days
5	Results Dissemination	1,500,000	Cost during seminars
6	Contingency	500,000	Meeting unforeseen costs
	Sub-total	2,700,000	
	GRANDTOTAL	6,001,000	

Appendix 7: GUREC Approval Letter

GULU UNIVERSITY
P.O. Box 166, Gulu (U)
Website: www.gu.ac.ug
Email: gurec@gu.ac.ug
Tel: +256 471 432 096
Fax: +256 471 432 913
Mob: +256 772 964 491
+256 776 812 147

RESEARCH ETHICS COMMITTEE

To: Innocent Aloyo 17/03/2025

+256 774002070

Type: Initial Review

Re: GUREC-2025-1202: Exploring Human - Wildlife Conflicts through the Livelihoods Framework in Nwoya District

I am pleased to inform you that at the **120th** convened meeting on **27/11/2024**, the Gulu University REC meeting voted to approve the above referenced application.
Approval of the research is for the period of **17/03/2025** to **17/03/2026**.

As Principal Investigator of the research, you are responsible for fulfilling the following requirements of approval:

1. All co-investigators must be kept informed of the status of the research.
2. Changes, amendments, and addenda to the protocol or the consent form must be submitted to the REC for re-review and approval **prior** to the activation of the changes.
3. Reports of unanticipated problems involving risks to participants or any new information which could change the risk benefit: ratio must be submitted to the REC.
4. Only approved consent forms are to be used in the enrollment of participants. All consent forms signed by participants and/or witnesses should be retained on file. The REC may conduct audits of all study records, and consent documentation may be part of such audits.
5. Continuing review application must be submitted to the REC **eight weeks** prior to the expiration date of **17/03/2026** in order to continue the study beyond the approved period. Failure to submit a continuing review application in a timely fashion may result in suspension or termination of the study.
6. The REC application number assigned to the research should be cited in any correspondence with the REC of record.
7. You are required to register the research protocol with the Uganda National Council for Science and Technology (UNCST) for final clearance to undertake the study in Uganda.

The following is the list of all documents approved in this application by Gulu University REC:

GULU UNIVERSITY
RESEARCH ETHICS COMMITTEE
APPROVED UNTIL
★ **17 MAR 2026** ★
FACULTY OF MEDICINE
P. O. Box 166, Gulu

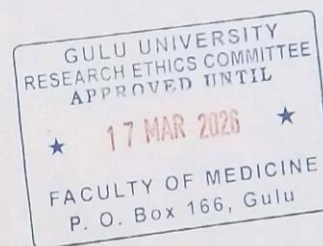
No.	Document Title	Language	Version Number	Version Date
1	Document Review Checklist	English	Version 2.0	2025-03-12
2	Data collection tools	Luo	Version 2.0	2025-03-12
3	Translated consent	Luo	Version 2.0	2025-03-12
4	Informed Consent forms	English	Version 2.0	2025-03-12
5	COVID-19 & EBOLA risk management plan	English	Version 2.0	2025-03-12
6	Community Engagement plan	English	Version 2.0	2025-03-12
7	Data collection tools	English	Version 2.0	2025-03-12
8	Protocol	English	Version 2.0	2025-03-12

Yours Sincerely

Julaina A. Obika

Julaina A. Obika (PhD)

For: Gulu University REC



Appendix 8: Nwoya District Local Government Administrative Clearance Letter



Communication Route
Tel: 0392176298
Website: www.nwoya.go.ug
E-Mail: nwoya2010district@gmail.com
Incase of any correspondence
on this subject matter
Please quote: CR/220/1



NWOYA DISTRICT LOCAL GOVERNMENT
Office of the Chief Administrative Officer
P. O. Box 1033, Gulu
UGANDA

Date: 30th May, 2025

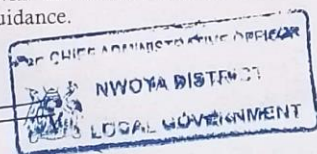
Ms. Aloyo Innocent Jessie
Gulu University
Institute of Peace and Strategic Studies
P.O Box 166,
Gulu, Kampala

RE: PERMISSION TO CARRY OUT RESEARCH STUDY IN LII SUB COUNTY - NWOYA DISTRICT

The above subject matter refers.

Reference is made to your request dated 12th May, 2025, requesting for administrative clearance to carryout research in Nwoya District entitled ("EXPLORING THE COMPLEX RELATIONSHIP BETWEEN HUMAN LIVELIHOODS AND WILDLIFE CONFLICTS").

This therefore, is to inform you that permission is hereby granted for you to carry out your research, please liaise with the Senior Assistant Chief Administrative Officer – Lii Sub County for necessary guidance.

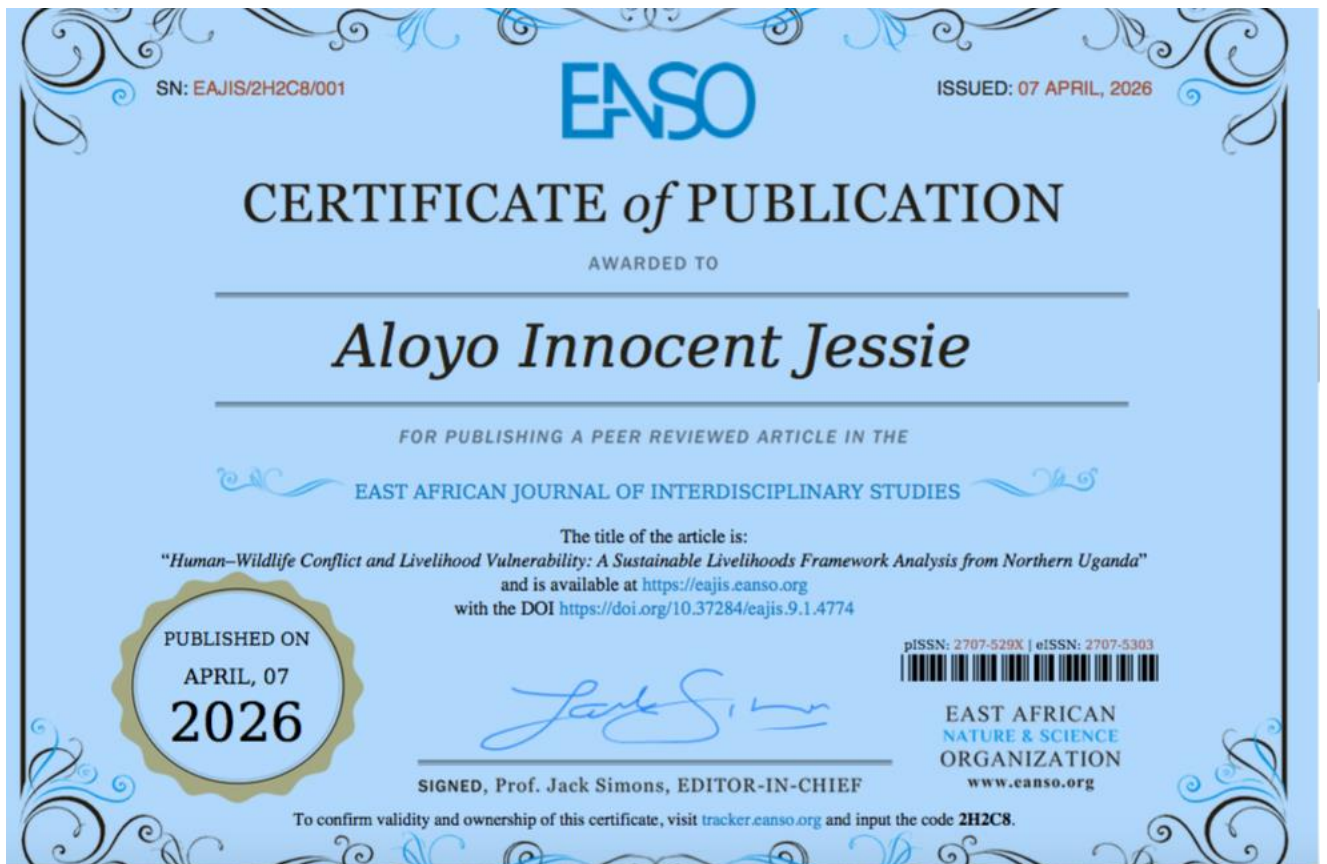


Akubonabona Yusuf
For: CHIEF ADMINISTRATIVE OFFICER/ NWOYA

CC: District Chairperson, Nwoya
CC: Resident District Commissioner, Nwoya
CC: Head of Finance, Nwoya
CC: Principal Human Resource Officer, Nwoya
CC: LC III Chairperson, Lii SC
CC: Senior Assistant Chief Administrative Officer, Lii SC
CC: File

MISSION: To empower the community in their various capacities to enjoy qualitative life.
VISION: A transformed and prosperous community by 2040.
GOAL: A stable, healthy and productive society.

Appendix 9: Article Publication Certificate



Appendix 10: Plagiarism Check Report

GULU

P.O. Box 166
Gulu, Uganda



UNIVERSITY

Tel: +256-471-32924

Fax: +256-471343095

Emails: info@gu.ac.ug

URL: www.gu.ac.ug

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PLAGIARISM CHECK

Declaration for Originality Form

This form must be completed and signed for all scholarly work produced.

Name: _____ **ALOYO INNOCENT JESSIE (Ms.)** _____

Personal File No. (staff) Reg. (student). _____ **REG. 22/U/0913/MAC/PS** _____

Faculty/Institute: _____ **INSTITUTE OF PEACE AND STRATEGIC STUDIES, GULU UNIVERSITY**

Department: _____ **PEACE AND SECURITY STUDIES** _____

Title and bibliographic description of the work

**EXPLORING HUMAN WILDLIFE CONFLICTS THROUGH THE LIVELIHOODS FRAMEWORK
IN NWOYA DISTRICT**

Declaration.

1. I understand what plagiarism is and I am aware of the University policy on this regard,
2. I declare that this ... **Dissertation** ... (Proposal, thesis, essay, assignment, paper, report etc.) is my original work and has not been submitted elsewhere for examination, award of a degree or publication. Where other people's work or my work has been used, this has been properly acknowledged and referenced in accordance with Gulu University requirements,
3. I have not sought or used the services of any professional agency to produce this work,
4. I have not allowed, and shall not allow anyone to copy my work with the intention of passing it off as his/her own,
5. I understand that any false claim of this work shall result in disciplinary action in accordance with University Policy on Plagiarism.

Signature _____ **AJO** _____

Date **23/2/2026** _____

Originality Report

The article/thesis/document titled above have been subjected to plagiarism check and the level was found to be 09% (percent) this is classified as:

- ☒ Minor
☐ Moderate
☐ Serious

Yours sincerely,

[Signature]

Dr. Clement Luta

University Librarian



Appendix 11: Photo Gallery



Caption: Photos taken during a Community Action Group(CAG)-L and Female headed households(FHH)- R Focus Group Discussions in Ceke village, Lii sub-county. One Research Assistant facilitated in Luo (Acholi), another took notes, while I recorded and noted key points. **Photo Credit:** Ms. Aloyo Innocent Jessie (Principal Investigator), 5 May 2025.



Caption: Photo of bonfire sites taken from two gardens of two households viewed during a transect walk in Ceke Village, Lii Sub-county. The bonfire is lit in the night to scare away elephants and stop them from coming into the garden. **Photo Credit:** Ms. Aloyo Innocent Jessie (Principal Investigator), 5 May 2025.



Caption: Photos of fruit tree (jack fruit)-L, Soya garden (C) and Bananas plantation (R) destroyed by elephants viewed during a transect walk in Ceke Village, Lii Sub-county. **Photo Credit:** Ms. Aloyo Innocent Jessie (Principal Investigator and Nwoya District CDO), 5 May 2025.