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Human–Wildlife Conflict and Livelihood Vulnerability: A Sustainable Livelihoods Framework Analysis from Northern Uganda

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Introduction: Human–wildlife conflict (HWC) remains a major barrier to sustainable development in conservation-adjacent landscapes across Sub-Saharan Africa, where frequent wildlife incursions threaten livelihoods, food security, and social cohesion. **In northern Uganda,** communities in Lii Subcounty, Nwoya District, face repeated crop destruction, livestock predation, and human injuries, creating complex socioeconomic, environmental, and governance challenges. This study examines the multidimensional impacts of HWC on household livelihoods using the Sustainable Livelihoods Framework (SLF) to capture the interplay of economic, human, social, natural, and physical capital. **Methodology:** A mixed-methods design was employed, combining 126 household surveys, 6 key informant interviews, and 5 focus group discussions involving 40 participants. Quantitative data measured the scale of economic losses, food insecurity, and livelihood disruptions, while qualitative narratives provided insights into lived experiences, coping strategies, and social dynamics of HWC. **Findings:** Findings indicate that HWC constitutes a multidimensional shock undermining all five livelihood capitals. Economically, households reported annual losses averaging UGX 5,823,636, with over 57.7% experiencing severe food insecurity. Human capital is diminished through injuries, fatigue, and psychological distress associated with constant farm protection. Women and children bear a disproportionate burden, facing increased labour demands, heightened exposure to risks, and rising incidences of gender-based violence. Social cohesion is eroded by fear, mistrust, and reduced cooperation, while educational outcomes are disrupted as children miss school to guard crops or due to insecurity. **Conclusion and Recommendations:** The study concludes that unresolved HWC represents a multidimensional development and governance crisis that undermines progress toward SDGs 1 (No Poverty), 2 (Zero Hunger), 5 (Gender Equality), and 15 (Life on Land). Policy recommendations emphasise integrated, participatory, and gender-responsive strategies: strengthening community-based wildlife management, establishing early warning systems, implementing compensation or insurance schemes for livelihood losses, and aligning conservation policy with local development priorities through adaptive co-management frameworks. These measures are essential to mitigate risks, enhance resilience, and promote sustainable

human–wildlife coexistence, ensuring that both conservation objectives and community livelihoods are supported in the long term.

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INTRODUCTION

Human–wildlife conflict (HWC) has become one of the most pressing challenges at the intersection of conservation and rural livelihoods. Across Africa, Asia, and the Americas, expanding human populations, agricultural intensification, and infrastructure development have increased interactions between people and wildlife. These interactions frequently result in crop destruction, livestock predation, property damage, and, in some cases, human injury or death, undermining household welfare and weakening local support for conservation initiatives (Nyhus, 2016; International Union for Conservation of Nature [IUCN], 2020). HWC is thus not merely an ecological issue but a multidimensional socio-economic and governance problem with direct implications for human well-being.

In Sub-Saharan Africa, and particularly northern Uganda, HWC remains a persistent challenge to sustainable development. Communities in Nwoya District, including Lii Subcounty, experience frequent incursions by elephants and other large mammals, creating complex socio-ecological and

governance pressures. While Uganda has policies aimed at mitigating HWC, such as revenue-sharing mechanisms and wildlife management frameworks, their practical effectiveness at the household level remains uneven. Limited benefit-sharing, weak policy enforcement, and competing land-use pressures, including oil exploration, exacerbate household vulnerability, often forcing communities to rely on ad hoc coping strategies. These conditions raise critical questions about equity, resilience, and sustainable human–wildlife coexistence.

Despite these pressures, empirical research examining HWC through the lens of household livelihoods is limited. Most studies emphasise ecological or conservation perspectives while neglecting the multidimensional socioeconomic, human, and gendered impacts of HWC on rural communities (Nyhus, 2016). This knowledge gap hinders the development of integrated interventions capable of simultaneously promoting livelihood security, social cohesion, and biodiversity conservation. Situating HWC within broader livelihood systems and governance frameworks provides critical insights for designing participatory, context-specific strategies that

enhance resilience, support sustainable livelihoods, and foster coexistence between humans and wildlife in high-risk conservation landscapes (IUCN, 2020).

Human–Wildlife Conflict in Uganda’s Protected Area Context

Uganda is endowed with rich biodiversity and a network of protected areas managed by the Uganda Wildlife Authority (UWA). However, high rural population densities around parks intensify human–wildlife interactions. Communities bordering Queen Elizabeth National Park, Bwindi Impenetrable National Park, Mgahinga Gorilla National Park, Kidepo Valley National Park and Murchison Falls National Park frequently report crop raiding by elephants, buffalo, gorillas and baboons, as well as livestock predation by lions and leopards. These incidents contribute to food insecurity and income instability in predominantly subsistence-based economies (Saferworld, 2021).

In response, Uganda implements a revenue-sharing policy under which 20% of park entry fees are allocated to neighbouring communities for development projects (UWA, 2022). The policy aims to offset conservation-related costs and strengthen community support for protected areas. However, the effectiveness and visibility of these benefits vary significantly across districts.

Differential Visibility of Benefit-Sharing: Bwindi and Nwoya Compared

Around Bwindi Impenetrable National Park, high-value gorilla tourism generates substantial revenue through premium trekking permits. Revenue-sharing funds have supported schools, health facilities, water projects and livelihood enterprises (Tumusiime & Vedeld, 2015). In addition, tourism provides direct employment opportunities for local residents as guides, porters, lodge staff and craft sellers. These visible economic linkages strengthen the perceived relationship between conservation and household welfare. Research indicates that where communities directly benefit from tourism,

conservation legitimacy improves (Tumusiime & Vedeld, 2015).

In contrast, Nwoya District, bordering Murchison Falls National Park, experiences a different pattern. Although revenue sharing exists, funds are typically disbursed as conditional grants to district local governments rather than direct household transfers (UWA, 2022). The benefits are often invested in community-level infrastructure rather than compensating households that incur crop or livestock losses. Consequently, families facing recurrent crop raiding by elephants, buffalo and bush pigs may not perceive tangible returns corresponding to their losses. This reduces the visibility of conservation benefits at the household level.

Moreover, tourism in Murchison Falls National Park is more diversified and less concentrated around a single high-value attraction like gorilla trekking. The per-visitor revenue is therefore comparatively lower, and the economic multiplier effects at the local level are less pronounced. Where benefit-sharing mechanisms lack transparency or strong participatory structures, perceptions of inequity may emerge (Tumusiime & Vedeld, 2015). This situation contributes to frustration among households that bear conservation costs without proportional livelihood gains.

Conservation, Livelihoods, and Oil Development in Nwoya

Nwoya District presents an additional layer of complexity due to oil exploration activities under the Tilenga Project in the Albertine Graben. The project is led by Total Energies Exploration & Production Uganda in partnership with Uganda National Oil Company and China National Offshore Oil Corporation (Total Energies, 2023). Oil infrastructure development within and near the conservation area has altered land use patterns and disrupted wildlife corridors, intensifying human–wildlife encounters (Okello et al., 2014).

Unlike Bwindi, where tourism is the dominant economic driver reinforcing conservation–livelihood linkages, Nwoya represents a convergence of conservation pressures, subsistence agriculture, and extractive industry expansion. Households rely heavily on rain-fed agriculture, making them highly vulnerable to seasonal crop losses. Recurrent HWC reduces natural and financial capital, weakens resilience and may push households toward alternative coping strategies such as charcoal production or fishing, which can further strain natural resources.

Framing the Study

These overlapping dynamics make Nwoya a critical case for examining HWC through a livelihoods lens. The goal of this study was to understand the dynamics of HWC within the livelihoods framework in Nwoya District. Specifically, the study sought to: (i) assess the extent and nature of HWC in Nwoya District, (ii) investigate its impacts on household livelihoods, (iii) analyse existing livelihood strategies employed by households to cope with and mitigate HWC, and (iv) evaluate the effectiveness of policies, regulations, and management strategies aimed at mitigating HWC.

By situating HWC within broader livelihood systems and governance structures, this study contributes to ongoing debates on aligning conservation policies with rural development goals. It emphasises the need for integrated, context-specific, and participatory approaches that enhance resilience, support sustainable livelihoods, and promote coexistence between humans and wildlife in high-risk conservation landscapes.

METHODOLOGY

Study Design

The study adopted a mixed methods research design, specifically the Convergent Parallel Design, to capture the complex interrelationships between wildlife-related challenges and human livelihoods. This design entails the concurrent collection of both

quantitative and qualitative data, followed by separate analyses and subsequent integration of the findings to produce a comprehensive interpretation. The quantitative component, such as structured household surveys, generated measurable evidence on the extent, frequency and economic impacts of Human–Wildlife Conflicts (HWC). In contrast, the qualitative component through focus group discussions, key informant interviews and case narratives provided deeper insights into perceptions, coping strategies, social dynamics and policy responses within affected communities.

Philosophically, this design is grounded in the pragmatic paradigm, which emphasises methodological flexibility and the pursuit of practical solutions to real-world problems (Creswell & Plano Clark, 2018). Pragmatism rejects the rigid boundaries between positivism (quantitative) and interpretivism (qualitative), instead advocating for an integrative approach that prioritises the research question over methodological purity. In this study, pragmatism allows the researcher to blend statistical trends with community narratives, thereby ensuring that the findings are both empirically grounded and contextually meaningful.

The design's suitability is further reinforced by its alignment with the Sustainable Livelihood Framework (SLF), which examines how multiple livelihood capitals; natural, financial, social, physical and human, interact within vulnerability contexts such as HWC. By merging quantitative breadth with qualitative depth, the convergent design enhances validity through triangulation, promotes complementarity of insights and supports policy-relevant conclusions. Thus, it provides a holistic, epistemologically coherent and methodologically robust framework for understanding and addressing HWC in Nwoya District.

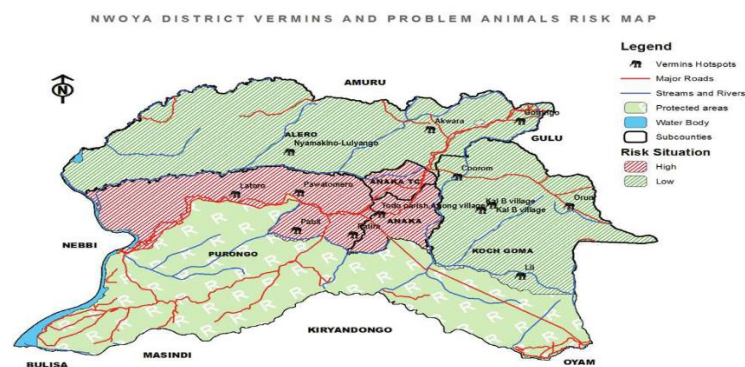
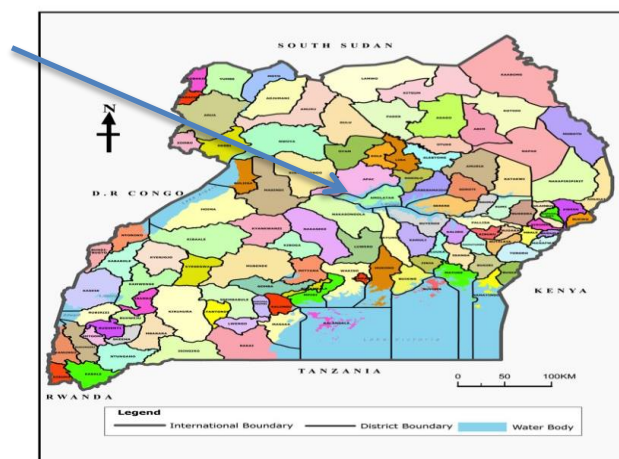
Study Area

The study was conducted in Lii Sub-county, Nwoya district, northern Uganda. Lii sub-county covering

485.6 km² with 39,601 residents (density 81.55/km²), directly borders Murchison Falls National Park (MFNP) in northwestern Uganda. MFNP, established in 1952, is Uganda's largest conservation area at 3,840 km², with 43% (431,539.94 acres) located in Nwoya District. This park shares a 107 km boundary with local communities, impacting an estimated 86,000 people across five sub-counties, including Lii. The sub-county has a total population of 39,601, comprising 19,473 males and 20,128 females, resulting in a population density of 81.55 individuals per square kilometre. The population's age distribution includes 16,325 individuals aged 0-14 years, 22,589

aged 15-64 years, and 687 aged 65 years and above (UBOS, 2024). This study specifically focused on four sub-villages of Celpeke, Te-Obee, Mwodo, and Langele, all in Ceke Village, Langele Parish, one of Lii's four parishes adjacent to MFNP, highlighting the close proximity of residents to park wildlife like elephants and buffaloes. These Villages – Celpeke, Te-Obee, Mwodo and Langele were chosen due to their proximity to the park, high frequency of elephant crop raiding, making them hotspots for the conflicts. The distance of households from the nearest protected area ranged from 0.5 Km to 8 Km, indicating a close proximity that likely contributes to the high incidence of wildlife conflicts.

Map of Uganda Showing Nwoya District and Map of Nwoya District Showing the Location of Lii Sub-County



Adopted from the District report on the Disaster Situation in Nwoya District presented by the District CDO – Nwoya District, 2022

Economic Activities

Agriculture dominates Lii Sub-county's economy, a common trait across the Acholi sub-region, as confirmed by the Uganda Bureau of Statistics (UBOS, 2024). The search for fertile land largely drives population influx into Lii, solidifying farming's fundamental role in local livelihoods (UBOS, 2024), reflecting national trends where about 33.1% of households rely on subsistence activities (UBOS, 2024). Lii also sees farming primarily for household consumption, with surplus sold for income. Major crops grown include groundnuts, maize, simsim, soyabeans, millet, cassava, beans, sweet potatoes, bananas, fruit trees-pawpaw, jackfruit (fwene), mangoes, as well as the sale of honey and finished goods, conducted at markets across the sub-county.

Data Collection Methods

Data collection in this study was guided by the convergent parallel mixed methods design, which required simultaneous collection of both quantitative and qualitative data to provide a comprehensive understanding of Human–Wildlife Conflicts (HWC) and their impacts on household livelihoods. Multiple instruments were employed to ensure methodological triangulation, enhance reliability, and capture both statistical trends and contextual realities (Creswell & Plano Clark, 2018). The instruments included structured household questionnaires, key informant interview guides, focus group discussion guides, observation checklists and secondary data review forms.

Data collection involved 126 household interviews, 6 key informant interviews, and 5 focus group discussions (8 participants each- 40), targeting participants through purposive and random sampling to ensure direct experience with HWC. Following ethical clearance from Gulu University and administrative approval from the Office of the Chief Administrative Officer (CAO)- Nwoya, interviews were transcribed and subjected to thematic analysis. This process identified critical

drivers of conflict, including increased wildlife population and human settlement in close proximity to the park. Ethical clearance was obtained from the Gulu University Research Ethics Committee (GUREC) on 17th March 2025 with clearance number GUREC-2025-1202. All participants provided informed consent. Participation was voluntary, and confidentiality was maintained throughout the study.

FINDINGS AND DISCUSSIONS

Economic Loss and Household Livelihood Disruption

Economic loss emerged as one of the most immediate and devastating consequences of Human–Wildlife Conflict (HWC) for households living adjacent to protected areas. In the study villages of Celpeke, Te-Obee, Mwodo and Langele in Lii Sub-county, respondents described repeated incidents in which elephants destroyed entire fields of maize, groundnuts and cassava within a single night. One farmer narrated that he had planted three acres of maize using improved hybrid seed purchased at UGX 17,500 per kilogram, an investment made after selling goats and securing an agricultural loan to raise the required capital. When elephants raided the farm shortly before harvest, the entire crop was flattened. The immediate implication was the loss of both the initial investment in seed and the expected harvest income.

For a subsistence household, this loss goes far beyond a single agricultural season. The destroyed maize would normally serve multiple functions within the household livelihood system. First, it provides food for family consumption for several months, ensuring staple security during the dry season. Second, surplus maize is sold to generate income used to pay school fees, medical bills and agricultural inputs for the next planting season. When elephants destroy the crop, the household loses both food and income simultaneously. In such cases, parents reported withdrawing children from school because they could not afford tuition or

scholastic materials. Some families resorted to casual labour in nearby trading centres or charcoal burning to compensate for the lost income.

Within the Sustainable Livelihoods Framework (SLF), such economic losses represent a severe depletion of financial capital and natural capital, which are foundational for rural household resilience (Scoones, 1998). Nyhus (2016) similarly observes that repeated wildlife-related crop losses can push subsistence farmers into chronic poverty traps, where households continuously invest in agriculture but repeatedly lose their harvests. This cyclical pattern erodes confidence in farming as a viable livelihood strategy and forces households to adopt riskier or environmentally destructive coping mechanisms.

Food Insecurity and Its Implications for Household Survival

Food insecurity has emerged as one of the most immediate and distressing consequences of Human–Wildlife Conflict (HWC) in the study communities surrounding Murchison Falls National Park. Severe food insecurity attributed to human wildlife conflicts (HWCs) as reported by households (57.7%) and key informants (85.7%), with key informants reporting a higher prevalence of severe food insecurity linked to HWCs compared to household respondents. In many households, staple crops such as maize, cassava, beans and groundnuts represent the primary source of food throughout the year. When wildlife, particularly elephants and buffaloes, raid farms and destroy these crops, the immediate outcome is a drastic reduction in household food availability. For families in Lii Sub-county whose livelihoods depend almost entirely on subsistence farming, the destruction of crops means that the food expected to sustain the household for several months is lost within a single night.

The implications of such losses extend far beyond temporary hunger. Several households reported that after repeated crop raids, they were forced to reduce

the number of daily meals from three to one or two. In extreme cases, families survived on one meal a day, borrowed food from neighbours, or relied on casual labour in nearby trading centres in exchange for small quantities of grain or earn small cash. This pattern reflects what researcher Peter J. Nyhus describes as the food security shock associated with human–wildlife conflict, where wildlife damage directly disrupts household consumption patterns and dietary stability.

Food insecurity also has serious health implications. Reduced food intake affects children most severely, often leading to malnutrition, weakened immunity and poor cognitive development. In the long term, persistent nutritional deficits undermine household productivity because weakened individuals are less able to engage in labour-intensive activities such as farming. Within the Sustainable Livelihoods Framework, food insecurity signals a critical erosion of both natural capital, through the destruction of agricultural production and human capital, through declining physical health and labour capacity (Scoones, 1998).

Furthermore, food shortages often force households to sell productive assets such as goats or chickens in order to purchase food. While this strategy may provide temporary relief, it reduces the household's asset base and deepens long-term vulnerability. Research by Steve Redpath and colleagues similarly demonstrates that communities experiencing persistent crop losses frequently enter cycles of asset depletion that make recovery increasingly difficult (Redpath et al., 2013). Therefore, food insecurity resulting from HWC is not merely a short-term crisis but a structural livelihood challenge that undermines household resilience, health, and long-term economic stability.

Human Capital Erosion: Fatalities, Injuries, and Health Consequences

Human–Wildlife Conflict (HWC) in the communities bordering Murchison Falls National Park extends beyond economic losses to directly

threaten human safety and wellbeing. In Lii Sub-county, residents reported multiple incidents of injuries sustained while attempting to chase elephants away from farms during nighttime patrols. Some respondents described being trampled, knocked down or severely injured while guarding crops. Others reported injuries resulting from sudden encounters with buffaloes or elephants while travelling to farms early in the morning or returning home in the evening. Such incidents illustrate how HWC exposes rural populations to constant physical danger.

The consequences of these encounters represent a significant erosion of human capital, which, within the Sustainable Livelihoods Framework, refers to the health, labour capacity, skills, and knowledge that individuals rely on to sustain their livelihoods (Scoones, 1998). When household members are injured during wildlife encounters, their ability to work is reduced, sometimes permanently. For example, respondents explained that individuals who sustained broken limbs or severe injuries were unable to cultivate their fields during the subsequent planting seasons. This reduced labour capacity directly affects household agricultural productivity and income generation. In extreme cases where fatalities occur, households lose their primary breadwinner, leaving widows and children economically vulnerable.

The psychological impact of these risks also contributes to human capital erosion. Farmers reported persistent fear when working in fields located near the park boundary. Children and women, who often collect firewood or fetch water from nearby forests, expressed anxiety about potential wildlife encounters. Research by Dickman Amy demonstrates that fear of wildlife significantly influences rural livelihoods by discouraging agricultural expansion, reducing mobility, and increasing stress among affected communities (Dickman, 2010).

In addition to physical injuries, sleep deprivation caused by nightly crop guarding further weakens

human capital. Many farmers reported spending entire nights in fields beating drums or lighting fires to deter elephants. This practice leads to chronic fatigue, reduced daytime productivity, and deteriorating health. As noted by Peter J. Nyhus, the cumulative physical and psychological toll of HWC can be as damaging to livelihoods as direct economic losses (Nyhus, 2016).

Thus, human capital erosion in HWC-prone communities manifests through injuries, fatalities, chronic fatigue, and persistent fear, all of which weaken household labour capacity and undermine long-term livelihood resilience.

Educational Disruptions and Intergenerational Poverty

Human–Wildlife Conflict (HWC) has profound implications for children’s education and the long-term socioeconomic trajectory of households in Lii Sub-county. Education represents a critical component of human capital within the Sustainable Livelihoods Framework because it equips individuals with the knowledge and skills necessary for livelihood diversification and economic mobility (Scoones, 1998). However, the study findings reveal that repeated wildlife incursions into farmland disrupt this pathway by undermining the ability of households to sustain their children’s schooling.

One of the primary reasons children leave school is the loss of household income following crop destruction. Many parents reported that school fees, uniforms and scholastic materials are typically financed through the sale of surplus agricultural produce, particularly maize, beans and groundnuts. When elephants destroy these crops, households lose the financial resources required to support children’s education. Consequently, some families temporarily withdraw their children from school until the next harvest season, while others permanently discontinue schooling due to prolonged economic hardship.

Fear of wildlife encounters also contributes significantly to educational disruptions. In several villages, children travel long distances on foot to reach the nearest schools. Community members explained that elephants frequently move between the park and surrounding farmland during early morning and evening hours, the same periods when children travel to and from school. Parents, therefore, fear that children may encounter elephants along these routes. As a result, some families prevent younger children from attending school during periods of heightened wildlife activity. Studies by Peter J. Nyhus indicate that fear of wildlife attacks can significantly restrict access to education in communities bordering protected areas (Nyhus, 2016).

The district authorities and conservation agencies have attempted to address this challenge through community sensitisation programs and the construction of elephant deterrent trenches and electric fencing along the park boundary. While these interventions reduce some risks, their coverage remains limited, leaving many villages exposed to continued threats.

When children drop out of school due to economic or safety concerns, the consequences extend beyond the immediate household. Limited education restricts future employment opportunities, forcing the next generation to remain dependent on subsistence agriculture in the same high-risk environment. Research by Rosaleen Duffy highlights that such cycles of disrupted education and livelihood insecurity contribute to intergenerational poverty, where children inherit the same structural vulnerabilities faced by their parents (Duffy, 2014).

Therefore, educational disruptions caused by HWC represent a long-term livelihood challenge, weakening human capital formation and perpetuating poverty across generations in communities bordering protected areas.

Gendered Burdens and Social Fragmentation (SDG 5)

Human–Wildlife Conflict (HWC) also produces significant gendered impacts, disproportionately affecting women and children within rural households. In Lii Sub-county, the study findings reveal that women increasingly shoulder a “triple burden” of responsibilities: maintaining agricultural production, managing domestic duties such as childcare and food preparation and participating in night patrols to guard crops from wildlife. Women bore disproportionate burdens through a “triple role” of farming, caregiving and night patrols. 57.1% of key informants and 11.5% of households reported increased gender-based violence (GBV) linked to food stress and night guarding duties. This pattern reflects broader gender dynamics in rural agrarian societies where women are primary caregivers and food producers. When wildlife repeatedly destroys crops, the burden of ensuring household food security often falls most heavily on women.

Women reported that during periods of intense elephant activity, they spend nights in fields alongside men attempting to scare away wildlife by lighting fires, beating drums, or shouting. This practice exposes them to significant physical danger, including the risk of elephant attacks. The situation also increases vulnerability to gender-based violence and harassment during nocturnal patrols. Research by Amy Dickman shows that women in wildlife-conflict zones often face higher levels of insecurity because they must continue performing livelihood activities despite the risks posed by wildlife encounters (Dickman, 2010).

Beyond physical risks, HWC also contributes to domestic tensions and social fragmentation within households and communities. The study documented that food shortages and declining agricultural productivity generate stress among household members, sometimes leading to arguments, blame, and increased cases of gender-based violence. One male participant explained:

“It is a must. I quarrel with my wife every night. She accuses me of using night patrols as an excuse to go meet other women”.

Women may be accused of failing to protect crops or manage household resources effectively, despite having limited control over the wildlife threats themselves. In some cases, the prolonged absence of men during nighttime patrols or migration for wage labour further destabilises family structures.

Within the framework of Sustainable Development Goal 5 (Gender Equality), these findings highlight how environmental shocks such as HWC can exacerbate existing gender inequalities. As noted by Melissa Leach, environmental pressures often intensify unequal gender roles by increasing women’s unpaid labour and reducing their opportunities for economic empowerment (Leach, 2016).

Social fragmentation also occurs at the community level. Competition for limited resources, disputes over access to safer farmland, and dissatisfaction with wildlife management policies may weaken trust between communities and conservation authorities. In Lii Sub-county, most participants reported dissatisfaction with the management strategies and response by the government and other stakeholders, like Non-governmental Organisations. According to Steve Redpath, unresolved conservation conflicts frequently undermine cooperation between stakeholders, making long-term coexistence more difficult (Redpath et al., 2013).

Thus, the gendered impacts of HWC extend beyond labour burdens to include heightened vulnerability, domestic tensions and weakened social cohesion. Addressing these challenges requires gender-sensitive conservation policies that recognise women’s roles in agriculture, protect them from violence and promote equitable participation in decision-making related to wildlife management.

Policy Implications for Household Livelihoods and Resilience

The findings from this study carry significant implications for conservation policy, rural development planning and livelihood resilience in communities bordering protected areas. The experiences reported by households in Lii Sub-county demonstrate that Human–Wildlife Conflict (HWC) is not merely an environmental management issue but a complex socio-economic challenge requiring integrated policy responses. Addressing these challenges demands interventions that simultaneously strengthen livelihood assets while reducing wildlife-related risks.

One major implication concerns the need for more responsive compensation and risk-sharing mechanisms. Many households reported losing large portions of their harvests, including acres of maize cultivated using purchased seeds and fertilisers. For example, maize seeds sold at approximately UGX 17,500 per kilogram represent a substantial investment for subsistence farmers. When elephants destroy entire fields, the financial losses extend beyond the value of the crop to include the costs of land preparation, labour, seeds and fertilisers. Without compensation or insurance mechanisms, affected households absorb these losses entirely, weakening their financial capital. Scholars such as Peter J. Nyhus emphasise that fair and timely compensation systems can improve community tolerance toward wildlife and strengthen conservation outcomes (Nyhus, 2016).

A second policy implication relates to preventive infrastructure and early-warning systems. Households repeatedly reported guarding crops at night because of the absence or inadequacy of physical deterrents such as electric fences, trenches or wildlife corridors. Expanding preventive infrastructure around high-conflict zones could significantly reduce the need for risky night patrols and protect agricultural production. Research by Steve Redpath suggests that proactive conflict mitigation measures are more effective and less costly than reactive responses after wildlife damage has already occurred (Redpath et al., 2013).

Another important implication concerns livelihood diversification programs. The heavy reliance on subsistence agriculture makes households highly vulnerable to wildlife-related crop destruction. Promoting alternative income-generating activities such as beekeeping, poultry farming and eco-tourism enterprises could reduce dependence on high-risk crops cultivated near park boundaries. Such strategies have proven effective in other conservation landscapes where diversified livelihoods increase resilience to environmental shocks.

The findings also highlight the need for stronger community participation in conservation governance. Some respondents expressed frustration with wildlife management institutions, particularly when crop losses occurred without visible support from authorities. Enhancing community engagement through participatory wildlife monitoring, local wildlife committees and transparent benefit-sharing mechanisms could rebuild trust between communities and conservation agencies.

Finally, the findings emphasise the importance of integrating social protection and mental health support into conservation policies. The psychological stress, sleep deprivation and fear reported by households indicate that HWC affects well-being in ways often overlooked by traditional conservation frameworks. As noted by Amy Dickman, effective conflict management must consider the social and emotional experiences of affected communities in addition to ecological objectives (Dickman, 2010).

Overall, the policy implications of this study underscore the necessity for multi-sectoral interventions that combine conservation management, rural development, gender-sensitive programming and social protection. Only through such integrated approaches can communities build the resilience required to coexist sustainably with wildlife while maintaining stable and secure livelihoods.

Researcher's Personal Reflections: Emotional Journey and Lived Experiences of Participants

Conducting this study in Lii Sub-county was not merely an academic exercise; it was also an emotionally challenging and deeply reflective experience. As the researcher engaged with households that had endured repeated wildlife incursions, the lived realities behind the statistics became strikingly evident. Conversations during household surveys, focus group discussions and key informant interviews revealed the profound human dimension of Human–Wildlife Conflict (HWC), transforming what initially appeared to be environmental incidents into narratives of hardship, resilience, and frustration.

One of the most striking experiences during fieldwork was listening to farmers describe the destruction of crops that represented months of labour and financial investment. In several instances, respondents narrated how elephants had destroyed entire fields of maize, groundnuts, and beans in a single night. For families that depend almost entirely on subsistence farming, such losses meant not only the disappearance of expected income but also the disappearance of food that would have sustained the household for several months. Many participants expressed a sense of helplessness when recounting these events, emphasising that despite their efforts to guard farms at night, the strength and unpredictability of elephants often made resistance impossible. Scholars such as Peter J. Nyhus have similarly observed that repeated wildlife losses can produce deep psychological stress and frustration among affected communities (Nyhus, 2016).

The emotional weight of these experiences became particularly evident when discussing the consequences for children's education and household welfare. Several parents shared stories of withdrawing children from school due to financial constraints after crop losses. Others spoke about the constant fear of elephants moving through village paths during early morning and evening hours when

children travel to and from school. These narratives illustrated how wildlife conflict extends far beyond agricultural damage to influence family aspirations, educational opportunities, and community stability.

Field observations also revealed the physical exhaustion associated with nighttime crop guarding. During discussions with farmers, it became clear that staying awake through the night while maintaining daytime farming activities creates severe fatigue and emotional strain. Some respondents described feelings of frustration toward conservation policies that protect wildlife while offering limited immediate support to communities facing recurrent losses. Similar sentiments have been documented by Steve Redpath, who notes that conservation conflicts often arise when communities perceive that the costs of wildlife protection are unevenly distributed (Redpath et al., 2013).

For the researcher, witnessing these lived experiences generated a mixture of empathy, concern, and reflection. It became evident that the debate on wildlife conservation cannot be separated from the realities of rural livelihoods. The field experience reinforced the understanding that sustainable conservation requires not only ecological management but also policies that genuinely address the economic and social vulnerabilities of communities living alongside wildlife.

Ultimately, the research process highlighted the resilience of rural households despite repeated shocks. Many participants demonstrated remarkable determination to continue farming and supporting their families despite persistent wildlife threats. Their stories underscored the urgency of developing policies that recognise and support the everyday struggles of communities striving to coexist with wildlife.

Comprehensive Conclusion: Government Position and Theoretical Contribution to Sustainable Livelihoods and Resilience

The findings of this study demonstrate that Human–Wildlife Conflict (HWC) in Lii Sub-county is not simply an environmental challenge but a multidimensional livelihood crisis affecting food security, household income, education, social cohesion and psychological well-being. The empirical evidence presented throughout the study shows that recurring wildlife incursions, particularly by elephants, buffaloes and other large mammals from Murchison Falls National Park, significantly undermine the stability of rural livelihoods. Crop destruction, livestock losses and the need for constant vigilance against wildlife attacks impose both visible and hidden costs on households that depend primarily on subsistence agriculture.

At the household level, the cumulative effects of crop losses, food shortages, sleep deprivation and social stress reveal how HWC erodes all five livelihood capitals identified within the Sustainable Livelihoods Framework. Natural capital is compromised through reduced access to productive farmland near park boundaries. Financial capital declines as households lose expected harvests and income opportunities. Human capital is weakened by hunger, fatigue, injuries and psychological distress. Physical capital is damaged when wildlife destroys granaries, fencing and crops, while social capital erodes as tensions grow within households and communities over the management of wildlife-related risks. These interconnected losses highlight the complex pathways through which environmental shocks translate into long-term livelihood vulnerability.

From a governance perspective, the Government of Uganda recognises the seriousness of HWC and has implemented several policy mechanisms through institutions such as the Uganda Wildlife Authority. These mechanisms include revenue-sharing schemes, wildlife damage compensation policies and community-based conservation programs aimed at improving relations between protected areas and surrounding communities. For example,

Uganda's revenue-sharing policy allocates a portion of tourism revenues generated from national parks to neighbouring communities for local development projects such as schools, health centres, and water systems. While these initiatives represent important steps toward equitable conservation governance, the findings of this study suggest that their impact at the household level remains limited, particularly in areas where tourism revenues are relatively low or where compensation mechanisms are slow and difficult to access.

The government has also begun implementing preventive strategies such as the construction of trenches, electric fencing and community wildlife response teams in high-conflict zones. However, the study findings indicate that these interventions have not yet reached all vulnerable communities or achieved sufficient coverage to effectively prevent wildlife incursions. Strengthening these initiatives will require improved coordination between wildlife authorities, district governments and local communities to ensure that mitigation measures are both accessible and contextually appropriate.

Beyond its policy implications, this study contributes to broader theoretical debates on sustainable livelihoods and resilience in conservation landscapes. Traditional conservation models often prioritise ecological protection without fully considering the socio-economic realities of communities living near protected areas. By applying the Sustainable Livelihoods Framework, this study demonstrates that effective wildlife conservation must simultaneously protect biodiversity while strengthening the resilience of local livelihood systems. Scholars such as Peter J. Nyhus argue that sustainable coexistence between humans and wildlife requires integrated approaches that balance ecological objectives with social justice and economic security (Nyhus, 2016).

Furthermore, the study advances theoretical discussions on livelihood resilience by illustrating how repeated wildlife shocks create cycles of vulnerability that can trap households in chronic

poverty. When families lose crops, withdraw children from school or sell productive assets to survive, the long-term consequences extend far beyond a single agricultural season. This dynamic aligns with the argument of Ian Scoones that resilience in rural livelihoods depends on the ability of households to absorb shocks, adapt to changing conditions, and transform livelihood strategies when necessary (Scoones, 2015).

In conclusion, the evidence from Lii Sub-county emphasises the urgent need for integrated conservation and development approaches that strengthen household resilience while reducing wildlife-related risks. Rural communities will only achieve sustainable coexistence between people and wildlife when conservation policies address the full spectrum of livelihood impacts experienced. By highlighting the interconnected relationships between wildlife conflict, household welfare, and livelihood sustainability, this study contributes valuable insights to ongoing academic and policy debates on conservation, development, and resilience in protected area landscapes.

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Researcher Contribution

Researcher. Aloyo Innocent Jessie: Conceptualisation, data collection, analysis, interpretation, and manuscript drafting.

Co-researcher. Dr. Stella Laloyo Apecu: Supervision, theoretical guidance, review, and academic mentorship.

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Ethical Considerations

Ethical clearance was obtained from the Gulu University Research Ethics Committee (GUREC) in March 2025 with clearance number GUREC-2025-1202. All participants provided informed consent. Participation was voluntary, and confidentiality was maintained throughout the study.

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