THE ROLE OF ENVIRONMENTAL DEGRADATION IN CONFLICT ESCALATION IN MAU FOREST COMPLEX IN NAROK COUNTY, KENYA

BY

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DECLARATION

I declare that this research thesis is my work with all derivations from the reviewed literature duly acknowledged and at no time has it been dispensed for academic award in any university.

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DEDICATION

I dedicate this work to my wife Stella Kerubo and daughters for being there for me throughout the entire period of writing this thesis. May the Almighty God bless you.

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ABBREVIATIONS AND ACRONYMS

AMAP	Arctic Monitoring and Assessment Programme
ASAL	Arid and Semi-Arid Land
AU	African Union
CAFF	Conservation of Arctic Flora and Fauna
CFC	Chlorofluorocarbons
CLRTAP	Convention of Long-Range Transboundary Air Pollution
CO	Carbon Dioxide
DEAT	Department of Affairs Tourism
DGEFC	Division of Global Environmental Facility Coordination
ECE	Economic Policy for Europe
FAO	Food Agricultural Organization
GOK	Government of Kenya
GLASOD	Global Assessment of Soil Degradation
IGAD	Intergovernmental Authority on Development
IPCC	International Panel on Climate Change
IUCN	International Union of Conservation of Nature
KDF	Kenya Defence Forces
KEL	Kenya Environmental Chemical Control
KFS	Kenya Forest Reserves
LADA	Land Degradation Assessment
MRWUA	Mara River Water Users Association
NBI	Nations Building Initiatives
NEMA	National Environment Management Authority
NEAT	National Environment Action Plan
NEPAD	New Partnership for African Development
RUAS	Water Resources Users Association
SACCO	Saving and Credit Corporation
SDG	Sustainable Development Goal
SO2	Sulphur Dioxide
UNCHE	United Nations Conference Human Environment
UN	United Nations

UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency International Development
WCED	World Commission on Environment and Development

OPERATIONAL DEFINITION OF TERMS

Conflict: This refers to a serious disagreement of two parties the Maasai and the non-Maasai although convinced they are incompatible, about resources of land at Mau Forest Complex.

Climate change: This refers to long-term shifts in temperatures and weather patterns, such shifts can be natural, due to changes in the sun's activity at Mau Forest Complex.

Deforestation: it is the purposeful clearing of forested land, to create space for agriculture and animal grazing and to obtain wood for fuel, manufacturing, and construction at Mau Forest Complex Nyayo tea zone.

Environmental conflicts: This refers to anything that can rapidly reduce the standard of living of state citizens or restrict the options available to individuals and organisations within the state itself for example, water quality, air quality and management aspects. In this study, environmental conflicts will be evaluated using direct and indirect conflicts.

Environmental degradation: it is the deterioration of the environment through depletion of resources such as air, water, and soil. In this study, environmental degradation will be assessed using deforestation, water, air, soil degradation and water diversion indicators, the disappearing of River Mara.

Encroaching: This refers to the placement of fill, the removal of vegetation, or an alteration of Topography into such natural areas of Mau Forest Complex

Environmental Management: This refers to a set of processes and practices that enable an organization to reduce its environmental impacts and increase its operating efficiency at Mau Forest Complex.

Forest conservation: This refers to the practice of planting and maintaining forested areas for the benefit and sustainability of future generations at Mau Forest Complex.

Forest land: This refers to land covered with forest or reserved for the growth of forests of the Mau Forest Complex.

Greenhouse effects: These refer to a process that occurs when gases in Earth's atmosphere trap the sun's heat. This process makes earth much warmer than it would be without an atmosphere at Mau Forest Complex.

Internally displaced people: This refers to persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of order to avoid the effects of armed a Mau Forest Complex

Kyoto protocol: This refers to the operationalization of the United Nations Framework Convention on Climate Change by committing industrialized countries and economies in transition to limit and reduce greenhouse gases (GHG) emissions in accordance with agreed individual targets.

Land degradation: This refers the deterioration or loss of the productive capacity of the soil for present and future at Mau Forest Complex.

Mau Forest Complex: This refers to a forest in the Rift valley of Kenya which is said to be the largest indigenous mountain forest in East Africa.

Pastoralist communities: This refers to a society; a social group of pastoralists, whose way of life is based on pastoralism, and is typically nomadic. Daily life is cantered upon the herding of animals.

Militia group: This refers to Rebel group in Kenya for land like Mungiki and Saboat Land Defence Force at Mau Forest Complex.

Pastoral cycle: This refers to four dimensions such as: **insertion, social analysis, theological re- flection, and pastoral planning**. All four of these circulate around experience and are concerned for justice at Mau Forest Complex.

Reforestation: This refers to replant trees on the land denuded by cutting or fire.

Social transformation: This refers to essential vehicle to liberate the oppressed and make the society devoid of inequalities of Ogiek People in Mau Forest.

Water Towers: This refers to a major catchment for 13 major rivers namely Amalo, Ewaso-Ng'iro, Makalia, Mara, Molo, Mumberes, Naishi, Nderit, Njoro, Nzoia, Nyando, Sondu and Yala Originate from Mau Forest Complex.

ABSTRACT

The Mau Forest Complex is a critical ecosystem as it plays a vital role in providing various ecological benefits, including water regulation, carbon sequestration, and habitat preservation. However, unsustainable practices such as illegal logging, encroachment, and agriculture have resulted in significant degradation. - The Mau Forest Complex is Kenya's important water tower. Important rivers that flow into Lake Victoria such as River Nile, the longest one in the world originate there. The study aims to establish the role of environmental degradation in conflict escalation in Mau Forest complex in Narok County, using a mixed methods approach of quantitative and qualitative design. The study was guided by for objectives; 1) To Establish the level of Environmental Degradation in the Mau Forest Complex. 2) To Identify the factors contributing to the Conflict escalations in the Mau Forest Complex 3)To establish the relationship between environmental degradation and Conflict Escalation in the Mau Forest Complex and 4) To recommend the necessary measures to mitigate the environmental degradation in Conflict escalation in the Mau Forest Complex in Narok County , Kenya A sample of 134 was drawn from the target population of 65,300 of the seven (7) blocks of the Mau Forest Complex, the Maasai Mau 21, Eastern Mau 14, Western Mau 17, Southern Mau 18, Southwest Mau 13, Trans Mara Region 25, and Mau Narok 26. Qualitative approach used focused group discussion and key informants. The 134 participants were picked through convenience sampling. Quantitative techniques used of questionnaires and data analysis. The clusters, snowball and purposive sampling were also used to select the participants of the study. Data was analysed using Statistical Package for the Social Sciences (SPSS) version 21 through the descriptive and thematic analysis. Descriptive statistics generated in the form of frequencies and percentages used to summarize quantitative data and was presented in the tables of frequency distribution. The study concluded that there were measures to mitigate the effects of degradation including sustainable environmental practices and conflict reduction.

CHAPTER 1: INTRODUCTION

1.0 Background to the Study

1.1 Introduction

This chapter presents the researcher insertion, research problem, background to the study, scope and delimitation, the study limitations, and the summary of the chapter. Environmental degradation is the destruction, damaging and reducing the natural world in which human beings and plants live (Sapar & Syafruddin, 2021). The history of environmental degradation can be traced back to various factors throughout human history (Prem et al., 2020). The industrial revolution, which started in the late 18th century and resulted in enormous breakthroughs in manufacturing, transportation, and technology is one important component (Muok et al., 2021). Despites these advantages, industrial revolution resulted in more pollution, deforestation, and resource extraction due to increased demand for natural resources like coal, land for settlement and agriculture and lumber (Anil. & Arnab 2019).

In africa, the environmental degradation was introduced during colonialism period, to get raw materials for their industries the European colonists exploited natural resources without much considering the long-term effects on the environment (Ide et al., 2021). Environmental pressures have increased recently due to urbanization, consumerism, and population expansion. Rising material consumption and the use of plastics have resulted in pollution and complicated waste management (Väyrynen, 2022). Furthermore, continued burning fossil fuels for energy results in the release of greenhouse gases, which exacerbates global warming (Anser et al., 2021).

Moreover, Environmental degradation increasingly affects many communities globally and threatens the sustainability of the global economy and fragile societies (Ajala, 2020). In addition, over the last 30 years more than 200 million people have been affected by violent conflict and have lived in some way in post-conflict environments because of environmental related causes (McGuirk & Nunn, 2024; Muluken, 2020). According to Fuchs (2023) explains that human disturbance primarily drives environmental degradation, the scholar explains that specifically, factors such as overpopulation, air and water pollution, deforestation, global warming, unsustainable agricultural and fishing practices, overconsumption, misdistribution of

wealth, the rise of corporations, the Third World debt crisis, and militarization and wars contribute significantly (Furlong, 2020; Ibrahim et al., 2020).

In addition, Sapar and Syafruddin (2021) explains that while these causes individually lead to degradation, they are intricately connected and combine with devastating ramifications to the environment. Overpopulation exacerbates the demand for consumer goods, which in turn leads to over-exploitation and misuse of environmental resources through unsustainable economic activities such as burning of charcoal, illegal logging, and agriculture or deforestation (Chelang'a & Chesire, 2020). Urbanization further compounds these effects, not only causing habitat destruction but also altering the environment itself, as seen in deforestation and fragmentation, leading to the degradation and loss of forest habitats. Transportation, through the combustion of fossil fuels, significantly contributes to degraded air quality and climate change, in addition to noise and water pollution, thereby impacting ecosystems through various direct and indirect interactions (Anser et al., 2021).

According to Marchetti and Tocci (2020) human disturbance drives multifaceted environmental challenges, underpinning significant threats and heightened risks such as increased poverty, overcrowding, famine, weather extremes, species loss, acute and chronic medical illnesses, war, human rights abuses, and an increasingly unstable global situation (Kweyu et al., 2019; McGuirk & Nunn, 2024; Pereira et al., 2022). Furthermore, Wassie (2020) illustrate that unsustainable practices, including agriculture, human settlement, and logging for economic and political gain, account for the degradation of the Mau Forest. These practices began during the colonial government and have persisted under successive post-independence regimes. Over the last decades, approximately 25% of the Mau Forest Complex has been degraded due to excision and encroachment. In 1963, about 10% of the country was covered with forest. However, this decreased to 6% towards the 2020s due to charcoal burning, timber production, expansion of agriculture, and unregulated logging (Rawtani et al., 2022).

Efforts to rejuvenate the Mau Forest Complex in Kenya have encountered notable hurdles. The United Kingdom's allocation of approximately $2 million for the Kenya Indigenous Forest Conservation (KIFCON) initiative from 1991 to 1994 was not sustained. Governance deficiencies, corruption, and inadequate enforcement of environmental regulations have allowed illegal activities like logging and land encroachment to persist (Kweyu et al., 2019). Additionally, insufficient engagement with local communities, complex land tenure issues,

limited institutional capacity, political interference, and ecological challenges have further impeded progress. Addressing these obstacles demands a collaborative, long-term approach that integrates environmental conservation with sustainable development goals (Fuchs, 2023).

The first attempts at resettlement at Mau Forest complex was met with suspicion and protests by forest dwellers, the Ogiek community (Kweyu et al., 2019). They considered themselves the legitimate beneficiaries of such settlements and protested the inclusion individuals from outside their community. There was also the question of the exact number of the beneficiaries. Whereas KIFCON estimated the total number at 1,800 families, the provincial commission's figure stood at 3500 people of which only 200 belonged to the Ogiek community. Other beneficiaries included state actors such as former KANU government officers, who were fraudulently compensated and in turn politicized the process (Ogiek Welfare Council, 2004). These irregularities led to public uproar and investigations were instituted by the successive government, the National Rainbow Coalition (NARK) when it came to power in 2003. Settlement schemes started in Kiptagich in 1996 and increased from 3500 the number of families to 9,000 by the end of KIFCON's phase (Chelang'a & Chesire, 2020).

In early September 2019, the Environment Cabinet Secretary issued a report listing 1,029 original landowners who had received 14,000 hectares of forest land (Marchetti & Tocci, 2020). The report revealed that nearly 7,000 hectares were sold to new owners, and land allocations and divisions continued until late 2009. The government further attempted to plant 1.8 billion trees nationwide within the year to increase forest cover to 10%. In the case of the Mau Forest Complex, it initiated evictions to create room for this activity. It buttressed its efforts in 2008 instituted a 24km buffer zone between the forest and human settlements to deal with the imminent threat of ecological degradation. Coupled with ongoing evictions, the government issued a stern 60-day ultimatum for the inhabitants of the forest boundaries to relocate. Following the elapse of 60-day period, various villages, ranches, and settlements on the forest land have been dispersed completing the transition by the close of 2019 (Oduor, 2022). Despite these efforts, historical political rifts have resurfaced, particularly regarding the contentious issue of resettlement (Sapar & Syafruddin, 2021).

1.2 Insertion

In 2009, the researcher first encountered Mau Forest while serving as a security agent in the National Police Service Commission. Throughout Kenyan history, the absence of checks and balances, public monitoring, and transparent allocation processes allowed those in power to influence land access through settlement schemes at Mau Forest Complex. This led to favoritism towards supporters, friends, and relatives, with settlements often expanding beyond original borders, contributing to Kenya's status as one of the African countries with the highest land inequality globally (Wildlife and Conflicts in Kenya, 2020). An example is the Ogiek Settlement scheme, now a locus of land accumulation and patronage politics, resulting in exclusion, conflict, and environmental degradation (Wildlife and Conflicts in Kenya, 2020).

The challenges persist in Kenya's elections due to the lack of a democratic institutional order in the ecological landscape. Contentious issues include evictions and efforts to delineate Mau's boundaries to identify legal settlers. The negotiations to save the forest became entangled in political maneuvering before the previous election in 2022. Reforestation efforts for Mau Forest were initially intertwined with social, economic, political forces, and power patronage (Report of the Prime Minister's Task Force on the Conservation of the Mau Forest Complex, March 2009).

1.3 Problem Statement

In Narok County, Kenya, the Mau Forest Complex faces a significant challenge of– environmental degradation. Human activities such as deforestation, illegal logging, agricultural expansion, and urbanization are negatively impacting the once thriving and diverse ecosystem. Degradation not only harms the environment, but also contributes to conflict escalation among the communities' dependent on it (Muiruri, 2016). This research aims to examine the role of environmental degradation in conflict escalation in Mau Forest Complex in Narok county, Kenya. Factors such as the depletion of natural resources, heightened competition for land, and socioeconomic repercussions on local communities were scrutinized to uncover the complex dynamics at play.

Additionally, the roles of various stakeholders, including local communities, state actors and non-state actors in either exacerbating or mitigating the environmental conflicts were explored. The objective gained a comprehensive understanding of these dynamics and provided practical

insights into the development of effective and sustainable management strategies and policies. (Chikoto, Chitopota, 2018).

Studies addressing environmental degradation and conflict escalation in the Mau Forest Complex in Narok County have focused on the interplay between resource scarcity and community conflicts (Kweyu, 2022; Chaudhry, 2021). Researchers have examined the political economy of forest degradation, highlighting the role of pastoral communities and government policies (Muok et al., 2021). However, these studies often overlook the complex socio-cultural dynamics and local governance structures, leading to inadequate conflict resolution strategies (Wando, 2023). The failure to incorporate community-based approaches and sustainable livelihood options has hindered effective solutions (Koech & Iteyo, 2023).

Much emphasis has been paid to the connection between resource shortage, war, and environmental degradation in conflict escalation. The' resource wars' argument, on the other hand, has become a symbol of the link between the environment degradation in conflict escalation. The conceptual complexities of how to mitigate environmental degradation in conflict escalation in Mau Forest Complex resource-related risks have been the subject of numerous studies. Experiential research on the results of actions related to environmental degradation in conflict escalation is still lacking. The study was necessary since there is a lack of specific academic empirical literature demonstrating the relevance of the Kenya Forest Service (KFS) in this area of inquiry of environmental degradation in conflict escalation.

1.4 Research Objectives

1.4.1 Main Objective of the Study

The general objective of the study aimed to establish the contribution of environmental degradation in conflict escalation in the Mau Forest complex in Narok County, Kenya.

1.4.2 Specific Objectives of the Study

The specific objectives were to:

1. To establish the level of Environmental Degradation in the Mau Forest Complex.
2. To Identify the factors contributing to the Conflict escalations in the Mau Forest Complex

3. To establish the relationship between environmental degradation and Conflict Escalation in the Mau Forest Complex.
4. To recommend the necessary measures to mitigate the environmental degradation in Conflict escalation in the Mau Forest Complex in Narok County, Kenya.

1.4.3 Research Questions

1. To what extent has the Mau Forest Complex environment been degraded?
2. What are the factors contributing to the Conflict Escalation in the Mau Forest Complex?
3. What is the relationship between Environmental Degradation and Conflict in the Mau Forest Complex?
4. What are the possible mitigation measures against the Environmental Degradation in Escalation of Conflicts in the Mau Forest Complex in Kenya?

1.5 Justification of the Study

The study underscores the importance of addressing threats and risks associated with environmental degradation such as resource-based conflict. Particularly crucial for developing nations, the adoption of effective strategies and regulations for environmental conservation is imperative to combat issues like heat waves and global warming. Degradation, a significant environmental concern and serious hazard, necessitates careful management of the Mau woods to ensure regional stability. Recognizing the interconnectedness of environmental degradation in conflict escalation and social systems is paramount for developing mitigation and adaptation strategies that are effective. This knowledge guided sustainable resource management practices, promoting resilience and reducing the likelihood of conflicts.

Despite on-going studies on degradation and its connection to conflict by individuals and international organizations like the United Nations (UN), the risks and threats stemming from the Mau, persisted to for Kenya and its East African neighbours. This investigation into novel concepts in environmental conflict aimed to conduct a systemic analysis and identified gaps in the existing literature. By doing so, it seeks to contribute valuable insights that can address the on-going challenges and enhance our understanding of the complex dynamics between environmental degradation and conflict escalation.

1.6 Significance of the Study

The findings of this research should influence the environmental and socio-economic fabric of the Mau Forest Complex in Narok County, Kenya, emphasizing the critical importance of biodiversity preservation. As a crucial water catchment area for Kenya, the Mau Forest Complex serves as a sanctuary for diverse ecosystems and a refuge for numerous wildlife species. The severe threat posed by environmental degradation, including processes such as deforestation and soil erosion, underscores the significance of this study in informing conservation efforts and strategies aimed at safeguarding this invaluable ecosystem (Ndegwa, 2019).

The intricate relationship between environmental degradation in conflict escalation and disruptions to local livelihoods was a focal point of the research study. The consequences of the degraded environment, such as diminished agricultural productivity and compromised access to clean water, increased the vulnerability of communities' dependent on the resources. By providing insights into the socio-economic impacts of environment degradation, the study hopes to inform the development of sustainable livelihood strategies for affected communities and underscores the need for targeted interventions to mitigate adverse effects (Lambin, 2007)

1.7 Scope and Delimitation of the Study

The study was conducted in Narok, Kenya, within the frame work of establishing the role of environmental degradation in conflict escalation in Mau Forest Complex in Narok County, Kenya. The participants for the study consisted of men and women living in Narok County aged 18 years and above. The participants included all the agencies involved in forest conservation namely: KWS, KFS, the residents of Narok, local leaders and religious leaders. The Data collection instruments questionnaires were not restricted in the opinion and views of the respondents of Narok County, but generalised to the other areas surrounding Narok county for example Transmara forest.

1.8 Limitations of the Study

The research study investigated the role of environmental degradation in conflict escalation in Mau Forest Complex, in Narok County, Kenya. The researcher being an employee of Kenya National Police Service, was faced with a challenge of conflict of interest in the exercise of data collection. Secondly Ogiek (Dorobo) are secretive and they don't allow researcher to

access their social or personal standing life. The issue was addressed by, the researcher who recruited the research assistants from the area, the reason behind, the participants have trust to somebody they know and, as a result the Data collection exercises was successful. Thirdly a researcher was to face with a language barrier, the difficulties of some respondents who don't understand English or Kiswahili. The researcher used the translator to address the issue. Fourthly There was to be a challenge of getting permission to collect data. The researcher applied for a leave in advance, and it was approved in good time, which enabled the researcher to address the issue. The researcher finally was to face a logistic issue, whereby the researcher resolved the situation by the use of motorcycles as a means of transport. The researcher was able overcome the challenges stated above and as a result the data collection exercises was successful.

1.9 Chapter Summary

The study's backdrop has been highlighted in this chapter from global, regional and the local perspectives. It also demonstrated the role of environmental degradation in conflict escalations in the Mau Forest Complex. The problem statement, the purpose of the study, the research objectives and the research questions, the justification of the study, significance of the study, the scope of the study, the limitations and delimitations. The next chapter is the literature review on the research topic.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter presents and elaborates the relevant literature to the topic of the research of Role of Environmental Degradation in Conflict Escalation. The explanations are guided by the research objectives. It starts with the review of theories and highlights the positions, strengths, weaknesses, and the applications of each theory in relation to the role of environmental degradation in conflict escalation. The discussions of the existing literature relevant to the study and then followed by study's conceptual framework showing the variables both dependent and independent and their interrelationships. At the end of the chapter the summary is presented based on the literature identifying the knowledge gaps.

2.2 Theoretical Review

The theoretical framework guides the study in the review of the related theories associated with environmental degradation in conflict escalation. The academic review elaborates the direction of research and firmly in the theoretical aspects. The theoretical framework directs research, convincing explanation, and generalizing the outcomes (Shanguhyia, 2021).

The study focuses on the role of environmental degradation in conflict escalation in the Mau Forest Complex in Kenya.

The researcher has applied the Agenda Setting Theory. McCombs and Shaw's (1972) agenda setting theory mainly describes on how well the media may shape or change on public perception on important events. The study previously conducted in Chapel Hill, North Carolina, USA, have contrasted the public's and media's perception on the campaigns of two candidates. Agenda setting theory relies on conveying early campaign on what will be the most important thing to the public following on what will be aired in the news (McCombs, 2015).

The way a media attempted to draw attention to the progress made in forest conservation by examining the strengths and weaknesses of what he called "indigenous" and "exogenous forest." The theory provided recommendations on how each would be used most effectively to spread information about forest conservation and management (Soola, 2019). The theory helps to emphasize the link between environmental degradation and conflict escalation, the media

possess the capacity to mould public perception and steer discussions toward solutions and the prevention of further conflicts.

Another an important theory to this study is the, Realist International Theory of Resource Scarcity and Conflict. It is evident that there are links between the environment and violence, that resources can be used as tools and as strategic goals, the resource imbalances can lead to conflict (Deudney, 2010). The theory helped to incorporate into mainstream security discourse, policy, and relevant emphasis input placed on environmental change as a recipe of conflict as opposed to human security (Collins, 2010).

The two theories therefore helped to connect the three objectives. To Establish the level of Environmental Degradation in the Mau Forest Complex. To Identify the factors contributing to the Conflict Escalations in the Mau Forest Complex. To establish the relationship between environmental degradation and Conflict Escalation in the Mau Forest Complex. And finally to recommend the necessary measures to mitigate the environmental degradation in Conflict escalation in the Mau Forest Complex in Narok County, Kenya.

The media plays a crucial role in shaping public opinion during elections, exerting influence over which issues gain prominence and how they are framed, ultimately guiding voters' focus. By emphasizing the link between environmental degradation and conflict escalation, the media possesses the capacity to mould public perception and steer discussions toward the solutions and the prevention of further conflicts (Severin & Tankard, p. 250). The links between environmental change and violence was significantly influenced by realist international relations theory and mostly focused on resource depletion and interstate conflict (Gleick, 2011). For instance, it is evident that there are links between the environment and violence, that resources can be used as tools and as strategic goals, and that resource imbalances can lead to conflict in the Mau forest complex. This has increased the likelihood of war breaking out between nations that share limited water resources, such as Lake Victoria and Migingo Island (Deudney, 2010).

2.2.1 Agenda Setting Theory

Proposed by McCombs and Shaw in 1972, Agenda Setting Theory highlights the media's role in shaping public and governmental attention by giving prominence to specific issues, thus influencing public perception and policy focus (McCombs & Shaw, 1972). The theory posits

that by consistently covering issues like environmental degradation, media can elevate these concerns in public discourse, potentially prompting legislative action. Within the Mau Forest Complex, media coverage has played a significant role in increasing awareness of deforestation, water shortages, and the impact of environmental degradation on local communities. This theory informs the research variables of public awareness and governmental response to environmental degradation, underlining how media-driven focus can indirectly contribute to both conservation efforts and conflict escalation. By highlighting the urgency of these issues, Agenda Setting Theory provides a pathway for understanding the role of public sentiment and advocacy, which can pressure policymakers to address environmental threats that may otherwise remain overlooked.

However, Agenda Setting Theory has its limitations in explaining direct action or advocacy, as it only enables media to raise awareness without fostering public activism. This restricts its applicability in understanding community-driven conflict management strategies or direct interventions aimed at environmental restoration. Consequently, while Agenda Setting Theory sheds light on how public perception influences policy decisions, it does not fully capture the dynamics of resource competition or state-centered strategies that are critical in addressing conflicts stemming from environmental degradation. This gap necessitates the integration of another theory, Realist International Theory provides a more complete picture of how resource scarcity affects both inter-community and state responses to conflict in the Mau Forest.

2.2.2 Realist International Theory of Resource Scarcity and Conflict

Realist International Theory, rooted in the work of E.H. Carr in the 1930s, argues that competition for scarce resources is a fundamental driver of conflict, particularly among states or communities focused on survival and self-interest (Carr, 1939). This theory, with its basis in the principles of power and self-preservation, suggests that states and communities prioritize security and control over vital resources, especially in environments where such resources are dwindling. Applied to the Mau Forest Complex, Realist Theory offers insights into the variable of resource scarcity, explaining how limited access to resources like water and land exacerbates tensions among local communities, potentially escalating into conflict. This perspective aligns with the research objective of understanding the relationship between environmental degradation and conflict, as resource scarcity in the Mau Forest region intensifies competition among groups, leading to violence and territorial disputes. The theory further aligns with

literature that links environmental change and conflict, suggesting that scarce resources often become focal points of aggression and competition (Gleick, 2011).

While Realist Theory contributes significantly to understanding the role of scarcity in conflict dynamics, its state-centric focus on military and economic power is often critiqued for downplaying the environmental and human security dimensions that are equally critical in contexts like the Mau Forest Complex. This oversight limits its explanatory power for intra-community conflicts, where state actors are not the primary players and where issues extend beyond military concerns to include ecological factors and resource management. The Agenda Setting Theory thus complements Realist Theory by emphasizing the role of public awareness and media influence on environmental policy and conflict resolution, creating a more nuanced understanding of how environmental issues can fuel conflict at both community and state levels.

2.3 Empirical Literature Review

This part examines some important research studies on environmental degradation in conflict escalation. The study is guided by the research objectives and the conceptual structure of the study, (Kweyu, 2022) Oso and Onen, (2011). To point out the literature reviews serve as a vital tool for researchers to delve into the nuanced dimensions of a specific field of study. The researcher organised existing literature into three progressive themes as guided by the research objectives. The themes are to Establish the level of Environmental Degradation, to identify the factors contributing to the Conflict Escalation of Conflict, to Establish the relationship between Environmental Degradation and Conflict escalations and finally to recommend the necessary measures to mitigate the Environmental Degradation in Conflict escalation (Borona, 2017). Each theme was measured using the relevant indicators which helped the researcher to understand more about the concern problem. Before proceeding to the role of environmental degradation in conflict escalation. It is important to give a brief overview of the origins of Mau Forest Complex.

2.4 An Overview of the Drivers of Environmental Degradation

With a surface area of over 400,000 hectares and at an average altitude of 2500 metres above sea level, the Mau Forest Complex is the largest in Kenya. The Forest is the source of at least

twelve major rivers, which flow into and sustain the fragile ecosystems in lakes Victoria, Nakuru, Bogoria, Naivasha, Natron, Elementaita and Turkana (Chaudhry, 2019).

These lakes support a wide range of social and economic activities such as the generation of hydroelectric power, industrial, agricultural and domestic. The complex also supplies several Counties, namely Nakuru, Kericho, Bomet, Narok, Baringo, Keiyo Marakwet and Nandi. It has a population of close to 65,000 people, who depend on wood fuel, medicinal herbs, and supports biodiversity generally for their survival. It is home to the Ogiek people, a hunter and gatherer minority who solely depend on it for food, honey, medicine, shelter and the preservation of their culture (Kweyu., 2015).

Despite its importance, economic and political drivers have led to its degradation and adversely affected the ecosystem. Consequently, the livelihoods of indigenous communities such as the Ogiek, who depend on it have been disrupted. This has led to a national outcry to preserve the forest for the sake of biodiversity and future generations (Mbugua, 2011). Moreover, encroachments on the complex adversely affected social pillars of the economy such as agriculture, animal husbandry and tourism. For example, the tourism sector has suffered setbacks after rivers such as the Mara, which are centres for wildlife, dried up following unsustainable agricultural practices leading to desertification (Western & Nightingale, 2013; Ndegwa, 2019).

Further to that, the failure of the post-colonial governments to adequately address unemployment and landlessness led to the invasion of forest land by individuals and group in search of a livelihood (Shanguhyia, 2021). Thus, squatters accessed woodlands to create a national narrative in post-colonial Kenya. Population growth, underdevelopment, poverty levels, unemployment and many other factors have derived the environmental degradation of the Mau Forest Complex and threatening humanity, it has been argued that the post colonial government failed to adequately address unemployment and landlessness, leading to the expansion of forests in the country.

Ultimately, squatters had access to woodlands to create a national narrative in the post-colonial Kenya (Thuita & Mukhovi, 2020).

The government task force 2009 outcome showed that there were violations, publicly exposed injury, and killing of some Kenyan citizens. This indicates that environmental degradation has been used to perpetuate violent conflicts. It resulted in unlawful labelling of some communities as aliens for instance from central region hence perpetuated the rise of militia groups such as

sabaot land movement (Njogu, 2019). The study revealed that other communities as well politically connected people, for instance the chairman of Narok County Council 1970s and the KANU government had encroached into the forest, there was a cumulative effect which caused a massive deforestation, which not only threatened to disrupt the Ogiek people's livelihoods and culture, but it also affected the water resources, leading to reduced volumes in rivers and boreholes (Mbugua, 2011).

2.5 The Mau Forest

Following the destruction of the Mau Forest Complex, a task force was formed by the government in 2009, to investigate the damage and recommended conservation measures. The task force report showed that the negotiations to save the forest was unsuccessful due to the preparation of 2022 general election, which turned the Mau evictions into a political issue (Ogiek welfare council, 2014).

Inhabitants of Mau Forest in Narok County were forced to leave their homes because of deforestation. The government issued a 60-day notice to the people living illegally in the forest to vacate, by the end of 2019 (Chweya, 2020). A similar activity a decade ago almost led to a split of government, with one side seemingly demanded for forceful evictions without immediate and adequate compensation, and the other group also demanded for the compensation. The savannahs and grasslands are undergoing through overgrazing and charcoal burning. (Recommendations from a report of the Prime Minister's Task Force on the protection of the Mau Forest Complex, March 2009) This human mismanagement of the environment causes cyclical experiences of natural calamities including drought and floods. The researcher was convinced that the findings helped in understanding the relationship between environmental degradation in conflict escalations and its effects in the society (Borona, 2017).

2.5.1 Forest resources depletion

The 2009 government task force investigations had revealed that massive unplanned settlements, erroneous forest land distribution, and illegal logging have all had impact on the Mau Forest Complex (MFC). Over the past 15 years, severe encroachment and the degazettement of forest reserves had destroyed around 25% of the MFC. Forest plantations (which make up 10% of the Mau Forest), subsistence and commercial crop farming, and

unregulated logging concessions have also had an impact on some parts of the MFC (Chaudhry, 2019).

The MFC's ecological services assist a number of industries, including agriculture and tourism. According to (Wamukota & Muna, 2021), the MFC contributions to the tea and tourism industries sectors, yearly market value of the goods and services generated exceeds Ksh20 billion (US$229 million). According to the study, additional MFC damage had drastically lowered the river flows and lake levels in Kenya and resulted in an environmental catastrophe (Glover & Luukkanen, 2013). Growing public concern and attention had been drawn to the MFC's rate and degree of degradation. The government of Kenya is interested in, and had made the restoration of the MFC as a top priority. The politicization of the removal of encroachers from a number of forest blocks in the southern MFC highlights the value of the ecosystem and the breadth of the conflicting interests at played (Chelang'a & Chesire, 2020)

2.5.2 Origin of environmental conflict

Throughout history, environmental conflicts have evolved globally due to various factors, each creating distinct challenges across regions and periods (Kumar, 2012). During the colonial era (16th–20th centuries), significant environmental degradation occurred as European powers exploited natural resources to enhance their economic gains. Colonial policies often led to widespread deforestation, land degradation, and displacement of indigenous communities. Resulting conflicts centered on land and resource rights, as seen in the rubber boom in the Amazon basin and disputes over land ownership in African colonial territories (Kweyu, 2015).

The Industrial Revolution of the 18th and 19th centuries further escalated environmental degradation and social conflicts. Rapid technological advancements and urbanization led industries to expand, often at the cost of severe pollution, land-use conflicts, and displacement of local communities. Consequently, disputes arose over labor rights, pollution, and the repurposing of land for industrial development. This era marked the beginning of labor movements and environmental activism, underscoring the interconnectedness of social and environmental justice issues (Langat, 2022).

Moving into the 20th century and the present day, conflicts over scarce resources, such as water, energy, and arable land, have intensified. Key examples include the Arab-Israeli conflict over water rights in the Jordan River basin, the Niger Delta conflict over oil extraction, and

disputes over freshwater in drought-prone areas (Koech & Iteyo, 2023). The impacts of climate change in the 21st century have exacerbated these environmental stressors, leading to resource conflicts and migration. Shifts in precipitation patterns have intensified disputes over water and agricultural land in regions like sub-Saharan Africa and South Asia. Rising sea levels further displace coastal communities, sparking conflicts over resettlement and territorial claims in low-lying regions (Ajala, 2020). These historical cases highlight the complex interplay of social, economic, political, and environmental factors that shape environmental conflicts. Addressing these challenges requires collaborative efforts in equitable resource management, sustainable development, and climate change mitigation. Learning from these past experiences and adopting inclusive approaches can help build resilience and promote peace amid environmental challenges (Wassie, 2020).

The concept of "environmental conflict" gained prominence with four key developments beginning in the 1960s (Collins, 2013). The first was the rise of environmental awareness in developed nations, spurred by influential events that supported the environmental movement (Julca, 2010). Rachel Carson's seminal 1962 work, *Silent Spring*, utilized print and electronic media to bring environmental concerns to the public's attention. Public figures like David Attenborough, Jacques Cousteau, and David Suzuki played significant roles in this awareness campaign. In the 1960s, over 100,000 environmental non-governmental organizations (NGOs) emerged, including international groups such as the World Wildlife Fund (1961), Friends of the Earth (1969), and Greenpeace (1971), representing an important advance in international environmental advocacy (Soroos, 2014).

Environmental awareness spans beyond conservation to encompass environmental justice, indigenous rights, gender equality, genetic engineering, nuclear non-proliferation, poverty alleviation, sustainable energy, and waste management. The first international environmental summits appeared in the 1970s, catalyzing the formation of over 500 multinational environmental agreements by 1972 (Julca, 2010). These summits, combined with related studies on shared security, ultimately led to the 1987 World Commission on Environment and Development (WCED) report, which emphasized environmental security as an essential component of sustainable development. In his seminal work "Redefining Security," Richard Ullman (1983) argued that environmental change could incite conflict. Ullman defined a national security threat as anything that significantly diminishes the quality of life for citizens

or restricts opportunities for individuals and organizations. This view has been echoed by environmental scientists who have warned that environmental degradation could lead to violent conflict (White House, 2014).

Initially, Western security institutions relegated environmental security concerns to the periphery, focusing instead on achieving military superiority during the Cold War. For the United States and its allies, "security" primarily entailed national defense against military and ideological threats from the Soviet Union (Trump, 2017). However, in the early 21st century, the importance of environmental security has grown, driven by issues related to global food supply, energy markets, and strategic planning in many nations (Julca, 2010). The concept of environmental security underscores the recognition that environmental changes pose significant risks not only to ecosystems but also to human well-being (Baum, 2019). Environmental degradation restricts access to essential resources, such as arable land, clean water, and food, thus endangering human security and limiting economic and social opportunities for fulfilling lives (Matthew et al., 2015).

Environmental security has since become a critical global issue, prompting research on the role of environmental degradation in conflict escalation, as demonstrated by recent studies on the Mau Forest Complex in Narok County, Kenya. This research highlights how environmental degradation directly impacts resource availability, heightens competition, and fuels conflict, underscoring the urgent need for sustainable management to protect both natural resources and human livelihoods in affected regions.

2.5.3 Background of conflict at Mau forest complex

The vision and threats to Mau Complex serve as a platform for security analysis in order to develop effective management. There exists a well-set framework of security, conflict and management process and in addition to this the already available theories of security historical attributes, and colonials forest regulations will help understanding, how environmental degradation escalate conflict of Mau Forest complex better.

Kenya was a British protectorate from 1895 until 1963, during this time, the European powers exploited natural resources for economic gain. The policies imposed by colonial rulers often led to deforestation, land degradation, and the displacement of indigenous communities. (Kweyu, 2015). During this period a larger part of Kenya forest, Mau Forest Complex was

down for fuel supply. When the Mau complex was a habitation area and later a highland, there was internal conflict over its resources and exploitation. When a successful government was in place and devoted lawmakers were given environmental land, tension existed and continued to persist. This caused the emergence of militia groups and other anti-government organisations that pose a threat to stability and security (Gecaga, 2017).

With reference to (2005) referendum on the new constitution, various emblems were employed during the campaigns. The future of the then president his administrative government dependent on the campaign groups. This evolved into multi-ethnic political alliances with intention of succeeding the then serving president's government in the 2007 general election. During the referendum various communities engaged in evicting people who unlawfully acquired their land at Mau Forest Complex. Referendum affairs were linked to ethnic polarizations due to several natural resources for instance timber among other resources encroaching of Mau complex, menace remains analysis and understanding of different types of conflicts since security matter manifests in it (Borana, 2017).

Several actors drawn into Mau Forest Complex worsened the Mau complex conflict situation both within Kenya and entire East Africa because of vested interests. The magnitude of this conflict is highly experienced when the tourism sector fails to provide adequate water to sustain itself. Wildlife migrates to other promising forest areas and sometimes perishes unexpectedly. Nevertheless, there has been an intention to improve and reduce the Mau conflict by introducing afforestation. This was to be conducted on January 15 of the year 2010. Security agencies were also advised to conduct tree planting, secure water towers and also provide direction supporting the Afforestation.

2.5.4 Elaboration of the environmental conflicts

Conflicts arise when there is existence of incompatible interests, irreconcilable differences, and struggle for power, values and goals (Castro & Nielson 2003; Yasmi et al. 2016) additionally, confrontations that aren't settled quickly and for a long period are likely to make things worse. What separates conflicts from simple disagreements, according to White et al. (2009? Pg 244), is a party's behaviour that expresses previously hidden sentiments when that party is thought to behave against the interests of another party. Threats, physical violence, theft, appropriation, insurrection, skirmishes, and interstate or intrastate conflicts are just a few examples of how a

conflict can manifest itself (Reuveny, 2011). Such environmental conflicts are perpetuated and made worse by the struggle and rivalry for limited environmental resources, diverse attitudes and ideas, as well as institutional elements (Hellström, 2011). Therefore, resource depletion is a key factor in comprehending environmental conflicts. This literature evaluation identifies various categories of environmental conflicts, as illustrated below.

2.5.4.1 Biodiversity Conflicts

These are conflicts involving wildlife or other aspects of biodiversity (White et al., 2009). They include conflicts over the preservation of protected areas, environmentally friendly technologies, fair trade, and patenting rights related to biodiversity, including forms of knowledge about natural resources. Disputes about these can take place on a global scale and have profound regulatory and policy repercussions (2009). If conservation and environmental management policies are not developed and put into practice in a comprehensive manner to maximize the needs and interests of conservation and people, conflicts may occur (Okech, 2010). for instance, points out that in Kenya, environmental management and protection can create circumstances in which "humans become the victims of wildlife" and then make up for the harm done by killing animals for bush meat or to defend their crops or cattle from pests and illness. According to Yasmi (2016) such conflicts are becoming more common and difficult to prevent due to the involvement of numerous parties and the diversity of issues and management approaches involved.

2.5.4.2 Conflicts Disproportionately Affecting Women

Women are frequently more vulnerable than men in a variety of ways, including (physically, economically, socially, and politically). Therefore, they frequently bear an unfairly disproportionate burden of the negative effects of environmental conflicts and stress. Scholars (Omolo, 2010; Bob 2010; Perry et al. 2010) have emphasised this idea. They also suggest that the true costs of environmental devastation on women is complex and difficult to calculate. Perry et al. (2010) for instance, points out that women frequently face larger food and economic challenges, and are impacted by cattle rustling.

2.5.4.3 Conflicts about Air Quality and Poisonous Pollutants

The conflicts surrounding air quality and poisonous pollutants have become increasingly prevalent in recent years, reflecting the growing awareness of the environmental and health risks associated with air pollution. One of the central points of contention revolves around the sources of these pollutants, with industries, transportation systems, and agricultural practices often at the forefront. Disputes related to air quality and poisonous pollutants are not confined to local or national levels but often have international dimensions (Gyamfi, Bein, Adedoyin, & Bekun, 2021). The effects of air pollution have widespread implications, impacting not just human health but also ecosystems and contributing to climate change. Environmental tensions linked to air quality issues are prevalent in regions such as Nairobi, Mombasa, Kisumu and Mau Forest Complex in Kenya (Mwaniki, 2016).

These areas grapple with challenges such as industrial pollution, traffic congestion, and difficulties in waste management. Ongoing research explores the intricate links between air quality and various health Pollution, particularly air and water pollution, poses a significant threat to the Mau Complex and similar ecosystems. Contamination from industrial waste, agricultural runoff, and untreated sewage harms water quality, disrupts aquatic ecosystems, and endangers wildlife. Air pollutants like sulphur dioxide and particulate matter settle on water bodies and vegetation, affecting soil and plant health (Mwaniki, 2016).

Deforestation exacerbates pollution issues by removing natural buffers. Overall, pollution undermines ecosystem integrity, necessitating comprehensive management to preserve biodiversity and environmental health. On-going research explores the intricate links between air quality and various health hazards, including respiratory and cardiovascular issues (Bein, 2021). As these conflicts persist, there is an increasing burden on governments, industries, and international organizations to tackle the origins and repercussions of harmful pollutants. This necessitates a concerted effort towards sustainable development and the adoption of clean energy solutions (Linnér & Selin, 2013).

2.6 The Nature of Environment

The term "environment" refers to all of an organism's surroundings, including all natural forces and other living things that offer opportunities for development and expansion while also posing inherent risks. The planet offers a good environment with clean air, clean water, clean

land, and carbon dioxide, which when combined with powerful sunlight aids in the growth and development of all living things, including plants, animals, and people (Jacobson, et, al., 2017). The evolution of all forms of life has been easily aided by the universe through its own cycles. The natural cycles, which coexist in harmony with the environment, include the water cycle, oxygen cycle, nitrogen cycle, and carbon cycle (Das, 2015). In the past, man coexisted peacefully with nature, but as time went on, this harmonious coexistence was disrupted by the same man's desire to improve his way of life through science and technology. In addition, because of the human population explosion there is now an increased struggle for survival for scarce resources like water, arable land, and energy. Because of man's egotism and never-ending wants, natural resources are overstretched, resulting in environmental destruction and a global catastrophe that continues to raise serious questions about whether human survival and future generations, in particular (DFID, 2008)

This has been expressed in research conducted in some parts of Mau Forest Complex. The gesture of environmental concern was that Mau Forest Complex was a source of environmental sustainability for the country between 1895 to 1963 when Kenya was under the British rule. The Indigenous communities applied traditional techniques like rotational farming and controlled grazing, preserving the ecological equilibrium. Colonial administrators enforced rules to curb timber harvesting, balancing forest preservation with colonial demands. Additionally, the sparse population and less intense land use practices contributed to the forest's durability. Nonetheless, colonial forest management had its drawbacks, including the displacement of indigenous peoples and unequal sharing of forest resources (Chaudhry, 2019)

The struggle over forest policy and the use of forest policy and the use of forest resources, these conflicts have been increasing identified. Forests primarily managed by local communities brought about conflict with the colonial government when attempting to control access to forest areas, introduction of modern forestry and forest conservation mechanism. The local communities did not recognize the right and roles to be played by settlers and approved companies eager to gain logging concessions, while maintaining the forest by reforestation (Cosgrove, & Loucks, 2015).

The colonial authority started creating cadastral maps that marked proper land borders for its own jurisdiction. This was developed for Africans in clearly defined boundaries in order to safeguard land taken by white immigrants. The Ogiek had a history of interacting with the locals' settlers and integrating into the numerous communities that surrounded the forest. They

developed policies, continued to live in the forest and claim rights to it. Mau Forest Complex is estimated to support between 15,000 to 16,000 Ogiek who live within it (David. & Willis. 2011).

2.7 Causes of Environmental Degradation

Our world is divided into distinct cultural, social, political, economic, and territorial orders. Environmental destruction, violent conflict, and security are all considered within the context of inter and intra-state relations (Natural Hazards, 55(3), 689-715). Because of this, the environment is damaged, and some political leaders who engage in violent conflict end up being the main perpetrators and assassins of violence. Both lethal short-term and long-term violent conflict cast doubt on and pose a threat to this international order (Glover & Luukkanen 2013).

Environmental protests' effects on security have a variety of varied causes. However, the casual elements in Mau Complex vary significantly depending on violent conflict and environmental offence (Adano, Dietz, Witsenburg & Zaal, 2012). Therefore, depending on historical era, political rumours, and geographical area, the factors producing this may not match. As a result, the researcher examined three categories of causes: potential causes, structural causes, and triggers contributing to environmental degradation on security (David & Willis, 2019).

2.7.1 Land degradation

Environmental degradation results from current population pressures that disturb natural resources and ecosystems. In rural areas, where approximately 75% of the world's impoverished population resides, many people engage in subsistence farming and other basic tasks to sustain their livelihoods. As population growth continues, food production often becomes insufficient, compelling individuals to encroach upon forests and protected areas to meet their needs. In the Mau Complex and surrounding protected regions, a substantial population struggles with hunger and malnutrition due to unequal resource consumption and distribution (Glover & Luukkanen, 2013).

UNEP (2014) reports that 70% of the earth’s surface is covered by water. However, depleting water catchment areas hampers development, especially in sectors such as tourism. For instance, the drying up of Lake Victoria’s tributaries, including the Nyando and Sondu rivers,

has negatively impacted local ecosystems and the fishing industry. According to estimates from Kenya's Ministry of Environment and Natural Resources, resource extraction in the Mau Complex expanded by approximately 1000% between 1963 and 2000. This figure suggests that nearly one-third of the resources in the Mau Complex have been degraded under the guise of population growth, leaving local communities unable to sustain themselves (Baum, 2019).

Agriculture remains central to the livelihoods of Kenyans, with about 56% of the population dependent on this sector. Unfortunately, forest encroachment and environmental degradation have had damaging effects on Kenya's vital water towers, leading to land degradation and a decline in agricultural productivity. Additionally, at the start of the new millennium, Kenya intensified efforts in mineral and hydrocarbon exploration and exploitation, aligning with the interests of multinational corporations (MNCs), which have contributed to the drivers of environmental degradation (Cisse, Grimm, & Nolke, 2014). This growing demand highlights that land and resource management are essential for peaceful coexistence among ethnic communities and for maintaining stability at national water catchment sites. Despite MNCs' contributions to economic development and employment, it is critical that their operations adhere to environmental safeguards, especially to protect water catchment areas (Cosgrove & Loucks, 2015).

The environment influences not only Kenya's domestic politics but also its international relations. Effective land management and water catchment preservation are pivotal for fostering peaceful coexistence across ethnic groups and for stability between governments. In 2009, the Copenhagen climate conference underscored the significance of safeguarding water towers, recognizing that issues affecting Kenya's environment, including the Mau Complex, have global ramifications in addressing climate change (Warner et al., 2010). This conference provided an international framework for countries, including Kenya, to address climate change and environmental degradation, though unsustainable land use in areas like the Mau Complex continues to threaten environmental stability.

Land degradation in the Mau Complex has significant security implications, not only for Kenya but also for the entire Great Lakes region of East Africa. Prior to 2009, the Mau Complex was characterized by instability and land disputes, often spilling over into neighboring regions, thus contributing to a wider cycle of conflict. This instability primarily stems from competing economic interests among various ethnic groups residing around the Mau Complex. Over the

past fifty years, the area has been central to political power struggles, where different communities, including agriculturalists and pastoralists, have contested for control over land and resources. These disputes have led to violent conflicts, including killings and other inhumane acts, perpetuating insecurity and tension in the region. Consequently, land degradation in the Mau Complex is closely linked to Kenya's enduring security challenges, as it exacerbates ethnic and economic tensions, heightening the risk of conflict and instability (Mwaniki, 2016).

2.7.2 Prompt Urbanisation and Globalization

Rapid urbanisation in the modern world has led to environmental degradation and an increase in territorial security. According to the Liberalism school of thinking on the international political system, decentralised state sovereignty, market liberalisation, and cross-border trade all speed up the pace of globalisation. One key issue is that globalisation has made labour, capital, technology, ideas, and profit more flexible across a variety of nations and regions, where the Mau complex is not left behind (Kim, 2018).

Real estate and the building of contemporary homes have caused environmental damage through the land as people excavate foundations for constructions and simultaneously carry out deforestation to obtain raw materials like lumber (Dudley, Jeanrenaud & Sullivan, 2014). The globalisation-induced contemporary housing facilitates environmental degradation, and at the same time, trees are cut down to make charcoal for the current and expanding urban population. However, the success of globalisation is what drives the building of modern homes (Mwaniki, 2016).

2.7.3 International Interference

The involvement of foreign powers is highly noted where some political and superpower's actions lead to destruction and destruction of the existing environment. The involvement of foreign powers, including the European Union (EU), the United States (USA), and China in the Mau Forest Complex issues can perpetuate environmental conflicts in several ways (Mohamed, 2015).

These foreign powers often have economic and geopolitical interests in the region that can influence their actions and exacerbate environmental challenges. The urgent removal of the unlawful squatters as well as the work of the taskforce that promoted and carried out the

restoration of the Mau complex were hampered by the fact that other countries, such as China and an African Union (AU) delegate, were not aligned with any political camp (Julca, 2010). This had an impact on the targeted individuals who held positions of authority in the current and previous governments, but it also put some civilians' safety in danger such as the Ogiek community, a minority tribe that lives in the woods and relies on hunting and gathering for survival (Union, 2010).

2.7.4 Ethno-nationalism

This is a politically charged group whose membership is based on traits including customs, religion, ethnicity, race, colour, and clan or tribe. These characteristics identify "people" in their mind as their members. (Stafford-Smith & Lambin, 2007). This evidence shows that there is discrimination which demonstrate itself to the people of Mau Complex. As a matter of fact, this can be seen as a cause of ethno-nationalism on environmental degradation. The implication is that a sizable portion of the minority population within the Mau Complex appears to be routinely denied their rights with regard to forest resources, particularly social, economic, and political prospects (Romijn, 2012). In response some of the communities are obstructed from expressing their cultural way of life for example pastoralism and agricultural or excluded from political influence, this result state of insecurity from discriminated communities and gives rise to secessionist movements that may result to violent conflict as well as other violent means of defence (Thelma, 2015). In conclusion, ethno-nationalism is most likely to justification for environmental destruction than the moderate inclusive population.

2.7.5 Bad Governance

The cause of environmental degradation and democracy result a severe challenge to the successive regimes in Kenya since 1963. Environmental deterioration is a prerequisite for ideas like democracy, civil liberties, and the rule of law. The majority of democratic societies have the lowest levels of anti-violence sentiment. To name a few, these include Germany, Britain, and the United States (Mohamed, 2015). Ironically, weak governments are perceived to lack the ability or motivation to exercise territorial control and preserve water towers, including developing countries and African republics for example Egypt. Mau Complex is not an exception in this scenario. In most cases, this results in a power struggle from that communities

can take advantage of in their pursuit for a living by maximising funds from MNCs, particularly those involved in the building sectors. This should not be interpreted as a lack of democratic procedures, though. In fact, long-standing democracies like the United States and China have been accused of flouting international treaties like the Kyoto Protocol and the Montreal Protocol (Gareau, 2013).

2.7.6 Political Uncertainty

Environmental deterioration is directly influenced by political instability. Political unrest that followed the 2005 National Referendum on the new Constitution as well as the post-election violence in 2007 and 2008 clearly contributed to the acceleration of environmental degradation. In fact, the confluence of political unrest and extreme poverty may force people to invade protected areas such as water towers to sustain their livelihoods. People travelling to water towers because of inadequate and incorrect land laws, divisions, and national land commissions have significantly contributed to environmental deterioration by people encroaching into the water catchments areas. Mau complex restoration generated acrimony along the tribal lines just before the promulgation of Kenyan constitution in 2010 (Mbugua, 2011).

Additionally, political instability results to the proliferation of small arms and light weapons (SALW), warlords, and militias, fragmenting the nation and forcing people to compete for the scarce natural resources. Despite Kenya possessing a reliable army and a well- established police force, when a crisis arises, they are more likely to engage in humanitarian efforts than to manage security (Phillips, Ting & Demurjian, 2012). Protection of water towers had destructed the military from focussing on national security.

2.7.7 Trigger Causes

This is brought on by a community in the Rift Valley province having grievances, which leads to environmental destruction as a result of discrimination. A community that is disappointments must contribute to the environmental deterioration (Jepkosgei, 2018). Due to a lack of political opportunity and engagement in the revenue collection before the new constitution of 2010, the second condition can contribute to and serve as a motivator for environmental degradation. It is implied that structural reasons contribute to environmental deterioration, which in turn drives the outbreak of tribal conflicts (Zaal, 2012).

According to the widely held belief, environmental offenders are frequently unpredicted, yet a consistent pattern has emerged with highlights of particular activities, such as deforestation where some of the products are exported to other nations. Because trees operate as a carbon "sink," unusual and unexpected carbon release in the industry, will have a negative impact on the ecosystem (Reynolds et al., 2011). In general, energetic activities that explode under the strain of growing population will cause aridity and desertification in all spheres of society (Jepkosgei, 2018).

2.8 The role of environment in conflict escalations

The natural environment consists of all living and non-living organisms, for instance plants and animals' species, like elephants, lions, and birds in the game park and the cows in the grass fields. it provides man with the resources he needs for survival and thrive. It also, affects his health, well-being and quality life (Homer & Dixon, 2011). The environment also plays a crucial role in regulating the climate, maintaining biodiversity and supporting ecosystems. However, human activities like pollution, deforestation and climate change have detrimental effect on the environment, leading to various challenges such as habitat destruction, resource depletion and loss of biodiversity (Commilla, 2010).

The Pollution occurs when harmful material is released into the environment, making it unfit for use. People are less likely to know the significance of planting trees if their education is inadequate or if the country's environmental laws are inadequate. It is essential to take care of the environment and make it sustainable choices to ensure healthy planet for future generation (Muiruri, 2016).

Kenyan at all times claim and advocates for the right to clean environment as a human and civil right. Kenyan cannot fully enjoy his/her right to free speech if they continuously remain afflicted by severe illness resulting from unclean environment (Aubin, 2008). There is a connection between the security of particular people, societies, and even the biosphere, and the state of the natural environment. Herbicides used during the Vietnam War such as the infamous "Agent Orange" had disastrous effects on the environment and the people who relied entirely on it. The 1973 and 1979 oil shocks revealed the extent of the western America's reliance on foreign energy, making them factors of national security (Harwell & Farah, 2011).

To pay for the decontamination of military facilities, the US Congress established the defence environmental restoration account during the administration of President Reagan. National power is the culmination of a number of factors, including geography, population, social coherence, resource endowment, military prowess, regime type, and economic scale. These components of may be impacted by environmental change. For example, the military may struggle to project and use power if they operate in swampy areas or during a heat wave (Adano, 2012).

When environmental adequacy and poor governance coexist, resource plenty frequently results, although the latter is anything from not a blessing. Instead, it typically results in bloody war, which then causes widespread poverty and human instability. For instance, having a high supply of important commodities may inhibit economic innovation and lead to an economy that is unbalanced, which is beneficial to the global price of commodities, foreign involvement, and local corruption (Muiruri, 2016). The gender-blindness of all other environmental security strategies is bound up with feminist environmental security. Women are often in charge of fetching water and fuel wood and have lesser cultural and social- economic status than men in many parts of the world. Last but not least, there will be poor investment in public services like education linked with economic growth and little chances to hone political competencies like negotiating and consensus-building (Wasting, 2017).

According to Greenberg and Thomas K. The Journal of Political Ecology, the two most significant theoretical influences are "ecological analysis, with its broader vision of bioenvironmental relationships and political economy, with its insistence on the need to link the distribution of power with productive activity." Environmental issues, including environmental conflict, cannot be understood without accounting for political factor Political ecology, which aims to disentangle the political power at play in environmental access, management, and transformation, is guided by a normative agenda of improvements toward better, less coercive, less exploitative, and more sustainable business practices (Watts, 2012).

The circumstances render women especially less privileged to global environmental change, including environmental conflict. The ability to address and adapt to climate change will be supported by a nation's wealth and infrastructure (Herweijer & Chateau, 2011). Tensions already present in unfriendly areas of the world will increase as a result of climate uncertainty and harshness. For instance, Africa's Sahel area is a 3,860-kilometre-long geographical mass

that lies immediately south of the Sahara Desert. Kenya's arid north has sought to test the links between resource inadequacy and conflict of violence between herding groups over a series of wetter and drier years (Homer & Dixon, 2011).

Marsabit Mountain and its environs have witnessed very rapid in- migration over the last thirty years. Automatic weapons have become far more common, bringing the risk and threats of more devastating damage from disputes and a higher death toll. In 2004, the Ndungu land commission was formed to investigate the unlawful and irregular allocation of public land. In the year 2005 the ministry of lands declared cancellation of 10,000 title deeds in the Mau (Keith, 2006). Evictions returned in May, affecting 50,000 people. It was estimated that in 2010 about sh265.3 million was required to compensate 461 people with valid title deeds (Lawrence, 2007). The Intervention Measures to Environmental Degradation and Conflict Escalations according to the projections, one seventh of the world's population is owned by three quarters of the current wealth in the last 30 years. The major advancement in education, reading, and communications, ties to socioeconomic differences on environment. Governments must lessen people's reliance on environmental changes, raise living standards, and overall increase people's welfare (Olang & Kundu, 2011).

The risks related to health, transportation, human resources, technology, water, atmosphere, soil, forests, and poverty, Africa continent needed to address the issues by improving its level of readiness and preparedness. Many nations in the geographical area, share the same huge groundwater aquifers (Flint, 2004). This has made the management and regulation of these aquifers as a challenge. Countries should strengthen their governance institutions, improve accountability and transparency, as well to eliminate corruption, for them to realize a higher economic growth. According to Bjornlund, Bjornlund, and Van Rooyen (2020), policymakers Have the chance to pursue food production through irrigation augmentation, particularly in sub-regions and nations with the greatest capacity.

Through organising and carrying out win-win water resource development projects, create a global network for groundwater monitoring. All of the boreal countries are experiencing regeneration and afforestation, despite the fact that several of the species being employed are not local (Commilla, 2010). In an effort to stop soil erosion and save the forest districts that were vulnerable to it, Finland created the Forest Zones Protection Zone Act in 1922. Around 800 crown forest reserves were established as a result of Sweden's 1909 statute to protect the environment. For at least the last 30 years, the fundamental goals of Kenya's green belt

movement had empowered the community and preserved environment at Mau Forest Complex and the rest of the counties (Barrow, 2006). The attitudes of Kenyans toward the environment has evolved, there's a growing public interest in an environment protection, and also increased understanding of the effects of ecological deterioration. More than 30 million trees have been planted as part of the Green Belt Movement on private and public property, in the protected areas, and the significant cultural sites (Anil & Arnab, 2019).

2.9 Relationship between Environmental Degradation and Conflict Escalations in Mau Forest Complex

Previous studies have shown a correlation between land degradation and environmental conflict over natural resources in various contexts. Environmental conflicts often stem from fundamental human needs and issues related to resource distribution, allocation, and management (Flint, 2004). Historical accounts reveal that resource-based conflicts have led to severe wars in regions such as Karamoja and Kagera in Uganda, Darfur in Sudan, the Rwandan genocide, and the Niger Delta (Mwaniki, 2016). In Kenya, the Mau Forest Complex, recognized as one of the country's most crucial water towers, supports several rivers that ultimately flow into Lake Victoria, including the Nile. However, this land is under intense human pressure, leading to degradation that serves as a precursor to conflict. For instance, in 1993 and 1994, extensive destruction of forest plantations occurred following presidential decrees that permitted settlement after the elimination of the 'shamba' system in 1987. During the 1990s and early 2000s, parts of the Mau Forest Complex were used to resettle forest-dwelling communities, ostensibly to conserve what remained of the forest (Kumar, 2012).

An aerial assessment conducted by the United Nations Environmental Program (UNEP), Kenya's Ministry of Environment and Mineral Resources (2008) documented significant destruction and degradation within the Mau ecosystem. The interplay of environmental conflict and land degradation in the Mau Complex poses threats to Kenya's domestic political stability and its Vision 2030 goals, with ramifications extending to regional and global stability (Kevin & Lewis, 1997). Over 80% of Kenya's land area is classified as arid and semi-arid, characterized by low population densities that primarily rely on livestock for subsistence (Magembe, Bebe, Lagat, & Chelang'a, 2013). Approximately 12% of Kenya's land cover consists of forested areas with closed canopies, designated as Forest Reserves under the Kenya

Forest Service or National Parks managed by the Kenya Wildlife Service. Local authorities also oversee trust land forests (Measham & Lumbasi, 2013).

A study done by Koech and Iteyo (2023)on conflict escalation in the Mau Forest Complex explored how these conflicts affect the Kenya Forest Service's mandate and operations while examining methods to prevent or peacefully resolve such disputes. Employing both primary and secondary data, the study utilized purposive and snowball sampling methods to select respondents from targeted categories in research sites. It highlighted that weak institutional policies and inadequate enforcement of forest laws are major drivers of changes in Kenya's forest cover.

Kenya's diverse landscape encompasses ecosystems including forests, steep slopes, and degraded areas, all of which have undergone restoration and protection efforts to support regional biodiversity. Africa's varied climates, ranging from humid tropical conditions in western and central Africa and the western Indian Ocean islands to arid and semi-arid conditions in South Africa and the semi-deserts and deserts in northern Africa, contribute to highly variable and often unpredictable climatic conditions (Yusuf, Abubakar, & Mamman, 2020). Although African nations contribute minimally to global pollution and greenhouse gas emissions, they are encouraged to implement programs that support socioeconomic development while promoting sustainability. In line with this, countries such as Algeria, Cape Verde, Ghana, Lesotho, Mali, Mauritius, Senegal, Seychelles, and Zimbabwe have submitted National Communications to the United Nations Framework Convention on Climate Change (UNFCCC, 2011).

South Africa, recognized as the highest carbon emitter on the continent, is urged to adopt stringent measures to control greenhouse gas emissions. As a signatory and depository of the East Africa Regional Seas Programme, Kenya plays a pivotal role in promoting sustainable environmental practices. Between 1973 and 1983, significant progress was made in developing environmental policies and natural resource management strategies. In 1986, six Eastern African countries joined forces under the Intergovernmental Authority on Development (IGAD) to address natural resource degradation. Recent efforts in Kenya to restore the Mau Forest have included initiatives like the Save Mau Trust Fund, launched by the Kenya Forest Service in partnership with organizations such as East African Breweries, the Green Belt Movement, and UNEP. This initiative has facilitated extensive tree planting efforts in the Mau Forest. Additionally, Kenya's Ministry of Environment and Natural Resources has established

a committee dedicated to rehabilitation and livelihoods, continuing to foster partnerships with the Kenya Forest Service and other stakeholders to support forest conservation (Lewis, 1997

2.10 Conserving of the Water Catchment Areas.

The Kenyan government responded to concerns about the degradation of the Mau Forest water tower by establishing a Task Force in July 2008. The Task Force, approved by the government, aimed to make recommendations for restoring the Mau Forest. Released in March 2009, the Task Force's report highlighted that over 60,000 hectares of the forest had been allocated for farming and livestock, neglecting its significance as a crucial water source (Jepkosgei, 2018).

The report proposed a three-phase eviction plan, focusing on encroachers, settlers without proper title deeds, and finally those with valid title deeds. However, the implementation faced obstacles, especially during the third phase, linked to political complexities and concerns about potential electoral repercussions (Kweyu, 2015). The recommendations sparked mixed reactions in the Mau Complex region. While there was a consensus on the need for conservation, tensions arose among communities due to political and ethnic alliances. Debates cantered on whether all settlers, regardless of land ownership status, should be compensated or resettled. Some argued for exemptions for certain communities like the Ogiek, who historically lived in harmony with the forest, while others raised concerns about preferential treatment. The issue also acquired a political and ethnic dimension, with different groups perceiving the actions as targeting them unfairly (Mbugua, 2011).

The conflicts extended beyond community boundaries, involving political rivalries and historical grievances. As efforts to restore the Mau Forest heightened, the potential for conflict between evicted communities and the Ogiek, as well as among different evictees, increased. It was emphasized that the issues in the Mau Forest Complex are not solely local concerns, but had broader national and regional implications affecting downstream communities and their livelihoods, due to diminishing water volumes from the forest's rivers (Kimaiyo, 2004).

2.11 Land Disturbances

Land is still a limited resource, which encourages fighting over those limited resources. The Mau complex is thought to cover roughly 237,000 Ha. The implication is that a variety of human activities have an impact on the environment and safety. This implies that the existing water tower has impacted some populations, such the agriculturally oriented Kalenjin, who had

benefited more than other any communities who are pastoralists, like the Maasai. This is because Mau has a favourable climate and it is appropriate for arable farming (Mbugua, 2011).

2.11.1 Population

Kenya's population increased tremendously from its initial 8.7 million residents in 1963 to

42.6 million People in 2009, marking the country's independence. This demonstrates that the rate of population expansion has an impact on wealth distribution, wealth sharing, and the support of urban environments that rely heavily on forest products. Unfortunately, the 2009 national census encountered significant opposition due to people being counted more than once, which had an impact on the distribution of funds (Collier & Gunning, 2019).

The 14% of the overall population, the Kalenjin community is currently the third largest in Kenya. This suggests that while they carry out their commercial activities to make a living, they will be much more noticeable in environmental degradation in Mau Forest Complex than any other communities. Although a larger labour force is not a guarantee of population expansion, other than the competition for the limited natural resources that are already available that are at risky. As a result, this has boosted the unemployment rate and at the same time raised the poverty level (FAO & Rome, 2009).

2.11.2 Mineral Resources

Environments that are favourable had encouraged economic development and growth. The Mau Complex serves as a storehouse for natural resources like water, which are crucial for societal development. The Nation can also import water from nearby nations that have huge water towers. Other natural resources, such lumber, are found in Mau. The elimination of the local and global trade has hampered the increased of poverty and pauperism. Encroachment and illegal logging had occurred in the Mau Complex posing a serious threat to its sustainability. The Kenyan government from 2009 intensified the rehabilitation and conservation of Mau complex so as to bring back the degraded environment. This is shown by the data displayed below from Kenya Forest Service.

Table 2.1: Stocking

Stocking	2010	2011	2012	2013	2014
Previous plantation Area planted	112.7	118.8	121.1	127.1	129.3
Area Planted	9.6	8.8	7.4	8.2	7.1
Total	122.3	126.8	129.1	135.3	136.4
Area clear felled	2.8	3.9	2.2	4.8	6.1
Planting failures/ damages	0.7	1.2	..	1.2	1.0
Total area	118.8	121.7	127.1	129.3	129.3

Source: Kenya Forest Service.

In the contrary, there were some efforts to increase forest cover however this initiative was watered down by increased logging especially to the less overgrown trees. There were other hindrances and threats to the forest cover like fire outbreak. In addition to this, sales of state forest products have been on rise. For example, the availability of the statistics provided by the Kenya Forest Service is a blatant sign of environmental security and deterioration. From 933,7 thousand true cubic meters in 2013 to 1,197,6 thousand true cubic meters in 2014 the sale of timber increased by 28.3%. The evidence suggests that there is trade on hardwood timbers involving several local corporations including Kenya Power and Lighting Company (KPLC), which uses such in their Rural Electrification Program for the construction of power posts. By hindsight, this has led to illicit harvesting of trees.

2.11.3 Wildlife Extinction

Given that the Mau complex serves as both a residence and water source for pastoralist tribes raising cattle, protecting wildlife, and grazing were the main uses of the area there. Similar to that, it functions as a tourist destination because it is home to diverse species (Loucks, 2015). This indicated that its natural system had also been impacted by the removal of trees. Additionally, the ecological system's destruction and degradation had an effect of determining the numbers of tourists visiting the country. It is also obvious that the number of various

herbivores, including giraffes and elephants, has decreased as a result of environmental degradation (David & Willis, 2011). The degradation of the Mau Forest Complex had played a significant role to charcoal burning, the establishment of new settlements, increased infrastructural development, but due to unsuitable land use which are notwithstanding human actions, such as animal poaching, had caused a decline in the number of species (Flint, 2004).

2.11.4 Poverty

The key indicator of population increases and socioeconomic progress is the level of poverty. Statistics generally show that unemployment is still high and increasing even after independence (Romijn, 2012). This kind of circumstance forces people to hunt for work in any legal or criminal manner. The 2005–2010 global economic recession factor had motivated individuals to harvest trees for charcoal burning to support their livelihoods or other economic reasons. Since people just needed to support their livelihood regardless of the means, this has indirectly encouraged corruption and nepotism (Jorge & Maltin, 2001).

Since Kenya's independence, successive governments have attempted to reduce poverty through youth empowerments program, vocational training, promoting entrepreneurship and conservation effort such as reforestation project, it seems that these efforts haven't been fully successful in preventing these activities due to amidst numerous obstacles such as global recession and internal financial status (Keith. S,2006).

Since 1960 more than 25% of Kenyans have been living in poverty. This increased to 47% in 2000 as a result of to environmental damage and the economic downturn in turn, this has exacerbated encroachment on water towers and illegal tree-logging. Coupled with improper management of environmental resources, the country has witnessed decreased food security, and increased poverty. Thus, poverty reduction and elimination of corruption are critical to environmental protection and restoration of the Mau Forest Complex. However, that cannot be accomplished without the good will of the government and proper management of forest resources (Institute for Law and Environmental Governance in Kenya, 2003).

2.11.5 Infrastructure

Road maintenance is a significant issue on the African continent. Due to rising temperatures, intense storms, and environmental degradation, 15% of roadways frequently experience flooding, and water catchment areas like forests that act as water reservoirs are being destroyed.

Similar to this, when roads are demolished, the budgetary money designated for ongoing expenses are diverted to special programs (Chaudhry, 2019). Because security personnel focus on executing specific programs rather than carrying out their primary responsibility of protecting residents, this poses a security risk. As a result of the usage of trees as temporary bridges and the potential risk to human life posed by unexpectedly failing footbridges, this has eventually resulted in tree cutting (Collier & Gunning, 2019).

Additionally, due to the excessive density of forest goods in transit, which is escalating road deterioration, traffic congestion, and road carnage, transportation of forest products like timer and logs of wood becomes a security risk. A managerial staff member at the Ministry of Planning and Devolution was questioned inquisitively, and the results revealed that any continuing road development has an impact on the environment, particularly water towers. This indicates that many landslides frequently occur as a result of friction between the environment and infrastructure (Barrow, 1996).

When roads become dilapidated and negatively impact the environment, civil and structural engineers work to correct the problem in order to preserve the designated reserve areas. Additionally, starting in 2012, the government has been spending nearly KS 20 billion annually in an effort to reduce the expense associated with the effects of flooding. However, due to unforeseen climatic factors, more and more new roads are being built, and at the same time, a specific amount is being set aside for upkeep (Chweya, 2020).

2.11.6 Unemployment

Unemployment remains serious challenge in Kenya. According to the 2015 economic census, there were 2,700,623 publicly unemployed Kenyans in 2014– 2015. Efforts by successive governments to address unemployment have not been successful. Consequently, some young Kenyans engage in illegal activities such as tree-harvesting and poaching of game animals, to address an issue of unemployment (Lambin, 2007).

These had grave implications to the young people, the environment, and the country. First, these young people end up committing the crime. Sometimes they violently clash with law enforcement agencies such as forest keepers and wildlife rangers. Second, these activities lead to environmental degradation. Third, it negatively impacts agricultural production and other

economic benefits associated with the environment. Finally, Kenya's reliance on agriculture and tourism are seriously undermined by such factors (Nightingale, 2003).

To address unemployment issue needs a focus on sustainability, by creating a more resilient economy while protecting the environment for future generations.

2.12 Conceptual Framework

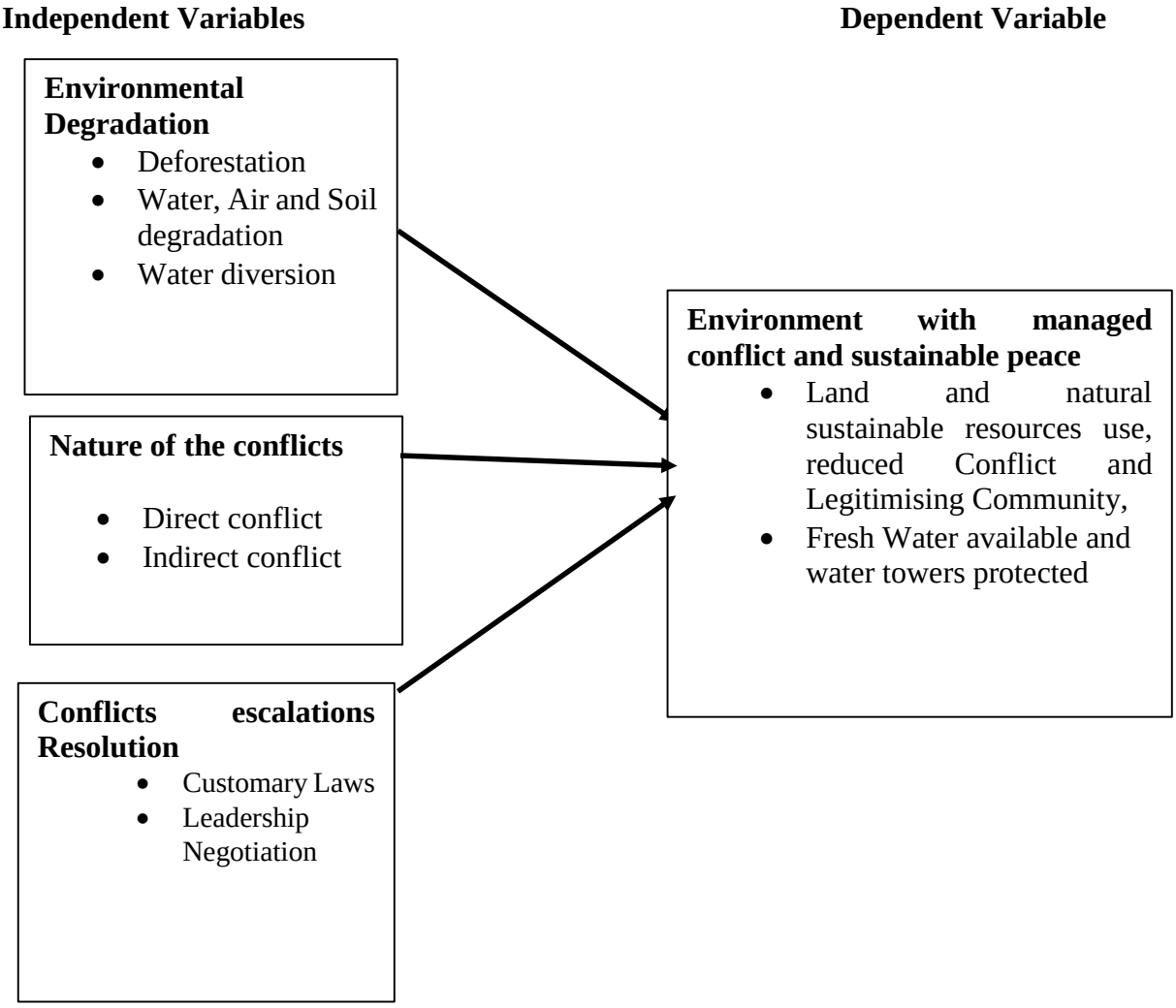

Figure 2.1 Conceptual Framework

In the conceptual framework, the dependent variable is represented by Environment with Managed conflict and sustainable peace. Conflict which is measured by land and natural sustainable resource use, reduced conflicts, legitimising Community, and plenty fresh Water available. While the independent variables are "environmental degradation", "nature of conflicts escalations", and "conflict resolution", whose sub-variables have been highlighted in

the conceptual framework above. The study focused on assessing the direct relationship between the independent variables and dependent variable.

2.13 Research Gaps

Specific Mechanisms of Environmental Degradation Leading to Conflict: While it's understood that environmental degradation contributes to conflict, the specific mechanisms through which this occurs in the Mau Forest Complex need exploration. Research could delve into how deforestation, water scarcity, land degradation, or resource competition directly exacerbate tensions and lead to conflict escalation.

The role of Stakeholder to the Engagement on Community Participation: Understanding the involvement of various stakeholders, including local communities, government agencies, NGOs and private entities is important. This research of study focused on the level of environmental degradation in conflict escalations can be addressed by community participation, effectiveness of collaborative management approaches, and the local voices in decision-making.

Interplay of Environmental Factors with Ethnic and Socio-Political Dynamics: Exploration is needed into how environmental degradation intersects with existing ethnic tensions and political dynamics in Narok County. Understanding these interactions can inform targeted interventions and conflict resolution strategies in the Mau Forest Complex.

Potential for Sustainable Conflict Resolution and Environmental Conservation: Research could explore opportunities to integrate conflict resolution mechanisms with environmental conservation efforts.

Identifying synergies between peacebuilding initiatives and sustainable environmental management strategies can lead to holistic approaches addressing both conflict root causes and environmental degradation.

By addressing these research gaps, scholars can contribute to a more comprehensive understanding of the intricate relationship between environmental degradation and conflict escalation in the Mau Forest Complex, ultimately informing evidence-based policies and interventions for sustainable peace and environmental conservation.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter explains the research methodology and the techniques used to arrive to the study objectives. The explanation of the research design, the target population, sample size and sampling procedure, data collection techniques, research instruments, validity and reliability of research tools and data analysis methodologies. A mixed research method applied to conduct the research study and finally the chapter also introduces ethical and logistic considerations that were discussed during the research study and the chapter summary.

3.2 Research Design

The research study applied a mixed method design. This allowed collecting data using both qualitative and quantitative methods concurrently. The advantages of using the method have the ability to provide insights into the setting of a problem and generating the idea using qualitative design, and quantitative data to produce a generalized result (Nutting et al., 2013). The combination of the two methods was a crucial in grasping the inconsistencies findings in between the methods.

The researcher administered the questionnaires for both qualitative and quantitative data collections. The approach of the researcher aimed to collect both forms of data at the same time with the purpose of coming up with a comprehensive analysis of the findings. Equally in the process of analysis, the researcher presented the findings in the integrated form, this provided different levels of interpretations and analysis concepts (Creswell 2012).

Since the idea of environmental degradation in conflict escalation has been discussed, in the preceded chapters had a lot do with people's feelings and suggestions and their experiences. This design allowed the use of mixed method of data collection, which was critical, particularly when it comes to collecting information related to the environmental degradation in conflict escalation Dawson (2012).

3.3 Location of the Study

This study was conducted at Mau Forest Complex in Narok county, Kenya. Narok county is one of the 47 counties in Kenya, located in the Rift Valley Region. The county borders in the North Kericho and Bomet counties, in the south adjoins Tanzania, in the East neighbours Kajiado County and finally in the west shares boundaries with Bomet County and Nakuru

County. Narok County has a population of close to 1,157,873 million people based on the population census conducted 2019.

The data for this research study was collected across seven blocks where Mau Forest Complex among them. It is about 200 km from Nairobi.

The Mau Forest Complex is the largest in Kenya, the source at least twelve major rivers, which flows into and sustain the fragile ecosystem. These lakes support a wide range of social and economic activities such as the generation of hydroelectric power, industrial, agriculture and domestic. Moreover, encroachments on the complex have affected social pillars of the economy such as agriculture, animal husbandry and tourism. This research study was narrowed down to Narok County in Kenya and specifically in Mau Forest Complex and generalised to other counties.

3.4 Target Population

The population of the people living in Narok County is 1,157, 873 according to Kenya national Bureau of Statistics of 2019. The researcher focus concentrated on the Mau Forest Complex, including men and women residents' respondents, living there. As such, according to Human Rights Watch (2019), estimated 65,300 people and the response rate of 134 participants living in Mau Forest Complex. The Mau Forest complex is further divided into seven blocks. The blocks are as presented in the table below.

Table 3. 1: Target population

Mau Forest Complex Blocks	Population
Maasai Mau	10000
Eastern Mau	7000
Western Mau	8000
Southern Mau	9000
South West Mau	6500
Trans Mara Region	12000
Mau Narok	12800
Total	65, 300

3.5 Sample Size and Sampling Procedures

The research study combined the two sampling techniques of probability and non-probability. The seven blocks of Mau Forest Complex were sampled by clusters, while convenient sampling was used to in identifying the local administrative leaders, and religious leaders. Snowball sampling was used to select resident's mostly old residents from each block of Mau Forest Complex, and purposive sampling was used to obtain key informants (forest managers - Kenya Wildlife Service / Kenya Forest Service) among the other residents.

The total number of residents were 134 of all the blocks.

The study concentrated on the seven blocks, conducting focused group discussions with sample size of seven participants from every block. The first residents were chosen from each block and then helped to choose others in their groups relied on their availability. The choice of clusters, convenient, snowball and purposive sampling was considered, mainly because the population was large. Therefore, it made applicable as proposed by Mugenda and Mugenda, (2003). The forest managers were given first priority considering their roles as leading implementers of the conservation of the forest laws and policies, the overall management and leadership of the forest (Creswell, 2012.).

3.6 Sample size

Sampling refers the process of selecting some suitable representative participants from the entire population for the purpose of study. Those selected represent the whole population selected (Scholastic 2019). The researcher had considered the cluster, purposive, snowball, and convenient sampling due to the larger size of the population. The sampling techniques eliminated inconsistences, sampling error and provided data on all individuals in the population. The seven blocks formed the sampling frame with each block having focus group discussion.

The study used cluster sampling method. In cluster sampling, the researcher divided a population into smaller groups known as clusters. He then randomly selects among these clusters to form a sample. (Mugenda and Mugenda, 2003). The clusters were seven groups' one composed: Maasai Mau, Eastern Mau, western Mau, Southern Mau, South West Mau, Trans Mara Region and Mau Narok. Convenient sampling involved selecting participants based on their accessibility and availability, the local administrative leaders, and religious leaders, were suitable for gathering data efficiently within the community. Snowball sampling

involved initial participants referring or introducing the researcher to other potential participants who made the study's criteria, whereby he expanded the sample size through referrals. Seven residents were picked through snowballing, who were identified as old residents', randomly picked from each block, helped the researcher to identify the other next seven residents who depended on their availability participated in the focus group discussion. Purposive sampling involved deliberately selecting participants who possessed specific characteristics or expertise relevant to the researcher's study objective, he used key informants (forest managers - Kenya WS / KFS) among the residents the (Mugenda & Mugenda, 2003).

By utilizing these sampling techniques, the researcher obtained a diverse range of perspectives and insights from participants within the Mau Narok community, he ensured a comprehensive understanding of environment of the research topic. The choice of the sampling techniques enabled the researcher to collect quantitative and qualitative data results from the research study. The techniques were also appropriate to the research context, as a result the researcher obtained, the relevant information from the best-fit respondents (Opoku, Ahmed & Akotia, 2016).

To sample this category of participants, the researcher applied the common formula of (Mugenda & Mugenda, 2003). The calculations of the sample size from 65,300 used a 3-step sample resampling technique, the number of respondents considered were obtained as follows:

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

n-Sample size
N- Target Population
e- Desired margin error $(0.05)^2$
Therefore, applying the above formula in a 3-step sample re-sampling and substituting the values correctly results to the following calculations.

$$n = \frac{65{,}300}{1 + 65{,}300(0.05^2)} = 397.56 \cong 398$$

$$n = \frac{398}{1 + 398(0.05^2)} = 199.49 \cong 200$$

$$n = \frac{200}{1 + 200(0.05^2)} = 133.33 \cong 134$$

Table 3. 2: Sample Size

Mau Forest Complex Blocks	**Population**	**Block's proportion**	**Sample distribution**	**Sample size**
Maasai Mau	10000	10,000 / 65,300 = 0.153	0.153 * 134 = 20.502	21
Eastern Mau	7000	7,000 / 65,300 = 0.107	0.107 * 134 = 14.338	14
Western Mau	8000	8,000 / 65,300 = 0.122	0.122 * 134 = 16.548	17
Southern Mau	9000	9,000 / 65,300 = 0.138	0.138 * 134 = 18.492	18
South West Mau	6500	6,500 / 65,300 = 0.099	0.099 * 134 = 13.266	13
Trans Mara Region	12000	12,000 / 65,300 = 0.183	0.183 * 134 = 24.822	25
Mau Narok	12800	12,800 / 65,300 = 0.196	0.196 * 134 = 26.264	26
Total	65, 300	1.00	134	134

Table 3. 3: Response Rate

Target groups	target Population	Sampling procedure
Seven blocks representatives	34	clusters
Administrative leaders and religious leaders	33	convenient
Residents	34	snowballing
Forest managers	33	purposive
Totals	134	

3.7 Data Collection Methods

The research study used various research tools in the data collection process. These includes questionnaires, interview guides and key informant interviews. A questionnaire is a research tool for gathering data in which respondents are asked to participate and provide written responses, was used for local administrators and religious leaders, resident, forest managers and Kenya wild services staffs. Every question on the questionnaire was created specifically to meet the study's purpose and the topic. This was administered to all respondents fairly. The second one is interview scheduled which was another vital important tool for data collection. This tool was very important for the particular respondents who had information, but can neither write nor read. The third was focus group discussion key informant for the forest managers. This tool was developed because it gives a more in- depth understanding of issues that cannot be addressed by surveys or other data collection tools. The research instrument enabled and supported the researcher to justify the findings and to measure the rationality and liability of the data collected. The collected data undergo rigorous and stepwise analysis.

3.7.1 Questionnaires for residents

The questionnaires comprised both open and closed ended questions. The questionnaires for residents was self-administered. The responses to the research questions were largely depended on the participants' experience on the same. Provided that the study sought the participants' views, questionnaires were best suited to capture all the views, and it was cheap and easy to administer (scholastica, 2019). This tool ensured data was accuracy, specific and relevance to

the research topic. It was divided into six main parts; one concentrated on the bio data. Part two addressed the level of environmental degradation. Part three focused on factors contributing to the conflict escalation in the Mau forest complex. Part four looked at the land degradation. Part five looked at the preventive measures of environmental degradation and conflict escalation. Part five Focused on the relationship between environmental degradation and conflict escalation.

3.7.2 Interview Guide for national, county leaders and residents

The interview guide for was semi-structured, guided by interview scheduled with questions to help the researcher receive detailed data on the research objectives. The use of interview guide provided detailed on the research study, which was not to get by applying by questionnaires (mugenda and mugenda, 2003). The researcher was capable to clarify critique questions relating to the subject of the study to the particular group. The national and county leaders were lead implementers.

This instrument was administered in the form of face-to-face encounters. The researcher obtained maximum cooperation from the correspondents, because he established a friendly relationship with the respondent prior to conduct the interview. The interviewer refrained from asking leading questions. Finally, the researcher remained neutral at all times in an interview situation which made him to achieve his objective during the study.

3.7.3 Focus group Discussion Guide for forest managers

The focus group discussion for forest managers was applied to collect information to back up the data collected from the residents, the religious readers, the national and county leaders. Forest managers being the main beneficiaries of the forest, they had more elaborative experience with the forest and contributed vital information pertaining their experience and views on environmental degradation and conflict on the economic development. Seven sub blocks participants were formed the sampling frame with each sub block possessing one focus group discussion. Seven forest participants were picked from snowballing were the first I identified as facilitators. Randomly picked from each of the seven blocks the next seven other participants who a depended on their accessibility to participate in the focus group discussion. These tool was important and used to understand the issues into details. It helped getting why, how and what of the topic. Just like the other mentioned tools, the focus group discussion guide, contained questions that led to the answering, the research questions of the study. The main

focus was on the research question of the study topic: The role of environmental degradation in conflict escalation in the Mau Narok. The research objective questions were, one to what extent was the Mau Forest Complex environment been degraded? Two what were the factors contributing to the escalation conflict in the Mau Forest Complex? Three what was the relationship between environmental degradation and conflict in the Mau Forest Complex? Four What were the possible mitigation measures against the conflicts in the Mau Forest Complex in Kenya?

3.8 Piloting of the Research Study Instruments

The pilot test applied to the proposed research design and procedure to the test in the field and updated the researcher of any issues that may have had negative impact on the research study. According (Schade, 2015). Carrying out a pilot of study is crucial for the validity of the research instruments.

For that matter before administering the instruments to the participants, the research carried out the pilot research study to test any deficiencies or any problems that the participants were likely to encounter when answering the questions.

The pre-test was conducted at Oloolua forest for primates' research institutes located in Ngong Kajiado County. Where twelve participants who are the staff of the institute were selected. Any questions explained differently during the pre-test were to be reconstructed to come out with the best required answers to the participant.

The pilot test was conducted two week earlier before main research study. The reason was to prove if there were any questions caused participants to be uneasy and I made it sure that the questions were understood by the participants. It really assisted the researcher to estimate the cluster and as a result it was successful

3.9 Data Validity and Reliability

Reliability and validity are tests that measure the relevance and correctness of any given study (Mugenda & Mugenda, 2003). This was done by conducting a pilot study where the instruments were tested before the main data collection process was carried out.

3.9.1 Validity

Validity of the tools was used to set out if the tools measured, what they were required to measure. The validity of the data collected in the study, was considered to the extent on how findings data was analysed and represented in the area of study (Scholastica, 2019).

The degree to which data collected using appropriate instruments, represented specific content domain intended to measure, is called as content validity.

The study used content validity, whereby the instruments involved researcher's experts, who tested whether the items indicated in the instruments accurately represented the matter under investigation.

The subsequent assessment of whether the research instruments; questionnaires, and interview guide measured the research area of study was carried out through facial validity. The investigation aimed the success in shedding light on the role of environmental degradation in conflict escalation.

3.9.2 Reliability of the instruments

Reliability helps the degree to which the instruments measures the consistency data over time under similar samples (Mugenda and Mugenda, 2003).

Testing the reliability of the instrument was conducted two weeks before the material day. The twelve participants were selected from Oloolua forest for primates' research institute, in Kajiado county. The study used Pearson product movement correlation reliability, which used to administer the same questionnaires to twelve participants among the Oloolua forest of institutes of primates' research, and correlating their responses independently: the same was repeated after one-week time.

After administering the questionnaires Pearson's correlation Coefficient was computed to determine the relationship between the scores and internal consistency to ascertain how close the participants' responses on the second round marched their responses to the first, which the research study revealed to be significantly correlated. more, an overall scale reliability coefficient score was generated applying Cronbach's alpha as a measure of internal consistency.

The study tools generated an overall scale reliability coefficient score 0.8198 and this was obtained from the clusters responses. The shows a good overall internal consistency of the tool responses.

3.9.3 Data Collection Procedure

The researcher started the procedure by the approval of the research proposal and also receiving of an introductory letter from Tangaza University, which assisted the researcher to apply to the National Commission for Science, Technology, and innovation (NACOSTI) for a research licence.

This was submitted to the County Commissioner's office for authorization by County administration. The questionnaires were self-administered. The participants were provided with approval letter of Ethics from Tangaza University and the NACOSTI permit certificate and the consent form. The questionnaires and interview guide were used to collect data at the field.

With the involvement of the research assistant, the cluster was administered to the participant by dropping the questionnaires and collecting them later.

3.10 Data Analysis

The statistical software for the social sciences (SPSS) version 2.1 was used by the researcher to analyse the data collected through the quantitative data. Quantitative data from the questionnaires were coded. The researcher's initial step in data analysis used descriptive statistics to describe the data (Frequencies, percentages and means) each statistic used in descriptive statistics had a purpose.

The statistics used by the researcher depended on the variable in the study and the scale used (ratio, interval, ordinal, nominal) (Mugenda & Mugenda, 2003). Descriptive statistics used helped a researcher to summarise quantitative data, which made it ready and easy, to be presented in diagrammatic forms. The thematic analysis was utilized to analyse qualitative data based on the emerging themes, meanings or patterns, being descriptive research, frequency counts and percentages were used to present categorical variables.

Tables were used to present the quantitative data, and qualitative data was presented in narrative form and verbatim quotes. The developments of data coding by researchers was significantly reduced the amount of work and time needed (Selvam, 2017).

3.10.1 Data Analysis and Presentation

According to Tromp and Kombo (2007) data analysis entails the process in which the collected data assessed to obtain relevant information. Particularly, the process entailed the finding fundamental structures, extracted essential variables, noticed irregularities and tested fundamental assumptions. Further, it encompassed examined data, obtained and, created interpretations.

This study utilized descriptive statistics, to analyse data. Descriptive statistics entailed, the collection, organization, and analysis of all data relating to some sample under the study. According to Breakwell (2006), descriptive analysis enabled the presentation of data in form of frequency tables. Qualitative data was analysed thematically to detect patterns, categories, and recurrent themes.

3.10.2 Statistical Data Analysis

Table 3. 4: Descriptive Data Analysis Techniques

Analysis Techniques	Main features	When to use	Measure of
mean	The average of a set Quantitative data. The sum of all scores was divided by the total Number of items in the set.	Was used to describe the Central measure whether the sample was normally distributed	
Median	The number (or variable) was divided to a set of characteristics into Two equal halves when all the number (or variables) was Arranged in Order of magnitude. It was positioned average.	Was used to describe the Central measure When the distribution of a variable was skewed.	Central Tendencies
Mode	The most frequent number (number).	Was used mostly for qualitative data.	
Range	The arithmetic difference between the highest and the lowest scores in a distribution	Was used when Only a sample Measure of dispersion was required a Suited normally distributed sample	
Quartile Deviation	The difference between upper and lower quotas in a given set of distribution.	was used to measure dispersion when the distribution of variables skewed positively or negatively.	Dispersion
Standard Deviation	The average variation scores in the distribution from the mean.	Was used to estimate Variability in A distribution.	
Variance	Standard error of Difference between two means.	Was to determine whether the means of the two samples from Different sources were actually different.	

3.10.3 Data Coded and Anonymized

Personal identifiers were removed from the data and replaced with a participant code. This helped with the anonymization of research participants.

3.11 Ethical Considerations.

The study complied with a complex set of ethical values in accordance with Tangaza University Ethics Committee and NACOSTI, that protected the participants from undue influence and ensured its integrity (Scholastica, 2019; Selvam, 2017).

The letter enabled the researcher to apply to the National Commission for Science, Technology, and innovation (NACOSTI) to provide the research permit certificate. The researcher presented the permit certificate to the County Commissioner of Narok County Commissioner's Office to access and collect data at Narok County. The county caretakers gave authorization to access data in the county, the study aimed to establish the role of environmental degradation in conflict escalation in Mau Forest complex in Narok county, Kenya.

The outcomes were targeted to assist the residents of Narok county to manage and restore the Mau Forest Complex, which must balance environmental protection with the needs and rights of local communities, to reduce conflict and ensure sustainable resource use. The researcher elaborated to the research assistants the significance of the study, as the above and professionalism while submitting the questionnaires to the participants. The research participants were well treated with respect and dignity.

More so the questionnaires were designed in such way as to protect the identity of the participants. The explanations of the research study were provided to the participants that the information disclosed would be treated with confidentiality to protect their identities. Participation was at liberty and freely to quit the research study voluntary if there was need. The participants were protected from applying the real names during the collection event. The researcher conducted the debate carefully and objectively without revealing the information that would affect participants negatively. The researcher ensured that the data collected from the field study was in safe custody.

The researcher exercised honesty, integrity and openness during the data collection exercises. The dissemination of the finding was done after the research study was completed in a more appropriate manner. The researcher was at all times avoided using force to receive information from participants.

All participants were appreciated at the end of data collection process. For the sake of avoiding plagiarism and fraudulent act, the reference lists at the end of the proposal are provided, the information required, necessary identifications and each sources retrieved.

3.12 Community Consideration of the Study

Some people of the residents of the community were very suspicious of strangers talking to them. The researcher recruited the research assistants from the area of the study of Mau Forest Complex. Since more respondents were more trustful to somebody they knew, and therefore they shared the information freely. The research assistants were more familiar with the geographical area thus made data collection exercise easier and faster.

3.13 Potential Risks

In this study, the researcher intentionally administered 250 questionnaires in case some got spoilt. Besides, the researcher hired motorbikes to forestall the risks associated with rainfall and terrain.

3.14 Data Quality Assurance

The process of getting the completed instruments from the field to the office where coding and analysis was done during data collection. The researcher established an efficient system of collecting completed instruments on a regular basis. The researcher's exercise, had several centres in the field, whereby research assistants' completed instruments were taken and the supervisors checked thoroughly to ensure that the instruments were completed properly, before dispatching them to the main centre, where data coding and analysis was conducted.
The data coding and entry started immediately as completed instruments were received.
This reduced the time needed to code and enter data, and once the data had been transferred from the instruments to the computer, the instruments were kept in a safe place for future reference.

3.15 Chapter Summary

The research methodology was employed in the research study has been set out in this chapter: The justification of the type of research, the research design, location of the study, the target population, Sample Size and Sampling Procedures, Data Collection Methods, research tools, pilot study, validity, reliability, data collection procedures, data analysis, Data Coded, ethical consideration of the study, potential risks and data quality assurance. The chapter provides the

backbone foundation for the subjective chapters, which was critical to the presentation, analysis and interpretation of the data collected in the field study.

CHAPTER 4

DATA ANALYSIS AND PRESENTATION

4.1 Introduction

This chapter presents the results and findings of the study. The study relied on primary data collected from the people of the local communities, national and county administrators at Narok County, the Kenya Forest Service Staffs, Kenya wild service and religious leaders through questionnaires, interview guides and focus group discussion.

Quantitative data collected through questionnaires was analysed using descriptive statistics and presented in tables. Qualitative data generated from focus group discussions and interviews subsequence to thematic analysis and presented with reference to the objectives of this study.

4.2 Response Rate

The target sample consisted of 134 respondents from different groups. All targeted respondents were reached through a combination of cluster sampling, snowball sampling, purposive sampling, and convenience sampling. This approach allowed the study to collect data from all 134 individuals in the target sample, leading to a 100% response rate. The distribution is as presented in Table 4. 1 below.

Table 4. 1 Response Rate

Target groups	Target Sample	Percentage (%)	Sampling procedure
Seven blocks representatives	34	25.37	clusters
Administrative leaders and religious leaders	33	24.63	convenient
Residents	34	25.37	snowballing
Forest managers	33	24.63	purposive
Totals	134	100	

4.3 Demographic Characteristics of the Respondents

This section presents the demographic characteristics of the respondents who participated in the study. The demographic information covers two key attributes of gender and age, which provides the respondents' backgrounds and potential influence on their views regarding

environmental degradation and conflict escalation in the Mau Forest Complex. Table 4. 2 summarises the distribution for gender and age of the respondents.

Table 4. 2 Demographic Characteristics of the Respondents

Category	Sub-Category	Frequency	Percentage (%)
Gender	Male	80	59.70
	Female	54	40.30
	Total	134	100
Age Bracket	18 years and below	12	8.96
	19 - 29 years	67	50.00
	30 - 39 years	24	17.91
	40 - 49 years	12	8.96
	50 - 59 years	13	9.70
	60 years and above	6	4.48
	Total	134	100

As is depicted in Table 4. 2, out of the total 134 respondents, 80 (59.7%) were male, and 54 (40.3%) were female. This indicates that the study had a relatively higher representation of males compared to females. The majority of respondents fell within the 19–29 years' age bracket, accounting for 50% of the total sample. This indicated a youthful population as the predominant age group in the study. Other significant age groups include those aged 30–39 years (17.9%) and 50–59 years (9.7%). The least represented age group was 60 years and above (4.5%). The demographic data showed that the study engaged a fairly balanced gender representation and a predominantly younger population.

4.4 Level of Environmental Degradation in Mau Forest Complex

The study collected respondents' perceptions of environmental degradation in the Mau Forest Complex and its impact on the ecosystem and local communities. Respondents were asked to indicate their level of agreement with various statements regarding the role of environmental degradation. The following table summarises the responses, categorized by Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), and Strongly Disagree (SD). Table 4. 3 presents the different perceptions of the respondents on environmental degradation.

Table 4. 3 Perceptions on Environmental Degradation

Perception	SA	A	N	D	SD	TOTALS

1) Many local communities depend on the Forest for their livelihood including agriculture, grazing and forest products	89	38	4	2	1	134
2) Degrading (destruction) of Forests leads to the consumption of vital resources such as water, timber and fertile soil.	96	31	4	2	1	134
3) Environmental degradation such as deforestation (clearing) and soil erosion reduces the forest's ability to regulate water	90	38	4	1	1	134
4) Environmental degradation(destruction) threatens all kinds of life, including death of rare animals and plants	96	32	4	1	1	134
5) Degradation of the environment contributes to reduction of carbon dioxide in the atmosphere	56	23	5	10	1	134

Fromabove, most respondents (89 strongly agree and 38 agree) indicated that local communities rely on the forest for their livelihoods, including agriculture, grazing, and forest products, representing a total of 94.8% agreement. This highlights the critical role the forest plays in supporting the community's economic activities. On destruction of forests and resource consumption, a huge portion of the respondents (96 strongly agreed and 31 agreed) acknowledged that forest destruction led to the consumption of vital resources such as water, timber, and fertile soil, with 94.8% in agreement. This illustrates the widespread recognition of the adverse effects of environmental degradation on essential natural resources.

Concerning deforestation and water regulation, a vast majority of respondents (90 strongly agree and 38 agree) recognised that deforestation and soil erosion diminish the forest's ability to regulate water, accounting for 95.5% agreement. This reflects strong awareness of the forest's role in maintaining water systems. On threat to biodiversity, the statement that environmental degradation threatens all forms of life, including rare animals and plants, received overwhelming agreement (96 strongly agree and 32 agree), with a total of 95.5%. This indicates a strong consensus on the detrimental impacts of forest destruction on biodiversity. While still notable, the statement about environmental degradation contributing to reduced carbon dioxide levels saw lower agreement, with 56 strongly agreeing and 23 agreeing, totalling 59.7%. However, 10 respondents disagreed, suggesting a difference in understanding or perception about the impact of environmental degradation on atmospheric carbon dioxide levels. In an interview, one respondent expressed:

"Without the forest, we have no life; it provides our water, our food, and our way of living. When it suffers, we all suffer." (Respondent, C)

This statement reflects a strong consensus among respondents regarding the critical role of the Mau Forest Complex in sustaining local livelihoods and ecological health. Many emphasized that local communities heavily rely on the forest for agriculture, grazing, and forest products, highlighting its importance in their daily lives. Additionally, there was widespread recognition that environmental degradation, such as deforestation and soil erosion, diminishes the forest's capacity to regulate water and threatens biodiversity, including rare species. While some respondents showed varied awareness about the impact of degradation on carbon dioxide levels, the overall findings underscore a pressing need for sustainable management practices to address environmental degradation and support both the ecosystem and local communities.

The findings on the perception of environmental degradation in the Mau Forest Complex reveal a strong consensus among respondents regarding its adverse impacts. A majority agree that local communities heavily depend on the forest for their livelihoods, and the degradation of forests leads to the depletion of vital resources like water, timber, and fertile soil. Most respondents also recognize that deforestation and soil erosion reduce the forest’s ability to regulate water and threaten biodiversity, including rare animals and plants.

4.5 Factors Contributing to the Escalation of Conflict in Mau Forest Complex

This section presents the factors identified by respondents as contributing to the escalation of conflict within the Mau Forest Complex. Respondents were asked to indicate their level of agreement with statements related to factors such as resource scarcity, political interests, weather changes, governance issues, and human activities. **Error! Reference source not ound.** summarises the responses.

Factors Contributing to Conflict Escalation in Mau Forest Complex

The objective of the study was to establish the factors contributing to the conflict escalations in Mau Forest Complex Narok County. To achieve this, respondents were asked to rate the items if they agree they contributed to conflict escalation. Table 1 represents findings.

Table 4. 4: Factors Contributing to Conflict Escalation in Mau Forest Complex

Variable Statements	SA	A	N	D	SD	Total	Mean	SD
Scarcity of natural resources	90	30	8	4	2	134	4.51	0.85
Political interest	96	22	9	2	4	134	4.50	0.91

Variable Statements	SA	A	N	D	SD	Total	Mean	SD
Changes in weather	80	16	15	8	2	134	3.93	1.06
Weak governance and law enforcement	96	18	12	7	3	134	4.51	1.01
Human activities (disturbance) on land e.g., farming	86	18	10	11	9	134	4.20	1.27
Destroying water towers (water catchments)	89	27	13	10	4	134	4.60	1.15
Conversion of forestland into settlements	86	40	9	9	4	134	4.77	1.17
Mismanagement of industrial forest plantations	80	40	8	3	3	134	4.43	0.88
Illegal forest resource extraction	89	29	10	4	2	134	4.49	0.87
Grazing of cattle-protected wildlife areas	80	33	13	4	4	134	4.35	0.98

Source: Author (2024)

Result presented in table 2 highlights various factors contributing to conflict escalation in the Mau Forest Complex, with each factor evaluated based on respondents' agreement levels. The mean and standard deviation values provide insights into the intensity and variability of perceptions regarding these factors. The study found that scarcity of natural resources (Mean = 4.51, SD = 0.85) is a contributor to conflict. The high mean indicates strong agreement among respondents that resource scarcity exacerbates tensions. This finding aligns with the literature, which suggests that competition over limited resources often leads to conflicts, particularly in regions where communities depend heavily on natural resources for their livelihoods (Homer-Dixon, 1999). The root cause of this issue is the increasing demand for resources due to population growth and environmental degradation, which reduces the availability of essential resources like water and arable land. This scarcity can lead to disputes over resource allocation, further escalating conflicts.

In addition, political interest (Mean = 4.50, SD = 0.91) also plays a crucial role in conflict escalation. Political manipulation and interests often exacerbate conflicts, as leaders may exploit ethnic or regional divisions to gain support or control resources (Kahl, 2006). The variability in responses (SD = 0.91) suggests differing perceptions of political influence, possibly reflecting the complex and multifaceted nature of political dynamics in the region. Political interests can inflame existing tensions by promoting policies that favor certain groups over others, leading to feelings of marginalization and resentment.

The study also identified changes in weather (Mean = 3.93, SD = 1.06) are perceived as a moderate contributor to conflict. Climate change impacts, such as altered rainfall patterns and increased frequency of extreme weather events, can exacerbate resource scarcity and

displacement, leading to conflicts (Barnett & Adger, 2007). The relatively higher standard deviation indicates diverse opinions on the extent of weather changes' impact, which may be due to varying experiences and awareness levels among respondents. Further, weak governance and law enforcement (Mean = 4.51, SD = 1.01) is another significant factor. Ineffective governance structures and poor law enforcement can create power vacuums and enable illegal activities, such as land grabbing and resource exploitation, which fuel conflicts (Ostrom, 1990). The high mean reflects a consensus on the importance of strong governance in mitigating conflicts, while the standard deviation suggests some variability in perceptions, possibly due to differences in local governance experiences.

Moreover, human activities (disturbance) on land, e.g., farming (Mean = 4.20, SD = 1.27) contribute to conflict by disrupting ecosystems and competing with conservation efforts. The high standard deviation indicates significant variability in responses, which may reflect differing levels of impact experienced by various communities. Farming and other land-use changes can lead to habitat destruction and resource depletion, increasing competition and conflict among land users (Geist & Lambin, 2002). In addition, destroying water towers (water catchments) (Mean = 4.60, SD = 1.15) is perceived as a major conflict driver. Water towers are crucial for maintaining water supply and ecological balance, and their destruction can lead to severe water shortages and environmental degradation (UNEP, 2012). The high mean and standard deviation suggest strong agreement on the issue's importance but also indicate diverse experiences and perceptions of its impact.

Conversion of forestland into settlements (Mean = 4.77, SD = 1.17) is the highest-rated factor, highlighting the critical role of land use changes in conflict escalation. The conversion of forestland for settlements disrupts ecosystems, displaces wildlife, and reduces available resources, leading to conflicts between settlers and conservationists (FAO, 2016). The high mean reflects strong agreement on this issue, while the standard deviation indicates variability in the perceived impact. Mismanagement of industrial forest plantations (Mean = 4.43, SD = 0.88) contributes to conflict by reducing forest productivity and sustainability. Poor management practices can lead to resource depletion and environmental degradation, exacerbating tensions among stakeholders (Putz et al., 2008). The relatively low standard deviation suggests a consensus on the negative impact of mismanagement.

Illegal forest resource extraction (Mean = 4.49, SD = 0.87) is another significant factor. Illegal activities, such as logging and poaching, undermine conservation efforts and create conflicts over resource control (Nellemann et al., 2014). The high mean indicates strong agreement on the issue, while the standard deviation suggests some variability in perceptions.

Grazing cattle in protected wildlife areas (Mean = 4.35, SD = 0.98) contributes to conflict by competing with wildlife for resources and disrupting conservation efforts. This practice can lead to overgrazing, habitat destruction, and increased human-wildlife conflicts (Ogutu et al., 2014). The high mean reflect strong agreement on the issue, while the standard deviation indicates variability in the perceived impact. The findings highlight the multifaceted nature of conflict escalation in the Mau Forest Complex, with resource scarcity, political interests, and land use changes being the most significant contributors. These factors are interrelated and often exacerbate each other, leading to complex conflict dynamics. Addressing these issues requires integrated approaches that consider environmental, political, and socio-economic dimensions to promote sustainable conflict resolution and forest management.

In interviews, respondents consistently pointed to resource scarcity as a key factor in escalating conflicts within the Mau Forest Complex. Many expressed frustrations over the depletion of essential resources such as water, firewood, and grazing land due to deforestation and illegal human activities. Encroachment for farming and logging has significantly reduced forest cover, which in turn has diminished the availability of these vital resources. This resource depletion, as respondents noted, has intensified competition among local communities, often resulting in disputes. The scarcity of arable land has also strained relationships, particularly in areas where agriculture is the primary livelihood. Historical issues, such as mismanagement of land allocations during the KANU era, have further compounded these conflicts, with communities now fighting over limited resources.

As more people move into the forest to farm and settle, we are left with less land and fewer resources. This has caused tensions between families and tribes who rely on the same resources to survive. (Respondent A).

The scarcity of natural resources as a driver of conflict has been widely documented in environmental research. Bisht et al. (2020) underscore the role of deforestation and over-exploitation in exacerbating resource competition, which leads to conflicts in forested areas. Similarly, Kumar, Kumar, and Saikia (2022) highlight that deforestation not only disrupts ecological balance but also triggers social instability, particularly when resources like water

and arable land become scarce. These findings resonate with Chemutai Koech's (2023) study, which identified resource scarcity as a major factor driving tensions among the indigenous Ogiek community in the Mau Forest**.**

Respondents emphasized the profound impact of political interference on conflict escalation in the Mau Forest Complex. Several participants expressed frustration over how political leaders have historically used forestland allocations to secure votes and maintain influence. Politicians often promise land in exchange for political support, leading to illegal settlements and environmental degradation. This manipulation has sparked land disputes between indigenous communities and new settlers, creating a volatile environment where tensions escalate over land ownership and resource access. Political favoritism has allowed for unchecked destruction of the forest, further exacerbating conflicts between forest-dependent communities.

Politicians always promise us land in exchange for votes, but this has only led to conflicts. The forest is being destroyed, and we are left to fight over what is left.

Political interference in land management has been identified as a critical factor in many resource-based conflicts. Chemutai Koech (2023) discusses how political promises and irregular land allocations have contributed to ongoing tensions in the Mau Forest. Irland (2008) further asserts that governance failures and political corruption are key barriers to effective forest management, as they create an environment where illegal activities are allowed to flourish. This finding is also supported by Blumm, Brown, and Stewart-Fusek (2022), who argue that political exploitation of natural resources often destabilizes communities and undermines conservation efforts**.**

Several respondents highlighted the role of changing weather patterns in contributing to resource scarcity and, consequently, conflict. Unpredictable rainfall and prolonged droughts have worsened the availability of water and pasture, especially for pastoralist communities that depend on these resources for livestock. As weather patterns become more erratic, communities are forced to migrate in search of fertile land and water, leading to conflicts with indigenous groups and others who rely on the same resources. Respondents also expressed concern that the lack of resilient infrastructure has left them vulnerable to climate-related shocks, further intensifying competition over dwindling resources.

The weather has changed so much. We don't get enough rain, and the rivers are drying up. This has caused a lot of conflict between us and the neighboring communities. (Respondent C).

Bell and Masys (2020) emphasize that climate change acts as a conflict multiplier, particularly in regions where communities rely heavily on natural resources. Prolonged droughts and erratic weather patterns, as seen in the Mau Forest, lead to increased competition for limited resources such as water and pasture, exacerbating existing tensions. Jebiwott et al. (2021) echo these findings, noting that climate variability has significantly impacted resource availability in the Mau Forest, which in turn has fueled conflict between forest-dependent communities**.**

Many respondents voiced their concerns over weak governance and law enforcement, which they saw as major contributors to ongoing conflicts in the Mau Forest Complex. They expressed frustration with the government's inability to curb illegal activities such as logging, settlement encroachment, and land grabbing. Several respondents cited corruption and political interference as key reasons behind the government's failure to protect the forest and enforce environmental regulations. The lack of clear land tenure policies has also created uncertainty, leading to disputes between communities and between communities and government authorities.

"The government is not doing enough to stop illegal activities in the forest. They allow people to come and settle, and then we are the ones who suffer the consequences." (Respondent D).

Irland (2008) emphasizes that governance failures and corruption are major challenges in forest management, particularly in regions vulnerable to resource-based conflicts. In the case of the Mau Forest, Klopp and Sang (2011) note that the government's inability to enforce land regulations has led to widespread illegal settlements and environmental degradation, further exacerbating tensions between communities. Blumm et al. (2022) argues that strengthening governance and law enforcement is critical to resolving conflicts and ensuring the sustainable management of forest resources**.**

Respondents frequently identified illegal human activities, such as farming and logging, as key factors contributing to the degradation of the Mau Forest and the subsequent escalation of conflicts. The encroachment of settlers into forested areas for agricultural purposes has led to deforestation and competition over remaining land and resources. As the forest cover continues to diminish, tensions rise between settlers and indigenous communities, as well as between settlers and conservation authorities. These activities are often driven by economic necessity, but they have long-term consequences for the sustainability of the forest and the well-being of surrounding communities.

“Farming in the forest has caused a lot of problems. People come in, cut down trees, and clear land to grow crops. This has led to conflicts, as we are running out of land and resources.” (Respondent E).

Human activities such as illegal farming and logging have been widely recognized as drivers of environmental degradation and conflict in forest regions. Jebiwott et al. (2021) document the extensive deforestation in the Mau Forest caused by these activities, noting the direct link between environmental degradation and resource conflicts. Bisht et al. (2020) further assert that human encroachment into forested areas exacerbates resource scarcity, leading to increased competition and social tensions**.**

Several respondents expressed concern over the destruction of water towers in the Mau Forest, which they viewed as a significant driver of conflict. Deforestation and human activities in water catchment areas have disrupted water flow, leading to shortages and increased competition for water resources. These shortages have particularly affected agricultural productivity, with many farmers reporting reduced access to irrigation water, thereby intensifying conflicts between communities that rely on the same water sources.

“The rivers are drying up because of the destruction of the water towers. We now must fight for water, and this has caused so many problems between us and the neighboring communities. (Respondent F).

Langat et al. (2021) emphasizes the critical role of water towers in maintaining the ecological balance of the Mau Forest and supporting surrounding communities. The destruction of these catchment areas has disrupted water availability, leading to increased competition and conflict, particularly among agricultural communities. Bisht et al. (2020) similarly argue that the degradation of vital ecological services, such as water catchments, has far-reaching consequences for both environmental sustainability and social stability, as communities vie for control of these resources**.**

Table 4. 5: Results of deforestation of Mau Forest complex

Statements	SA	A	N	D	SD	TOTALS
1 Tourism sector will be affected	100	23	4	3	4	134
2 Desertification	101	24	4	3	2	134
3 Rainfall declines	104	21	5	3	1	134
4 Drying up of some rivers	101	24	4	3	2	134
5. Unique diversity (all life forms) of forest will be affected	93	25	8	5	3	134

From Table 4.5 above, the majority of respondents (100 strongly agree and 23 agree) believed that deforestation will significantly affect the tourism sector, with 91.8% total agreement, reflecting concerns over the loss of a critical natural attraction. Similarly, a huge number of respondents (101 strongly agree and 24 agree) believed deforestation will lead to desertification, with 93.3% agreement, indicating the perception that deforestation will drastically alter the environment. Additionally, the strongest consensus was observed regarding the impact on rainfall, with 104 strongly agreeing and 21 agreeing (93.2% total agreement), highlighting the belief that deforestation will disrupt local weather patterns and lead to reduced rainfall.

On drying up of rivers and the unique biodiversity, respondents also expressed strong concerns about rivers drying up due to deforestation, with 101 strongly agreeing and 24 agreeing (93.3% total agreement), indicating the anticipated depletion of water resources. From the qualitative responses, the respondents explained that the clearing of forest can disrupt the natural balance of water systems, contributing to reduced river flow and increased risk of drying. Additionally, a total of 93 strongly agreed and 25 agreed that deforestation will affect the unique biodiversity of the forest, although a few respondents were neutral/disagreed, suggesting a high level of concern (88.8% agreement) over the loss of various life forms in the forest ecosystem. Qualitative responses supported the perception by highlighting that efforts to manage and restore the Mau Forest Complex must balance environmental protection with the needs and rights of local communities to reduce conflict and ensure sustainable resource use.

Overly, respondents overwhelmingly believed that deforestation in the Mau Forest Complex would have severe consequences, affecting tourism, leading to desertification, reducing rainfall, drying up rivers, and harming the forest's biodiversity.

The qualitative data revealed deep concerns among local community members regarding the loss of natural resources and its implications for their livelihoods. Respondents highlighted that the removal of trees has led to drying rivers, significantly diminishing their access to vital water sources. Additionally, participants noted changes in local weather patterns, attributing declining rainfall and increased temperatures to forest loss. They expressed fears about the threat to biodiversity, emphasizing that the unique plant and animal species of the forest are integral to their cultural identity. Furthermore, the discussions illuminated social tensions arising from resource scarcity, indicating that as access to essential natural resources decreases, conflicts within and between communities are increasing. Overall, the findings underscore the urgent need for sustainable management practices to safeguard the Mau Forest and support the well-being of local communities. In an interview, one participant stated:

"Since the trees have been cut down, we have seen the rivers start to dry up. It feels like our lifeline is disappearing." (Respondent, R)

The respondents were further probed on their opinions and views on various entities' roles in addressing environmental degradation and conflict escalation in the Mau Forest Complex. Table 4.6 below outlines the responses.

Table 4.6 Roles of addressing Environmental Degradation and Conflict Escalation in Mau Forest Complex

Statements	SA	A	N	D	SD	TOTALS
The people of Mau Narok are aware of their problems which are as a result of environmental destruction and know how to overcome them.	46	26	27	17	18	134
The county administration has the role of addressing environmental degradation and conflict escalation (increases).	70	42	8	8	6	134
The people of Mau Narok (residents) have a role to play in addressing environmental degradation and conflict escalation.	93	29	6	4	2	134

Mau Narok non-residents have a role of addressing environmental degradation and conflict escalation.	73	40	8	7	6	134
Both national and county administrators, Mau Narok residents and non-residents have a role to play in addressing environmental degradation and conflict escalation (increase).	77	36	10	6	5	134
None of the above has a role to play in addressing environmental degradation and conflict escalation.	2	4	6	8	114	134

From above, only 34.3% (46 strongly agree, 26 agree) believed that the people of Mau Narok were aware of their problems and know how to overcome them, while 27 were neutral and 35 respondents disagreed, indicating a divided opinion on local awareness and capacity to address environmental challenges. A significant majority (83.6%) of respondents (70 strongly agree, 42 agree) felt that the county administration had a role in addressing environmental degradation and conflict escalation, emphasising the perceived responsibility of local governance structures.

A huge proportion (91.0%) of respondents agreed that the people of Mau Narok have a role to play in addressing the challenges, showing a strong consensus about the responsibility of local communities in environmental conservation efforts. Most respondents (84.3%) felt that even non-residents have a role to play, reflecting the perception that external parties also bear responsibility for addressing environmental degradation and conflict escalation.

A substantial majority (83.6%) agreed that both national and county administrators, residents, and non-residents should collectively address the challenges, indicating that respondents believe in a multi-stakeholder approach to solving these problems. An overwhelming 85% disagreed with the statement that none of the above has a role in addressing environmental degradation, reaffirming the view that multiple actors are responsible for mitigating environmental degradation and its associated conflicts. In an interview, one participant emphasized the need for collective action:

"Everyone has a part to play in saving our environment; it cannot just be left to a few." (Respondent, E)

The qualitative data on addressing environmental degradation and conflict escalation in the Mau Forest Complex revealed varied perspectives on local awareness and capacity to tackle

environmental challenges. Some respondents felt that while the people of Mau Narok may recognize the challenges, there is limited confidence in their ability to overcome them independently. However, a strong consensus emerged around the responsibility of county administration to take active measures, indicating reliance on local governance to drive meaningful change. Many respondents also viewed the local community as pivotal to conservation efforts, with widespread agreement on the vital role of Mau Narok residents in addressing environmental degradation. Moreover, a substantial portion of participants saw non-residents as equally responsible, underscoring the need for involvement from all affected parties. Overall, the findings point to a belief in a multi-stakeholder approach, suggesting that effective solutions require the collaboration of national and county administrators, residents, and non-residents alike.

4.6 Nexus between Environmental Degradation and Conflict Escalation in the Mau Forest Complex

The study probed whether Mau Narok residents had witnessed environmental degradation. The findings show that the vast majority of respondents (97%) have witnessed environmental degradation in the Mau Forest Complex, with only 3 respondents indicating "No" and 1 stating "I don't know." This indicated a high level of awareness regarding environmental degradation among both residents and non-residents of Mau Narok.

For those who witnessed degradation, illegal logging was a significant challenge, particularly around 2023. Forest rangers and officers were reportedly involved in corrupt activities that facilitated forest destruction. As a result of their involvement in these illegal activities, the government terminated their employment. These responses underscore the role of weak governance and corruption in exacerbating environmental degradation in the Mau Forest Complex.

Respondents indicate that both residents and non-residents of Mau Narok faced heightened vulnerability due to environmental degradation and conflict. The primary challenges mentioned include extreme weather and climate change, largely attributed to human activities such as deforestation, unsustainable land practices, and the encroachment on riparian and wetland ecosystems in the Mau Forest Complex. These actions have had a direct negative impact on the local environment.

Regarding the impact on education, respondents highlighted that environmental degradation and conflict significantly disrupted education in 2019. Specifically, 15 educational facilities were demolished as part of the campaign to conserve the Mau Forest Complex, displacing around 10,000 children. Many students, particularly those from Chebetet and Kitobon, were forced to relocate to schools outside the forest. This disruption affected candidates preparing for their final Standard Eight and Form Four exams.

Further, the study explored respondents' views on how environmental degradation relates to conflict escalation in the Mau Forest Complex. Respondents were asked to indicate their level of agreement with a range of statements, as detailed below.

Table 4.7 L: Relationship between Environmental Degradation and Conflict Escalation in Mau Forest Complex

Statements	SA	A	N	D	SD	TOTALS
Existence of latent issues related to access to land or insecurity of tenure e.g. ethnic (tribal) tensions.	70	50	8	4	2	134
Mobilization around land issues; land becomes object of dispute; escalation of localized conflict.	77	48	4	3	2	134
Increased land-related violence and displacement; institutions failing; land & natural resources fuel conflict; new tenures emerge.	81	44	3	4	2	134
Role of land tenure recognized in peace agreements (or not); non-violent process established (or not)	66	36	24	6	2	134
Conflict transformation or return to conflict? Depends on ability to manage localized violence and address conflict drivers, issues land.	79	37	11	4	3	134
Population pressure encouraged destructive forms of agriculture to meet the needs of the population.	86	36	6	4	2	134
Natural resource exploitation result to environmental degradation and escalates conflict.	86	37	5	3	3	134
Weak land administration and management systems encourages environment degradation which escalates conflict.	84	40	6	3	1	134
Unregulated trade for timbers, charcoal and investment which result to environmental degradation and conflict escalation.	83	34	9	6	2	134

From table 4.7 a significant majority (89.6%) agreed that latent challenges related to land access and insecurity of tenure, such as ethnic tensions, contribute to conflict escalation in the Mau Forest Complex. This indicated a broad consensus that land disputes were key drivers of conflict. 93.2% of respondents believed that land disputes lead to localised conflict escalation, emphasising the role of land as a central factor in conflicts. 93.2% agreed that land-related violence and displacement were exacerbated by institutional failures and that land and natural resources fuel conflict. This suggested that weak institutional governance was a contributing factor.

While most respondents acknowledged the role of land tenure in peace agreements, 24 respondents (17.9%) remained neutral, possibly reflecting uncertainty about the effectiveness of these agreements. 86.6% agreed that whether conflicts were transformed or escalated

depends on the ability to manage localised violence and address land-related challenges. The majority (90.3%) agreed that population pressure encouraged destructive agricultural practices, which in turn lead to environmental degradation, illustrating the link between human activity and ecological decline. 91.7% of respondents agreed that the exploitation of natural resources led to environmental degradation and fuels conflict, showing strong awareness of how resource depletion exacerbates tensions.

On land administration, a huge majority (92.5%) felt that weak land administration and management systems contributed to environmental degradation, further escalating conflict, reinforcing the need for stronger governance. 87.3% agreed that unregulated trade in timber, charcoal, and other investments led to environmental degradation and conflict escalation, highlighting the impact of illegal economic activities on both the environment and local peace.

Overall, the respondents strongly agreed that environmental degradation, driven by weak governance, population pressures, and resource exploitation, significantly contributed to the escalation of conflict in the Mau Forest Complex. Effective management of land resources and institutional governance is crucial to mitigating these conflicts.

On cultural practices, particularly those of the indigenous Ogiek community, were closely tied to environmental degradation and conflict. The eviction of the Ogiek from the Mau Forest Complex, meant to protect water catchment areas, forced them to shift from their traditional hunting and gathering lifestyle to farming, which they were unfamiliar with. This change increased their vulnerability to poverty and worsened their living conditions. Environmental degradation and conflict have significant negative effects on economic development. The loss of biodiversity impacts agriculture, tourism, and other industries reliant on natural resources. The forest played a vital role in climate regulation, and its destruction leads to extreme weather events that damage agriculture and infrastructure, causing economic instability. Additionally, degradation leads to the loss of cultural heritage, which affects cultural tourism, a key economic sector in Narok County. Conflicts over scarce resources like land and water disrupt economic activities and deter investment. Natural disasters resulting from environmental degradation, such as floods and landslides, further damage infrastructure and increase economic costs.

The role of the national and county governments in addressing environmental degradation and conflict escalation lied on collaboration. Both levels of government need to work together on

conservation projects, share resources, and coordinate law enforcement. Partnerships with NGOs, community-based organisations, and international stakeholders are also essential for comprehensive and sustainable solutions. Joint efforts between national and county governments are crucial to managing the Mau Forest Complex and preventing further conflict escalation.

To address environmental degradation and conflict escalation, a multi-faceted approach is needed. This includes empowering local communities, promoting sustainable livelihoods, and ensuring effective governance. Integrating environmental conservation with economic development is key to restoring the forest ecosystem while improving the well-being of the people who rely on it.

CHAPTER 5

SUMMARY CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter presents a discussion of the findings in relation to the objectives of the study, conclusions drawn from the results, and recommendations for mitigating the environmental degradation and the escalation of conflict in the Mau Forest Complex. The study's implications for policy, practice, and further research are also highlighted.

5.2 Discussion of Findings

5.2.1 Level of Environmental Degradation in the Mau Forest Complex

The study highlighted a significant dependency of the local communities on the forest for livelihoods, which was overwhelmingly agreed upon by 94.8% of the respondents. The destruction of the forest was viewed as leading to the depletion of vital resources such as water and fertile soil. The recognition of deforestation’s impact on water regulation was also noted, with 95.5% of respondents agreeing.

The findings align with literature that emphasizes the environmental services provided by forests, including water regulation, carbon sequestration, and biodiversity protection. The heavy reliance of local communities on the forest for both economic and subsistence activities exacerbate pressure on forest resources. The wide recognition of these impacts by respondents suggests a strong awareness of the negative effects of environmental degradation, which aligns with global concerns about deforestation's contribution to environmental crises such as climate change and biodiversity loss.

5.2.2 Factors Contributing to the Escalation of Conflict in the Mau Forest Complex

The study identified multiple factors contributing to conflict, including resource scarcity (89.6% agreement), political interference (87.3% agreement), weak governance (84.6% agreement), and human activities like farming and grazing in protected areas (84.3% agreement). Additionally, the conversion of forestland into settlements was strongly acknowledged as a major driver of conflict.

The findings point to the complex interaction between environmental degradation and socio-political factors that drive conflict. Resource scarcity and weak governance are classic triggers of environmental conflicts, as shown in literature, while political interests often aggravate tensions by influencing land use policies. The conversion of forestland into settlements, as identified by respondents, reflects deeper governance issues where short-term political gains override long-term environmental sustainability, ultimately fuelling conflict.

5.2.3 Impact of Deforestation on the Ecosystem

The study found that the majority of respondents (over 90%) believed deforestation would negatively affect tourism, lead to desertification, reduce rainfall, and cause rivers to dry up. Additionally, there was a strong consensus that deforestation would harm the unique biodiversity of the Mau Forest.

These findings highlight the multifaceted impacts of deforestation, consistent with environmental studies that link deforestation to increased desertification, disrupted weather patterns, and biodiversity loss. The threat to tourism underscores the broader economic implications of environmental degradation, while the drying up of rivers points to the cascading effects on water availability for agriculture and human consumption.

5.3 Conclusion

Based on the findings, the study draws the following conclusions:

Environmental Degradation: The Mau Forest Complex is under significant environmental stress due to human activities such as agriculture, grazing, and illegal extraction of resources. These activities have led to the degradation of the forest's ability to provide essential ecosystem services, including water regulation and biodiversity preservation.

Conflict Escalation: The escalation of conflict in the Mau Forest Complex is primarily driven by resource scarcity, political interests, weak governance, and land conversion. These factors have compounded the already fragile relationship between environmental sustainability and human livelihood needs.

Impacts of Deforestation: The deforestation of the Mau Forest will have far-reaching consequences on both the environment and the economy, particularly through loss of biodiversity, disruption of water systems, and a decline in tourism.

5.4 Recommendations

To mitigate environmental degradation and the escalation of conflict in the Mau Forest Complex, the following recommendations are proposed:

Strengthen Governance and Law Enforcement: The study highlights the need for stronger governance structures and law enforcement to regulate land use, prevent illegal logging, and ensure the sustainable management of the Mau Forest.

Promote Community Engagement: Local communities must be actively involved in forest conservation efforts. This could include capacity-building programs, alternative livelihood options, and the establishment of community-based forest management systems.

Political Neutrality in Land Allocation: The study suggests the need for depoliticizing land allocation and settlement issues within the Mau Forest Complex. Independent and transparent mechanisms should be put in place to ensure equitable land distribution without fuelling conflict.

Environmental Education and Awareness: Increased efforts should be made to raise awareness among local communities about the long-term impacts of environmental degradation. Educational campaigns could focus on the importance of forest conservation, the risks of deforestation, and sustainable resource use practices.

Collaborative Forest Restoration Programs: There is a need for coordinated efforts between the government, local communities, and non-governmental organizations (NGOs) to undertake reforestation and forest restoration projects. Such initiatives would help rehabilitate degraded areas and restore the ecosystem's functionality.

5.5 Areas for Further Research

Future studies could explore:

The effectiveness of community-based forest management in reducing conflict and promoting sustainable forest use.

The long-term socio-economic impacts of deforestation on local communities, particularly regarding food security and water availability.

The role of political interests in natural resource management and conflict resolution in other forested areas in Kenya

5.6 Implications for Policy and Practice

The findings of this study have several implications for policy and practice:

Policy: Policymakers should prioritise environmental protection in the Mau Forest Complex by enforcing existing laws and introducing new policies that address the root causes of conflict and environmental degradation.

Practice: Forest management authorities and conservation groups need to adopt more inclusive and sustainable approaches to forest conservation, incorporating the needs of local communities and promoting long-term environmental stewardship.

5.7 Chapter Summary

This chapter summarizes the findings of the study by discussing each objective as follows. To establish the level of environmental degradation in the Mau Forest Complex. To identify the factors contributing to the escalations of Conflict in the Mau Forest Complex. To establish the relationship between environmental degradation and Conflict Escalation in the Mau Forest Complex. To recommend the necessary measures to mitigate the environmental degradation in escalation of conflict in the Mau Forest Complex in Kenya.

It also links findings of each objective to the literature reviewed in this study. In general, findings from this study align with those of the previous studies that have also identified that the Role of environmental degradation in conflict escalations in the Mau Forest Complex.

CHAPTER 6

THEOLOGICAL REFLECTION

6.1 Introduction

This chapter presents a structured theological reflection using the Pastoral Circle model, aimed at addressing the environmental degradation and conflict escalation issues in the Mau Forest Complex. As the author and researcher, I undertook this process to engage community members, stakeholders, and local administrators in understanding and addressing ecological challenges through a faith-based framework. This study integrates environmental conservation policies with scriptural insights to guide actions in forest preservation and conflict resolution, with the ultimate objective of fostering sustainable and ethical stewardship.

Using the Pastoral Circle model's four phases Seeing, Judging, Acting, and Celebrating I collaborated with stakeholders to develop a community-oriented approach. This chapter captures the detailed processes involved in each phase, from the initial coding of data informed by both policy and scripture to community participation in decoding and theological reflection, and finally to the development of an action plan and work schedule for practical conservation efforts.

6.2 Seeing

In the Seeing phase, I conducted a qualitative data collection exercise to gather community perspectives on the degradation of the Mau Forest and related conflicts. I facilitated interviews and focus groups, aiming to capture the local population's insights on environmental issues and their understanding of roles in addressing them. Through this data collection, I noted a variation in awareness levels: some respondents demonstrated an in-depth understanding of the impacts of deforestation, while others appeared less informed or hesitant to engage. The Seeing phase

revealed critical observations on community challenges, including resource limitations and a perceived need for external support.

To deepen my understanding, I categorized the data into recurring themes and developed codes that aligned with conservation policies and scriptural references. These codes included themes like *stewardship of creation* and *shared responsibility*, which helped me frame the qualitative data within both environmental and theological contexts. This approach highlighted the need for coordinated action among local communities, non-residents, and government entities.

6.3 Judging (Reflecting with Faith)

The Judging phase involved a theological reflection based on the collected data, where I guided participants in connecting policy directives with biblical teachings. This reflection process was structured around biblical codes like *creation care* (Genesis 2:15) and *justice for the marginalized* (Isaiah 1:17). The aim was to encourage participants to see ecological stewardship as both a policy-driven and a divinely mandated responsibility. I facilitated discussions where participants could express their understanding of these codes and their relevance to the conservation of the Mau Forest.

Through this decoding process, participants explored how environmental conservation and justice toward marginalized communities are deeply intertwined in both scripture and policy. Each participant was encouraged to consider their personal responsibility and community role in protecting the forest. This dialogue fostered a shared moral foundation, with participants recognizing the preservation of the forest as essential for both ecological stability and the fulfillment of their faith-based values.

6.4 Acting (Determining a Response)

Following the theological reflection, I developed an action plan aimed at practical solutions to forest degradation. I collaborated with community leaders, local administrators, and non-resident stakeholders to create a structured approach to address the identified issues. The action plan, outlined in Table 6.1, assigns specific roles and timelines for each party involved, including activities such as recruiting and briefing research assistants, piloting conservation instruments, and implementing policy measures. This stage ensured that each participant had clear responsibilities, promoting a coordinated response to environmental degradation.

The action plan was further enhanced by theological insights, encouraging each participant to view their tasks as part of their stewardship duties. I emphasized that ecological restoration should be approached with the same commitment as other community welfare activities. By aligning the project goals with participants' faith-based values, I aimed to create lasting motivation and a sense of shared purpose. Each task in the action plan was designed to reinforce the community's long-term engagement in forest conservation.

6.5 Direct Quote

In a reflective moment, a local elder shared a perspective that resonated with the group:

"We have been given this forest as a blessing, and to ignore its destruction is to ignore our duty to each other and to God."

This statement encapsulated the community's view on stewardship, reinforcing the ethical and spiritual dimensions of the project

6.7 Work Plan

This was a plan of action of various tasks that was done in the whole research process and the timeframe for each task. The work plan specified the parties to be involved in the project and their tasks.

Table 6. 1: The work plan table.

Activity	Time	Responsible Party	Expected Outcome	Critical Assumption	OUTCOME
Developed terms of references.	By 7st August 2024	Research assistants	Terms of Reference	Availability of Research Funds.	Improved communication between the research assistants and the researcher
Recruited research assistants	By 8Th August 2024	Research assistants	Contract Agreement	Research assistants' bids were within available budget.	Increased motivation and commitment and facilitation of the exercises
Briefed the research assistants.	By 9th August 2024	Research assistants and the Researcher	Minutes of the brief meeting	Signed agreement between the participants and selected research assistants.	Staff capacity improvement and commitment to their roles
Developed the instruments and piloting them.	By 10th August 2024	The Researcher.	Draft Instrument	Indicators agreed with the research assistants	Improved participation of residents, forest managers, religious and the local and county administrators.

Reviewed the instruments.	By 11th August 2024	Research assistants and the researcher	Instrument Revised as Necessary	Draft instrument was developed on time.	Increased technical support towards the exercises.
Developed a sampling frame work.	By 12th August 2024	Researcher	Sampling Frame	Sampling frame was available.	Increased support towards the research project
Sampling was done and subject identified.	By 13th August 2024	Researcher	Sample	Sampling frame was developed	Improved the local resident and non-residents in the project
Training of research assistants	By 14th August 2024	Researcher	Trained enumerators	Research assistants identified	Increased staff awareness on the research project in terms of supervisory and management
Pre-test of instruments using trained research assistants.	By 15th August 2024	Researcher	Pre-tested instrument	Training of research assistants was conducted	Improved the research assistants in facilitating of the project fast
Development of tables using pre-testing data	By 16th August 2024	Researcher	tables	Pre-testing data was availed for usable.	increased data coding and entry of instruments

Collected data in the field work	By 17th August 2024	The researcher and research assistants	Raw data	Absence of major constraints in the field	Reduced the budget and time
Data analysis and interpretation	By 18th August	Researcher	Draft report	Data analysis was done on time.	Reduced the time needed to code and enter data,
Writing of draft research report	By 19th August 2024	Researcher	Review a list of suggested revisions to the research report.	Report writing was complete.	The research process and the time -frame for each task was achieved
Submitted the final report in hard copies and upload a soft copy	By 10th October 2024	Researcher	Final research report	Reviewed the final research report and revision	Improved communication between the supervisors and examiners

6.2 Research Budget.

This was the list of items and expenditure to carry out the research study, and the approximately cost incurred.

Table 6. 2: Research Budget.

No	Item	Description	Unit Cost (Ksh)	Estimated Amount (Ksh)	Comment Of The Research
	Personnel	5 Field assistant for 14 days	**1,000.00**	**70,000.00**	**Achieved**
	Travels	To the field and within	20,000.00	20,000.00	**Achieved**
	Stationary Writing material 1flush disk	10 reams of photo copy papers@ 1000 2 writing materials 1 flush disk	1,000.00 1,000.00 1,500.00	10,000.00 2,000 1,500	**Achieved**
	Accommodations	15 days @ 2000	2,000	30,000	**Achieved**
	Equipment	1 pair of gum boots @ 2000 Attires @ 5000	2,000.00 5,000.00	2,000.00 5,000.00	**Achieved**
	Consultancy	Data analysis	10,000.00	10,000.00	**Achieved**
	Services	Secretarial Photocopying Printing Binding	 10,000.00	15,000.00	**Achieved**
	Subsistence	Food	15,000	15.000	**Achieved**
	miscellaneous	1% of the total cost		10000	**Achieved**
.	**Total**			**190,500**	**Achieved**

6.3 The Chapter Summary

This chapter concludes with the research study action plan and the budget the researcher proposed to the project on the recommendations.

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APPENDICES

Appendix I: Letter of Introduction from the Researcher

Dear madam/sir,

My name is Paul Oganda Moruka, I am a student at Tangaza University, Ref. 17/00654. This study is in partial fulfilment of the requirements for the award of degree of masters of arts in social transformation with a specialisation in security and sustainable peace. The main objective of the study is to examine the role of environmental degradation in conflict escalation: A case of Mau Forest Complex, Narok County, Kenya. The findings of this study will present the management of Mau Forest Complex and other stake holders with knowledge that can be utilized to reduce conflict and ensure sustainable resource use. You are being invited to participate in this study because you have information that is highly needed. Requested to be honest as possible when answering all of the questions. The information provided will be treated with utmost anonymous and confidential and will not be divulged to anybody. Its use will be strictly for academic purpose.

With highly appreciation in advance for taking part in this research

Yours faithfully

P.O BOX 30369 -00100 Nairobi

0721406008

Appendix II: Reserch Consent Form for Participant

The statement to be signed by the participant:

I, the undersigned, confirm that the researcher has clearly stated the nature of this study, what it entails, and what I will be required to do while participating in it. I accept that this research will only be used for academic purposes and that I will be affected in way as a result of it, I certify that I was permitted to ask relevant questions about this research. I understand that my participation in this study is entirely voluntary, and what I have the right to quit at any time thought the research without explanation, as a result, I accept to participate in this research study without expecting remuneration

Signature----------

Date----------

Appendix III: Questionnaire for Residents

Dear participant, my name is Mr. Paul Oganda Moruka, a master's student at Tangaza University College. I am conducting research titled "The Role of Environmental Degradation in Conflict

Escalation in Mau Forest Complex in Narok County, Kenya.

This questionnaire is part of the above-mentioned academic research for my master's degree in Social Transformation, with a specialization in Security and Sustainable Peace. The information you provide will be anonymous and confidential and will not be divulged to anybody. It will be used for academic purposes only. Please fill in this questionnaire about your experiences regarding environmental degradation escalating conflict and mitigation measures.

SECTION ONE: Demographic Information

1. Gender:

1. Kindly indicate ( ) your gender:

[ ] Male [ ] Female

2. Kindly ( ) your age bracket:

[ ] 18 years

[ ] 19 - 29 years

[ ] 30-39 years

[ ] 40-49 years

[ ] 50-59 years

[ ] 60 years and above

SECTION TWO: Environmental Degradation in the Mau Forest Complex

Please indicate ( ) you level of agreement with the information provided hereunder with respect to the to the role environmental**. Key SA = Strongly Agree, A = Agree, N = Neutral. D = Disagree, and SD = Strongly Disagree**

Perception

	SA	A	N	D	SD
1) Many local communities depend on the Forest for their livelihood including agriculture, grazing and forest products					
2) Degrading (destruction) of Forests leads to the consumption of vital resources such as water, timber and fertile soil faster.					
3) Environmental degradation such as deforestation (clearing) and soil erosion reduces the forest's ability to regulate water					
4) environmental degradation(destruction) threatens all kinds of life including death of rare animals and plants					
5) degradation of the environment contributes to reduction of carbon dioxide in the atmosphere					

SECTION THREE: To identify the Escalations Conflict in the Mau Forest Complex

1. The following are the factors that contribute to the environmental escalation(increases) of conflict in the Mau Forest Complex.

Key SA=Strongly A=Agree N= Neutral D= Disagree SD= strongly Disagree

		SA	A	N	D	SD
1	Scarcity of natural resources					
2	Political interest					
3	Change in weather					
4	Weak governance and law enforcement					
5	The (disturbance) human activities on land e.g. farming.					
6	destroying of water towers(water catchments)					
7	Conversion of forestland into settlements					
8	Mismanagement of industrial forest plantations					
9	Illegal forest resource extraction					
10	Overgrazing					

3.**What do you think will be the result of Mau Forest complex deforestation (clearing).**

Key SA=Strongly A=Agree N= Neutral D= Disagree SD= strongly Disagree

	SA	A	N	D	SD
1 the tourism sector will be affected					
2 Result to desertification.					
3 Rainfall declines					
4 drying of some rivers					
5. Uunique diversity (all life forms)of forest types will be affected					

SECTION FOUR (A): The Land Degradation Will Result to Competition of Resource which will Escalates (increase) of Conflict.

1) The clearing of Mau forest complex for farming and settlement, will result drying of some rivers and competition for freshwater

Yes, ☐ No ☐ I don't know ☐

If Yes explain ----------

---

2) The scarcity of natural resources in Mau Forest Complex will lead to competition which escalates conflict

Yes ☐ No ☐ I don't know ☐

If yes explain

, ----------

4.The deforestation of Mau Forest Complex, results in extinction(disappearing) of some wildlife species which will affect the tourism industry.

Yes ☐ No ☐ I don't know ☐

If yes explain

5.**Please indicate your opinion in these sentences regarding these roles in addressing environmental degradation in escalates of conflict.**

	SA	A	N	D	SD
The people of Mau Narok are aware of their problems and know how to overcome them					
Local authorities have the role to address environmental degradation that escalates (increases) conflict					
The people who live in Mau Narok have role to address environmental degradation that escalates conflict					
Mau Narok community has a role of addressing environmental degradation that escalates conflict					
Both local leaders Mau Narok community and settlers have a role to play in addressing environmental degradation that escalates (increases) conflict					
None of the above has a role to play in addressing environmental degradation that escalates conflict					

SECTION 4(B): Relationship between Environmental Degradation and Escalations of conflict in Mau Forest Complex.

Key SA=Strongly A=Agree N= Neutral D= Disagree SD= strongly Disagree

	SA	A	N	D	SD
Existence of latent issues related to access to land or insecurity of tenure e.g. ethnic (tribal) tensions.					
Mobilization around land issues; land becomes object of dispute; escalation of localized conflict.					
Increased land-related violence and displacement; institutions failing; land & natural resources fuel conflict; new tenures emerge					
Role of land tenure recognized in peace agreements (or not); non-violent process established (or not)					
Conflict transformation or return to conflict? Depends on ability to manage localized violence and address conflict drivers, issues land.					
Population pressure encouraged destructive forms of agriculture to meet the needs of the population.					
Natural resource exploitation result to environmental degradation and escalates conflict.					
Weak land administration and management systems encourages environment degradation which escalates conflict.					
Unregulated trade for timbers , charcoal and investment .					

1. Have you felt environmental degradation as a Mau Narok a resident or anon-resident?

Yes ☐ No ☐ I don't know ☐

If yes, please describe what you felt

……

2. In which way does environmental degradation and conflict affect the resident of Mau Narok?

   ……

   ……

3. Is environmental degradation and escalation of conflict affect the education of your children? If yes, how? ----------

   ---

4. How do cultural practices relate to environmental degradation and conflicts escalations?

   ……

   ……

5. How can environmental degradation and conflict affect the economic development?

   ……

   ……

6. In your opinion, what could be the role of local leaders in addressing environmental degradation that escalates (increases) conflict?

   ……

   ……

7. What do you suggest could be the best ways of addressing environmental degradation that escalates conflict on Mau Forest Complex people's economic development?

   ……

   ……

Appendix IV: Interview Questions Guide for Mau Narok Residents and Non-Residents on Environmental Degradation in Escalating Conflict?

1. Are non-residents rights considered in the same way as those originally residents in Mau forest in Narok County?

   ……

   ……

   How the non-residents address challenges of environmental degradation that escalates conflict?

   ……

   ……

2. Are the residents willing to participate in community meetings in Mau Narok?

   Yes ☐ No ☐ I don't know ☐

   If no give reason

   ……..

   ……..

3. Do local leaders have a role to play in addressing environmental degradation that escalates conflict?

   Yes ☐ No ☐ I don't know ☐

   If no give reason

   ……

   ……

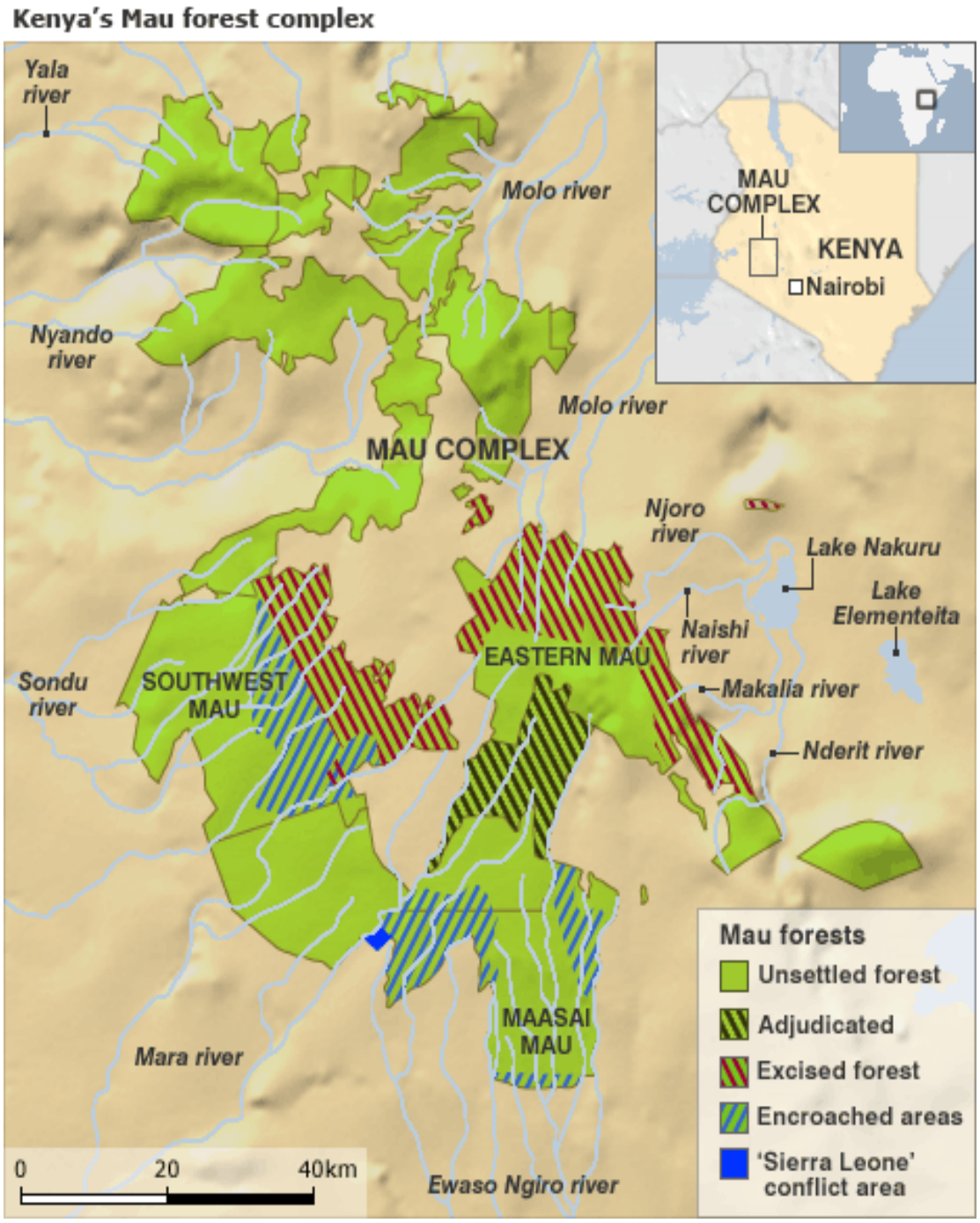
4. In your view, what can be done to address to address environmental degradation that escalates conflict in Mau Forest in Narok County?

   ……

   ……

Thanks, you for your collaboration and participation in this study.

Appendix V: The Map of Mau Forest Complex: Figure 2.2



Appendix VI : County Government Research Permit

OFFICE OF THE PRESIDENT
MINISTRY OF INTERIOR AND NATIONAL ADMINISTRATION

Telegram: **"narok@go.ke"**, Narok
Telephone: Narok [050] 22433
Fax: [050] 22588
If calling or telephoning ask for the undersigned.
When replying please quote;
RE:SR.ADM.15/6 VOL.II/157

County Commissioner
Narok County
P.O. Box 4 – 20500
NAROK

15th Aug, 2024

Deputy County Commissioners
NAROK COUNTY

RE: RESEARCH AUTHORIZATION – MR. PAUL O. MORUKA

The above mentioned student of Tangaza University has been authorized to carry out research on the topic **"the role of environmental degradation in conflict escalation in Mau forest complex"** in Narok County for the period ending 12th Aug, 2025.

Please accord him the necessary assistance.

KIPKECH LOTIATIA
COUNTY COMMISSIONER
NAROK COUNTY.

C.C.
Paul Oganda Moruka

Appendix VII: NACOSTI Research License

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **411589**

Date of Issue: **12/August/2024**

RESEARCH LICENSE

This is to Certify that Mr.. PAUL OGANDA MORUKA of Tangaza University College, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Narok on the topic: THE ROLE OF ENVIRONMENTAL DEGRADATION IN CONFLICT ESCALATION IN MAU FOREST COMPLEX IN NAROK COUNTY, KENYA for the period ending : 12/August/2025.

License No: **NACOSTI/P/24/38650**

411589

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

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See overleaf for conditions

Appendix VIII: University Research Clearance

TANGAZA UNIVERSITY

Teaching Minds / Touching Hearts / Transforming Lives

REF: DRIE/ISERC2024/01/0023 11th July 2024

To: *Paul Oganda Moruka*

Reg. No. 17/00654

Dear Moruka,

Re: "The Role of Environmental Degradation in Conflict Escalation in Mau Forest Complex in Narok County, Kenya".

This is to inform you that TU-ISERC has reviewed and approved your above research proposal. Your application approval number is *TU-ISERC'2024/01/0023*. The approval period is **11th July 2024 – 12th July 2025**. This approval is subject to compliance with the following requirements;

1. Only approved documents including (informed consents, study instruments, MTA) will be used
2. All changes including (amendments, deviations, and violations) are submitted for review and approval by TU-ISERC.
3. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to TU-ISERC within 72 hours of notification.
4. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to TU-ISERC within 72 hours
5. Clearance for export of biological specimens must be obtained from relevant institutions.
6. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
7. Submission of an executive summary report within 90 days upon completion of the study to TU-ISERC.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://research-portal.nacosti.go.ke and also obtain other clearances needed.

Yours sincerely

Dr. Daniel M. Kitonga (Ph.D., MBA)
Chair, TU - ISERC

TANGAZA UNIVERSITY INSTITUTIONAL SCIENTIFIC AND ETHICAL REVIEW COMMITTEE (TU-ISERC)
★ 11 JUL 2024 ★
P. O. Box 15055 - 00509
NAIROBI - KENYA

P.O. Box 15055-00509 Langata, Nairobi - Kenya
Tel: + 254 20 806 7667 / 732 897 000 / 733 685 059 / 722 204 724 / 714 610 777
Email: inquiries@tangaza.ac.ke
Website: www.tangaza.ac.ke

Appendix IX: University Ethics Clearance Letter

TANGAZA UNIVERSITY

Teaching Minds / Touching Hearts / Transforming Lives

DIRECTORATE OF RESEARCH, INNOVATION & EXTENSION

E-mail: dir.rie@tangaza.ac.ke **Website:** www.tangaza.ac.ke

OUR Ref: DRIE/ISERC2024/01/0023 **Date:** 11th July 2024

The Commission Secretary,
National Commission for Science, Technology and Innovation
P.O. Box 30623,
Nairobi – Kenya.

Dear Sir/Madam,

Re: Recommendation for Research Permit – Paul Oganda Moruka

This is to confirm that **Paul Oganda Moruka** is a PI in a researcher protocol which was submitted to TU-ISERC for review. The protocol was reviewed and approved for research permit.

Moruka wishes to carry out research under the title "The Role of Environmental Degradation in Conflict Escalation in Mau Forest Complex in Narok County, Kenya".

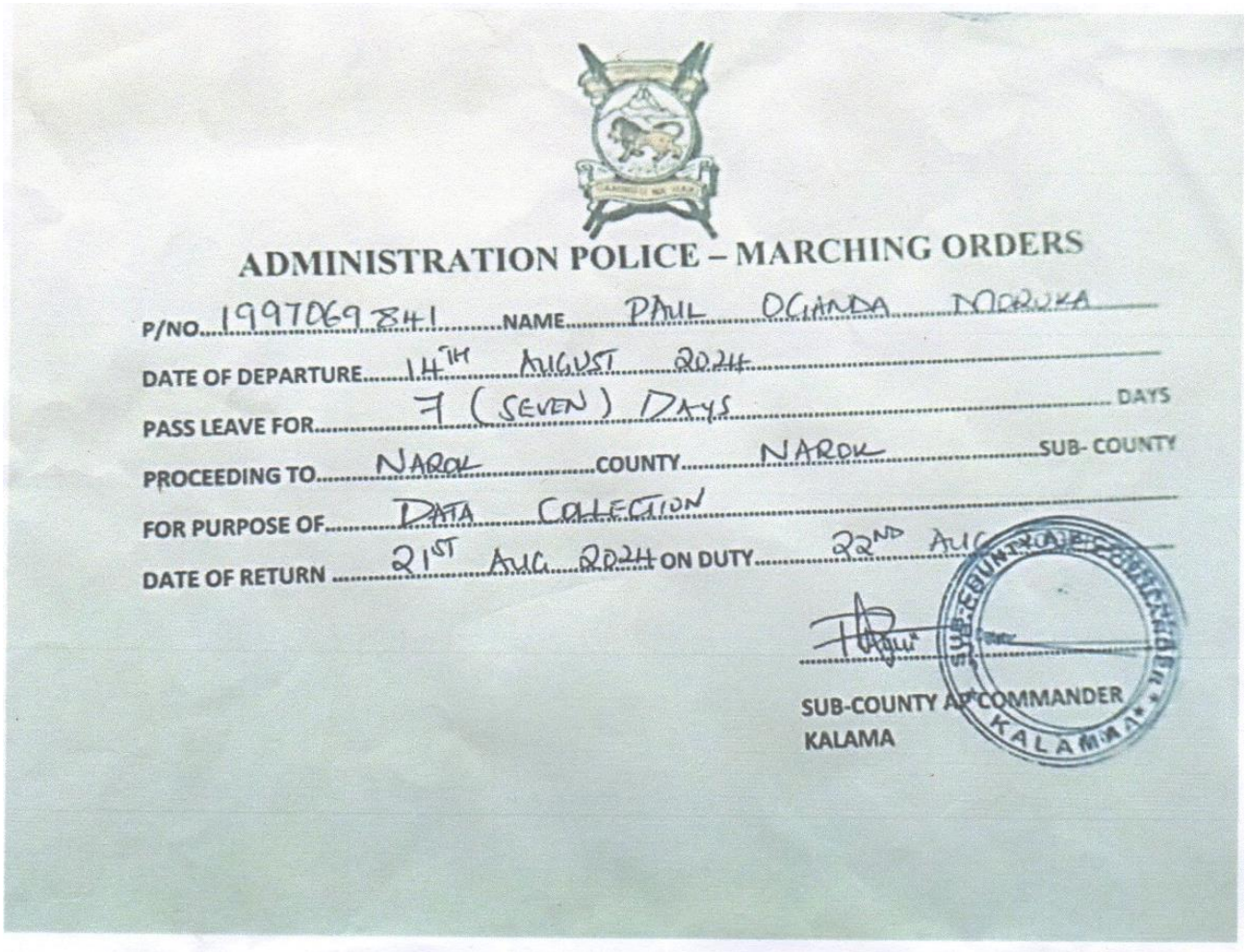
I strongly recommend Paul Oganda Moruka to the Kenya National Commission for Science, Technology and Innovation for issuance of a research permit. The permit will enable him to proceed to data collection for his study. Thanking you in advance for your cooperation.

Yours sincerely,

TANGAZA UNIVERSITY INSTITUTIONAL SCIENTIFIC AND ETHICAL REVIEW COMMITTEE (TU-ISERC)
★ 11 JUL 2024 ★
P. O. Box 15055 - 00509
NAIROBI - KENYA

Dr. Daniel M. Kitonga (Ph.D., MBA)
Director, Research, Innovation & Extension
Chairperson, TU-ISERC

Appendix X: Police Pass Leave



ADMINISTRATION POLICE – MARCHING ORDERS

P/NO. 199706984 NAME PAUL OCHANDA NDORUKA

DATE OF DEPARTURE 14TH AUGUST 2024

PASS LEAVE FOR 7 (SEVEN) DAYS DAYS

PROCEEDING TO NAROK COUNTY NAROK SUB- COUNTY

FOR PURPOSE OF DATA COLLECTION

DATE OF RETURN 21ST AUG 2024 ON DUTY 22ND AUG

SUB-COUNTY AP COMMANDER
KALAMA

SUB-COUNTY ADMINISTRATION POLICE COMMANDER KALAMA

Appendix Xi: plagiarism Report

THE ROLE OF ENVIRONMENTAL DEGRADATION IN CONFLICT ESCALATION IN MAU FOREST COMPLEX IN NAROK COUNTY, KENYA

ORIGINALITY REPORT

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