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The Nature of Environmental Degradation and Inter-Ethnic Conflict in Meru County, Kenya

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Abstract

Environmental degradation continues to be one of the most serious challenges in achieving Kenya's Vision 2030 sustainable development goals. For instance, parts of Meru County where this study was done experience persistent conflict from environmental degradation and depletion of the natural resources, due to farming and livestock rearing. The conflict pits the agriculturist Meru and other communities who are pastoralists. This study sought to examine the nature of environmental degradation and inter-ethnic conflict in Meru County, Kenya. This study employed phenomenological study research design using qualitative approach. The research instruments used were, interview guides and Focused Group Discussion guide (FDGs). The analysis of data was done thematically and presented as narrations and quoted verbatim. The study found that environmental degradation in Meru County is primarily driven by overgrazing, deforestation, and poor land management practices. These factors have led to soil erosion, water and pasture scarcity, and reduced agricultural productivity, which in turn escalate inter-ethnic conflicts between farmers and pastoralists. The analysis revealed that environmental degradation not only strains the already

limited resources but also intensifies competition and disputes over land, pasture and water. The study concluded that there is a significant relationship between environmental degradation and escalating inter-ethnic conflicts in Meru County. Effective strategies to mitigate these issues include enhancing community engagement, implementing robust environmental policies, promoting sustainable land use practices, and fostering conflict resolution mechanisms. Addressing environmental degradation is crucial for reducing inter-ethnic conflicts and promoting peace and sustainable development in the region. To address environmental degradation in Meru County, prioritize sustainable agriculture, reforestation, and waste management to combat erosion and pollution; engage the community in conservation efforts, strengthen policies against harmful activities, and integrate land use plans to balance conservation and development.; implement conflict resolution mechanisms and revive traditional practices to enhance resilience; and capacity building and advocacy are key to fostering sustainable practices and ensuring long-term environmental stewardship.

Keywords: Environmental Degradation, Inter- Ethnic Conflict, Natural Resources, Land Management Practices, Farmers, Pastoralists, Environmental Resources

1. Introduction

The concept of "environment" encompasses the physical setting in which individuals exist and thrive, serving as an indispensable foundation for their physiological functions, production activities, and consumption patterns. This intricate framework positions the environment at the very heart of survival for both humanity and the broader spectrum of living organisms. Key resources inherent to the physical environment include air, water, land, as well as diverse flora and fauna, which collectively form essential ecosystems.

The interplay between the natural environment and human well-being is characterized by its complexity and multidimensionality, manifesting both qualitative and quantitative dimensions. Notably, the availability and sustainable utilization of natural resources profoundly influence developmental outcomes and rates of progress (Chopra, 2016) ^[3]. As such, understanding this relationship is crucial for fostering sustainable practices that not only enhance human prosperity but also

ensure the preservation of ecological integrity.

Environmental degradation which is caused by the exhaustion of resources has had devastating effects on how people coexist and share the little available resources. Currently, human activities are the primary causes of environmental deterioration especially human induced population, high growth and increase on population of animals thus leading to a decrease in quality and quantity of renewable natural resources. For instance, environmental degradation includes desertification, land degradation, air pollution, sea level rise brought on by global warming, and deforestation among others (Kumar *et al.*, 2020) ^[7]. According to the United Nations (2020) ^[14], there is more competition for dwindling natural resources including land and water which are aggravated further by environmental deterioration, population increase, and climate change. The poor management of natural resources and land exacerbates already existing disputes and prevents their peaceful resolution (Beckline *et al.*, 2016) ^[12].

IDB (2003) ^[6] identifies Latin America and the Caribbean (LAC) regional environmental problems to include loss of ecosystem services and biodiversity, degradation of land, forests, water and coastal environments. Environmentally, LAC has been divided into sub-regions to include the Amazon region, Andean sub-region, Caribbean sub-region and Central American sub-region. Countries in these sub regions include Bolivia, Brazil, Colombia, Chile, Ecuador, Guyana, Peru, Surinam, and Venezuela. The rate of deforestation in LAC is not only a local problem but also a global one as it affects environmental degradation, increase conflict, poverty and decrease biodiversity. According to Nature Conservancy (2019) ^[12] conflict in Colombia was out of the usage of natural resources which include forest, water and land.

Africa has neither been spared, for instance, in the Sahel region which covers Burkina Faso, Cameroon, Chad, The Gambia, Guinea Mauritania, Mali, Niger, Nigeria and Senegal are facing environmental resource-based conflict that has led to insecurity, insurgencies and inter-communal violence. The region experiences both human and natural resources conflict that offers tremendous potential for rapid growth and deep-rooted challenges which include environmental, political and security problems. The region is also known for its environmental degradation that cause endless conflict. Snorek (2014) ^[13] highlights the case of Niger where the use of grazing land and pasture among farmers and herders has resulted to expansion of farmlands and protected areas.

Masara (2021) ^[8] discusses contrast between environmental degradation and conflict, where Africa abundance in resource is considered as a key motivator to violent conflict rather than scarcity. Contrary to the notion that scarcity in Africa leads to conflict, having plenty might also lead to violent conflict as humans are guided by greed thus increasing their appetite for more leading to conflict. Homer-Dixon's Environmental Conflict Theory identifies environmental scarcity, depletion, increased population, social cleavages and degradation as factors that are aggravating environmental conflicts. Bayramov (2006) ^[1] writes elaborately on the environment depleting aggravated conflict in the Great Lake regions. His work discusses the diminishing natural resources and the subsequent competition as the cause of conflict in most countries such DRC, Rwanda and Burundi. David Van Reybrouck (2010)

^[16] identifies eastern Democratic Republic of Congo to be a geographical scandal as it continues to experience conflict despite its abundance of natural resources and minerals.

In Kenya, Gakuria (2013) ^[5] analyses the link of the scarcity of natural resources as brought about by environment degradation and the conflict in the 10 districts in the Northern part of Kenya, which is mostly semi-arid and arid areas. Gakuria explains that most of the conflicts in the area are on contestation of the usage of these scarce resources. Gakuria explains that the insecurities arising herein are on ways to use the land, that is; is it pastoralists grazing or irrigation on farms? The land use in this part of Kenya is largely contested. The contestation among farmers who have lost greatly to the pastoralists. According to Mbugua (2011) ^[9] in her work on Mau environmental degradation, she attributes the insecurity here as being brought about by the competition for the most preferred land. The conflict pits the farmers and the pastoralists amid the degraded environment. This completion and environmental degradation have a lot of damage to the water catchment of Kenya, the region and Africa in general. Mbugua further argues that this has a potential to bring about regional conflict because of the Nile, which has its source in the Mau and has a lifeline to Sudan and more particularly Egypt.

MoALF (2016) ^[11] report on Meru County Climate Risk Profiles provided an analysis of the underlying causes of vulnerability and on-going and potential climate change adaptation strategies. It identified key factors on the impact of climate change and variability to include decline of soil fertility, reduced agricultural land, high agricultural input costs and market systems, poor management of catchment areas, depletion and degradation of the environment, cross-border conflicts between pastoralists and crop farmers. Limiri (2022) ^[10] posits that protracted conflict in Meru has resulted to conflict among farmers and the pastoralists. Historically, Meru County has attracted settlement of the pastoral community such as the Turkana, Samburu, Borana and Somali. The Meru community which occupies the area are in mixed farming and livestock keeping. Environmental degradation in Isiolo, Garissa and Turkana have led to encroachment of pastoralists to Meru resulting to pressure on land, water bodies, grass and other natural resources.

It has been argued that with the depletion of pasture, the flash floods, migration of more settlers who come and buy land together with increased population of both human beings and livestock, the pressure on the environment has become real. The overgrazing has led to soil erosion, water scarcity and increased competition for the diminishing natural resources. These, coupled with poor conflict resolution mechanisms and lack of proper government policies on the pastoral community. Ndimu (2012), generally views this as contributing less to the country per Capita thus leading to tension between the two groups with different economic mainstay and later it aggravates to conflict, which progresses to armed conflict.

In an effort to address environmental degradation and avert potential conflict, several measures have been put in place at the international, regional and national levels. In Kenya for instance, the government through the Ministry of Environment and Forestry came up with a Strategic Plan (2018-2022) focusing on environmental conservation, protection, restoration and management of environment and forest ecosystems by strengthening legal and institutional frameworks on environmental degradation. The problem

however resides in the fact that despite the various policy and legal frameworks at various levels, the country still continues to experience serious environmental degradation and attendant conflicts. Meru County where this study was conducted has for instance over time experienced perennial conflicts related to environmental degradation. It is therefore from the forgoing that this study sought to investigate the nexus between environmental degradation and conflict in Meru County Kenya.

2. Materials and methods

This study employed a phenomenological study design using qualitative approach. This design was deemed to be the most appropriate for this study because environmental degradation and conflict in Meru County is historical and need a deeper interrogation of people's lived experiences. Since phenomenological design enables the researcher to delve into what people have experience over a prolonged period of time, it was the most appropriate for this study.

The study was conducted in Tigania East Sub-County, located within Meru County, Kenya. This region is significant due to its diverse ethnic composition, including the Borana, Turkana, Somali, Samburu, and Meru communities. The proximity of Tigania East to Isiolo County intensifies the interaction among these groups, leading to both cooperation and conflict over shared resources, particularly in the context of environmental degradation. Tigania East is strategically chosen for this study because it has been identified as a hotspot for agropastoral disputes and environmental conflicts, particularly in recent years. The area has experienced increasing pressure on natural resources due to population growth, changing land use patterns, and climate variability, all of which have contributed to the escalation of conflict among local communities.

By focusing on Tigania East Sub-County, this research aimed to provide insights into the relationship between environmental degradation and conflict, contributing to a deeper understanding of how these dynamics unfold in the context of local communities. This approach is relevant in light of contemporary environmental challenges and their implications for peace and stability in the region.

The target population included the Ministry of Environment, Ministry of Interior government especially national government administrative officers (NGAO), council of elders, Nyumba Kumi committees and religious leaders. NGAO consists of national police officers, village elders, Nyumba Kumi, Assistant Chiefs, the Assistant County Commissioners current and members of the divisional committee and the Sub County Intelligence and security committees. The police included the national police reservists, inspectors, the OCSs and OCPDs current and the others who have gone on transfer, members of the Peace Committee/ Pastoralist Committee. Sampled heads from all parties involved in the conflict. This was a very rich source of information for this research.

Since the study was purely qualitative in nature, it adopted non-probability sampling technique, specifically purposive sampling technique to identify participants. From the various sample categories, the researcher was therefore able to get a total of 52 participants. This sample size was considered adequate in line with Creswell (2009) ^[4] who

posits that in a study that is qualitative in nature, a sample size of 30 should be adequate.

Table 1: Sample Size

Sample Population	Number of participants
Religious leaders	6
National police officers i.e. inspectors, the OCSs and OCPDs	8
Nyumba Kumi committees	6
NGAO i.e. Village elders, Assistant Chiefs, the Assistant County Commissioners Deputy County Commissioners	9
Njuri-Nchekes	2
Peace Committee/Pastoralist Committee	5
NEMA official	1
Residents	12
Pastoralists/Agriculturists	6
Total	52

The research instrument that the study used was Focused Group Discussion (FGD) guides. The researcher had a field notebook for recording responses from the sampled participants and audio gadgets for voice recording to assist in analysis.

The study used interview guide and Focused Group Discussion guides (FGDs) guided by structured questions as per the research objectives and questions. The FGDs were administered on groups selected from the residence, council of elders and Nyumba Kumi committees. The study used stratified sampling method to select the individuals from the community to participate in the FGDs. The interview guide were used on all the sampled population.

The analysis of this research was conducted using both thematic and content analysis. Thematic analysis was applied to examine the data according to the study's objectives, with the researcher categorizing the responses into themes based on the questions posed. These questions were carefully crafted to align with the study's objectives, ensuring that the analysis was directly relevant to the research goals.

Content analysis was employed to interpret the data from various sources, including numerical data, PDFs, books, observations, recordings, photos, narrations, and other relevant materials. This approach allowed for a comprehensive examination of the data, providing a deeper and more nuanced understanding of the research topic. By integrating thematic and content analysis, the study ensured the validity of its findings. This methodological triangulation, where multiple sources and methods support one another, reinforced the credibility of the research results. This approach follows the guidelines suggested by Yin (2018) ^[15] in ensuring rigorous and reliable data analysis.

3. Results and discussion

3.1 Primary Factors Leading to Environmental Degradation in Tigania East, Meru County

The study sought to assess the various manifestations of environmental degradation in Tigania East, Meru County, and how they could have implications in conflict as depicted by the diagrams below.

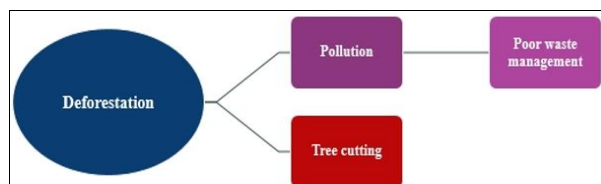


Fig 1: Primary Factors Leading to Environmental Degradation

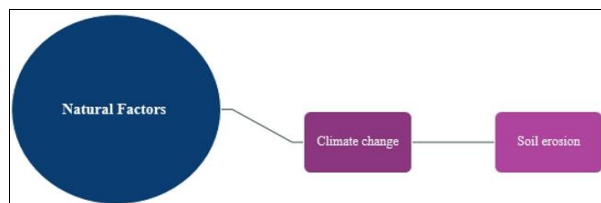


Fig 2: Primary Factors Leading to Environmental Degradation

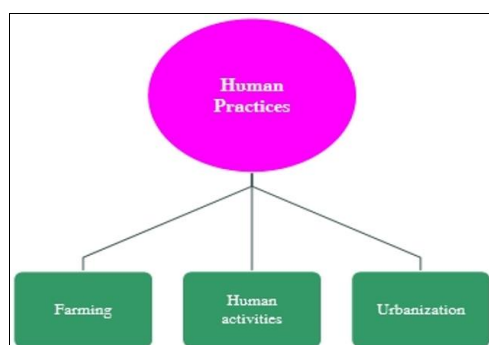


Fig 3: Primary Factors Leading to Environmental Degradation

The first theme highlights human activities such as farming, urbanization, and cultivation, which significantly contribute to environmental degradation. These practices often lead to the overuse and depletion of natural resources, exacerbating the strain on the environment. The second theme encompasses issues like pollution, poor waste management, and tree cutting. These factors collectively degrade the natural habitat, reduce biodiversity, and impair ecosystem services. Lastly, the theme of natural factors focuses on the impacts of climate change and soil erosion. Climate change alters weather patterns and increases the frequency of extreme events, while soil erosion reduces land fertility and productivity. Together, these themes illustrate the multifaceted nature of environmental degradation in Tigania East, Meru County, emphasizing the urgent need for sustainable practices and effective environmental management strategies.

Environmental degradation, encompassing deforestation, soil erosion, water pollution, and loss of biodiversity, poses significant threats to the ecological balance and sustainability of the region. Conflicts arising from resource scarcity, land use disputes, and competition over dwindling natural resources further exacerbate these environmental challenges. This chapter presents a detailed analysis of the data collected, shedding light on the current state of environmental degradation and the nature and frequency of related conflicts in Tigania East, Meru County. By examining these issues, the study aims to provide a comprehensive understanding of the interrelated dynamics of environmental and social challenges facing the county.

3.2 Major Environmental Problems

From the study it emerged that the residents acknowledged

the following issues as major environmental concerns that contributed to the escalation of tensions and hostilities in Meru County.

Table 2: Themes in major environmental problems

Theme
Deforestation
Water Pollution
Soil Erosion
Climate Change
Biodiversity Loss
Air Pollution
Poor Waste Management
Invasive Species
Overgrazing and Land Degradation

In analyzing the environmental challenges faced by Tigania East, Meru County, ten major themes emerged from the participants' feedback. Deforestation was highlighted as a significant issue, with areas like the Nyambene Forest suffering from extensive logging and land clearing for agriculture. This not only leads to loss of biodiversity but also exacerbates soil erosion and contributes to climate change.

Water pollution was another prevalent concern, particularly affecting rivers like the Kathita, where chemicals from farms and untreated sewage contaminate water sources, posing risks to human health and aquatic life.

Soil erosion, linked to deforestation and poor farming practices, is evident on the slopes of Mount Kenya, causing damage to farmlands and infrastructure. Participants also noted the impacts of climate change, including longer dry spells and heavier rains that lead to floods, which have devastating effects on agriculture and local communities. Biodiversity loss, air pollution, and overpopulation were also significant themes. The decline in wildlife populations in areas such as Meru National Park indicates a troubling trend in biodiversity loss, affecting ecosystem balance and tourism. Air pollution, primarily from vehicles and waste burning, is deteriorating air quality in urban centers like Meru Town. One of the residents lamented:

"Just one month ago, there was a group of Borana people who came with their goats, almost 2500 of them, to graze on the grass in that forest up there. Such actions tend to cause environmental hazards. And you know, the Chief and the government officials had warned residents that no one should be found in that forest, but now because they come at night and leave at night, you wouldn't know. However, they were discovered and chased away." (FGD 10th June).

Overpopulation contributes to environmental degradation by increasing pollution and waste and causing the loss of green spaces. Poor waste management practices, such as insufficient recycling programs, result in visible garbage in public areas, further polluting the environment. Invasive species, such as the water hyacinth, are disrupting local ecosystems, while overgrazing by livestock leads to land degradation and desertification, particularly in semi-arid regions. These interconnected issues highlight the need for comprehensive environmental policies and sustainable practices to mitigate the adverse effects on Tigania East,

Meru County's environment. A deputy County commissioner said...

"Biodiversity loss is concerning. Many species of plants and animals that were once common are becoming rare. For example, the Meru National Park has seen a decline in some wildlife populations. Invasive species are becoming more of a problem, outcompeting native plants and animals. For instance, the spread of the water hyacinth in some water bodies is choking aquatic life. Poor waste management is a visible issue, with garbage often seen in public areas. There is a lack of effective recycling programs, leading to pollution in rivers and other natural areas." (FDG 11th June)

The issue of biodiversity loss is a growing concern, as highlighted by the Deputy County Commissioner during a discussion on June 11th. Many species of plants and animals that were once abundant are now becoming increasingly rare. A notable example of this is the decline in wildlife populations within Meru National Park, a significant indicator of the broader environmental challenges facing the region. Compounding this problem is the rise of invasive species, which are outcompeting native plants and animals. For instance, the spread of water hyacinth in some water bodies is having a devastating effect, choking aquatic ecosystems and disrupting the balance of biodiversity. Additionally, poor waste management practices are a visible problem, with garbage frequently seen in public areas, contributing to environmental degradation. The absence of effective recycling programs further exacerbates the situation, leading to increased pollution in rivers and other natural areas. These environmental issues highlight the urgent need for stronger conservation efforts and more sustainable waste management solutions in the region.

The major environmental problems identified in Tigania East, Meru County, align with broader global environmental concerns, as illustrated by the FDGs participants. Deforestation emerges as the most pressing issue, with the Nyambene Forest being a prime example of this problem. The extensive logging and land clearing for agriculture in this area not only contribute to a significant loss of biodiversity but also exacerbate soil erosion, leading to further environmental degradation and contributing to climate change.

The study therefore states that, climate change exacerbates environmental challenges by altering weather patterns and increasing the frequency of extreme weather events. Soil erosion, driven by deforestation and improper agricultural practices, reduces land productivity and increases vulnerability to environmental changes.

3.3 Population Growth and Poverty on Environmental Degradation

One of the questions that the researcher sought to answer was how does population growth and poverty influence environmental degradation, and what are the implications for the future of our environment. The participants consistently identify population growth and poverty as primary factors leading to environmental degradation. These factors increase the pressure on natural resources, leading to unsustainable practices such as deforestation, overgrazing, illegal logging, and charcoal burning. A significant theme

was the need for both community action and government intervention. participants emphasized the importance of community mobilization, education, and awareness campaigns to promote sustainable practices. They also highlighted the role of government in enforcing environmental laws, implementing sustainable policies, and providing alternative livelihoods to reduce dependency on natural resources.

Education and awareness are seen as crucial for fostering sustainable practices. Teaching communities about environmental stewardship, promoting family planning, and integrating environmental education into school curriculums are suggested as ways to address the issues.

The link between resource scarcity and conflict is evident, particularly in areas with high population growth and poverty. This leads to practices that further degrade the environment. Mediation and promoting peaceful coexistence are viewed as essential for protecting natural resources. One religious leader had this to say:

"As a pastor, I can say that there is a link between population growth, poverty, and environmental degradation. Our growing population puts immense pressure on the environment as more people need land for farming, firewood for cooking, and water for drinking. Just the other day, I was invited to a seminar where the issue of a Safe Environment for Safe Water was discussed, organized by the youth here in Buuri" (FDG 11th June 2024).

A law enforcement officer added that:

"As law enforcement officers, we have observed that population growth and poverty lead to increased illegal activities that degrade the environment. For example, illegal logging, charcoal burning, and sand harvesting are common in impoverished areas. Last week on Tuesday, I caught two young men cutting down trees in the Amuthumba Division. Therefore, these activities not only harm the environment but also lead to conflicts over resources. To mitigate these issues, we need to enforce environmental laws more strictly and work with communities and NEMA to promote awareness about the long-term benefits of conserving our natural resources" (FDG 11th June 2024)

A law enforcement officer shares insights on how population growth and poverty drive illegal activities that further harm the environment. In regions where poverty is prevalent, activities such as illegal logging, charcoal burning, and sand harvesting are rampant, worsening environmental degradation. The officer provides an example of catching young men cutting down trees in Amuthumba Division. Such illegal activities not only degrade the environment but also trigger conflicts over diminishing natural resources. To address these issues, the officer emphasizes the importance of enforcing environmental laws more strictly and collaborating with communities and organizations like the National Environment Management Authority (NEMA) to raise awareness about the long-term benefits of conserving natural resources.

The participants from the FGD's articulate a shared concern that without intervention, these trends will lead to severe

long-term consequences for the environment. The community's role, as highlighted by the participants, includes mobilization, education, and raising awareness about sustainable practices. The government, on the other hand, is seen as pivotal in enforcing environmental laws, implementing sustainable policies, and offering alternative livelihoods to reduce the reliance on degrading practices.

From the results above the study is in line with the study carried out by (UNEP, 2020) ^[14]; highlights that unsustainable agricultural practices, urban expansion, and improper land use are primary drivers of environmental degradation. These activities increase pressure on natural resources, similar to the findings in Tigania East.

The quote illustrates the complex relationship between population growth, poverty, and environmental degradation, as observed by various community stakeholders. A pastor pointed out that the growing population exerts considerable pressure on the environment, driven by increased demand for essential resources such as land, firewood, and water. As more people require land for farming and fuel for cooking, the natural environment suffers. The pastor highlights a recent seminar focused on creating a "Safe Environment for Safe Water," an event organized by the youth of Buuri, which underscores the need for collective action in addressing these environmental concerns.

Another participant reflected on the changing landscape, lamenting on how their once-fertile land had now become barren due to unsustainable practices like overgrazing and the expansion of farming activities. This degradation has left the soil eroded and unproductive, resulting in a dire situation where families struggle to feed themselves. The depletion of natural resources is not just an environmental issue but also a livelihood challenge, with devastating effects on the local population's ability to sustain themselves.

The collective voices in this discussion revealed a shared understanding of the destructive cycle linking population growth, poverty, and environmental degradation. This cycle is exacerbated by unsustainable practices and illegal activities that strip the land of its productivity and disrupt ecosystems. The need for enforcement of environmental laws and community-based conservation efforts is stressed as critical in breaking this cycle and securing the well-being of both the environment and the people who depend on it. From observation, the researcher could see an eroded soil crust, with piles of tiny rocks, indicating non-activity, one would wonder what was left for grazing because none could be spotted.

There is the critical impact of deforestation on biodiversity, climate regulation, and local livelihoods. Protected areas like forests and national parks are essential for conserving biodiversity, and their degradation has far-reaching consequences. Pollution from agricultural runoff and untreated sewage is a significant issue, affecting water quality and posing risks to human and aquatic health. Soil erosion, driven by deforestation and poor agricultural practices, is a major threat to land productivity. Climate change further exacerbates these issues by increasing the frequency and intensity of extreme weather events, leading to more severe environmental degradation. Also, the study aligns with; Ineffective waste management systems contribute to environmental pollution, affecting air and water quality. Improved waste management practices and recycling programs are essential for mitigating these impacts (UNEP, 2020) ^[14].

The study identified human activities such as farming, urbanization, and cultivation as primary drivers of environmental degradation in Tigania East, Meru County, Kenya. Deforestation, illegal logging, poor waste management, and climate change exacerbate these issues, threatening biodiversity and essential ecosystem services. Population growth and poverty intensify these challenges by increasing demand for resources like land and fuelwood, leading to conflicts over their use. Mitigating environmental degradation requires sustainable practices, effective waste management, conservation efforts, community engagement, and robust policy enforcement.

4. Recommendations

Based on the conclusions, the study recommends that, to address environmental degradation in Tigania East, Meru County, Kenya, immediate action must prioritize sustainable agricultural practices, including agroforestry and organic farming, to combat soil erosion and preserve biodiversity. Implementing effective waste management systems is crucial to curb pollution, while initiatives promoting reforestation and protected areas will restore degraded landscapes and safeguard ecosystem services. Community engagement and education are vital for fostering local stewardship of natural resources, emphasizing the importance of conservation. Strengthening policy frameworks and enforcement mechanisms is imperative to regulate harmful activities such as illegal logging.

5. Further Research

Based on the scope and the findings for this study, the following is the recommendation for future research: To build upon the findings, future studies could explore the specific socio-economic impacts of environmental degradation on different demographic groups within Meru County, examining how age, gender, and occupation influence vulnerability and resilience. Additionally, research could focus on comparative analysis between Meru County and other regions experiencing similar conflicts to identify unique and shared factors contributing to environmental degradation and conflict.

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