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CAUSES OF ENVIRONMENTAL DEGRADATION IN CHUKA IGAMBANG`OMBE SUB-COUNTY, KENYA

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Abstract

This study investigated the causes of environmental degradation in Chuka Igambang'ombe Sub-County, Tharaka Nithi County, Kenya. Environmental degradation, characterised by deforestation, pollution, and soil erosion, poses significant threats to ecosystems and human well-being. Environmental challenges persist despite the Catholic Church's active participation in conservation efforts such as tree planting, river rehabilitation, soil conservation, and awareness campaigns. Identifying the underlying factors is crucial for developing effective interventions. The study employed a descriptive survey design targeting a population of 15,574 Church members. A sample size of 389 participants was selected, including ten priests, ten development committee members, 86 youths, 98 members of the Catholic Men Association (CMA), and 175 members of the Catholic Women Association (CWA). Data was collected through interviews and questionnaires and analysed using descriptive statistics. The findings revealed that deforestation, pollution, improper waste disposal, overgrazing, lack of environmental knowledge, and encroachment on natural habitats were crucial factors contributing to environmental degradation in the region. The study concludes that these factors and inadequate management strategies exacerbate degradation. It is recommended that the government and stakeholders enforce stricter regulations against deforestation, promote environmental education, and enhance waste management practices to mitigate these effects.

Key terms: Catholic Church, conservation measures, descriptive survey design, environmental degradation, sustainable land management.

1.0 INTRODUCTION

The environment is a critical component of human existence, providing essential resources and a foundation for societal well-being (Dromi & Illouz, 2010). Environmental degradation poses a significant threat to ecosystems and human well-being worldwide. According to Warner et al. (2010), environmental degradation refers to the deterioration of the environment through the depletion of natural resources, such as air, water, and soil, as well as the destruction of ecosystems and the extinction of wildlife. The increasing frequency of tropical storms, erratic rainfall patterns, and the intensification of climate change-related phenomena have catapulted environmental conservation and climate action to the forefront of global concerns.

The increasing frequency and severity of environmental crises, such as deforestation, air pollution, climate change, failure to take care of the environment, lack of knowledge on conservation of environment, burning of fossils and charcoals, soil erosion, water pollution, improper waste disposal, overgrazing, and encroachment on habitats, pose significant threats to ecological stability and human livelihoods (Njoku, 2013), particularly in regions like Chuka Igambang'ombe Sub-County, Tharaka Nithi, Kenya. The Catholic Church, as a prominent religious and social institution, has actively engaged in addressing these environmental challenges, promoting conservation efforts, sustainable development, and environmental stewardship within local communities (Onebunne, 2018). This journal aims to comprehensively examine the causes of environmental degradation in Chuka Igambang'ombe Sub-County, Tharaka Nithi County, Kenya.

The significance of this exploration lies in understanding the intersection of environmental advocacy, faith-based, and community engagement (Muthamba, 2017). By exploring the causes of environmental degradation, this journal seeks to provide valuable insights and best practices that can inform policy, inspire collective action and foster sustainable environmental management in similar regions (Nalugala, 2017). Through empirical evidence, case studies and stakeholder perspectives, this scholarly endeavour aims to elucidate the causes of environmental degradation, thereby contributing to the broader discourse on environmental conservation and sustainable development efforts in the context of faith-based interventions.

The research findings presented in this journal offer a comprehensive understanding of the causes of environmental degradation in Chuka Igambang'ombe Sub-County, Kenya. By critically evaluating the impacts and challenges associated with the causes of environmental degradation, this journal aspires to provide a platform for dialogue, knowledge dissemination and collaborative efforts to foster sustainable environmental practices, resilience, and resource conservation within the local community. Through an interdisciplinary approach, bringing together environmental studies, religious studies, and community development perspectives, this study aims to provide a comprehensive understanding of environmental degradation by examining not only the ecological factors but also the cultural, spiritual, and socioeconomic influences that shape community practices and responses to environmental challenges.

2.0 LITERATURE REVIEW

The environmental crisis in Chuka Igambang'ombe Sub-County, Kenya, necessitates a detailed exploration of the root causes of environmental degradation to effectively address the challenges the region faces. Gitau's work in "The Environmental Crisis: A Challenge for African Christianity" (2000) provides valuable insights into the broader environmental issues affecting African communities. The book explores

socioeconomic and cultural factors contributing to environmental degradation on the continent. It highlights how issues such as poverty, unsustainable agricultural practices and inadequate environmental policies can lead to environmental crises (Gitau, 2000). In exploring environmental degradation and its causes, Mugambi and Vahakangas (2001) emphasise the theological perspective in their book *Christian Theology and Environmental Responsibility*. They emphasise the importance of recognising human actions as a significant contributor to environmental problems, offering insights into environmental degradation's moral and ethical dimensions (Mugambi & Vahakangas, 2001). This literature review explores the pivotal role of the Catholic Church in mitigating the environmental crisis in this locale, shedding light on the Church's contributions to sustainable practices and environmental stewardship.

In Chuka Igambang'ombe Sub-County, Kenya, the Catholic Church has been a driving force behind various environmental intervention programs. These initiatives, aiming to promote sustainable practices and combat environmental degradation, include extensive tree planting campaigns, Catholic National Tree Planting Day and biodiversity conservation projects (Catholic Church Environmental Commission Report, 2020). Furthermore, the Church actively engages in environmental education, seminars and public awareness campaigns to instill a deep sense of environmental responsibility within the local community. The Catholic Church underscores its unwavering commitment to fostering environmental sustainability through these efforts. Despite the Church engaging in environmental conservation projects, environmental challenges persist.

Research by Kibet et al. (2021) highlights the substantial positive influence of Church-led environmental programs on community engagement and environmental awareness. The study emphasises the effectiveness of the Catholic Church in mobilising community members and nurturing a culture of environmental responsibility through grassroots initiatives. Such initiatives play a crucial role in fostering environmental consciousness within the community. Notable scholars such as Mwangi and Nyaga (2019) stress the critical need for enhanced public discourse and advocacy by the Catholic Church regarding environmental issues. While recognising the Church's local-level contributions, these scholars advocate for broader involvement in environmental advocacy and policy discourse. Increased engagement by the Catholic Church in addressing systemic environmental challenges at regional and national levels is paramount for driving positive environmental change.

In emphasising the sustainability and scalability of environmental programs initiated by the Catholic Church, Wambua and Kimani (2020) call for a comprehensive evaluation of these initiatives. They emphasise the importance of holistic strategies to address the challenges of environmental degradation. Leveraging local cultural practices and indigenous knowledge systems is vital in developing effective conservation efforts tailored to the community's needs. Ochieng's contextual analysis (2018) offers valuable insights into the community's perceptions of the Catholic Church's environmental engagement in Chuka Igambang'ombe Sub-County. Understanding these perspectives is instrumental in designing community-centric environmental interventions aligned with local values and priorities. By incorporating community feedback and perspectives, the Catholic Church can enhance its impact on environmental sustainability in the region.

3.0 METHODOLOGY

This study utilised a descriptive survey research design to explore the Catholic Church's contributions to addressing environmental degradation in Chuka Igambang'ombe Sub-County, Kenya. The descriptive

survey design was chosen for its ability to collect qualitative and quantitative data, providing a comprehensive analysis of the Church's environmental initiatives from multiple perspectives. The study was conducted in Chuka Igambang'ombe Sub-County, focusing on 10 Catholic parishes known for their active involvement in environmental conservation efforts.

The target population for this study consisted of members of the Catholic Church, including priests, development officials, and leaders of various church groups such as the Catholic Women Association (CWA), Catholic Men Association (CMA), and Youth Association (YA). These groups were included due to their active roles in spearheading environmental initiatives within the Church. A sample size of 389 respondents was determined using Yamane's (1967) formula, with stratified random sampling employed to ensure representativeness across the different groups. Data was collected using structured questionnaires and oral interviews, with questionnaires including both open-ended and closed-ended questions. Collected data was analysed using the Statistical Package for Social Sciences (SPSS) version 26.0, involving coding, classification, and tabulation of data, followed by statistical evaluation through tables, pie charts, and percentages. Ethical approval was obtained from Chuka University and the National Commission for Science, Technology, and Innovation (NACOSTI), and informed consent was secured from all participants. Confidentiality was maintained by anonymising participant data, and regular debriefing sessions were conducted to address any concerns raised by participants.

4.0 RESULTS AND FINDINGS

Causes of Environmental Degradation in Chuka Igambang`ombe Sub-County

The study determined the causes of environmental degradation in Chuka Igambang`ombe Sub-County. The results of the analysis are presented below.

Table 1: Causes of Environmental Degradation

Cause	Frequency	Per cent
Deforestation	48	13.4
Pollution	40	11.1
Failure to take care of the Environment	15	4.2
Lack of Knowledge on Conservation of Environment	8	2.2
Economic Growth	44	12.3
Burning of Fossils and Charcoals	82	22.8
Insufficient Rain	59	16.4
Population Growth	49	13.6
Soil Erosion	14	3.9
Total	359	100.0

The results indicated that many factors are responsible for environmental degradation. The identified factors included deforestation, pollution, failure to care for the environment, lack of knowledge on environmental conservation, economic growth, burning of fossils and charcoals, insufficient rain, population growth, and soil erosion. Other factors contributing to environmental degradation were improper waste disposal, overgrazing, and habitat encroachment. A discussion of the causes of environmental degradation in Chuka Igambang`ombe Sub-County is elaborated below.

Deforestation

Deforestation is a critical environmental issue with far-reaching implications, particularly in Chuka Igambang'ombe Sub-County, which has been identified as a significant cause of environmental degradation. The study by Gitau (2000) revealed that deforestation, driven by agricultural expansion and unsustainable land use practices, has become a primary factor contributing to environmental degradation. In addition, Patel (2021) highlighted improper waste disposal as a critical issue exacerbating the environmental impact of deforestation. The consequences of these activities, such as habitat loss, soil erosion, and a decline in biodiversity, underscore the urgent need for sustainable land management strategies and effective waste management systems to mitigate environmental degradation and promote ecosystem resilience (Johnson, 2020).

Results of this study showed that deforestation emerged as a notable cause of environmental degradation, with 48(13.4%) of respondents attributing it as the primary factor. Munene (OI,2023) highlighted deforestation for agricultural expansion and improper waste disposal practices as key factors contributing to environmental degradation in Chuka Igambang'ombe Sub-County. Deforestation for agricultural purposes can lead to habitat loss, soil erosion, and a decline in biodiversity. Improper waste disposal can result in pollution of water sources and land degradation. Addressing these issues requires sustainable land use practices and proper waste management systems. Mbirichi (OI,2023), a Catholic Church priest who participated in this study, stressed that intensive farming practices and deforestation for agriculture were the primary factors driving environmental degradation in Chuka Igambang'ombe Sub-County. Soil erosion reduces soil fertility and can lead to sedimentation in water bodies. Deforestation for agriculture accelerates habitat loss and biodiversity decline. Implementing soil conservation practices and promoting sustainable land use are essential for mitigating these environmental issues.

Pollution

Water pollution can have adverse effects on aquatic ecosystems and human health. Biodiversity loss due to habitat destruction disrupts ecological balance. Implementing pollution control measures and conservation efforts can help mitigate these environmental challenges. Improper waste disposal can contaminate the environment and harm wildlife. Insufficient conservation initiatives may result in habitat loss and biodiversity decline. Implementing proper waste management strategies and enhancing conservation programs are critical for environmental protection. The findings of this study indicated that 40(11.1%) of the respondents indicated that pollution plays a significant role in environmental degradation. Johnson and Wilson (2019) underlined that improper waste disposal practices causing pollution and ineffective conservation initiatives are key factors contributing to environmental degradation in Chuka Igambang'ombe Sub-County. Clark (2016) identified water pollution due to inadequate waste management practices and biodiversity loss resulting from habitat destruction as significant causes of environmental degradation in Chuka Igambang'ombe Sub-County.

Failure to take care of the Environment

Neglecting environmental care is a growing concern with profound implications for environmental degradation. The failure to prioritise environmental stewardship can significantly negatively impact ecological well-being. In their work, *Christian Theology and Environmental Responsibility*, Mugambi and Vähäkangas (2001) emphasise the vital role of religious institutions like the Catholic Church in fostering environmental stewardship. The Catholic Church's teachings on care for creation and its active involvement in environmental initiatives such as tree planting, river rehabilitation, and environmental education

underscore its potential to mobilise communities toward sustainable practices. By integrating environmental responsibility into its theological framework, the Church helps to address ecological challenges and promote sustainable development. Results of this study revealed that 15(4.2%) respondents believed that neglecting environmental care directly contributed to its deterioration. These findings resonate with scholars like Johnson and Wilson (2019), who argue that pursuing economic development often results in unsustainable practices and the depletion of natural resources.

Lack of Knowledge on Conservation of Environment

Lack of knowledge on conservation practices has emerged as a significant contributing factor to environmental decline, highlighting the importance of raising awareness and enhancing education on sustainable environmental practices to mitigate degradation. Anderson (2018) delves into this aspect in the context of Sub-Saharan Africa in the study "Environmental Degradation and Resource Management," emphasising the critical link between knowledge and effective environmental resource management. Findings of this research indicated that 8 participants, equivalent to 2.2(%), identified a lack of knowledge regarding conservation practices as a contributing factor to environmental decline.

Economic Growth

Economic growth has been widely recognised as a factor leading to environmental degradation. Panayotou (2016) explores this relationship in the work "Economic Growth and the Environment," as he delves into the intricate dynamics between economic development and its environmental consequences, highlighting the implications of rapid industrial expansion and resource exploitation on ecological integrity. Results of this study showed that 44(12.3%) believed that economic growth contributes significantly to environmental degradation. This viewpoint resonates with scholars like Smith and Johnson (2020), who argue that pursuing economic development often results in unsustainable practices and the depletion of natural resources.

Burning of Fossils and Charcoals

The burning of fossil fuels was identified as a significant contributor to environmental degradation. Jones (2019) provides a comprehensive review in "The Environmental Impact of Burning Fossil Fuels," shedding light on the detrimental effects of this practice on the environment, emphasising the implications of increased greenhouse gas emissions, air pollution, and the worsening of climate change. Results of this study indicated that 82 (22.8%) respondents attributed environmental degradation to burning fossils and charcoals. This aligns with Jones (2019), which emphasises the harmful consequences of burning fossil fuels on the environment.

Insufficient Rain

Insufficient rainfall is a critical factor in environmental degradation, affecting ecosystems and livelihoods. Cavalcante et al. (2024) highlight how inadequate precipitation levels can lead to biodiversity loss, soil erosion, water scarcity, and heightened vulnerability to natural disasters. By understanding the cascading impacts of insufficient rainfall on the environment, policymakers and stakeholders can implement targeted strategies to mitigate these effects and enhance environmental resilience. Results of this research indicated that 59(16.4%) of the participants attributed environmental degradation to insufficient rainfall. Scholars and policymakers widely recognise the significant impact of climate-related factors on the environment, underscoring the necessity for sustainable water management strategies. The findings of this research align with the work of Cavalcante et al. (2024), as they underscore the significant impact of insufficient

rainfall on environmental degradation, emphasising the critical role of precipitation levels in driving adverse environmental changes.

Population Growth

Population growth stands as a pivotal driver of environmental degradation, exerting pressure on natural resources and ecosystems (Johnson, 2018; Clark, 2016) who explores this phenomenon in the context of the Catholic Church's role in addressing environmental crises, focusing on Chuka Igambang'ombe Sub-County. The study shows how rapid population growth can lead to extensive environmental challenges, including deforestation, habitat destruction, pollution and resource depletion. By understanding the intricate link between population expansion and environmental degradation, interventions can be tailored to address sustainability issues and promote ecological balance within communities. The findings of this study revealed that 49(13.6%) of the respondents believed that population growth contributes to environmental degradation. This viewpoint is supported by Johnson's (2018) research, which argues that an increasing population exerts pressure on natural resources, leading to deforestation, pollution and soil erosion.

Soil Pollution

Soil pollution is a pressing environmental concern with far-reaching implications for ecosystem health and human well-being. It arises from the introduction of harmful substances into the soil, leading to its degradation and impairing vital ecological functions. Various human activities, such as industrial discharge, agricultural practices, improper waste disposal, and chemical pesticides and fertilisers, contribute to soil pollution. Blaikie and Brookfield (2019) discuss these activities as crucial drivers of soil degradation and pollution. The contaminants can affect soil fertility, alter the composition of microbial communities and pose risks to human health when they enter the food chain. Given the fundamental role of soil in supporting terrestrial life, mitigating and addressing soil is crucial for land use and environmental conservation. Research findings of this study revealed that soil erosion, identified by 14 (3.9%) of the respondents, emerged as a crucial factor contributing to environmental degradation. It poses a considerable risk to sustainable land use and agriculture due to the loss of fertile soil and disruption of ecosystems. These findings align with the research of Blaikie et al. (2019), who also emphasised the detrimental impact of soil erosion on environmental health.

Overgrazing and Uncontrolled Logging

Overgrazing and uncontrolled logging are significant factors contributing to environmental degradation, as Crovo et al. (2021) highlighted in their study on the effects of livestock grazing on soil health and the recovery of a degraded Andean Araucaria Forest. The research sheds light on how these activities can lead to extensive environmental degradation, specifically affecting soil health and hindering the natural regeneration of a degraded forest ecosystem. By understanding the detrimental effects of these practices, policymakers and stakeholders can implement sustainable land management strategies to mitigate degradation and promote ecosystem resilience in such fragile environments**.** In this study, Javan (OI,2023) emphasised that overgrazing leads to land degradation and uncontrolled logging activities, causing habitat loss and significant environmental degradation in the Chuka Igambang'ombe Sub-County. Overgrazing can deplete vegetation cover and lead to soil erosion, impacting the ecosystem's stability. Uncontrolled logging disrupts habitats and reduces biodiversity. Sustainable grazing practices and regulated logging can help mitigate these effects and promote ecosystem health.

Encroachment and Inadequate Waste Management

In the study by Agyen-Brefo (2012) on the effects of encroachment on sustainable public land management, specifically focusing on the Ow catchment area in Kumasi, encroachment and inadequate waste management emerge as critical challenges to environmental sustainability. Encroachment, characterised by unauthorised occupation or land use, threatens the delicate balance of ecosystems, leading to habitat destruction and biodiversity loss. Coupled with inadequate waste management practices, which contribute to pollution and degradation of land and water resources, these factors underscore the urgent need for effective environmental management strategies in the face of urban development pressures. Valiyaveeyttil (OI, 2023) pointed out that encroachment on natural habitats and pollution from inadequate waste management practices are notable factors driving environmental degradation in Chuka Igambang'ombe Sub-County. Encroachment of natural habitats can lead to habitat fragmentation and loss of biodiversity. Inadequate waste management practices can pollute water sources and degrade the environment. Conservation of natural habitats and proper waste disposal are crucial for environmental preservation. He further highlighted unsustainable agricultural methods leading to soil erosion and inadequate conservation measures for natural resources as primary factors contributing to environmental degradation in Chuka Igambang'ombe Sub-County. Unsustainable agricultural practices like intensive farming can deplete soil nutrients and increase erosion. Inadequate conservation measures can compromise ecosystem resilience. Implementing sustainable farming techniques and enhancing conservation efforts are essential for environmental sustainability.

Inadequate Conservation Efforts

Environmental degradation ensues when conservation efforts fall short of effectively safeguarding natural resources and ecosystems (Wilson, 2019). Inadequate conservation practices, characterised by insufficient protection of habitats, biodiversity loss, and limited restoration initiatives, contribute to the deterioration of ecological balance, as resources are exploited beyond their capacity for replenishment, leading to irreparable damages in critical ecosystems and a ripple effect of environmental crises. In this research, Nyarire (OI, 2023) highlighted the inadequacy of conservation efforts in the region, leading to habitat destruction and deforestation, causing ecosystem disruption as critical factors contributing to environmental degradation in Chuka Igambang'ombe Sub-County. Inadequate conservation efforts can result in habitat degradation and loss of ecosystem services. Deforestation disrupts the ecological balance and reduces biodiversity. Strengthening conservation measures and promoting sustainable land management practices are essential for preserving the environment in the region.

5.0 CONCLUSION AND RECOMMENDATIONS

Conclusion: The study revealed multifaceted insights into the various factors contributing to environmental degradation in Chuka Igambang'ombe Sub-County. Deforestation, identified as a primary cause, poses a significant threat to the local ecosystem due to the adverse impacts on habitat, soil erosion and biodiversity decline. Improper waste disposal practices contribute to pollution, compromising water sources and land integrity. Moreover, the study reflects the significance of addressing economic growth, burning of fossils and charcoals, insufficient rainfall, population growth, soil erosion, overgrazing, uncontrolled logging and unsustainable agricultural practices as substantial triggers for environmental degradation.

Recommendations: Based on the findings, recommendations are proposed to address environmental degradation in Chuka Igambang'ombe Sub-County. Implementing sustainable land use practices is advised to mitigate deforestation for agricultural expansion and combat soil erosion. Furthermore,

enhancing waste management systems is crucial to reducing pollution from improper waste disposal, emphasising recycling, proper hazardous waste disposal, and public awareness campaigns for responsible waste handling. These measures collectively aim to mitigate environmental degradation and foster a resilient and sustainable ecosystem for the community.

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