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POLICY LANDSCAPE OF CLIMATE CHANGE AND HEALTH IN EAST AFRICA: A KINGDON POLICY ANALYSIS

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Abstract

Climate change effects (CCE) significantly contribute to health hazards globally. Regrettably, Low and Middle-Income Countries (LMICs) bear the brunt of this burden due to their inadequate institutional capacity to combat climate change, susceptibility to extreme weather events, heavy reliance on agriculture, restricted ability to adjust, topographical position, inability to obtain climate funding and reliance on natural resources for economic purposes. Despite international efforts to mitigate the impact of climate change, countries in East Africa continue to face significant health challenges as a result of its consequences. This study sought to assess the impact of climate change on the health of individuals in East Africa. The methodology used in this study was the Kingdon Multiple Streams Framework, which was applied to identify both successful and damaging elements in terms of getting climate change prevention on the policy agenda. The findings indicate that climate change poses significant health risks in East Africa, including heat waves, water scarcity, and vector-borne diseases, but a lack of robust data and evidence hinders effective problem definition. Existing regional and international frameworks, such as the Paris Agreement and WHO's climate change and health strategy, provide a foundation for policy solutions, including early warning systems, climate-resilient healthcare infrastructure, and adaptation and mitigation strategies. While political instability and competing priorities often overshadow climate change and health concerns, the East African Community's commitment to addressing climate change and the presence of policy entrepreneurs in some countries offer opportunities for progress. A policy window is opening in East Africa, driven by the EAC's climate change agenda and WHO's support, and the presence of policy entrepreneurs and feasible solutions create an opportunity for the streams to align and prioritize climate change and health in the region. In conclusion, prioritizing climate change and health in East Africa requires a trifecta of essential elements: effective problem definition, robust policy solutions, and political stability. The alignment of these three streams, facilitated by policy entrepreneurs, is crucial for meaningful policy action in the region, enabling the translation of solutions into tangible actions that address the health impacts of climate change in East Africa.

Keywords: *Kingdon Policy Analysis, Climate Change, Policy Landscape*

1.1. Introduction

Climate change encompasses modifications in the climate resulting from human activities, which have direct or indirect effects on the atmospheric composition. These alterations occur concurrently with the inherent variability of the climate within a comparable time frame (Yerlikaya, Ömezli, & Aydoğan, 2020). Human activities, such as the use of fossil fuels, deforestation, and improper land use, agricultural practices, and industrial processes, contribute to climate change by altering the configuration of the atmosphere (Melo & Foster, 2021). As the least developed continent, Africa is susceptible to climate change due to its limited ability to handle the physical, human, and socioeconomic difficulties brought about by extreme weather events (Munalula et al., 2016). It is anticipated that Africa will be the most severely affected, and indeed climate change is already a reality in Africa. For instance, there is depletion of rain forests in equatorial Africa, floods in western Africa, prolonged and severe droughts in eastern Africa, and an increase in ocean acidity near Africa's southern coast are all current issues facing the continent. Consequently, these altered weather patterns and climatic extremes have impacted food security, agricultural productivity, health, water, and energy security impede Africa's ability to grow and develop (Wiston, 2020)

Mattjus, (2018) observes that rising temperatures, climate-related disasters, and water scarcity from droughts are significant factors driving the spread of infectious diseases in Africa. The increase in malaria cases, already a prominent cause of death in the region, is exacerbated by higher temperatures and more intense rainfall, extending the disease's reach into previously unaffected areas like the highlands of Kenya and Ethiopia. A study by UNEP and UNAIDS has highlighted the intricate connections between climate change and the HIV/AIDS epidemic in Africa. Furthermore, climate change indirectly impacts health by contributing to ecosystem degradation, unsafe water, and inadequate sanitation, leading to malnutrition, cholera, diarrheal diseases, and increased child mortality. Poor water and sanitation, exacerbated by climate-induced droughts and floods, account for over 20% of the disease burden in Africa, with diarrhea being the second leading cause of death among African children (Besada et al., 2009). Although the majority of citizens of the world see climate change as a threat to human health, they perceive other population groups to be most strongly affected. Perhaps cognitive dissonance theory could explain this lack of individual concern, which is by all standards a highly distorted perception (van Baal, Stiel, & Schulte, 2023). This perspective is considered as a skewed perception climate change has led to a considerable global burden of mortality and morbidity across all age groups due to its impacts on the environment indiscriminately.

The effects of climate change are exerting a significant impact on global health at the present time. Alahmad et al. (2023) observe that extreme weather events were found to be responsible for 9.4% of all deaths worldwide between 2000 and 2019. Additionally, a report from the World Health Organization (2009) sheds light on the devastating consequences of climate change on Human health. According to this analysis, starvation accounts for 3.5 million deaths per year, urban air pollution causes 1.2 million deaths, lack of access to clean water and sanitation results in 2.2 million deaths due to diarrhea, and natural disasters cause about 60,000 deaths annually. In addition, Lee et al. (2024) found that around 3.3 to 3.6 billion people live in highly vulnerable contexts

affected by climate change. Between 2010 and 2020, mortality rates from floods, droughts, and storms were 15 times higher in these vulnerable regions. Furthermore, the World Health Organization (2014) predicts that between 2030 and 2050, climate change will lead to approximately 250,000 additional deaths per year due to under nutrition, malaria, diarrhea, and heat stress, predominantly in low-income countries.

The United Nations has played a pivotal role in addressing climate change through a variety of treaties, agreements, programs, and initiatives (Kaur, 2024). As such, Bonneuil and Franta (2021) conducted an extensive study exploring the global responses and actions undertaken by the United Nations (UN) and the international community in addressing the issue of global warming from 1971 to 2021. The study prominently highlights the UN's relentless endeavors in mitigating the impact of climate change. One notable effort cited is the 1992 United Nations Framework Convention on Climate Change (UNFCCC) treaty, which aimed to stabilize greenhouse gas concentrations and prevent detrimental interference with the climate system. Another significant undertaking is the 1997 Kyoto Protocol, which focused on emission reduction targets for developed countries and implements compliance mechanisms. In 2015, the UN adopted the Paris Agreement, which aimed to limit global warming. Additionally, the UN established the Intergovernmental Panel on Climate Change (IPCC) to provide scientific assessments on climate change and its impacts. Periodic Climate Action Summits are organized to mobilize global efforts on climate change. In 2010, the UNFCCC established the Green Climate Fund (GCF) to provide support for developing countries, while the UN provides Capacity Building and Technology Transfer to assist them in enhancing their climate initiatives.

Despite the UN's efforts to address climate change, the effects are still being borne by LMICs. Although LMICs may adopt climate change mitigation policies, it is important to note that this does not always result in tangible changes (Lahsen & Ribot, 2022). In fact, the rate of climate change-related deaths in LMICs is more than twice as high as in high-income countries (HICs) (World Health Organization, 2023). This analysis is further underscored by Sliwa et al. (2024), who emphasize that people in LMICs face significant threats due to the profound environmental changes of the past century. It is, thus, evident that LMICs are disproportionately affected by these environmental changes. Differential progress in LMICs regarding climate change mitigation policies can be largely attributed to the lack of effective implementation strategies (Saeed et al., 2023). Currently, climate policies in LMICs are implemented separately from other policies for economic and social development. This lack of integration makes it difficult to identify and take advantage of potential opportunities and competitive advantages that could drive local economies towards sustainable growth. Additionally, this approach overlooks the need to promote collaborative efforts to build social capital and establish effective institutional frameworks that would support cooperation and governance across different ministries. Ultimately, this approach does not benefit all stakeholders involved (Trotte et al., 2022). Recent evidence shows that there are co-benefits from implementing climate policies when they align with economic and social development policies. This emphasizes the need to integrate climate change policies and legislation with broader development strategies (Xian, et al., 2024).

This study analyzes the factors influencing the policy landscape of climate change and its impact on health in low- and middle-income countries (LMICs) through an examination of the agenda-setting process in Kenya, Uganda, Tanzania, and Rwanda, using Kingdon's Multiple Streams Framework (MSF). Climate change has had a significant impact on East Africa, particularly in terms of its effects on agriculture, the food system, and public health. This region has experienced more frequent and severe droughts, unpredictable rainfall patterns, and increased temperatures, which have led to crop failure, reduced food production, and food insecurity (Zougmore et al., 2016). In addition, these climate change impacts have also contributed to the spread of diseases such as malaria, cholera, and vector-borne illnesses in East Africa. The policy landscape in East Africa regarding climate change and health is complex and multifaceted. Different countries in the region, including Kenya, Tanzania, Uganda, and Rwanda, have developed strategies and policies to address the challenges posed by climate change and protect the health of their populations. Some of these policies focus on climate change mitigation, such as reducing greenhouse gas emissions and promoting renewable energy sources. Others focus on

adaptation measures, such as improving water management systems, promoting climate-resilient agricultural practices, and strengthening healthcare infrastructure to respond to increased disease

These countries, though part of the same economic bloc, have distinct approaches to prioritizing climate change on their policy agendas, particularly regarding its effects on health. Kenya, Tanzania, and Rwanda have been more successful in integrating climate change into their national policy agenda compared to Uganda. The success can be attributed to a clearer problem definition, a supportive political environment, and influential policy entrepreneurs. By comparing countries with similar national indicators but different outcomes, this analysis identifies the factors contributing to the success or failure of policy initiatives addressing the intersection of climate change and health. The paper aims to raise awareness about the impact of climate change on health and contribute to the existing literature on MSF by examining the policy implementation processes addressing this growing burden.

1.2. Purpose of the Study

The purpose of this study is to provide an overview of the policy landscape analysis in the context of climate change and health in East Africa. The specific research questions being addressed are the following: What are the main barriers to policy change in this area? How to better understand and analyze the current policy responses to climate change and health in the region? And the last one: What theoretical frameworks best explain the policy process in this area? As it has been analyzed before, the policy process can be understood as the way in which political struggle creates the conditions for the success or otherwise of making certain courses of action. However, the importance of a proper understanding of policy development itself lies in the potential to identify feasible targets for policy change and to learn from policies in action. So, the object of this study is to comprehensively analyze and map the policy response to the challenges raised by the increasing effects of climate change on health in East Africa. There are several reasons for focusing on this particular region. First, the impacts of climate change on health are expected to be particularly serious in this area. This is due to a combination of greater exposure to the

impacts of climate change, higher human vulnerability and relatively low adaptive capacity. Second, East African states have been identified as experiencing particular problems in progressing from the recognition of climate change as an environmental and development issue to the translation of that knowledge into successfully implemented policy aimed at protecting public health. So, it is essential to map the existing policy responses, develop a comprehensive understanding of the way in which the efforts to make changes in health system policy are being addressed and identify at what level and where interventions will be most effective.

1.3. Research Questions

The research questions being addressed in this research, firstly investigating inimical climate events and strain in East Africa, have been pressing concerns for a long time. The intermittent reports of droughts have contributed to a move in rainfall patterns across the region. These events continuously are conditioned by climate change, which has resulted in issues ranging from malnutrition, waterborne diseases, food insecurity, and high rates of mortality for both humans and animals. A crisis of this nature calls for the investigation of how best to marry evidence-based policy choices in mitigating climate change as a health threat.

1.4. Purpose of the Analysis

The research aims to inform the development of policies on climate change and health in East Africa. This will be achieved by applying a well-established policy analysis framework to comprehensively analyze the policy making process. Kingdon's Multiple Streams Framework will be utilized to explore how policy decisions in the area of climate change and health are made and what factors shape the outcome of these decisions. However, the research does not aim to provide a comprehensive analysis of policy making in any specific country in East Africa. Instead, it seeks to highlight some of the main gaps and challenges in the current policy landscape that require attention. The rationale for the country focus is that a regional perspective is needed, given that climate change is a complex and multi-faceted issue that goes beyond national boundaries. This is especially important in small and developing countries in East Africa where resources and capabilities for addressing climate change impacts are limited. It is hoped that the outcomes of the research will help to trigger the policy entrepreneurs, policy analysts, and decision makers to consider new ways of combining various preferences, values, and interests into coherent strategies of addressing climate change in the area of health.

1.5. Scope of the Analysis

The study focuses on the policy landscape of climate change and health in East Africa. It examines the current policies and initiatives in the region, how these policies form, and what factors contribute to their development, which the key actors in the policy process are what factors shape policy change, and what the opportunities and strategies for effective policy change are. Through this, the study aims to identify the policy gaps and opportunities in East Africa and provide recommendations about how to achieve better policy outcomes in the future. As climate change is a global issue, there have been a large number of researches and policies which are discussing the relationship between climate change and health from an international or regional level perspective. However, it is also very important to understand the implementation of these grand policies at the

grassroots level, as the ignorance of local policy context would possibly lead to their failure. Thanks to the increasing attention to the capacity building for policy research in the less developing countries, there are a number of extensive research and technical assistant projects for the climate change policy in East Africa nowadays. This brings opportunities for the knowledge exchange between the local and international experts in the policy field and supports the development and evaluation of evidence-based and locally adoptive policies in East Africa. This is one of the reasons why the researcher chose East Africa as the particular study area, apart from the reason that East Africa is considered as one of the most vulnerable regions to the impacts of climate change and it has a high prevalence rate of climate-sensitive diseases such as malaria and malnutrition.

1.6. METHODOLOGY

This study was qualitative approach. It employed Kingdon's Multiple Streams Framework Analysis as a methodology to examine the interplay and convergence of these streams in shaping policy agendas, formulation, and implementation. Kingdon's (1984) Multiple Streams Framework (MSF) explains the formulation and implementation of government policies at various levels (Ridde, 2019). It was originally developed to study agenda setting, but scholars have expanded it to include policy adoption (Fowler, 2019) and argue for its applicability to policy implementation (Omweri, Muna, Njoroge, 2023). Kingdon's MSF consists of five key elements: problems, policies, politics, policy windows, and policy entrepreneurs. Kingdon demonstrates that these three independent streams —problems, policies, and politics— coexist within the political system, parallel to each other but with related sets of dynamic activities.

The problem stream involves defining the policy problem in order to attract the attention of decision-makers and the public, so that the issue can be addressed (Cramer, Crane & Dewulf, 2023; Cairney & Jones, 2015; Kingdon, 1984). Cairney and Jones (2015) assert that policy problems are delineated by three factors: personal values, comparisons to past performance or other countries, and categorization of conditions. It is not every situation that becomes a significant problem deserving attention. Attention is garnered through three means: indicators, focusing events, and feedback (Vince, 2023; Zahariadis, 2007). Indicators refer to data collected through routine monitoring methods such as surveys or research studies. They are utilized to establish the existence and assess the magnitude of a problem. Focusing events are specific occurrences, such as crises, disasters, or symbols associated with a problem, including a policymaker's personal experience (Øvald, 2023). Focusing events are situations that the government or public cannot disregard, thus assisting in elevating a problem on the governmental agenda. The role of these events is to reinforce an already recognized situation, rather than primarily drawing attention to it (Herweg, Zahariadis, & Zohlnhöfer, 2023). Feedback consists of information gathered from monitoring and evaluation studies of previous initiatives. This feedback aids decision makers in comprehending successful factors and limitations (Herweg, Zahariadis, & Zohlnhöfer, 2023).

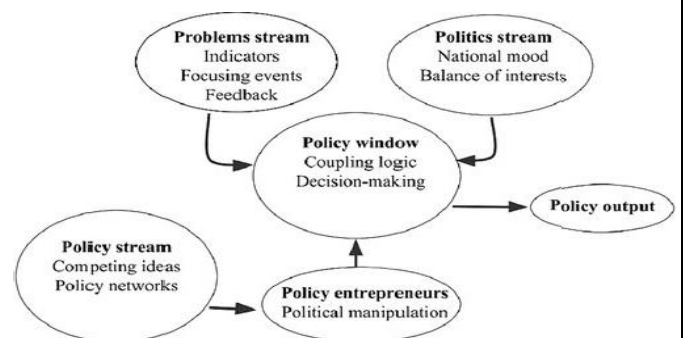
Within the policy stream, various solutions generated by policy specialists are taken into account. These solutions are often created well in advance of any identified problems, but once a relevant issue arises, it is linked to the appropriate solution. Proposed solutions can undergo reconsideration or modification by multiple actors over time until they are deemed viable. Viability is

determined these criteria: technical feasibility (the difficulty of implementing the proposed solution), value acceptability (the degree to which the solutions align with the values of policymakers and the political system), bearable costs, and political and public acceptance. Policymakers also assess the efficiency of alternative solutions (Zohlnhöfer, 2023).

The politics stream analyzes the impact of the political context on the prioritization of items on the policy agenda (Zahariadis, 2007). There are three key political factors that determine whether proposed solutions are perceived favorably or unfavorably: national sentiment (the general public's attitude towards a problem or solution), advocacy campaigns by interest groups, and changes in administrative or legislative leadership (Kingdon, 1984). Among these factors, national mood and turnover in administrative or legislative positions have the greatest influence on the prioritization of policy issues (Herweg, Zahariadis, & Zohlnhöfer, 2023). This is because the political composition of the governing party or coalition can shape perceptions of an issue and determine its priority. When control shifts from one party to another, the ideological makeup changes, resulting in shifts in the political agenda (Kassam & Merali, 2019). However, every governing party is fundamentally concerned with the likelihood of being re-elected. This motivation drives parties to support proposals for issues that are not only important to them, but more importantly, popular among voters (Wang et al., 2023).

These three streams can be influenced by a policy entrepreneur, an individual within or outside the policymaking institution (Petridou, 2023). Policy entrepreneurs are knowledgeable, well-connected, and possess the necessary resources (time and money) to bring about policy change for issues that they personally care about (Schnellenbach, 2024). Policy entrepreneurs employ three strategies to align these streams: persuasive problem framing, early selection of viable solutions, and adaptation to policy environments (Cairney, 2021). They achieve this by providing a concise yet compelling definition of complex problems, emphasizing solutions before the problem, and capitalizing on policy windows. Policymakers often face information overload and time constraints, which lead them to rely on both rational and irrational decision-making heuristics. Policy entrepreneurs are aware of this and strategically manipulate information to influence policymakers towards their proposed solutions (Arnold, 2021). When policy entrepreneurs successfully align, these three streams during a policy window, the likelihood of significant policy change increases (Øvald, 2023; Herweg, Zahariadis, & Zohlnhöfer, 2023). The aforementioned arguments have been summarized in the figure provided below.

Figure 1: Multiple Streams Framework for the Policymaking Process



Source: Adapted from Zahariadis (2014)

1.7. RESULTS CASES

Kenya's Case Study

Problem Stream. Indicators. According to the Global Adaptation Initiative (GAIN), Kenya ranks 151 out of 181 nations in terms of climate vulnerability. It is also ranked as the 37th least prepared to address the climate change crisis (Nyika, 2022). In recent years, Kenya has witnessed several significant occurrences, including 16 droughts that resulted in 196 fatalities and affected over 52 million people. There was also one earthquake and one tsunami, resulting in one death. Additionally, there were 20 outbreaks of bacterial diseases, which claimed 1,576 lives and impacted almost 60,000 individuals. Five instances of parasitic diseases caused 1,595 deaths and affected over 6 million people. Furthermore, there were seven outbreaks of viral diseases, resulting in 514 deaths and affecting 3,850 individuals. Eight flash floods claimed 245 lives and impacted 193,500 people. Thirty-seven riverine floods resulted in 1,150 deaths and affected over 2 million individuals. Four landslides caused 133 deaths, and one mudslide resulted in 20 fatalities. Lastly, one convective storm led to 50 deaths (World Bank, 2021).

Focusing Events. The worst flood in Kenya's recent history occurred in April 1961. During this time, heavy rainfall caused the Tana River to burst its banks, resulting in catastrophic flooding in various parts of the country. The flooding was particularly devastating in the Tana River Basin, affecting communities living along the river and causing extensive damage to homes, infrastructure, and agricultural lands. The 1961 floods in Kenya resulted in significant loss of life and property, making it one of the most severe natural disasters in the country's history (Kilavi, et. al., 2018). The Paris Agreement entered into force for Kenya on 27th January 2017, and as set out in Article 2(6) of the Constitution (2010), the Paris Agreement now forms part of the law of Kenya. This prompted the Kenya government to begin developing climate national plan. This event was followed by the drought crisis in 2017 resulted in crop failures, water shortages, and the deaths of livestock, affecting a substantial number of people nationwide. President Uhuru Kenyatta recognized the gravity of the situation and declared it a national disaster, calling for prompt action. This involved providing food aid and water supplies to the affected communities (Ngoye, Saado, & Gachari, 2021). In 2018, flooding led to the tragic loss of 183 lives and forced more than 225,000 people, including 145,000 children, to leave their homes. Additionally, this natural disaster caused over 700 educational institutions to temporarily shut down (Government of the Republic of Kenya, 2018). A noteworthy climate incident occurred in Kenya in 2020, characterized by flooding in various regions of the country. Intense rainfall and subsequent flooding led to the displacement of thousands of individuals, the destruction of homes and infrastructure, and loss of life. President Uhuru Kenyatta personally visited the affected areas, directing governmental agencies to deliver emergency assistance. He also underscored the significance of bolstering disaster preparedness and response strategies in the face of mounting climate-related challenges (Njenga, 2021). Feedback. Research projects that by 2030, approximately 9.1% of the projected 13,800 deaths due to diarrhea in children under 15 years old will be attributable to climate change. Although diarrhea deaths are projected to decrease to around 6,200 by 2050, the proportion of deaths attributed to climate change is expected to increase over time (WHO, 2015). Research indicated that air pollution accounted for 59% of an estimated 19,000 child deaths due to acute lower respiratory infections in Kenya (Zeeshan, 2020). The survey revealed that

crop yield reductions of up to 45 percent are expected for maize, rice, and soybean crops by 2100.

Policy Stream. The Kenyan government has formulated numerous initiatives, national frameworks, and plans to effectively tackle the challenges posed by climate change and its impact on public health. For instance, The Paris Agreement entered into force for Kenya on 27th January 2017, and as set out in Article 2(6) of the Constitution (2010), the Paris Agreement now forms part of the law of Kenya; National Policy for Disaster Risk Management(2009); National Climate Change Action Plan: Adaptation Technical Analysis (2012); Second Medium-Term Plan (2013–2017): Transforming Kenya (2013); National Climate Change Action Plan 2013–2017, Vision 2030 (2013); National Health Policy 2014–2030 (2014); Common Program Framework for Ending Drought Emergencies (2015); National Energy and Petroleum Policy (2015); Second National Communication on Climate Change (2015); Nationally Determined Contributions (2016); National Climate Change Profile (2018); Climate Smart Agriculture Implementation Framework 2018–2027 (2018); Updated Nationally-Determined Contribution (2020); The Landscape of Climate Finance in Kenya (2021); The Climate Change Act (2016); National Climate Change Response Strategy (2010); NCCAP (2013–2017); National Adaptation Plan (2015–2030); Climate Risk Management Framework (2017); National Climate Change Policy (2018), and National Climate Finance Policy (2018).

The national climate plan has not yielded desirable results in Kenya (Omondi, 2023). The country continues to face severe effects of climate change, such as droughts and floods, in various regions (Kogo, Kumar, & Koech, 2021). Climate change advocates, both within and outside the region, have acknowledged this failure and put forward numerous suggestions (Oluoch, 2023). However, some of the climate change initiatives have come to fruition. For instance, Kenya successfully managed to ban the use of polythene papers in 2017. The use of polythene papers contributed greatly to diverse effects on the environment that necessitated the spread of malaria. Climate change effects and farming practices increase malaria incidence (Elnour, et al., 2023). The usage of plastic bags in Kenya has been linked to an increase in malaria cases, along with other factors that enhance malaria (MacAfee & Löhr, 2023). Blocked drains contribute to the spread of water and mosquito-borne diseases such as dengue and malaria (Krystosik et al., 2020). Standing water contaminated with plastic and other solid waste can lead to the leaching of chemicals into groundwater, thereby reducing overall water quality and impacting human health (Akmal & Jamil, 2021). For example, the presence of bisphenol A (BPA), derived from plastic waste, in water can significantly shorten the hatching time and duration of larval instar in mosquitoes. This can increase the number of disease-carrying mosquitoes and the rates of dengue, malaria, and other mosquito-borne diseases (Valsala & Asirvadam, 2022). As such, in the past decade, there have been numerous malaria cases, with a total of 0.9 million cases in 2010. The number of cases has increased significantly, with 3.6 million cases in 2017 and 3.6 million in 2018. The number of malaria cases has also increased in different years, with 3.66 million cases in 2020, 3.83 million in 2021, and 3.42 million in 2022. (Leal, May, May, & Nagy, 2023; Statista, 2024).

Politics Stream. During President Uhuru Kenyatta's tenure, addressing climate change and health were recognized as primary

policy priorities (Mabera, 2016). To tackle the effects of climate change on health, the government implemented various frameworks and strategies, including the National Climate Change Action Plan and the National Health Policy (Lutta, 2022; César, & Nyangena, 2014). Coordination among government agencies responsible for climate change adaptation, health, and disaster risk management was enhanced. The Climate Change Directorate was established within the Ministry of Environment and Forestry to promote collaboration on climate change-related matters. Kenya actively participated in international climate negotiations and initiatives under President Uhuru Kenyatta's leadership, demonstrating its commitment to global climate agreements such as the Paris Agreement. The government sought partnerships with international organizations and donors to secure funding and technical assistance for climate change and health programs.

In addition, a diverse range of stakeholders, including civil society organizations, academia, and the private sector, were actively involved in addressing the challenges posed by climate change and health. Stakeholder consultations informed the policymaking, implementation, and monitoring processes (Naeku, 2020). For instance, USAID supported the Government of Kenya's development and climate priorities through programs and partnerships focused on climate adaptation, resilience building, renewable energy, and natural climate solutions. Additionally, USAID, in collaboration with the Swedish Development Cooperation Agency (SIDA), has helped develop Kenya's Carbon Markets Activation Plan 2023 (César, Ekbo, & Nyangena, 2014). However, despite policy commitments, there were challenges in implementing and enforcing climate change and health policies in Kenya. Progress toward policy goals was hindered by limited resources, institutional capacity constraints, and conflicting priorities (Ngetich & Ndiema, 2020; Odhengo et al., 2019). According to the article titled "The Landscape of Climate Finance in Kenya" published by Climate Policy Initiative in March 2021, Kenya received a total of \$2.4 billion in 2018 from both public and private sources, which were invested in climate-related activities. However, this amount represents only a third of the annual funding required to achieve Kenya's Nationally Determined Contribution (NDC) targets.

After the transition of power from Uhuru Kenyatta to William Ruto, certain climate change and health policies and initiatives that were initiated during the previous administration were continued. President Ruto expressed his commitment to introducing new policy directions and/or making adjustments to existing frameworks based on policy priorities and his vision for addressing climate change and health. This could involve revising current strategies, establishing new targets, or launching fresh initiatives to address emerging challenges (Omondi, 2023). For instance, the president pledged to call for the reassessment of the global carbon price to accurately reflect the true cost of climate change and to implement trade regulations that would enable global solutions. Subsequently, he signed Kenya on as a member of the African Carbon Markets Initiative, allowing for the expansion of the voluntary carbon market in Kenya (Cassina & Gachara, 2023). Besides, President Ruto demonstrated his commitment by hosting the inaugural Africa Climate Summit in Nairobi in September. The summit culminated in a joint declaration calling on major polluters to allocate more resources to aid developing nations. Additionally, President Ruto designated November 13th as a national tree-planting holiday, aligning with his broader ambition for Kenya to

plant 15 billion trees within the next 10 years (Cassina & Gachara, 2023).

Policy Window and Entrepreneurs. In Kenya, there was a strong push from climate change policy entrepreneurs to promote the use of clean energy sources like solar and wind power in the renewable energy sector (Nguta, 2021). Environmental organizations, civil society groups, and grassroots movements took the lead in advocating for clean energy through various campaigns and initiatives. Their main goals included raising awareness about the benefits of renewable energy, gaining public support for climate action, and advocating for policy reforms that facilitated the adoption of clean energy solutions (Muok & Kingiri, 2015). Sustainable Energy for All (SEforALL) Kenya had been actively involved in supporting policy discussions, capacity building, and mobilizing investments for clean energy projects to contribute to climate change mitigation efforts (Action, 2016). Kenya Renewable Energy Association (KEREKA) played a crucial role in advocating for favorable policies and regulations to foster the growth of the renewable energy sector and address climate change challenges. Additionally, Green Energy Africa was actively involved in advocacy efforts to promote the adoption of renewable energy and influence climate change policies in Kenya (Ockwell et al., 2021).

The policy window in Kenya opened during a time of energy shortages and a need to diversify its energy sources. In the early 2000s, Kenya faced significant power shortages, which prompted the exploration of alternative energy sources such as wind power. These challenges reached their peak in 2008-2009, when Kenya experienced severe electricity shortages (Owino et al., 2016; Ogola et al., 2011). Policy entrepreneurs played a role in influencing policy decisions on energy such as the introduction of feed-in tariffs and tax incentives, to encourage investment in renewable energy which led to Kenya's substantial growth in its renewable energy capacity. Besides, the Lake Turkana Wind Power project was initiated to take advantage of the region's abundant wind resources, aiming to enhance energy security, reduce reliance on fossil fuels, and mitigate the negative impacts of climate change. This project has made significant contributions to the national grid (Olsen & Westergaard, 2018).

Tanzania's Case Study

Problem Stream. Indicators. Tanzania ranks 45th out of 182 countries in vulnerability to climate change and 58th out of 192 countries in preparedness for adaptation investments. The country has experienced recurrent floods and droughts, with the frequency and severity increasing in recent decades. Between 2010 and 2020, the frequency of floods in Tanzania increased by 45%, while the frequency decreased by 14% and 15% in Sub-Saharan Africa and the rest of the world (Mzava, Valimba, & Nobert, 2020). This increase in frequency is consistent with the average number of floods per year increasing from 0.8 between 1980 and 2010 to 1.8 between 2011 and 2022, causing approximately US\$463.8 million in losses between 1980 and 2022 (Mdegela, et al., 2023). Tanzania is also the third most populous country in Africa at risk of contracting malaria, with 90% of its population living in malaria-prone areas. The resurgence of new malaria cases in highland regions previously deemed malaria-free is linked to climate change, rising temperatures, and increased risk of flooding, which poses a threat of more waterborne disease outbreaks (Sindato & Mboera 2024). Focusing Events. From 19th to 22nd December 2011, the city of Dar es Salaam experienced heavy rainfall events

that triggered the worst flooding in various parts, especially over low lying areas of Msimbazi Valley or wetland. The flooding events resulted in major socio-economic implications, including the death of forty-three people. The city's major transportation networks were destroyed by the floods. Some bridges were completely swept out and others were covered with water (Anande & Luhunga, 2019). Traditional rainfall patterns in Tanzania were disrupted with late onsets of the rains and wet seasons interspersed with prolonged dry spells (Sieber et al., 2015). Feedback. Several studies and reports have drawn attention to the distinct effects of climate change on Tanzania's economy, environment, and society. Notably, Tanzanian scientists, international organizations like the Intergovernmental Panel on Climate Change (IPCC), and NGOs have conducted research that offers evidence-based evaluations of climate change impacts, as well as proposed mitigation and adaptation strategies specifically designed for Tanzania's circumstances (Lee et al., 2023).

Policy Stream. Tanzania officially ratified several international agreements on climate change, including the Paris Agreement in 2018. These agreements stipulate the need to incorporate climate change considerations into domestic policy. (Msafiri, 2023). The Tanzanian government has demonstrated its commitment to regional and global agreements, such as the United Nations Framework Convention on Climate Change. Furthermore, they have outlined comprehensive strategies and plans to strengthen the country's climate resilience as documented in the Tanzania National Climate Change Response Strategy 2021-2026 and the Third National Development Plan (United Republic of Tanzania, 2021). The early and significant initiative for adaptation was the National Adaptation Plan of Action (NAPA), which had developed 35 plans by November 2016. However, while the NAPA approach has promoted sectorial integration, it has often led to the development of individual plans without proper coordination. Recognizing these limitations, there is now a shift towards more comprehensive approaches to mainstreaming adaptation into national policy. This shift is considered a positive step toward enhancing implementation effectiveness and minimizing the risk of maladaptation (Pardoe et al., (2018). In 2019, the Tanzanian Government implemented a ban on all plastic carrier bags, regardless of their thickness. This decision was made with the aim of reducing plastic pollution and addressing food security concerns. A study conducted in Tanzania revealed that the production of polythene bags using petroleum products leads to environmental pollution, as harmful chemicals are released by industries. When these bags are discarded and left in the soil, they take many years to degrade, adversely affecting soil texture and fertility (Behuria, 2021).

Politics Stream. Key government officials, including the President and relevant ministers, have publicly acknowledged the perils posed by climate change and have unequivocally displayed their commitment to the implementation of policies and strategies aimed at tackling this pressing issue. "The stakes are high," Tanzanian President Samia Suluhu Hassan (2023) told the Africa Climate Summit in Kenya, "and actions have to take place not tomorrow but today, and literally now." Tanzania has made some commitment to addressing climate change at the policy level. These initiatives demonstrate a certain level of political goodwill. The country ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1992 and has developed various national policies and strategies to tackle climate change, including the National Climate Change Strategy in 2012. Locally, Tanzania

has implemented several initiatives to combat climate change, such as afforestation and reforestation projects, renewable energy programs, and sustainable land management practices (Majamba, 2023). However, despite the existence of policies and initiatives, the National Assembly has not allocated enough resources to implement them. As a result, there is limited funding, institutional capacity constraints, and competing development priorities that often hinder the full realization of climate change mitigation and adaptation efforts. Although public awareness of climate change in Tanzania is gradually increasing, there is still a lack of widespread understanding of its causes, impacts, and potential solutions. Local communities in Tanzania play a crucial role in addressing the impacts of climate change. Tanzania has also participated in international climate change negotiations and partnerships, highlighting the importance of global collaboration in addressing this cross-border issue (Pardoe et al., 2018). However, most stakeholders in climate change did not have active roles in decision-making (Kongela, 2023). According to a study conducted by Msafiri in 2023, it was found that only 32% of Tanzanians are aware of climate change.

Policy Window and Entrepreneurs. Policy Entrepreneurs Tanzania has actively advocated for climate change policies, largely from the efforts of former President Jakaya Kikwete. His advocacy has not only placed climate change as a priority on the country's policy agenda, but has also resulted in Tanzania committing to global climate agreements (Poulton, 2017). The Tanzanian government, specifically the Ministry of Environment, has played a crucial role in facilitating climate change initiatives and establishing policy frameworks (Omambia, 2010). In addition, civil society organizations like the Tanzania Forest Conservation Group, Tanzania Climate Action Network, and Africa Climate Reality Project have actively contributed to the promotion of climate change policies (Bolin & Tassa, 2012). Tanzanian research and academic institutions, such as the Institute of Resource Assessment at the University of Dar es Salaam, have provided valuable expertise and technical support for the development of evidence-based climate policies (Pilato, Sallu, & Gaworek, 2018; Ssekamatte, 2018). Furthermore, international development partners such as the UNDP, World Bank, and bilateral aid agencies have been instrumental in supporting Tanzania's efforts to address climate change (Pardoe, 2020).

Policy Window. The agricultural sector in Tanzania was severely impacted by a prolonged drought. The effects, such as crop failures, food shortages, and increased livestock deaths, were widespread, especially in the central and southern regions where agriculture is vital for rural communities. This drought emphasized the vulnerability of Tanzanian farmers to climate change and raised awareness among policymakers and the public about the urgent need to address climate-related risks in the agricultural sector. (Mdemu, 2021). As a response, various stakeholders, including government agencies, agricultural experts, and NGOs, provided emergency relief and support to affected farmers and communities. They also made efforts to develop and implement long-term policy solutions to enhance resilience and reduce the impacts of future droughts. These solutions may involve promoting drought-resistant crop varieties, improving water management practices, and enhancing agricultural extension services to equip farmers with climate-smart techniques. The prolonged drought received significant media coverage in Tanzania, highlighting the severity of the situation and the urgency for action (Elia, 2019). The government, led by President John Magufuli at the time,

acknowledged the seriousness of the drought and emphasized the importance of addressing climate change's effects on agriculture. This recognition from political leaders, along with the advocacy of civil society organizations and international partners, generated momentum for policy action and increased support for climate-resilient agriculture (Donald, 2021).

Uganda's Case Study

Problem Stream. Indicators. Uganda, ranking 13th out of 191 countries in terms of climate vulnerability (Ndaliman, 2022), is highly susceptible to climate change. The country has faced numerous climate-related disasters, including 15 floods, 11 landslides, and 5 droughts, resulting in significant loss of life and property (Government of Uganda, 2020). In 2019, floods in the western region affected over 12,000 people, displacing many and causing extensive damage to infrastructure and agricultural land (UN News, 2019). Additionally, climate change has worsened the spread of waterborne diseases, such as cholera and typhoid fever, leading to numerous fatalities (WHO, 2018). For example, in 2021, Uganda accounted for the 3rd highest global burden of malaria cases (5.1%) and the 7th highest number of deaths (3.2%) [2]. Moreover, it had the highest proportion of malaria cases in East and Southern Africa, reaching 23% in 2021 (UNICEF, 2021). Focusing Events. One of the most significant events that brought attention to Uganda's need for urgent action on climate change and disaster risk reduction was the 2010 landslide in Bududa District. This devastating incident resulted in the death of over 300 people and the displacement of thousands more (IRIN, 2010). Following this tragedy, the government launched the National Climate Change Policy in 2019. The main objectives of this policy are to enhance climate resilience and reduce greenhouse gas emissions (Government of Uganda, 2019). The development of this policy was a response to the increasing threat of climate change and the necessity for a coordinated national approach. Feedback. Research has shown that climate change is projected to increase the frequency and severity of extreme weather events in Uganda. This will result in more frequent and intense floods, landslides, and droughts (IPCC, 2018). Additionally, climate change is expected to contribute to the spread of waterborne diseases, heat stress, and other health problems (MOH, 2018). Furthermore, it is projected that climate change will reduce agricultural productivity, leading to food insecurity and economic losses (MAAIF, 2019).

Policy Stream. The Ugandan government has demonstrated a commitment to addressing climate change through a range of policies and initiatives. The National Climate Change Policy (2019) provides a comprehensive framework for climate change mitigation and adaptation efforts, with a focus on reducing greenhouse gas emissions, promoting renewable energy, and enhancing climate resilience. The National Adaptation Plan (2015) outlines strategies for reducing vulnerability to climate change, including improving agricultural productivity, enhancing water management, and promoting climate-resilient infrastructure. The National Development Plan III (2020-2025) includes climate change mitigation and adaptation measures, such as promoting sustainable land use, reducing deforestation, and increasing energy efficiency. Additionally, the Ministry of Water and Environment has established a Climate Change Unit to coordinate climate change efforts across government agencies and stakeholders. Other notable policies and initiatives include the National Forestry and Tree Planting Act (2003), the National Wetlands Policy (2010), and the Uganda Green Growth Development Strategy (2017).

These policies demonstrate Uganda's commitment to addressing the challenges of climate change and achieving sustainable development.

Communities of policy experts, as Omweri (2024) notes, provide a multitude of policy concepts for policy solutions that are related to technical feasibility and compatibility with the political and social goals of the host society and such policies to be accepted, they must be seen as practicable. However, Kabumba (2024) contends that citizens of Uganda have a mixed perception of climate change policies, with many expressing concern about the impacts of climate change on their daily lives but also skepticism about the government's ability to effectively implement policies. While some citizens appreciate the government's efforts to address climate change; others feel that policies are inadequate or poorly enforced, and that the government prioritizes economic growth over environmental protection. Additionally, some citizens feel that climate change policies disproportionately affect vulnerable communities, such as small-scale farmers and pastoralists, who are already struggling to adapt to changing weather patterns.

Politics Stream. President Yoweri Museveni has acknowledged the urgent need to address climate change, and the government has committed to increasing its use of renewable energy sources, such as hydropower and solar energy (State House Uganda, 2020). The government has also established the Uganda National Climate Change Forum, which brings together stakeholders to discuss climate change issues and develop solutions. However, despite these efforts, the country still faces significant challenges in implementing and enforcing climate change policies, including limited resources and institutional capacity constraints.

For instance, the ban on polyethylene papers in Uganda was implemented in 2019, with the aim of reducing plastic waste and promoting environmental sustainability (National Environment Management Authority, 2019). The ban, which was announced by the Ministry of Water and Environment, prohibited the manufacture, importation, sale, and use of polyethylene plastic bags and other plastic materials (Ministry of Water and Environment, 2019). However, the implementation of the ban has been slow and inconsistent, with many plastic bags and other polyethylene materials still being used and sold in the country (Katusabe, 2020). Despite the ban, polyethylene papers and other plastic materials continue to be widely used in Uganda, particularly in urban areas (Katusabe, 2020). This is partly due to a lack of effective enforcement and monitoring by the relevant authorities, as well as a lack of alternative packaging materials (Mugerwa, 2020). Additionally, some manufacturers and traders have continued to produce and sell polyethylene papers and other plastic materials, often under the guise of "exempted" or "authorized" uses (Katusabe, 2020). Efforts to enforce the ban have been met with resistance from some manufacturers and traders, who argue that the ban will lead to job losses and economic hardship (Mugerwa, 2020). However, environmental activists and advocates have praised the ban as a necessary step towards reducing plastic waste and promoting sustainable development in Uganda (Greenwatch, 2020).

Policy Window and Entrepreneurs. Policy entrepreneurs in Uganda have successfully utilized policy windows to promote climate change mitigation and adaptation efforts. The Uganda National Association of Renewable Energy (UNARE) has leveraged policy windows to advocate for the development of renewable energy sources, such as solar and wind power (UNARE,

2020). For instance, UNARE successfully pushed for the implementation of the Renewable Energy Policy (2019), which aims to increase the use of renewable energy sources to 61% of the country's energy mix by 2030 (Ministry of Energy and Mineral Development, 2019).

The Uganda Wildlife Authority has also capitalized on policy windows to promote eco-tourism and conservation efforts, protecting the country's natural resources (Uganda Wildlife Authority, 2020). For example, the authority has worked with local communities to develop sustainable tourism initiatives, such as the Community Tourism Initiative (CTI), which aims to promote responsible tourism practices and support conservation efforts (CTI, 2020).

Furthermore, the Climate Action Platform (CAP) has brought together stakeholders to promote climate change mitigation and adaptation efforts (CAP, 2020). CAP has utilized policy windows to advocate for climate-resilient infrastructure development, sustainable agriculture practices, and renewable energy adoption (CAP, 2020).

Rwanda's Case Study

Problem Stream. Indicators. Rwanda, ranking 14th out of 191 countries in terms of climate vulnerability (IPCC, 2022), is highly susceptible to climate change. The country has faced numerous climate-related disasters, including 12 floods, 8 landslides, and 4 droughts, resulting in significant loss of life and property (UNDRR, 2020). In 2018, floods in Kigali city affected over 5,000 people, displacing many and causing extensive damage to infrastructure and agricultural land (UN News, 2018). Additionally, climate change has worsened the spread of waterborne diseases, such as cholera and typhoid fever, leading to numerous fatalities (WHO, 2018). For example, in 2021, Rwanda accounted for the 5th highest global burden of malaria cases (3.5%) and the 9th highest number of deaths (2.1%) (WHO, 2021). **Focusing Events.** One of the most significant events that brought attention to Rwanda's need for urgent action on climate change and disaster risk reduction was the 2007 landslide in Gatsibo District. This devastating incident resulted in the death of over 100 people and the displacement of thousands more (Reuters, 2007). Following this tragedy, the government launched the National Climate Change Policy in 2019. The main objectives of this policy are to enhance climate resilience and reduce greenhouse gas emissions (Government of Rwanda, 2019). **Feedback.** Research has shown that climate change is projected to increase the frequency and severity of extreme weather events in Rwanda. This will result in more frequent and intense floods, landslides, and droughts (IPCC, 2018). Additionally, climate change is expected to contribute to the spread of waterborne diseases, heat stress, and other health problems (WHO, 2018). Furthermore, it is projected that climate change will reduce agricultural productivity, leading to food insecurity and economic losses (FAO, 2019).

Policy Stream. The Rwandan government has demonstrated a commitment to addressing climate change through a range of policies and initiatives. The National Climate Change Policy (2019) provides a comprehensive framework for climate change mitigation and adaptation efforts, with a focus on reducing greenhouse gas emissions, promoting renewable energy, and enhancing climate resilience. The National Adaptation Plan (2015) outlines strategies for reducing vulnerability to climate change, including improving agricultural productivity, enhancing water

management, and promoting climate-resilient infrastructure. The National Development Plan II (2018-2024) includes climate change mitigation and adaptation measures, such as promoting sustainable land use, reducing deforestation, and increasing energy efficiency. Additionally, the Ministry of Environment and Natural Resources has established a Climate Change Unit to coordinate climate change efforts across government agencies and stakeholders. Other notable policies and initiatives include the National Forestry and Tree Planting Act (2003), the National Wetlands Policy (2010), and the Rwanda Green Growth Development Strategy (2017).

Politics Stream. President Paul Kagame has acknowledged the urgent need to address climate change, and the government has committed to increasing its use of renewable energy sources, such as hydropower and solar energy (The New Times, 2020). The government has also established the Rwanda National Climate Change Forum, which brings together stakeholders to discuss climate change issues and develop solutions. However, despite these efforts, the country still faces significant challenges in implementing and enforcing climate change policies, including limited resources and institutional capacity constraints.

Policy Window and Entrepreneurs. Policy entrepreneurs in Rwanda have successfully utilized policy windows to promote climate change mitigation and adaptation efforts. The Rwanda Environment Management Authority (REMA) has leveraged policy windows to advocate for the development of renewable energy sources, such as solar and wind power (REMA, 2020). For instance, REMA successfully pushed for the implementation of the Renewable Energy Policy (2019), which aims to increase the use of renewable energy sources to 60% of the country's energy mix.

1.8.DISCUSSION & CONCLUSION

Kenya's case study reveals a country struggling with the impacts of climate change and health issues. Although there are policies in place, challenges in implementing and enforcing them hinder progress. The country's vulnerability to climate change is evident in the frequent occurrence of droughts, floods, and disease outbreaks. While the Paris Agreement and national policies and plans have been established, desired results have not been achieved. However, there have been some successes, such as the ban on polythene bags and the growth of renewable energy. Policy entrepreneurs have played a crucial role in promoting clean energy solutions. The transition in leadership from President Uhuru Kenyatta to William Ruto has brought about new policy directions and initiatives, but challenges persist.

Similarly, Tanzania's case highlights the country's vulnerability to climate change, with an increase in the frequency and severity of floods and droughts, as well as a high risk of malaria. The government has ratified international agreements and developed national policies and strategies, but limited resources, institutional capacity constraints, and competing development priorities hinder implementation. Nevertheless, there are positive developments, such as the ban on plastic carrier bags and initiatives on afforestation, reforestation, and renewable energy. Policy entrepreneurs, including former President Jakaya Kikwete, have played a crucial role in advocating for climate change policies, while civil society organizations, research institutions and international partners have also contributed to promoting climate change initiatives. The agricultural sector has been severely

impacted by drought, emphasizing the necessity of climate-resilient agriculture.

Uganda's case study emphasizes the country's vulnerability to climate change, with frequent floods, landslides, and droughts, as well as a high burden of malaria cases. The government has developed policies and initiatives to address climate change, such as the National Climate Change Policy and the National Adaptation Plan. However, limited resources, institutional capacity constraints, and conflicting priorities hinder implementation. Policy entrepreneurs have seized policy windows to promote renewable energy, eco-tourism, and conservation efforts. Despite progress, challenges remain, including inconsistent enforcement of policies, limited public awareness, and inadequate resources. The case study on Rwanda highlights the country's vulnerability to climate change, as evidenced by frequent floods, landslides, and droughts, as well as a high burden of malaria cases. The government has developed policies and initiatives, such as the National Climate Change Policy and the National Adaptation Plan, to address this issue. However, implementation of these policies is hampered by limited resources, institutional capacity constraints, and conflicting priorities. Policy entrepreneurs have used policy windows to advocate for renewable energy, sustainable land use, and climate-resilient infrastructure. Despite some progress, there are still challenges to be addressed, including inconsistent enforcement of policies, limited public awareness, and inadequate resources.

In conclusion, this study underscores the importance of effectively defining the problem, developing robust policy solutions, and ensuring political stability to address climate change and health issues in East Africa. The experiences of Kenya, Tanzania, Uganda, and Rwanda demonstrate the significance of aligning the problem, policy, and politics streams, with the help of policy entrepreneurs, in order to tackle climate change challenges. Despite policy commitments, there can be obstacles to implementation and enforcement, underscoring the need for sustained commitment and action from both government and non-state actors. The study emphasizes the role of policy windows and entrepreneurs in promoting clean energy solutions and addressing climate change challenges, while highlighting the complex nature of this issue and the necessity of a coordinated response to mitigate its impacts and ensure a sustainable future.

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