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CLIMATE - INDUCED DISPLACEMENT AND ITS IMPLICATIONS ON HUMAN SECURITY: A CASE STUDY OF GHANA

BY

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DECLARATION

I hereby affirm that this work is the outcome of my own research and has not been submitted by anybody for any academic recognition in this or any other educational institution. All citations utilised in the project have been duly acknowledged. I assume full accountability for any deficiencies.

27/11/24

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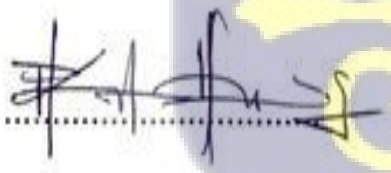

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DEDICATION

This dissertation is dedicated, first and foremost, to the Almighty God, whose grace, guidance, and unwavering presence made this journey possible. To my family—my parents, Mr. Andrews Ofori-Tano and Mama Ernestina Dwamena, and my sister, Joyce Boateng—thank you for your steadfast love, encouragement, and belief in my potential. Your sacrifices and prayers have been my foundation.

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Finally, I dedicate this work to myself—for daring to dream, for rising above challenges I once thought insurmountable, and for proving that perseverance and faith can turn obstacles into steppingstones. May this serve as a reminder that no dream is too big when determination and support come together.

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ARC	-	African Risk Capacity
AWS	-	Automatic Weather Stations
CRED	-	Centre for Research on the Epidemiology of Disasters
CSA	-	Climate Smart Agriculture
EPA	-	Environmental Protection Agency
FAO	-	Food and Agriculture Organization
FAO	-	Food and Agriculture Organization
GCM	-	Global Compact for Migration
IDMC	-	Internal Displacement Monitoring Centre
IOM	-	International Organization for Migration
IPCC	-	Intergovernmental Panel on Climate Change
NADMO	-	National Disaster Management Organisation
NADMO	-	National Disaster Management Organisation
NCCP	-	National Climate Change Policy
NGO	-	Non-Governmental Organization
SCIEWS	-	Strengthening Climate Information and Early Warning Systems
SPSS	-	Statistical Package for the Social Sciences
UNDP	-	United Nations Development Programme
UNHCR	-	United Nations High Commissioner for Refugees
UNISDR	-	United Nations International Strategy for Disaster Reduction

ABSTRACT

Climate change through extreme weather events such as flooding, drought, and sea-level rise, increasingly drove displacement globally. In Ghana, such displacement presented severe challenges to economic stability, health, and social cohesion within affected communities. This study aimed to explore the drivers, socio-economic impacts, and policy responses to climate-induced displacement in Ghana, with a focus on its implications for human security. A mixed-methods approach was employed, integrating quantitative surveys of displaced households and qualitative interviews with government officials, community leaders, and NGO representatives. Quantitative data were analysed through descriptive and Chi-square analysis using SPSS version 27, while qualitative data were analysed through thematic analysis. Findings indicated that flooding, drought, and coastal erosion were the primary drivers of displacement in Ghana. Displacement led to substantial socio-economic challenges, including loss of income, unstable housing, and limited access to healthcare, education, and sanitation. Coping strategies were mostly informal, with many individuals migrating to urban centres or relying on community networks, which offered only temporary relief. Policy responses were viewed as fragmented and insufficient, with limited awareness of support programs and perceived inadequacy in providing long-term recovery assistance. Climate-induced displacement in Ghana adversely affected human security, highlighting a critical need for integrated policy frameworks addressing both immediate and long-term needs. Enhanced coordination between government and NGOs, alongside sustained financial support, was deemed essential to effectively support displaced populations and build resilience against future climate threats. The study underscored the necessity for structured policy interventions, community-based adaptation measures, and improved public awareness to enhance resilience and adaptive capacity among displaced communities in Ghana.

CHAPTER ONE

INTRODUCTION

1.1 Background of Study

Climate change, driven by anthropogenic activities, has emerged as one of the most pressing global challenges of the 21st century (IPCC, 2021). The increasing frequency and intensity of extreme weather events, such as floods, droughts, and storms, coupled with gradual changes like sea-level rise and temperature increases, are reshaping our world in profound ways (Zhang et al., 2021; IPCC, 2022). One of the most significant and tangible impacts of these changes is climate-induced displacement, a phenomenon where individuals and communities are forced to move due to adverse climatic conditions.

Climate-induced displacement is defined as the forced movement of people as a result of sudden or gradual changes in the environment due to climate change, such as extreme weather events, sea-level rise, and prolonged droughts (IDMC, 2021; Warner et al., 2019). This form of displacement has far-reaching implications for both the affected individuals and broader society, disrupting social networks, economic activities, and access to essential services, thereby posing significant threats to human security (UNDP, 2022).

Globally, climate-induced displacement has been recognized as a significant humanitarian and development challenge. According to the United Nations High Commissioner for Refugees (UNHCR), an average of 21.5 million people has been displaced annually by weather-related events since 2008 (UNHCR, 2020). Regions such as South Asia, the Pacific Islands, and Central America are particularly vulnerable due to their geographical and socio-economic contexts (McLeman & Smit, 2016). In these regions, displacement often leads to a cascade of issues, including loss of livelihoods, increased poverty, and health crises. The social fabric of

communities are often torn apart as displaced populations struggle to integrate into new environments. This scenario underscores the urgent need for comprehensive policies and international cooperation to address the root causes of displacement and support adaptation strategies (Warner et al., 2019).

Africa, with its diverse climates and socio-economic conditions, is highly susceptible to the impacts of climate change. The continent faces a myriad of climate-related challenges, including desertification, deforestation, and variability in rainfall patterns (Niang et al., 2014). The Sahel region experiences frequent droughts that severely affect agricultural productivity, leading to food insecurity and displacement (Tschakert et al., 2019). In East Africa, countries like Kenya and Somalia contend with both droughts and floods that displace large populations and strain limited resources (Opiyo et al., 2021). In all these scenarios, Ghana has not been left out of these consequences.

Ghana, located on the western coast of Africa, is characterized by a variety of climatic zones including coastal savannah, forest, and northern savannah regions (Owusu & Waylen, 2019). Each of these zones faces distinct climate-related challenges. Coastal areas are particularly vulnerable to sea-level rise and coastal erosion which threaten settlements, agricultural lands, and vital infrastructure (Boateng et al., 2020; Addo et al., 2021). The northern regions frequently experience erratic rainfall patterns and prolonged droughts that exacerbate water scarcity and food insecurity (Yaro et al., 2020; Teye et al., 2021). The implications of these climate-related challenges extend beyond environmental degradation.

Climate-induced displacement has emerged as a critical issue as communities are forced to migrate in search of more habitable environments (IDMC, 2021). This displacement disrupts social networks, economic activities, and access to essential services posing significant threats to human security (UNDP, 2022). Human security encompasses economic stability, food

security, health security, environmental security, personal security, community security, and political security (UNDP, 2022).

In the Ghanaian context, climate-induced displacement affects several dimensions of human security including economic stability and social cohesion. For instance, in coastal regions such as Keta and Ada, sea-level rise and coastal erosion have led to the loss of homes and arable land forcing residents to relocate (Addo et al., 2021; Boateng et al., 2020). These environmental pressures are not isolated events but part of a broader pattern of climate change impacts that include increased frequency of floods and droughts (Owusu & Waylen, 2019). The northern savannah regions face similar challenges with communities grappling with the effects of prolonged droughts and erratic rainfall which disrupt agricultural activities and contribute to food insecurity (Yaro et al., 2020; Teye et al., 2021). These disruptions have far-reaching implications for human security as displaced populations often struggle to secure stable livelihoods access healthcare and education integrate into new communities.

1.2 Problem Statement

Climate-induced displacement in Ghana is a multifaceted issue that intersects with various aspects of human security. Despite the growing body of literature on climate change and migration, there is a need for a more nuanced understanding of how displacement affects human security in specific contexts (Black et al., 2022). In Ghana, the impacts of climate-induced displacement are evident in coastal areas like Keta and Ada, where sea-level rise and coastal erosion have led to the loss of homes and agricultural lands (Addo et al., 2021; Boateng et al., 2020). Similarly, in the northern savannah regions, communities are grappling with the effects of prolonged droughts and erratic rainfall, which disrupt agricultural activities and contribute to food insecurity (Teye et al., 2021; Yaro et al., 2020). However, the responses to

climate-induced displacement in Ghana have been largely reactive and fragmented (IDMC, 2021).

There is a lack of coordinated policy frameworks and comprehensive strategies to address the root causes of displacement and support affected populations (UNHCR, 2022). This gap in policy and practice highlights the need for a holistic approach that integrates climate adaptation, disaster risk reduction, and sustainable development to enhance human security.

Several existing studies have not adequately addressed the intersectionality of climate-induced displacement with broader human security dimensions in Ghana. Many focus primarily on environmental impacts or migration patterns without exploring how these displacements affect economic stability, social cohesion, and access to essential services (Salifu, 2021; Ekoh et al., 2023). This study therefore aimed to fill this identified gap by investigating the implications of climate-induced displacement on human security in Ghana, with a focus on identifying the key drivers of displacement, assessing the impacts on affected populations, and evaluating the effectiveness of existing policies and strategies. By doing so, this study aimed to contribute to the development of more effective and sustainable solutions to address this pressing issue.

1.3 Research Objectives

The primary objective of this study is to explore the implications of climate-induced displacement on human security in Ghana. The specific objectives are:

1. To assess the impacts of displacement on the economic, social, and physical security of affected populations.
2. To analyze the patterns and drivers of climate-induced displacement in Ghana.

3. To evaluate the effectiveness of current policies and strategies in managing climate-induced displacement and protecting human security.

4. To provide recommendations for enhancing resilience and adaptive capacity among vulnerable communities.

1.4 Research Questions

The study is guided by the following research questions:

1. How does displacement affect the human security of displaced populations in Ghana?
2. What are the main drivers of climate-induced displacement in Ghana?
3. What policies and strategies are currently in place to manage climate-induced displacement in Ghana?
4. How can these policies and strategies be improved to better protect human security and enhance community resilience?

1.5 Significance of the Study

This study is significant for several reasons. First, it contributes to the broader understanding of the complex relationship between climate change, displacement, and human security, providing insights that are specific to the Ghanaian context (Black et al., 2011; Warner et al., 2009). Secondly, this study it highlights the urgent need for integrated and proactive policy responses to address the root causes of displacement and support affected populations (IDMC, 2019). Furthermore, the findings of this study will inform the development of targeted interventions aimed at enhancing the resilience and adaptive capacity of vulnerable

communities, thereby contributing to sustainable development and human security in Ghana (UNDP, 1994; UNHCR, 2014).

1.6 Scope of the Study

This study focused on the implications of climate-induced displacement on human security in Ghana, particularly examining how environmental changes, such as sea-level rise and erratic rainfall, affected communities' socio-economic stability and well-being. The conceptual framework encompassed various dimensions of human security, including economic, food, health, and social security, providing a comprehensive understanding of how displacement influenced the lives of affected populations. Geographically, the research concentrated on the coastal areas of Keta and Ada, which faced significant threats from sea-level rise and erosion, as well as the northern savannah regions, where prolonged droughts disrupted agricultural activities. Methodologically, a mixed-methods approach was employed, combining quantitative surveys to assess socio-economic impacts with qualitative interviews to capture individual experiences and community dynamics. This dual approach aimed to enrich the analysis of climate-induced displacement while evaluating existing policies and strategies related to climate adaptation and disaster risk reduction in Ghana, ultimately identifying gaps and recommending more effective interventions.

1.7 Organisation of the Thesis

This thesis is structured into six (6) chapters. Chapter one introduces the topic, provides background information, outlines the problem statement, research objectives, and questions, and discusses the significance of the study. Chapter two reviews the existing literature on climate-induced displacement and human security, with a focus on the theoretical frameworks

and empirical studies relevant to the context of Ghana. Chapter three outlines the research methodology, including the research design, data collection methods, and analytical techniques used in the study. Chapter four presents the findings of the study, highlighting the patterns and drivers of climate-induced displacement in Ghana and its impacts on human security. Chapter 5 discusses the implications of the findings, evaluates the effectiveness of existing policies and strategies, and provides recommendations for enhancing resilience and adaptive capacity among vulnerable communities. Chapter 6 concludes the thesis, summarizing the key findings and contributions of the study and suggesting directions for future research.

1.8 LITERATURE REVIEW

This section reviews the relevant literature on climate-induced displacement and its implications for human security, focusing on both global and Ghana-specific perspectives. It is structured into four sections: concepts review, theoretical review, empirical review, and conceptual framework. The review incorporates perspectives from various regions around the world, outlines key theoretical frameworks, reviews empirical studies, and presents a conceptual framework for understanding the relationship between climate-induced displacement and human security.

1.8.1 Concepts Review

The concepts of climate change, climate-induced displacement, and human security have been central to both academic and policy discussions globally. This section reviews the key perspectives on these concepts across different regions.

1.8.1.1 Climate Change Phenomenon

Climate change is a critical global issue characterized by significant and enduring alterations in weather patterns over extended periods, typically decades or longer. The scientific consensus indicates that these changes are primarily driven by human activities, particularly the release of greenhouse gases (GHGs) into the atmosphere. According to the Intergovernmental Panel on Climate Change (IPCC), recent climatic changes are unprecedented over thousands of years and are largely attributable to anthropogenic emissions (IPCC, 2021). The primary sources of GHG emissions include fossil fuel combustion, deforestation, and various industrial processes. Fossil fuel combustion, responsible for the majority of GHG emissions, occurs during energy production, transportation, and industrial activities. Deforestation contributes significantly to climate change by releasing stored carbon dioxide (CO_2) when trees are cut down or burned, while industrial processes emit various GHGs, including methane (CH_4) and nitrous oxide (N_2O) (Friedlingstein et al., 2022).

The accumulation of GHGs enhances the natural greenhouse effect, which is essential for maintaining Earth's temperature. However, excessive GHG concentrations lead to global warming, an increase in Earth's average surface temperature—which triggers a cascade of climatic disruptions. This warming has far-reaching consequences for ecosystems, weather patterns, and human societies.

Arctic amplification is a particularly alarming manifestation of climate change, where the Arctic region warms at a rate significantly higher than the global average—nearly four times faster in recent years (Communications Earth & Environment, 2022). This accelerated warming has profound implications for both local ecosystems and global climate systems. One of the primary mechanisms driving Arctic amplification is sea-ice loss. As temperatures rise, sea ice melts at an alarming rate, exposing darker ocean waters that absorb more heat. This feedback loop accelerates warming further. Additionally, thawing permafrost releases stored methane

which is a potent greenhouse gas into the atmosphere, exacerbating global warming (Nature Communications, 2018). Changes in ocean currents due to warming waters also affect climate patterns worldwide. The consequences of Arctic amplification extend beyond the polar regions; they influence weather systems globally and disrupt local ecosystems.

In South Asia, climate change poses significant challenges due to intensified monsoon seasons. The region has experienced more frequent and severe monsoon rains as a result of climate change (Rahman et al., 2022). These intensified monsoon seasons lead to catastrophic flooding and displacement of populations. For instance, Bangladesh faces heightened risks from heavy rainfall combined with rising sea levels, exacerbating vulnerabilities to floods and cyclones. Such climatic events not only result in loss of life but also cause extensive damage to infrastructure and long-term economic hardship. Saltwater intrusion into freshwater systems further complicates agricultural practices and threatens drinking water supplies. Increased salinity can severely impact crop yields and food security for millions who depend on agriculture for their livelihoods.

Africa faces a unique set of challenges related to climate change due to its diverse ecosystems and socio-economic contexts. Desertification is particularly critical in regions such as the Sahel, where expanding deserts reduce arable land availability. Changes in rainfall patterns coupled with increased drought frequency adversely affect agricultural productivity (Hendrix & Salehyan, 2012). Many communities depend on subsistence farming; thus, reduced crop yields directly threaten food security. In Ghana specifically, changing climatic conditions have led to reduced crop yields for staple crops like maize and cash crops such as cocoa—essential for export earnings (Antwi-Agyei et al., 2021). The socio-economic ramifications are profound; rural communities face heightened food insecurity and economic challenges that drive migration to urban areas.

The societal implications of climate change are profound and multifaceted. Climate change influences human mobility patterns as individuals are forced to migrate due to environmental stressors (Umweltbundesamt, 2020). The relationship between environmental changes and migration is complex; some individuals may migrate temporarily or seasonally in response to acute climate impacts like flooding or droughts, while others may face permanent displacement due to slow-onset phenomena such as desertification or sea-level rise. Increased migration adds pressure on urban infrastructures already strained by rapid population growth.

1.8.1.2 Climate-Induced Displacement

Climate-induced displacement refers to the forced movement of individuals and communities resulting from the adverse effects of climate change and environmental degradation. This phenomenon encompasses both temporary and permanent relocation, occurring within national borders or extending across them (UNHCR, 2018; IOM, 2014). Climate-induced displacement arises when climatic events and processes render specific areas uninhabitable or incapable of sustaining livelihoods, compelling people to seek refuge in more hospitable environments (Warner et al., 2013). The complexity of this issue is underscored by its multifaceted nature, which intertwines environmental, social, economic, and political factors that exacerbate vulnerabilities and complicate responses to displacement (Adger et al., 2014).

At the core of climate-induced displacement are two primary catalysts: sudden-onset events and slow-onset processes (IPCC, 2021). Sudden-onset events are acute climatic disasters that occur abruptly, causing immediate and often catastrophic impacts on human settlements. These include hurricanes, floods, storms, and wildfires (Kelman, 2015; CRED & UNISDR, 2023). Such events can lead to the swift destruction of homes, infrastructure, and essential services like water supply, electricity, and healthcare facilities (Alexander, 2013). The immediate

aftermath often sees large populations displaced as they are forced to evacuate to safer areas. For example, extreme weather events have been responsible for displacing millions of people globally each year. The Internal Displacement Monitoring Centre (IDMC) reported that in 2023 alone, approximately 17.2 million new displacements were triggered by disasters, with weather-related hazards accounting for the vast majority (IDMC, 2023). These displacements can be temporary, with people returning once conditions stabilize, or they can become protracted if recovery is delayed or impossible (UNHCR, 2022).

In contrast to sudden-onset events, slow-onset processes involve gradual environmental changes that accumulate over time until living conditions become untenable (Warner & Afifi, 2014). These processes include sea-level rise, desertification, increasing temperatures, glacier melt, and prolonged droughts (IPCC, 2021). Unlike sudden-onset events that produce immediate impacts, the effects of slow-onset processes are often less visible but can be more profound and lasting (Hugo, 2011). Over time, these environmental changes can undermine agricultural productivity by altering rainfall patterns, reducing soil fertility, and increasing the frequency of pests and diseases (FAO, 2016). They can also deplete freshwater resources through prolonged droughts or saltwater intrusion into aquifers due to rising sea levels (Nicholls et al., 2011). As the natural environment upon which many communities rely for food, water, and livelihoods becomes degraded, individuals are increasingly compelled to relocate in search of viable living conditions (IOM, 2014). The Intergovernmental Panel on Climate Change emphasizes that climate change exacerbates existing vulnerabilities in regions dependent on agriculture and natural resources (IPCC, 2022).

Climate-induced displacement is not merely an environmental issue; it is a multifaceted phenomenon influenced by a convergence of environmental degradation with social dynamics such as poverty and inequality. It does not occur in isolation but often intersects with governance challenges and conflicts (McLeman et al., 2022). These intersections can

exacerbate the vulnerability of affected populations and complicate responses to displacement. In many developing countries particularly those with low-lying coastal regions or arid landscapes communities are disproportionately impacted by climate change. Limited resources and adaptive capacities hinder their ability to cope with climatic stresses (Barnett & Campbell, 2010; UNDP, 2022). For instance, inadequate infrastructure and lack of access to technology can prevent effective adaptation measures. Social factors such as population growth and urbanization further intensify pressures on communities facing environmental degradation (Gemenne et al., 2021).

Political instability and weak governance can impede the implementation of effective climate policies and disaster response strategies. This lack of governance can exacerbate vulnerabilities among populations at risk of displacement (Reuveny et al., 2023). Research indicates that slow-onset climate changes are more likely to induce increased migration and displacement than rapid-onset changes (Kaczan & Orgill-Meyer, 2020). Moreover, as slow-onset processes continue to evolve without adequate attention at national or international levels, the scale of their impact remains largely underestimated.

1.8.1.3 Human Security

Human security is a comprehensive framework that emphasizes the security of individuals and communities, focusing on seven dimensions: economic, food, health, environmental, personal, community, and political security (UNDP, 2023). This multidimensional approach provides a more holistic understanding of the security challenges posed by climate-induced displacement. Each dimension interacts with the others, creating a complex web of factors that influence the well-being of individuals and communities affected by climate change.

Economic security is a key concern in the context of displacement, as people often lose their livelihoods when they are forced to migrate. In East Africa, farmers displaced by droughts face significant challenges in finding new sources of income, contributing to rising poverty levels (Reuveny et al., 2023). The loss of agricultural livelihoods not only affects individual families but also has broader implications for local economies and food systems. In South Asia, agricultural workers displaced by floods and cyclones similarly encounter difficulties in re-establishing their livelihoods, often being absorbed into low-wage informal labor markets (Dasgupta et al., 2021). This transition can lead to increased vulnerability and economic instability for these populations.

Food security is closely linked to displacement, particularly in regions where agriculture is climate-sensitive. In West Africa, including Ghana, changing rainfall patterns and prolonged droughts are reducing agricultural productivity, leading to food insecurity and displacement (Laube et al., 2012). The Intergovernmental Panel on Climate Change (IPCC) highlights that climate change exacerbates food insecurity by negatively impacting crop yields and increasing the frequency of extreme weather events (IPCC, 2022). In Latin America, particularly in the Andean regions, climate-induced water shortages directly impact food production and contribute to migration as communities seek more viable living conditions (Bury et al., 2013). As food systems become increasingly strained due to climate change, the relationship between food insecurity and displacement becomes more pronounced.

Health security is compromised when displaced populations are forced to live in unsanitary conditions, often in informal settlements or camps where they are vulnerable to disease outbreaks. The lack of access to clean water and adequate healthcare exacerbates these risks (McMichael et al., 2012). In Bangladesh, displaced populations from flooded regions face higher risks of waterborne diseases and malnutrition due to inadequate living conditions (Islam & Hasan, 2016). Similarly, urban migrants in Ghana contend with health risks stemming from

poor living conditions in informal settlements (Osei et al., 2016). The interplay between displacement and health outcomes underscores the need for targeted interventions that address both immediate health needs and the underlying social determinants of health.

Environmental security involves protecting ecosystems and natural resources that communities rely on for their livelihoods. Climate change poses significant threats to environmental stability through increased frequency of extreme weather events, loss of biodiversity, and degradation of natural habitats. These environmental changes can exacerbate existing vulnerabilities and drive further displacement as communities seek safer living conditions (IPCC, 2022). For instance, coastal communities facing rising sea levels may be forced to relocate inland as their homes become uninhabitable.

Personal security encompasses protection from violence and harm during displacement. Displaced individuals often find themselves in precarious situations where they are vulnerable to exploitation, violence, and human rights abuses. Women and children are particularly at risk during times of crisis when social structures break down (Kalle, 2023). Ensuring personal security for displaced populations requires comprehensive protection measures that address both physical safety and access to justice (McMichael et al., 2018).

Community security focuses on the stability and cohesion of communities affected by displacement. Climate-induced displacement can disrupt social networks and community ties, leading to fragmentation and increased tensions among displaced populations and host communities (Mooney, 2023). Promoting community resilience through social cohesion initiatives can help mitigate these challenges by fostering collaboration and support among diverse groups (IPCC, 2022).

Political security involves ensuring that individuals have a voice in decisions affecting their lives. Displaced populations often face marginalization in political processes, which can hinder

their ability to advocate for their rights and access essential services. Strengthening political representation for affected communities is crucial for addressing their needs effectively (Adger et al., 2021). By ensuring that displaced individuals have a say in governance, their unique challenges can be better addressed, leading to more effective solutions.

1.8.2 Theoretical Review

This section expands on three major theoretical frameworks that explain the relationship between climate change, displacement, and human security: environmental determinism, vulnerability approach, and political ecology.

1.8.2.1 Environmental Determinism

Environmental determinism is a theory that suggests environmental factors are the primary drivers of human behaviour, including migration. According to this theory, changes in the natural environment directly shape societal responses, including migration decisions (Black et al., 2022). Proponents of environmental determinism argue that when an area becomes uninhabitable due to climate change—such as when sea levels rise or desertification intensifies—migration becomes a necessary response (Adger et al., 2015).

This theory is often applied to cases where extreme environmental events, such as hurricanes or floods, lead to sudden and large-scale displacement. For example, in New Orleans, the devastation caused by Hurricane Katrina in 2005 led to widespread displacement, with many residents permanently relocating to other parts of the United States (Hartman & Squires, 2021). Similarly, in Mozambique, Cyclone Idai in 2019 displaced thousands of people, with communities being relocated to higher ground (Castán Broto et al., 2020).

However, critics of environmental determinism argue that it oversimplifies the complex relationship between environmental change and human migration, ignoring other factors such

as political instability, economic opportunity, and social networks that also influence migration decisions (Adger et al., 2015). This critique is particularly relevant in cases where slow-onset climate impacts, such as drought or sea-level rise, gradually push people to migrate, allowing time for adaptation or resilience-building interventions (Mastrorillo et al., 2016). Thus, while environmental factors play a significant role in shaping migration patterns, they must be understood within a broader context that includes social and political dynamics.

1.8.2.2 Vulnerability Approach

The vulnerability approach emphasizes that displacement due to climate change is not solely a result of environmental factors but rather an outcome of the interaction between environmental stress and societal vulnerabilities (Adger, 2010). Vulnerability is shaped by a range of social, economic, and political factors that affect a community's ability to adapt to climate change (IPCC, 2022). This approach highlights that climate-induced displacement is more likely to occur in areas where poverty, inequality, and weak governance exacerbate the impacts of environmental change.

In South Asia, for example, communities living in informal settlements in coastal cities are particularly vulnerable to displacement due to their precarious living conditions and lack of access to resources that would enable them to cope with the impacts of sea-level rise and flooding (Khan et al., 2020). Similarly, in West Africa, including Ghana, rural communities that rely on rain-fed agriculture are vulnerable to displacement due to their dependence on climate-sensitive livelihoods and limited access to climate adaptation resources (Antwi-Agyei et al., 2021).

The vulnerability approach has been applied in many studies examining climate-induced displacement. Adger et al. (2015) argue that communities with greater social and economic

capital are better able to adapt to climate change, whereas marginalized groups are more likely to experience displacement. In Ghana, the vulnerability of northern rural communities to drought and desertification is exacerbated by poverty, limited infrastructure, and lack of access to adaptation technologies (Laube et al., 2022).

1.8.2.3 Political Ecology

Political ecology is a theoretical framework that emphasizes the role of political and economic power structures in shaping environmental change and its impacts on communities (Robbins, 2019). This theory posits that displacement due to climate change is not simply a result of natural forces but is also influenced by political, social, and economic dynamics that affect how communities access resources, land, and governance.

Political ecology provides a critical lens for examining how marginalized communities are disproportionately affected by climate-induced displacement due to unequal access to resources and political representation. In West Africa, for example, land tenure systems and resource allocation policies have created significant vulnerabilities for rural farmers, who are more likely to be displaced by climate change because they lack secure access to land and state support for adaptation (Benjaminsen et al., 2012).

In Ghana, the unequal distribution of resources for climate adaptation is a key factor in explaining why certain communities are more affected by displacement. Sagoe-Addy & Appeaning Addo (2013) highlight that coastal communities in Ghana have limited access to state resources for coastal protection, making them more vulnerable to displacement due to sea-level rise and coastal erosion.

Political ecology also emphasizes the role of global political dynamics in shaping responses to climate change. Klein et al. (2014) argue that international policies and agreements on climate

change often fail to account for the needs of vulnerable communities, leading to insufficient support for those most at risk of displacement.

1.8.3 Empirical Review

This section reviews empirical studies on climate-induced displacement and human security, with a focus on both global and Ghana-specific contexts. It draws on research conducted between 2010 and 2024 to highlight key findings and trends.

1.8.3.1 Climate-Induced Displacement in Africa and Globally

Numerous studies have documented the impacts of climate change on displacement in different regions of the world. In East Africa, recurrent droughts and desertification are key drivers of displacement. Koubi et al. (2021) found that in pastoral regions of Kenya and Ethiopia, climate-induced migration is common, as communities seek water and pasture for their livestock. Similarly, in West Africa, the Sahel region is experiencing significant displacement due to desertification, with communities migrating southwards in search of arable land and water (Nawrotzki et al., 2015).

In Ghana, climate-induced displacement is driven by both slow-onset events, such as desertification and drought in the northern regions, and rapid-onset events, such as flooding and coastal erosion in the southern coastal areas. Antwi-Agyei et al. (2021) found that farmers in northern Ghana are increasingly migrating to urban areas such as Accra and Kumasi due to declining agricultural productivity caused by changing rainfall patterns. Similarly, Sagoe-Addy & Appeaning Addo (2013) documented significant displacement of coastal communities in the Volta River Delta due to sea-level rise and coastal erosion, which has destroyed homes, farmlands, and infrastructure.

Globally, climate-induced displacement is also a significant concern in South Asia. Dasgupta et al. (2021) reported that in Bangladesh, floods and storm surges are displacing millions of people, with many migrating to urban areas like Dhaka, where they face overcrowding, poor living conditions, and limited employment opportunities. In Latin America, Wrathall & Suckall (2016) found that rural communities in the Andean regions of Peru and Bolivia are migrating to cities due to water shortages caused by glacial melt and changing precipitation patterns.

1.8.3.2 Main Drivers of Climate-Induced Displacement

Climate-induced displacement is an escalating global issue driven by various environmental factors exacerbated by climate change. Globally, the primary drivers include extreme weather events such as floods, hurricanes, wildfires, and storms, which have become more frequent and severe due to climate change. These events displace millions of people annually, particularly in regions less prepared to cope with such disasters (Internal Displacement Monitoring Centre [IDMC], 2021). Rising sea levels threaten coastal communities worldwide, especially in low-lying areas like Bangladesh and small island nations, forcing populations to relocate (Intergovernmental Panel on Climate Change [IPCC], 2021). Slow-onset events like desertification and drought also exacerbate displacement, especially in agrarian economies where livelihoods depend heavily on natural resources (United Nations High Commissioner for Refugees, 2021).

In Africa, the situation is compounded by the continent's high dependency on agriculture and limited adaptive capacity. Desertification in the Sahel region and increasing droughts in the Horn of Africa have severely undermined food and water security, forcing populations to migrate in search of better conditions (United Nations Environment Programme, 2020). Floods in southern Africa, notably in countries like Mozambique and South Sudan, contribute

significantly to displacement, often affecting large numbers of people in a short period (IDMC, 2021). Additionally, rising temperatures and erratic rainfall patterns reduce agricultural productivity in rain-fed agricultural systems, exacerbating poverty and prompting people to leave their homes in search of better livelihoods (Food and Agriculture Organization [FAO], 2021).

Ghana faces similar challenges, with climate-induced displacement prevalent in coastal regions and the northern part of the country. Coastal erosion driven by rising sea levels has displaced many communities along the Gulf of Guinea, with areas like Keta experiencing significant land loss (Boateng, 2021). In the northern regions, erratic rainfall and prolonged droughts limit agricultural yields and food security, leading to rural-urban migration (Yaro, 2013). Flooding in the Volta Basin, exacerbated by heavy rainfall, frequently displaces thousands of people during the rainy season (National Disaster Management Organisation, 2020).

1.8.3.3 Human Security Impacts of Climate-Induced Displacement

The human security implications of climate-induced displacement are wide-ranging and affect several dimensions, including economic, food, health, and political security. Economic security is often the first dimension to be affected when displacement occurs. Displaced populations frequently lose their primary sources of income, particularly when their livelihoods depend on climate-sensitive sectors like agriculture, fishing, or pastoralism (Reuveny, 2007). In West Africa, for example, farmers displaced by drought often struggle to find alternative livelihoods, leading to increased poverty and economic insecurity (Nawrotzki et al., 2015). Similarly, in Ghana, displaced rural farmers face challenges in securing employment in urban areas, where the labour market is already saturated (Owusu et al., 2020).

Food security is also severely impacted by climate-induced displacement, particularly in regions where agriculture is a major source of food and income. In the Horn of Africa, droughts and land degradation have reduced crop yields and livestock production, leading to food shortages and malnutrition among displaced populations (Hendrix & Glaser, 2019). In Ghana, the displacement of rural farmers from the north to urban areas is contributing to food insecurity, as agricultural productivity declines and food prices rise (Laube et al., 2012).

Health security is compromised when displaced populations live in overcrowded and unsanitary conditions, where they are more vulnerable to diseases such as cholera, malaria, and respiratory infections (McMichael et al., 2012). In South Asia, for instance, displaced populations from flood-prone areas of Bangladesh face higher risks of waterborne diseases due to poor sanitation in temporary shelters (Islam & Hasan, 2016). In Ghana, migrants living in informal settlements in Accra and Kumasi also face significant health risks due to inadequate access to clean water, sanitation, and healthcare services (Osei et al., 2016).

Political security is another dimension of human security that is affected by climate-induced displacement. Displaced populations often lack legal protection and face challenges in accessing basic services and political representation. In Latin America, Bury et al. (2013) found that indigenous communities displaced by water shortages in the Andean region face political marginalization and have limited access to land rights and social services.

Climate-induced displacement profoundly impacts human security by disrupting access to basic needs, livelihoods, and overall well-being. Globally, displaced populations often experience significant economic insecurity due to the loss of livelihoods, especially when agricultural lands are destroyed by floods or droughts (UNHCR, 2021). Health risks are heightened for displaced individuals due to poor living conditions, overcrowding in refugee camps, and limited access to clean water and sanitation. Disease outbreaks such as cholera and

malaria are common in regions where displaced populations lack adequate resources and healthcare (IDMC, 2021). Social tensions may also arise in host communities when displaced populations compete with locals for scarce resources like land and water, potentially escalating into conflicts (International Organization for Migration, 2020).

In Africa, these effects are pronounced due to existing vulnerabilities such as poverty and conflict. Displacement caused by drought and desertification often exacerbates food insecurity, particularly in the Horn of Africa, where drought has led to widespread famine (World Food Programme [WFP], 2020). Conflicts over dwindling resources are common, especially between pastoralists and farmers in countries like Nigeria and Sudan, leading to violence and further displacement (Adepoju, 2019). Urban areas receiving large influxes of displaced populations, such as Nairobi and Accra, face increased pressure on infrastructure, healthcare, and sanitation systems, heightening vulnerability for both migrants and local residents (UN-Habitat, 2020).

Internally displaced populations often experience similar climate challenges in their new settlements, making it extremely difficult to recuperate (Arnall et al., 2019). These challenges are expected to persist and worsen in the coming years. World Bank predictions suggest that by 2050, 86 million people in sub-Saharan Africa will be internally displaced due to climate change (Rigaud et al., 2018).

In Ghana, displacement has significant implications for human security, particularly in the northern regions. Rural-urban migration driven by agricultural failure increases economic insecurity as migrants often struggle to find employment in overcrowded urban centres like Accra and Kumasi (Aniah et al., 2019). Health challenges are prevalent in informal settlements where displaced populations reside, lacking access to clean water, sanitation, and healthcare services, leading to the spread of diseases like cholera during flooding events (Boateng, 2021).

Social integration is challenging, leading to tensions between migrants and long-term urban residents and exacerbating social fragmentation (Owusu, 2020).

1.8.3.4 Policy Responses and Adaptation Strategies to Manage Climate-Induced Displacement

Recognizing the need for sustainable solutions, various policies and strategies have been implemented globally, regionally, and nationally to enhance climate resilience and manage displacement. Globally, there have been some strategic initiatives to deal with this situation. Such initiatives include the Global Compact for Migration (GCM) adopted in 2018 which acknowledges climate change as a driver of migration and encourages countries to develop policies that protect people displaced by climate-related disasters (International Organization for Migration, 2018). The Sendai Framework for Disaster Risk Reduction which is a UN framework emphasizes disaster preparedness and resilience-building to reduce the risks of displacement caused by extreme weather events (United Nations Office for Disaster Risk Reduction, 2015). The Nansen Initiative, which is a state-led initiative aiming to build international consensus on the protection of people displaced across borders due to climate disasters (United Nations High Commissioner for Refugees, 2015).

Governments and international organizations are increasingly recognizing the need to address climate-induced displacement through policy and adaptation strategies. In Bangladesh, the government has invested in flood-resistant infrastructure, such as embankments and cyclone shelters, to reduce displacement caused by extreme weather events (Dasgupta et al., 2021). In Latin America, countries like Peru and Bolivia have implemented water management projects to mitigate the impacts of glacial melt on rural communities (Wrathall & Suckall, 2016). In the

Pacific Islands, nations like Kiribati are advocating for international relocation agreements, recognizing that sea-level rise poses an existential threat to their populations (Connell, 2016).

In African some vital initiatives such as the African Union's Kampala Convention: A legally binding instrument focusing on the protection and assistance of internally displaced persons, including those displaced by environmental factors (African Union, 2019). It encourages member states to adopt policies providing assistance and protection to displaced populations. In addition, the African Risk Capacity (ARC) which is an African Union initiative providing insurance against climate-related risks such as droughts and floods, helping African countries better prepare for and respond to climate-induced disasters (ARC, 2020). The Climate Smart Agriculture (CSA) is another initiative which was implemented to improve food security and reduce displacement due to food shortages (Zougmoré et al., 2018). CSA is an approach for transforming and reorienting agricultural systems to support food security under climate change (Lipper et al., 2014).

The Ugandan Smart Beans Project illustrates the application of CSA for building climate resilience in rural farming communities (Lan et al., 2018). By introducing drought-resistant and nutrient-enriched bean varieties through selective breeding, Uganda has improved yields for this important staple crop (Tuck, 2019). This project has enhanced food security and provided economic stability for smallholder farmers, reducing the likelihood of displacement due to food shortages. Similar projects have been replicated in Kenya and Tanzania (Faling & Biesbroek, 2019). Challenges remain, such as gender disparities in access to land and resources affecting women's and youth's participation in CSA (Tsige et al., 2020).

In Ghana, the National Climate Change Policy (NCCP) launched in 2014, is a policy which provides a strategic framework for addressing climate change impacts, including displacement, by promoting adaptation measures such as improved land-use planning and resilience building

(Environmental Protection Agency Ghana, 2015). The National Disaster Management Organisation (NADMO) Coordinates efforts to manage displacement due to disasters like floods and coastal erosion (NADMO, 2020). However, resource constraints often limit its effectiveness. Initiatives to move communities from vulnerable coastal zones, such as in Keta, have been implemented, though challenges related to land availability and community acceptance persist (Owusu, 2020). Additionally, enhancing data gathering and measurement capabilities is crucial for building climate resilience and mitigating displacement (Schröter et al., 2005; Haywood et al., 2018). Sub-Saharan African nations are expanding data capture through vulnerability assessment tools and investing in automatic weather stations (AWSs) to better inform decision-making (Braimoh et al., 2018).

In furtherance, frameworks like the Country Resilience and Fragility Assessment (CRFA) developed by the African Development Bank help diagnose climate fragility by evaluating countries based on political inclusiveness, safety and security, justice, economy, social cohesion, and climate disruptions (African Development Bank, 2018). Investments in AWSs improve climate planning and predictability, aiding decision-making for disaster preparedness and supporting climate-smart agricultural practices (Nsabagwa et al., 2018). For instance, Uganda's Strengthening Climate Information and Early Warning Systems (SCIEWS) project focuses on increasing weather stations and enhancing weather monitoring (Muthui & Wasige, 2016).

Implementing strategies like Climate Smart Agriculture and enhancing data and measurement capabilities can mitigate climate risks and reduce displacement (Shiferaw et al., 2014; Zougmoré et al., 2018). While challenges remain, especially in resource allocation and policy implementation, these efforts are crucial steps toward safeguarding vulnerable populations and ensuring their ability to adapt to a changing climate.

1.8.4 Conceptual Framework

The conceptual framework for this study links climate change, displacement, and human security, drawing from both the vulnerability approach and political ecology theory as shown in Figure 1 below. The framework posits that climate change impacts, such as droughts, floods, and sea-level rise, serve as primary drivers of displacement. These environmental changes directly affect livelihoods, particularly in agriculture and fisheries, pushing individuals and communities to migrate. Vulnerability plays a central role in determining how populations respond to climate change. Social, economic, and political factors such as poverty, access to resources, and governance mediate the relationship between climate change and displacement. Populations with higher levels of vulnerability are more likely to be displaced. The framework further examines how displacement impacts various dimensions of human security, including economic, food, health, and political security. Displacement undermines human security by disrupting livelihoods, reducing access to resources, and increasing exposure to health risks.

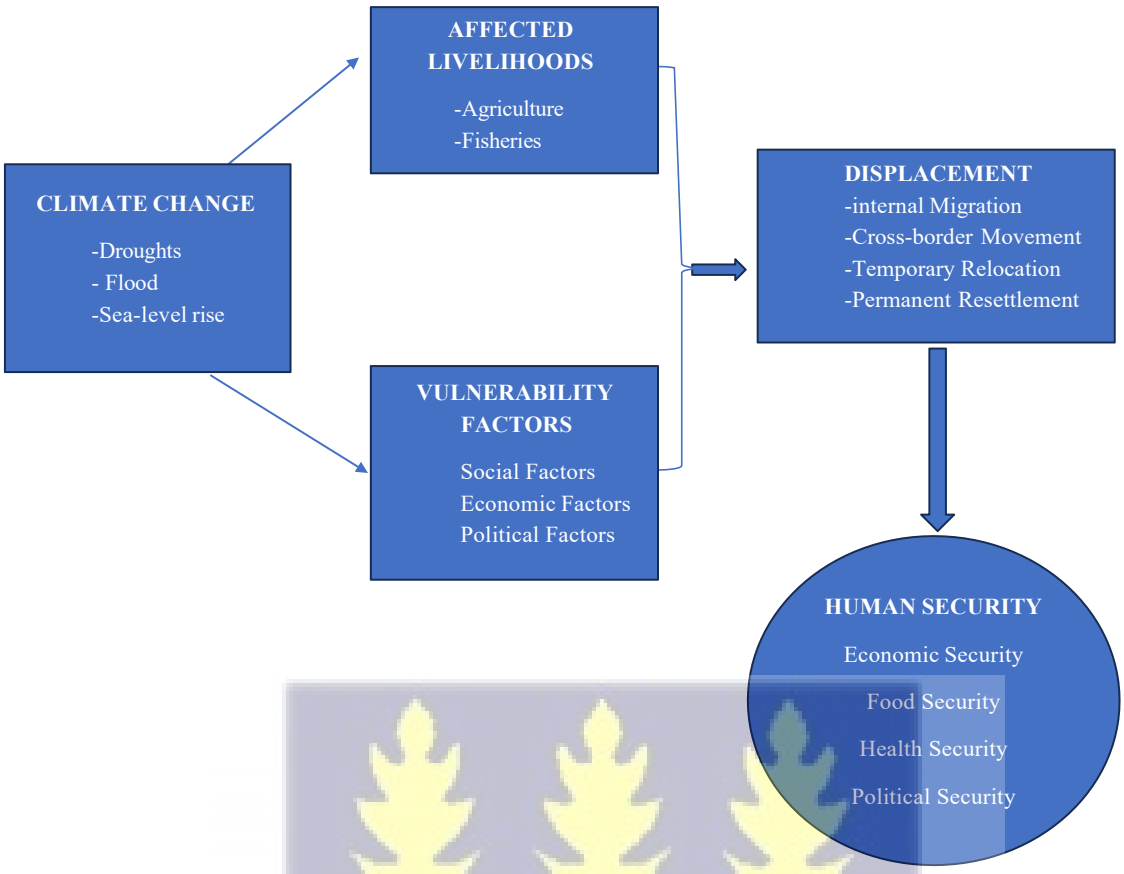

Figure 1: Conceptual Framework Source:

Author's Construct (2024)

1.8.5 Conclusion

This chapter reviewed the key concepts, theories, and empirical studies related to climate-induced displacement and human security. It highlighted the importance of understanding the complex interactions between environmental, social, economic, and political factors in shaping displacement and its human security implications. The next chapter explored the methodology used to investigate these issues in the context of Ghana.

CHAPTER TWO

RESEARCH METHODOLOGY

2.1 Introduction

This chapter provides a detailed explanation of the methodology used to investigate the implications of climate-induced displacement on human security in Ghana. The chapter includes the research design, study area, population and sampling, data collection methods, data analysis procedures, and ethical considerations.

2.2 Research Design

Research Design refers to the overall framework or strategy that a researcher uses to integrate different components of the study coherently and effectively, ensuring that the research problem is addressed comprehensively. It provides a systematic plan for collecting, measuring, and analyzing data (Kothari, 2004; Creswell, 2014). In this study, a mixed-methods research design was adopted, combining both quantitative and qualitative research techniques. This approach enables the integration of numerical data with in-depth qualitative insights, offering a more comprehensive and nuanced understanding of the research problem. In this case, the research problem is the impact of climate-induced displacement on human security in Ghana.

The rationale for utilizing a mixed-methods approach is its ability to capture the complexity of multifaceted phenomena like climate-induced displacement, which affects various aspects of life, including economic stability, food security, health, and environmental safety (Creswell & Plano Clark, 2011). Quantitative data were collected through structured surveys to identify patterns and trends among displaced populations, such as the demographic characteristics of those affected, the causes of displacement, and the frequency of displacement events like

coastal erosion or drought. These data provide measurable insights that can be statistically analyzed to draw broad conclusions about the extent of displacement and its impacts.

In contrast, the qualitative component of the study involved conducting semi-structured interviews with key stakeholders, including displaced individuals, government officials, and representatives of non-governmental organizations. These interviews offered deeper insights into the lived experiences of displaced individuals, capturing the social, emotional, and economic consequences of displacement that are often difficult to quantify (Bryman, 2016). They also provided valuable information on the effectiveness of policy responses and interventions aimed at managing the challenges associated with climate-induced displacement. By including both quantitative and qualitative methods, the study benefitted from a more holistic understanding of the issue.

The mixed-methods research design used in this study was particularly useful for assessing the diverse impacts of climate-induced displacement on human security. By combining quantitative data, which offered generalizable findings, with qualitative data, which provided context and depth, the study was able to address the complexity of the research problem in a way that would not have been possible with a single-method approach. This design enabled the researcher to examine both the broad trends affecting displaced populations and the individual experiences that reveal the true extent of the displacement's impact.

2.3 Study Area

The research was conducted in two key regions in Ghana namely the Northern Savannah Region and the Coastal Region. For the Coastal Region the areas chosen included Keta and Ada. These areas are particularly vulnerable to sea-level rise and coastal erosion, which have led to significant displacement. According to Addo (2013), coastal erosion in Keta has

displaced entire communities, while Ada faces similar challenges due to flooding and land degradation (Boateng, 2012). For the Northern Savannah region, the northern regions, particularly the savannah areas, experience prolonged droughts and erratic rainfall, which have disrupted agricultural livelihoods and forced communities to migrate (Yaro et al., 2015). The region's water scarcity and food insecurity are exacerbated by climate change, making it a critical area for studying displacement (Teye et al., 2015). These two regions were chosen because they represent distinct climate-related challenges sea-level rise and coastal erosion in the south and drought in the north allowing for a comprehensive examination of the drivers and impacts of climate-induced displacement in Ghana.

2.4 Sampling and Sample Size

2.4.1 Sampling Technique

A random sampling technique was used to ensure that the selected households were representative of the broader displaced population. For the qualitative component, a purposive sampling technique was employed to select key informants with direct experience or involvement in managing climate-induced displacement (Patton, 2015). This approach ensured that the interviews captured relevant insights from stakeholders who are directly involved in addressing the challenges associated with displacement.

2.4.2 Sample Size

The target population for this study consisted of households displaced by climate-related factors such as coastal erosion, flooding, and drought. Additionally, key informants such as policymakers, government officials, and representatives from NGOs involved in managing

climate-induced displacement were also included. To determine the sample size for the quantitative survey, the Cochran formula was used to calculate the required number of respondents. The formula is given as:

$$n= Z^2x\ p\ x\ (1-p)\ /\ e^2$$

Where:

n_0 = the sample size

Z = the Z-value (the number of standard deviations from the mean corresponding to the desired confidence level, e.g., 1.96 for 95% confidence)

p = the estimated proportion of the population that has the attribute of interest (often set to 0.5, which provides the maximum variability)

e = the margin of error (desired precision level, e.g., 0.05 for 5%)

n= 1.96 2x 0.5 x (1-0.5) / 0.052

n= 3.8416 x 0.25 / 0.0025

n= 0.9604 / 0.0025

n= 384.16

Thus, the calculated sample size for this study was approximately 384 respondents, distributed between the 2 regions (192 respondents each).

For qualitative data collection involving external stakeholders, a smaller, purposive sample of 10 key informants (5 from each region) was selected. These included government officials, representatives from private sector firms, and international organizations involved in understanding the subject of climate-induced displacement and its effects on human security.

2.5 Data Collection Methods

2.5.1 Surveys

A structured survey was administered to displaced households in both the coastal and northern regions. The survey instrument was designed to collect demographic data, identify the causes of displacement, and assess its impact on various dimensions of human security, including economic, food, health, and environmental security (King & Murray, 2001).

The survey administered to displaced households in both the coastal and northern regions of Ghana was structured into five key sections to gather comprehensive data on the impact of climate-induced displacement. The first section focused on capturing the basic characteristics of the respondents and their households. This included data on age, gender, marital status, education level, household size, occupation before displacement, and the length of time they had been displaced. These demographic details provided essential context for understanding how different population groups experience displacement and how their specific characteristics might influence their vulnerability or resilience.

The second section, aimed to identify the primary and secondary climate-related factors that led to the respondents' displacement. Respondents were asked to specify whether their displacement was due to events such as coastal erosion, flooding, drought, or sea-level rise. This section also included open-ended questions that allowed participants to describe in their own words the timeline of events leading up to their displacement, providing deeper insights into the gradual or sudden nature of these climate-induced threats.

The third section, Economic Security, explored the impact of displacement on the financial well-being of households. Questions in this section focused on income loss, current employment status, and changes in livelihood activities. Respondents were asked to detail whether they had been able to maintain or regain employment and whether they had switched

to new forms of livelihood due to the displacement. This section also inquired about access to financial support, such as government aid or assistance from non-governmental organizations, to assess the extent of external support in mitigating the economic effects of displacement.

The fourth section investigated how displacement affected access to food and healthcare. Respondents were asked about their ability to meet household food needs, where they sourced their food, and how many meals they typically had per day before and after displacement. This section also explored the health impacts of displacement, including physical health problems and mental stress, as well as barriers to accessing healthcare services. This allowed the study to assess both the immediate and long-term health implications of displacement on vulnerable populations.

Finally, the fifth section, examined the physical security and living conditions of displaced households. It included questions on access to clean water and sanitation facilities, housing quality, and perceptions of environmental safety in their new locations. Respondents were also asked to describe the distance they had to travel to access essential services such as schools, markets, and healthcare centres. This section provided a clear picture of the challenges displaced individuals face in securing basic services and ensuring a safe living environment after relocation.

2.5.2 Interviews

Semi-structured interviews were conducted with key informants, including government officials, community leaders, NGO representatives, and displaced individuals. These interviews allowed for in-depth exploration of issues such as policy responses, institutional challenges, and the social and psychological impacts of displacement on affected populations (Kvale & Brinkmann, 2009).

The semi-structured format provided flexibility in the interview process, allowing for probing questions that could uncover deeper insights into the experiences of displaced individuals and the effectiveness of policies aimed at mitigating displacement. These qualitative data helped contextualize the quantitative findings from the surveys and provided a richer understanding of the displacement phenomenon in Ghana.

2.6 Data Analysis

2.6.1 Quantitative Data Analysis

The quantitative data collected from the surveys were analysed using descriptive and inferential statistics. Descriptive statistics, such as frequencies, percentages, and measures of central tendency, were used to summarize the characteristics of the displaced populations, including their socio-economic status and the drivers of displacement. Inferential statistical methods, such as chi-square tests and regression analysis, were applied to explore the relationships between displacement and different dimensions of human security, such as economic or food security. The analysis was conducted using SPSS (Statistical Package for the Social Sciences) version 27.

The qualitative data from interviews were analyzed using thematic analysis, a method that involves identifying, analyzing, and reporting patterns (themes) within qualitative data (Braun & Clarke, 2006). The interview transcriptions were coded, which facilitated the organization and analysis of large amounts of qualitative data. Through thematic analysis, the study explored recurring themes such as the socio-economic impacts of displacement, the role of government and NGOs in addressing displacement, and the challenges faced by displaced individuals in accessing basic services. This analytical approach allowed for a deeper understanding of the

subjective experiences of displaced populations, complementing the findings from the quantitative analysis.

2.7 Ethical Considerations

Ethical considerations were paramount in this study, particularly given the vulnerability of the displaced populations involved. All participants provided informed consent before participating in the surveys and interviews. They were informed of the purpose of the research, their right to withdraw at any time, and the steps taken to ensure confidentiality and anonymity. To protect participants' privacy, all personal identifiers were removed from the data, and only anonymized data were used in the final report.

2.8 Conclusion

This chapter has provided a detailed explanation of the research methodology used to explore the implications of climate-induced displacement on human security in Ghana. The use of a mixed-methods approach allowed for a comprehensive investigation of the research questions, combining quantitative and qualitative data to provide a well-rounded understanding of the issue. The next chapter presented the findings from the data analysis, focusing on the patterns of displacement and their impacts on human security in the selected regions of Ghana.

CHAPTER THREE

FINDINGS AND DISCUSSIONS

3.1 Introduction

This chapter presents the results and discussion of the study on climate-induced displacement in Ghana. It begins with a report on the response rate, followed by the details of the findings of this study. The chapter then further discusses the findings with other relevant literature as well and the implications of the findings.

3.2 Response Rate

The response rate for this study was 100%, indicating that all selected participants completed the survey. This full participation strengthened the reliability and completeness of the data, as it minimized potential bias from non-respondents and ensured that the findings were representative of the targeted demographic. The high response rate enhanced the study's validity, providing a comprehensive view of participants' experiences and perspectives on climate-induced displacement and related resilience measures.

3.3 Demographic Characteristics of respondents

The demographic profile of respondents revealed that the largest age group comprised individuals aged 18-29 years (42.2%), with a slight majority being male (50.3%). Educational attainment among respondents varied, with the majority having secondary education (36.5%), followed by primary education (30.5%), while smaller proportions reported tertiary education (21.1%) or no formal education (11.9%). Regionally, a greater number of respondents resided in the Northern Belt (55.7%) compared to the Southern Belt (44.3%). Employment status

displayed considerable diversity, with 27.6% identified as casual labourers, 26.6% as unemployed, 25% as employed, and 20.8% as self-employed (Table 1).

Table 1: Demographic Characteristics of respondents

Variable	Category	Frequency (n)	Percentage (%)
Age	18-29	162	42.2
	30-39	108	28.1
	40-49	79	20.6
	50 and above	35	9.1
Gender	Male	193	50.3
	Female	191	49.7
Education	Secondary	140	36.5
	Primary	117	30.5
	Tertiary	81	21.1
	No formal education	46	11.9
Regional belt	Northern Belt	214	55.7
	Southern Belt	170	44.3
Current Employment Status	Casual labour	106	27.6
	Unemployed	102	26.6
	Employed	96	25.0
	Self-employed	80	20.8

3.4 Drivers and Patterns of Climate- Induced Displacement

Survey responses regarding climate-induced displacement revealed that flooding was the primary cause (31.5%), followed by drought (29.4%), coastal erosion (20.6%), and sea-level rise (10.9%). The majority of respondents had been displaced for a duration of 1-3 years (31.2%), while others experienced displacement for less than 1 year (28.4%), 4-6 years (21.3%), or more than 6 years (19.0%). Temporary displacement was more prevalent (61.2%) compared to permanent displacement (38.8%), with an equal percentage (61.2%) indicating they had not been displaced multiple times. However, a substantial portion (57.5%) reported

feeling at risk of future displacement, while 21.3% were uncertain, and 21.1% did not expect to face displacement again (Table 2).

Table 2: Response to the Drivers and Patterns of Climate-Induced Displacement

Variable	Category	Frequency (n)	Percentage (%)
Primary reason for displacement	Flooding	121	31.5
	Drought	113	29.4
	Coastal erosion	79	20.6
	Sea-level rise	42	10.9
	Other	29	7.5
Length of years of displacement	1-3 years	120	31.2
	Less than 1 year	109	28.4
	4-6 years	82	21.3
	More than 6 years	73	19.0
Nature of displacement	Temporary	235	61.2
	Permanent	149	38.8
Frequency of displacement (more than once)	No	235	61.2
	Yes	149	38.8
Risk of being displaced again	Yes	221	57.5
	Uncertain	82	21.3
	No	81	21.1

3.5 Implications of climate-induced displacement on Human Security

The implications of climate-induced displacement on human security were significant, as shown in Table 3. A majority of respondents (59.6%) reported a decrease in income, with only 21.6% experiencing an increase. Access to food worsened for 50.8% of respondents, and 53.1% reported a reduction in meals, consuming only two per day. Health issues related to displacement affected 69.8% of respondents, with waterborne diseases (39.6%) and respiratory illnesses (28.6%) being the most common. Additionally, 62.5% experienced emotional or psychological stress, and nearly half (49.0%) perceived their new environment as less safe than

their original location. While 62.2% of respondents had access to clean water and sanitation in their new settings, a notable 37.8% reported a lack of these essential services (Table 3).

Table 3: Response on the implications of climate-induced displacement on human security

Variable	Category	Frequency (n)	Percentage (%)
Income changes due to displacement	Decreased	229	59.6
	Increased	83	21.6
	Remained the same	72	18.7
Access to food changes due to displacement	Worsened	195	50.8
	Remained the same	126	32.8
	Improved	63	16.4
Meals per day compared to before displacement	Less than before displacement	68	17.7
	1	81	21.1
	2	204	53.1
	3 or more	31	8.1
Experienced health issues related to displacement	Yes	268	69.8
	No	116	30.1
Kind of health issues	Waterborne diseases	152	39.6
	Respiratory diseases	110	28.6
	Malnutrition	79	20.8
	Other	43	11.2
Experienced emotional or psychological stress due to displacement	Yes	240	62.5
	No	144	37.5
Perceived environmental safety of new location compared to original place	Less safe	188	49.0
	About the same	101	26.3
	Safer	95	24.7
Access to clean water and sanitation facilities in new location	Yes	239	62.2
	No	145	37.8

3.6 Policy and Support Mechanisms towards Climate-Induced Displacement

Awareness and support mechanisms play a crucial role in addressing the challenges of climate-induced displacement. Findings indicated limited outreach, as 60.4% of respondents were unaware of any government or NGO support programs. Just under half (48.7%) reported receiving some form of assistance, primarily in the form of food supplies (35.4%) and housing (31.0%), while fewer received financial support (21.9%) or healthcare services (5.7%). Perceptions of policy effectiveness were mixed: 48.2% rated policies as moderately effective, 33.6% viewed them as ineffective, and only 18.2% found them very effective (Table 4).

Table 4 **Response to the policy awareness and support mechanisms towards climate-induced displacement**

Variable	Category	Frequency (n)	Percentage (%)
Aware of any government or NGO support programs	No	232	60.4
	Yes	152	39.6
Received any assistance from government or NGOs since displacement	No	197	51.3
	Yes	187	48.7
Type of assistance received	Food supplies	136	35.4
	Housing	119	31.0
	Financial support	84	21.9
	Other	23	6.0
	Healthcare services	22	5.7
Effectiveness of current policies	Moderately effective	185	48.2
	Not effective	129	33.6
	Very effective	70	18.2

3.7 Community Resilience and Adaptation Towards Climate-Induced displacement

Community resilience and adaptation strategies in response to climate-induced displacement reveal varied approaches among respondents as shown in Table 5. A notable 34.9% have adapted by relocating, while 25.5% have adopted new farming techniques. Support from government or NGOs has assisted 22.4% of respondents, although 13.0% reported making no adaptations. Community connections remain strong, with 71.3% maintaining contact with their original communities. Additionally, support from family or community was significant, with 43.8% receiving some support, 41.1% receiving substantial support, and 15.1% receiving none (Table 5).

Table 5: Response to community resilience and adaptation towards climate-induced displacement

Variable	Category	Frequency (n)	Percentage (%)
Adaptations to changes caused by climate displacement	Relocation	134	34.9
	New farming techniques	98	25.5
	Government/NGO support	86	22.4
	No adaptation	50	13.0
	Other	16	4.2
Maintained contact with original community	Yes	274	71.3
	No	110	28.6
Support received from family or community members after displacement	Some	168	43.8
	A lot	158	41.1
	None	58	15.1

3.8 Recommendations for Future Interventions for Climate-Induced Displacement

Respondents recommended several key measures to enhance resilience to climate-induced displacement. Infrastructure development was the top priority (41.4%), followed by climate-resilient agricultural practices (29.7%) and early warning systems (20.0%). Suggested adaptation strategies included sustainable farming practices (25%) and strengthening local

infrastructure (20.8%). Additional recommendations involved improving access to climate education (18.7%) and establishing early warning systems (10.4%). Smaller portions of respondents advocated for government financial support (9.6%), water management strategies (7.8%), partnerships with NGOs (4.4%), and community-led adaptation initiatives (3.1%).

Table 6: Suggested recommendations for future interventions for climate-induced displacement

Variable	Category	Frequency (n)	Percentage (%)
Priority to improve community resilience	Infrastructure development	159	41.4
	Climate-resilient agriculture practices	114	29.7
	Early warning systems	77	20.0
	Access to financial and social support programs	34	8.8
Strategies to enhance community adaptation to climate induced displacement	Implementation of sustainable farming practices	96	25
	Strengthening local infrastructure	80	20.8
	Improved access to climate education	72	18.7
	Establishment of early warning systems	40	10.4
	Government financial support for climate resilience	37	9.6
	Water conservation and management practices	30	7.8
	Partnerships with NGOs	17	4.4
	Community-led climate adaptation initiatives	12	3.1

3.9 Association between demography on exposure to climate-induced displacement

The analysis of demographic factors in relation to exposure to multiple climate-induced displacements showed no statistically significant associations. Although age groups exhibited slight variation, with younger individuals (18-29) experiencing a marginally higher exposure (18%) than older groups, the chi-square value (2.687) and p-value (0.442) indicated no

significance. Gender distribution of exposure was nearly equal, with females at 19% and males at 19.8% (chi-square = 0.016, p = 0.898). Similarly, regional location did not significantly impact exposure, as respondents from both the Northern and Southern Belts had comparable rates (chi-square = 0.27, p = 0.603).

Table 7: Association between demography on exposure to climate-induced displacement

Variable	Category	Exposed to more than one climate induced displacement		Chi-square value	P-value
		No	Yes		
Age	18-29	93 (24.2%)	69 (18%)	2.687	0.442
	30-39	68 (17.7%)	40 (10.4%)		
	40-49	49 (12.8%)	30 (7%)		
	50 and above	25 (6.5%)	10 (2.7%)		
Gender	Female	118 (30.7%)	73 (19%)	0.016	0.898
	Male	117 (30.5%)	76 (19.8%)		
Regional belt	Northern Belt	128 (33.3%)	86 (22.4%)	0.27	0.603
	Southern Belt	107 (27.9%)	63 (16.4%)		

3.10 Analysis of Interview Responses

The interviews were analyzed using thematic coding, and several key themes emerged related to the socio-economic impacts of displacement, the role of government and non-governmental organizations (NGOs), the challenges in accessing basic services, and the ways communities have adapted to displacement. These themes highlight the lived experiences of displaced individuals in Ghana, providing insight into their ongoing struggles and their recommendations for improving their situation.

3.10.1 Socio-Economic Impacts of Climate- Induced Displacement

One of the most significant impacts of displacement was the loss of livelihoods, particularly for those engaged in farming and fishing. The sudden disruption to their primary income sources left many struggling to find alternative means of support. Interviewee 1, a farmer, explained:

> "*Before the drought came, I used to farm and provide for my family. Everything we needed came from the land, and I knew how to manage it. But now, the land is dry, and I can't grow anything anymore. I've had to start looking for small jobs in town, but it's not the same. Farming was all I knew, and I've lost that.*"

Similarly, those who relied on the sea for their livelihoods experienced a similar fate. Interviewee 6, a fisherman, shared:

> "*The sea was my life. Every day, I would go out in my boat, and that's how I made my living. But when the sea took our home, it also took my boat. Now I don't have any equipment, and I'm just doing labour work to survive. It's hard to start again when you've lost everything.*"

These experiences highlight how displacement has forced many to abandon their traditional livelihoods, pushing them into uncertain and often precarious forms of employment.

3.10.2 Challenges in Accessing Basic Services

Another major theme that emerged from the interviews was the difficulty in accessing basic services such as food, water, shelter, and healthcare. Many interviewees described how their access to these essentials had deteriorated significantly since being displaced. Interviewee 3 spoke of the struggle to find clean water and food:

> "*Before the flood, we had everything we needed. We could fetch water from the stream, and we had enough food from our crops. Now, we are in a new place, and we don't have access to clean water. We have to walk long distances just to find a little water, and it's not even safe to drink. As for food, we rely on whatever we can find, but it's not enough for the whole family.*"

Healthcare was also a major issue for many of the displaced. Interviewee 5 expressed her concerns about the lack of medical access:

> *"When we were in our village, the health clinic was just a short walk away. But now, where we've been moved to, the nearest hospital is far. I don't have the money to travel there, and even if I did, I'm not sure I could afford the treatment. We have sick people here who can't get the help they need. It's really hard to know that we can't access basic healthcare."*

The above responses underscore the barriers displaced individuals face in accessing essential services, exacerbating their vulnerability in already challenging circumstances.

3.10.3 Role of Government and NGOs in Addressing Climate- Induced Displacement

While NGOs were frequently mentioned as providers of initial relief, the role of the government was perceived as minimal by most interviewees. Many felt abandoned by government institutions, with NGOs stepping in to offer short-term aid. However, this aid was often seen as insufficient for long-term recovery. Interviewee 4 commented on the limitations of NGO support:

> "*When we first got displaced, it was the NGOs who came to help us. They gave us food and some supplies to get through the first few weeks. But after that, we didn't hear from*

them anymore. The government didn't do anything to help us rebuild our lives. We're still living in temporary shelters with no idea of what will happen next."

Interviewee 9 also reflected on the lack of sustained support:

"*We were thankful when the NGOs brought us some food and tents to stay in. But that was months ago, and since then, nothing has changed. The tents are falling apart, and we have no proper homes. The government hasn't stepped in to provide us with any long-term help. It feels like we've been forgotten."*

These reflections point to the inadequacy of both governmental and non-governmental responses in addressing the long-term needs of displaced individuals, leaving them in precarious situations without clear solutions.

3.10.4 Community Adaptation to Climate-Induced Displacement

Displaced communities have employed a variety of strategies to adapt to their new circumstances, but these adaptations have often been limited by the resources available to them. Some interviewees described their efforts to find new livelihoods or adapt to different environments, while others expressed the difficulty of rebuilding in unfamiliar settings. Interviewee 7 shared how her community had tried to cope:

"When we first arrived here, it was very difficult. People were confused about where to go and what to do. Some of the younger men went to nearby towns to find work, but there's not much available. Most of us just try to help each other out when we can. But without jobs or money, it's hard to make any real changes."

Other respondents spoke about the challenges of farming in new environments that were not conducive to agriculture. Interviewee 4 discussed the struggle to adapt her farming practices:

"We tried planting new crops when we moved to this area, but the soil is different. It's much harder to grow anything here than where we used to live. We've had to abandon some of the crops we used to rely on because they just don't grow well here. It's been difficult to figure out what will work. We need more support to learn how to farm in this new place."

These responses highlight the resilience of displaced communities, but also the limitations they face in adapting without adequate resources and support.

3.10.5 Risk of Future Climate-Induced Displacement

Many interviewees expressed concerns about the possibility of being displaced again due to future climate-related events. The sense of insecurity was pervasive, as individuals felt that their current living conditions were still vulnerable to further environmental changes. Interviewee 2 voiced her fear of another displacement:

"Even though we've moved inland, the sea is still getting closer. I don't think we're safe here for long. Every year, it seems like the water comes further in, and we might have to move again. I'm always worried that another storm will come and destroy everything again. We need to be somewhere where we don't have to live in fear all the time."

Interviewee 8 also shared his concern:

"*The floods are getting worse every year. Where we are now, I don't feel confident that it will keep us safe. If it rains heavily again, we might be forced to leave once more. It's hard to live like this, always wondering if you'll be forced to move again. We need somewhere permanent and safe."*

These fears highlight the precarious nature of displacement in the face of ongoing climate risks, and the need for more secure and resilient relocation options.

3.10.6 Recommendations for Supporting Climate-Induced Displaced Individuals

The interviewees provided several recommendations for improving the situation for displaced individuals. A recurring suggestion was the need for permanent housing solutions, as temporary shelters were often described as inadequate. Interviewee 10 emphasized the importance of stable housing:

> *"We can't keep living in these tents forever. They were fine for the first few weeks, but now they're falling apart. We need proper homes, not just something temporary. If we have a permanent place to stay, we can start rebuilding our lives. The government should make sure we have proper housing so we don't have to worry about moving again."*

In addition to housing, several interviewees pointed to the need for job training and support in finding new livelihoods. Interviewee 11 suggested:

> *"Many of us can't go back to what we were doing before. The land is gone, the sea has taken everything. The government should help us learn new skills so we can find jobs in different industries. We need support in getting trained for work that we can do in this new environment. That's the only way we can really move forward."*

These recommendations underscore the need for comprehensive, long-term strategies that address both housing and employment as key factors in rebuilding the lives of displaced individuals.

3.11 Discussion

3.11.1 Patterns and Drivers of Climate-Induced Displacement

This study investigated the pattern and drivers of climate-induced displacement in Ghana, revealing that flooding, drought, coastal erosion, and sea-level rise are major contributors, with temporary displacement being more common than permanent. The temporary nature of displacement implies that, while communities are forced to relocate in response to adverse climate events, many return once conditions stabilise, indicating that these displacements are cyclical rather than permanent. This finding is consistent with research conducted in Sub-Saharan Africa by Sarkar et al. (2021) and McMichael et al. (2022), which identify environmental factors such as seasonal flooding and recurring droughts as primary displacement drivers. The prevalence of temporary displacement suggests that these communities are deeply attached to their land and livelihoods, with displacement viewed as a disruption rather than a permanent separation from their home environment.

When these findings are compared to those from other studies, they show that displacement patterns are similar across vulnerable regions. In West Africa, for example, seasonal displacement due to floods has been observed, with communities repeatedly disrupted but returning when possible (Nawrotzki et al., 2020). This cyclical displacement pattern is common in agricultural and fishing communities, where livelihoods are inextricably linked to specific environmental conditions. As climate change increases the frequency and severity of these events, communities in Ghana and other regions face increased risks, potentially pushing temporary displacements to permanent status over time. However, the resilience of these communities continues to encourage temporary over permanent movement, as many attempt to adapt rather than relocate indefinitely.

These patterns indicate that Ghana must invest in long-term resilience and infrastructure to address the recurring nature of displacement. Given that displacement is currently cyclical, there is an urgent need for infrastructure that can withstand environmental challenges, allowing communities to remain in place during moderate events and return more easily after severe ones. Infrastructure improvements such as flood-resistant housing, sustainable land management, and water conservation systems can help communities become more stable and reduce the likelihood of future displacement. Furthermore, adaptive measures that support local economies, such as sustainable agricultural practices, can protect communities from the need to relocate by providing alternative income sources that are resilient to climate change.

Without these structural investments, Ghana risks reinforcing a cycle of displacement in which communities are repeatedly disrupted without the resources to build long-term resilience. Long-term consequences may include a loss of community cohesion, reduced economic stability, and increased vulnerability to future climate events. To address these challenges, a multifaceted approach is required, including resilient infrastructure, adaptive land-use policies, and community-level support systems that promote security and stability in the face of climate change. By breaking the cycle of temporary displacement with comprehensive planning and support, Ghana can help these communities build a more secure and sustainable future.

3.11.2 Implications of Climate-Induced Displacement on Economic, Social, and Physical Security

Significant economic, social, and physical security issues that displaced people face are highlighted by the study's findings. These issues include lower income, worsened food security, elevated health risks, and increased emotional stress. Traditional livelihoods are disrupted by displacement, especially in fishing and agriculture, which are heavily impacted by

environmental changes. In a similar vein, Nawrotzki et al. (2020) discovered that displacement frequently causes people to lose their main sources of income, which exacerbates food insecurity and financial difficulties. Simultaneously, Campbell et al. (2021) note that displaced populations often experience health problems, especially respiratory and waterborne illnesses, as a result of limited access to clean water and sanitation.

These results, when compared to those of other studies, indicate that displacement increases vulnerability and frequently exacerbates social and health issues in addition to economic hardships. Reduced income, less food available, and limited access to healthcare are just a few of the many interrelated risks that displaced communities usually face. According to studies, displaced populations frequently turn to low-paying, precarious work when their traditional livelihoods are threatened, which exacerbates economic instability (Ferris, 2022). Overcrowding in temporary settlements, poor sanitation, and a lack of clean water further exacerbate the health risks, increasing the prevalence of infectious diseases and mental health issues among displaced people.

The ramifications of these findings highlight how important it is to have comprehensive support networks that cater to the social, medical, and economic needs of resettlement communities. According to the data, displaced communities may endure protracted socioeconomic instability in the absence of sufficient intervention, which would weaken their resilience and increase their susceptibility to further displacements. In order to meet these needs, safe, sustainable resettlement areas with food distribution networks, medical facilities, and chances for livelihood diversification must be established. These regions would offer a setting that is favourable for long-term stability and recovery, enabling displaced people to start over and become more resilient.

The long-term effects of displacement may make it more difficult for the impacted populations to adapt and endure further displacements if these support systems are not put in place. Economic hardships and poor health outcomes combine to produce a cycle of vulnerability that lowers quality of life and restricts adaptive capacity. Prioritising comprehensive security measures that address the immediate and long-term needs of displaced people while preserving their health, economic independence, and social stability is crucial as Ghana's climate becomes more unpredictable. This will help to build resilience against future climate-related challenges.

3.11.3 Effectiveness of Current Policies and Strategies in Managing Climate-Induced Displacement and Protecting Human Security

This study examined the awareness and perceived efficacy of governmental and non-governmental organisation (NGO) support programs for managing displacement. The research identified a deficiency in awareness and a perception of ineffectiveness regarding government and non-governmental organisation (NGO) support programs for addressing climate-induced displacement. The majority of participants were oblivious to the available resources, and those who did obtain assistance deemed it inadequate for sustained recovery. Warner et al. (2019) and Bettini and Nash (2020) discovered that dependence on transient NGO assistance and inadequate governmental backing generates a void that endangers displaced populations. The results indicate that enhancing awareness and accessibility to support mechanisms is essential for the effective protection of displaced communities.

Ghana's challenges, relative to other regions, exemplify a broader issue faced by climate-displaced communities globally, where assistance is frequently fragmented and insufficient for sustained adaptation. Immediate short-term assistance is often rendered after displacement events; however, enduring support and systematic policies are rare (Kelman et al., 2020). The

absence of robust policy frameworks results in dependence on non-governmental organisations (NGOs), which often lack the necessary resources and sustainability for thorough support. Consequently, displaced individuals are often housed in temporary accommodations lacking definitive routes for sustainable recovery and integration, leading to extended instability.

These findings underscore the pressing necessity for robust, unified policy frameworks that provide extensive support systems for displaced populations. Enhancing the efficacy of these programs will require increased funding as well as improved integration of government initiatives and NGO efforts. It is essential to establish a systematic support framework that encompasses awareness initiatives, readily available resources, and explicitly delineated routes for resettlement and adaptation. Ghana can assist displaced communities in shifting from temporary assistance to sustainable recovery, thereby reducing the likelihood of repeated displacement.

Moreover, establishing a transparent and accessible support system can cultivate trust and empowerment among displaced individuals, who may feel marginalised due to insufficient visible assistance. When communities possess awareness of and access to resources, they can make informed adaptation decisions, thereby diminishing their dependence on external assistance. An integrated strategy that merges governmental leadership with NGO collaborations can establish a robust framework for addressing displacement, safeguarding human security, and enabling individuals to rebuild their lives sustainably.

3.11.4 Recommendations for Enhancing Resilience and Adaptive Capacity Among Vulnerable Communities

The study's recommendations for increasing resilience centred on infrastructure development, climate-resilient agricultural practices, and early warning systems. These recommendations

reflect a comprehensive understanding of resilience, focusing on both physical infrastructure and sustainable livelihoods. Recent research, such as that of Garschagen and Romero-Lankao (2021), advocates for resilience frameworks that combine structural improvements with adaptive agricultural systems, arguing that such an approach is critical for reducing vulnerability and promoting long-term stability. Respondents' priorities suggest that immediate safety and economic security are critical to resilience, which is consistent with research on community-based adaptation.

When these findings are compared to those from other studies, it becomes clear how important a multifaceted resilience strategy is. According to research, physical infrastructure, such as flood-resistant housing and road networks, is critical in reducing displacement risks, whereas climate-resilient farming helps communities maintain food security in the face of environmental change (Adger et al., 2020). Furthermore, early warning systems enable communities to plan for climate events, thereby saving lives and reducing the need for reactive displacement. This integrated approach builds adaptive capacity and promotes self-sufficiency by giving communities the tools they need to navigate climate threats proactively rather than reactively.

These findings indicate that resilience-building in climate-vulnerable communities should include both physical and procedural adaptations. By investing in resilient infrastructure, Ghana can mitigate the immediate risks associated with climate events, allowing communities to focus on long-term adaptation. Meanwhile, implementing sustainable agricultural practices can improve food security by providing a stable livelihood option that is less vulnerable to climate change. Early warning systems are also important because they enable communities to take preventive measures, thereby mitigating the effects of climate events and reducing displacement.

Finally, building resilience in climate-vulnerable communities necessitates a strategic, multi-layered approach that combines immediate protective measures with long-term adaptation plans. Infrastructure improvements, sustainable farming, and early warning systems all contribute to a resilient framework that allows communities to increase their adaptive capacity and socioeconomic stability. These strategies should be integrated into policy frameworks to ensure consistent support, allowing communities to better withstand the challenges of climate change and reducing the recurring need for displacement as a survival strategy.

CHAPTER FOUR

SUMMARY OF FINDINGS, CONCLUSION, AND RECOMMENDATIONS

4.1 Introduction

This chapter presents the summary of key findings from the research on climate-induced displacement, offering conclusions aligned with the initial objectives and providing recommendations to address identified challenges on understanding the drivers, socio-economic impacts, coping mechanisms, and policy responses related to climate-induced displacement.

4.2 Summary of Findings

The study explored four main objectives to understand climate-induced displacement in Ghana. In examining the first objective, which sought to determine the main drivers of climate-induced displacement, the study found that extreme weather events such as flooding, drought, and sea-level rise are the primary causes of displacement. These climate-related factors disrupt the livelihoods of vulnerable communities, particularly those dependent on agriculture and fisheries. As these extreme weather events become more frequent and severe, they undermine the stability of these communities, making displacement an inevitable response for survival.

The second objective focused on analyzing the socio-economic impacts of climate-induced displacement on affected communities. Findings revealed that displacement results in significant socio-economic disruptions, including the loss of income, housing instability, and limited access to essential services such as healthcare, education, and sanitation. Displaced individuals often struggle to re-establish their livelihoods in new locations, which deepens poverty levels and increases social vulnerability. Social connections and support networks are

often fractured, leading to heightened social isolation and psychological stress among displaced populations.

Regarding the third objective, which aimed to assess the coping mechanisms employed by displaced communities, the study identified that most displaced individuals rely on informal mechanisms such as migrating to urban areas, seeking informal employment, and depending on family or community networks for support. However, these strategies provide only temporary relief and fail to address the underlying vulnerabilities of displaced populations. In many cases, these coping mechanisms are unsustainable and may expose individuals to additional risks, such as exploitation in informal employment or overcrowded living conditions in urban centres.

The fourth objective of the study examined the adequacy of policy responses and institutional support for climate-induced displacement. The research highlighted that existing policy frameworks are fragmented and lack coordination across governmental and institutional levels. While some efforts are made to address displacement, resources are limited, and comprehensive, long-term strategies are absent. There is a clear need for more structured and coordinated policies to support affected populations and to mitigate the long-term impacts of displacement. Overall, the study found that current policies and institutional support mechanisms fall short in effectively addressing the complexities of climate-induced displacement.

This study has provided a unique and context-specific contribution to the understanding of climate-induced displacement and its implications for human security in Ghana. While global research has widely explored the intersection of climate change and migration, this thesis distinguishes itself by offering a comparative analysis of two ecologically vulnerable regions highlighting how distinct environmental stressors like coastal erosion and drought shape displacement dynamics and community vulnerability. The study's most significant contribution

lies in its integrated human security lens, examining the economic, food, health, and political impacts of displacement rather than viewing it merely as an environmental or migratory phenomenon. Employing a robust mixed-methods approach that combines quantitative surveys with qualitative interviews, the research provides both statistically grounded and context-rich insights, deepening the understanding of displaced individuals lived experiences and coping strategies. Moreover, the thesis exposes critical gaps in Ghana's current policy responses, which are found to be largely fragmented and reactive.

4.3 Conclusion

Based on the study's findings, it is clear that climate-induced displacement is a complex and multifaceted issue that requires immediate and coordinated intervention. The study concludes

that extreme weather events are primary drivers of displacement, placing vulnerable communities at increased risk.

The socio-economic impacts are profound, often resulting in heightened poverty, loss of livelihoods, and significant social instability. Furthermore, while displaced populations demonstrate resilience through various coping mechanisms, these strategies are generally unsustainable and leave individuals exposed to further risks.

The lack of coordinated and effective policy responses exacerbates these issues, indicating an urgent need for a more comprehensive approach to managing climate-induced displacement. The findings emphasize the need for policies and support systems that not only respond to immediate displacement needs but address the long-term resilience and stability of affected communities.

4.4 Recommendations

In cognisance of the conclusions made in this study, the following recommendations are proposed to effectively address the challenges posed by climate-induced displacement, and to enhance the resilience and well-being of affected communities.

i. To effectively address the challenges of climate-induced displacement, it is essential to establish a cohesive policy framework that includes clear guidelines, secured funding, and inter-agency collaboration. Policies should integrate displacement management into national disaster and climate resilience planning, fostering partnerships between government, NGOs, and community leaders for a comprehensive approach.

ii. Additionally, targeted socio-economic support programs are crucial. These should include income generation and skills development initiatives, along with improved

access to healthcare, education, and housing to support the economic integration and well-being of displaced populations.

iii. Community-based adaptation strategies are also recommended. Empowering at-risk communities through early warning systems, climate education, and support for community-driven initiatives can enhance resilience and reduce displacement rates.

iv. Public awareness is vital for fostering preparedness. Campaigns to educate communities about climate risks and adaptive actions, as well as integrating climate risk education into school curricula, can strengthen community resilience.

v. Finally, further research and data collection on climate-induced displacement are necessary for effective policy development. A comprehensive database on displacement trends, socio-economic impacts, and policy effectiveness will provide the insights needed for continuous improvement in managing climate-induced displacement.

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APPENDIX

CLIMATE-INDUCED DISPLACEMENT AND ITS IMPLICATIONS ON HUMAN SECURITY: A CASE STUDY OF GHANA

RESEARCH QUESTIONNAIRE

Dear Respondent

Thank you for taking the time to participate in this survey. Your responses are an essential part of a research study titled *"Climate-Induced Displacement and Its Implications on Human Security: A Case Study of Ghana."* The purpose of this study is to better understand the impact of climate change on displacement and how it affects various aspects of human security, including livelihoods, health, food security, and access to basic services. The insights gathered will also help to evaluate current policies and provide recommendations for improving support for displaced individuals.

Your participation is completely voluntary, and all information you provide will remain strictly confidential. The data collected will be used solely for academic purposes and to inform policy recommendations aimed at improving the welfare of individuals and communities affected by climate-induced displacement.

Section A: Demographic Information

1. What is your age?
   a) Below 18 [ ] b) 18-29 [ ] c) 30-39 [ ] d) 40-49 [ ] e) 50 and above [ ]

2. What is your gender?
   a) Male [ ] b) Female [ ] c) Prefer not to say [ ]

3. What is your highest level of education?
   a) No formal education [ ] b) Primary [ ] c) Secondary [ ] d) Tertiary [ ]

4. What was your primary occupation before displacement?
   a) Farming [ ] b) Fishing [ ] c) Trading [ ] d) Unemployed [ ] e) Other (Please specify): : ……

5. Which regional belt of Ghana are you from?
   a) Northern Belt [ ] b) Southern Belt [ ]

Section B: Drivers and Patterns of Displacement

6. What was the primary reason for your displacement?
   a) Flooding [ ] b) Coastal erosion [ ] c) Drought [ ] d) Sea-level rise [ ] e) Other (Please specify): : ……

7. How long ago were you displaced?
   a) Less than 1 year [ ] b) 1-3 years [ ] c) 4-6 years [ ] d) More than 6 years [ ]

8. Was your displacement temporary or permanent?
   a) Temporary [ ] b) Permanent [ ]

9. Have you been displaced more than once due to climate-related events?
   a) Yes [ ] b) No [ ]

10. Do you feel at risk of being displaced again in the future due to climate-related events?
    a) Yes [ ] b) No [ ] c) Uncertain [ ]

Section C: Impact on Human Security

Economic Security:

11. What is your current employment status after displacement?
    a) Employed [ ] b) Unemployed [ ] c) Casual labor [ ] d) Self-employed [ ]

12. Has your income changed since displacement?
    a) Increased [ ] b) Decreased [ ] c) Remained the same [ ]

Food Security:

13. How has your access to food changed since displacement?
    a) Improved [ ] b) Worsened [ ] c) Remained the same [ ]

14. How many meals does your household have per day now compared to before displacement?
    a) 1 [ ] b) 2 [ ] c) 3 or more [ ] d) Less than before displacement [ ]

Health Security:

15. Have you or your family experienced any health issues related to the displacement (e.g., poor sanitation, lack of clean water)?
    a) Yes [ ] b) No [ ]

16. If yes, what kind of health issues have you experienced?
    a) Waterborne diseases [ ] b) Respiratory diseases [ ] c) Malnutrition [ ] d) Other (Please specify): : ……

17. Have you experienced emotional or psychological stress due to your displacement?
    a) Yes [ ] b) No [ ]

Environmental Security:

18. How do you perceive the environmental safety of your new location compared to your original place?
    a) Safer [ ] b) Less safe [ ] c) About the same [ ]

19. Do you have access to clean water and sanitation facilities in your new location?
    a) Yes [ ] b) No [ ]

Section D: Policy and Support Mechanisms

20. Are you aware of any government or NGO support programs for displaced individuals?
    a) Yes [ ] b) No [ ]

21. Have you received any assistance from government or non-governmental organizations (e.g., housing, food, financial aid) since your displacement?
    a) Yes [ ] b) No [ ]

22. If yes, what type of assistance did you receive?

    a) Housing [ ] b) Food supplies [ ] c) Financial support [ ] d) Healthcare services [ ] e) Other (Please specify):..

    ……

23. How effective do you think the current policies are in addressing the needs of displaced populations?

    a) Very effective [ ] b) Moderately effective [ ] c) Not effective [ ]

24. What recommendations would you suggest for improving policies and programs for displaced individuals?

    a) Increase funding and resources for displaced individuals [ ]

    b) Provide long-term housing solutions instead of temporary shelters [ ]

    c) Improve access to healthcare and sanitation services for displaced populations [ ]

    d) Implement job training and livelihood programs for displaced individuals [ ]

    e) Strengthen the legal protection and rights of displaced individuals [ ]

    f) Establish better coordination between government agencies and NGOs for more effective aid delivery [ ]

    g) Ensure participation of displaced individuals in decision-making processes [ ]

    h) Develop comprehensive plans for future climate-related displacement [ ]

    i) Other (Please specify): ……

Section E: Community Resilience and Adaptation

25. How have you or your community adapted to the changes caused by climate displacement?

    a) Relocation [ ] b) New farming techniques [ ] c) Government/NGO support [ ]

    d) No adaptation [ ] e) Other (Please specify): :

    ……

26. Have you maintained contact with your original community since being displaced?

    a) Yes [ ] b) No [ ]

27. How much support (financial, emotional, etc.) have you received from family or community members after being displaced?
    a) A lot [ ] b) Some [ ] c) None [ ]

Section F: Recommendations for Future Interventions

28. In your opinion, what should be prioritized to improve the resilience of communities vulnerable to climate-induced displacement?
    a) Infrastructure development (e.g., flood barriers, improved housing) [ ]
    b) Climate-resilient agriculture practices [ ]
    c) Early warning systems for climate events [ ]
    d) Access to financial and social support programs [ ]

29. What strategies do you suggest to enhance your community's ability to adapt to climate change?
    a) Implementation of sustainable farming practices [ ]
    b) Improved access to climate education and awareness programs [ ]
    c) Strengthening local infrastructure to withstand extreme weather events [ ]
    d) Establishment of local early warning systems for climate hazards [ ]
    e) Introduction of government financial support for climate resilience projects [ ]
    f) Promoting community-led climate adaptation initiatives [ ]
    g) Enhancing water conservation and management practices [ ]
    h) Developing partnerships with NGOs for capacity building and resources [ ]
    i) Other (Please specify): ……

End of Questionnaire

Thank You

CLIMATE-INDUCED DISPLACEMENT AND ITS IMPLICATIONS ON HUMAN SECURITY: A CASE STUDY OF GHANA

INTERVIEW GUIDE

Introduction

Thank you for agreeing to participate in this interview. This study is focused on understanding the experiences of individuals affected by climate-induced displacement and how such displacement impacts their livelihoods, health, and overall security. Your responses will provide valuable insights to help shape policies and programs that better support displaced communities in Ghana. This interview is voluntary, and you are free to skip any questions or stop the interview at any time. The information you provide will be kept confidential and used only for academic purposes.

Interview Questions:

1. Can you briefly describe your personal background and situation before displacement?
2. Can you tell me about the event or circumstances that led to your displacement?
3. How has being displaced affected your livelihood?
4. In terms of your daily needs (e.g., food, water, shelter), how has your situation changed since you were displaced?
5. How has displacement impacted your access to healthcare?
6. How has your community adapted to the changes caused by climate-related displacement?
7. Are there any support networks (family, friends, community groups, NGOs) that have helped you adjust since displacement?
8. Do you feel that you are at risk of being displaced again due to future climate-related events?
9. Have you received any assistance from the government, NGOs, or other organizations after your displacement?

10. In your opinion, what are the most important changes or improvements that should be made to support displaced individuals like yourself?

11. What strategies do you think would help communities like yours to better adapt to climate change?

12. Is there anything else you would like to share about your experience with displacement or your ideas for improving the situation for displaced individuals?

End of Interview

Thank You