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# SPECIAL ISSUE

## Climate Change and Internal Environmental Displacement in Somalia: Analyzing the Linkages Between Environmental Degradation, Conflict Dynamics, and Displacement Trends

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## Abstract
This research investigated the interconnections between climate change, environmental degradation, and internal displacement in Somalia, highlighting the impact of these conditions on conflict dynamics. As climate change accelerates ecological degradation, Somalia faces intensified droughts, resource scarcity, and shifting land conditions, contributing to increasing internal displacement. This study examined how these environmental changes drive displacement trends and exacerbate conflict over resources, thereby influencing local security and stability. By analyzing case studies and displacement data, the research aimed to elucidate the causal relationships between environmental degradation and conflict and to assess current adaptation and resilience strategies. Findings are expected to provide insights into effective policy interventions for mitigating displacement and conflict arising from climate-related challenges.

## Keywords
Climate change, environmental degradation, internal displacement, conflict dynamics, Somalia



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# Climate Change and Internal Environmental Displacement in Somalia: Analyzing the Linkages Between Environmental Degradation, Conflict Dynamics, and Displacement Trends

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## Introduction

### *Background and Rationale*

Somalia, a country highly vulnerable to climate change, has faced persistent environmental challenges that have significantly impacted its socio-economic and political stability. Over the past few decades, Somalia has experienced increasingly severe droughts and irregular rainfall patterns, leading to widespread environmental degradation. This environmental stress has directly influenced the country's food and water security, exacerbating existing vulnerabilities and contributing to heightened internal displacement.

Historically, Somalia's reliance on agriculture and pastoralism has made it particularly sensitive to climatic fluctuations. The recurrent droughts, intensified by climate change, have led to the depletion of natural resources, such as arable land and water sources, which are crucial for the livelihoods of many Somali communities. For example, the 2011-2012 famine, triggered by one of the worst droughts in recent history, displaced millions of people, both within Somalia and across borders (DeCarlo et al., 2020). The scarcity of resources forced many communities to migrate in search of water and food, often leading to the formation of overcrowded settlements and heightened competition for limited resources, which in turn exacerbated local conflicts. In recent years, the situation has worsened, with more frequent and severe environmental shocks. The combination of ongoing droughts and flooding—often described as climate variability—has led to significant displacement. For instance, the 2020 floods in southern Somalia displaced over 200,000 people, illustrating the direct link between environmental conditions and displacement (Ali et al., 2023). The challenge is compounded by Somalia's ongoing political instability and weak governance structures, which hinder effective response and adaptation strategies (Jama et al., 2019).

Understanding the interplay between climate change, environmental degradation, and displacement is crucial for developing targeted policies and interventions. This research aims to address these gaps by critically examining how environmental changes drive internal displacement and influence conflict dynamics. By doing so, it seeks to provide insights into the broader implications for Somali society and offer recommendations for improving resilience and adaptation in the face of escalating climate challenges.

### *Objectives of the Study*

The objectives of the study on climate change and internal environmental displacement in Somalia are designed to illuminate the intricate connections between environmental degradation, displacement, and conflict. The primary goal is to assess how climate change-induced environmental stressors contribute to internal displacement within Somalia, focusing on the specific mechanisms through which environmental changes influence migration patterns and exacerbate conflict. By analyzing these dynamics, the study aims to provide a comprehensive understanding of the multifaceted impacts of climate change on displaced populations and the broader societal implications.

One key focus is to explore how environmental degradation—such as land degradation, deforestation, and reduced water availability—drives internal displacement in Somalia. For example, the prolonged droughts and subsequent land degradation in Somalia have severely impacted pastoralist communities that rely on grazing lands. As traditional grazing areas become unviable, many families are forced to relocate in search of more fertile ground or water

sources. This displacement often results in the overcrowding of areas that are already strained by resource shortages, further straining local infrastructure and exacerbating tensions between displaced populations and host communities. Another important consideration is to analyze the relationship between displacement and conflict dynamics. The displacement of large numbers of people can create competition over limited resources, which can intensify existing conflicts or even trigger new ones (Jelle et al., 2021). For instance, in the wake of the 2011 famine, displaced populations migrating to urban centers such as Mogadishu have faced increased competition for resources like water and food, often leading to heightened local conflicts and contributing to the overall instability of the region (Ali et al., 2023).

The study also aims to evaluate the effectiveness of current adaptation and resilience strategies implemented by communities and policymakers. This includes examining community-based adaptation initiatives, such as the development of drought-resistant crops or alternative livelihood programs, and assessing their impact on reducing displacement and mitigating conflict. Additionally, the study will consider the role of international aid and policy responses in addressing the challenges faced by displaced populations and supporting sustainable development in affected areas.

Overall, these objectives seek to provide a nuanced understanding of the linkages between climate change, environmental degradation, and internal displacement in Somalia. By addressing these objectives, the study aims to offer valuable insights for policymakers, humanitarian organizations, and researchers working to develop effective strategies for managing displacement and fostering resilience in the face of environmental challenges.

***Research Questions***

The research questions for the study on climate change and internal environmental displacement in Somalia are designed to address the core issues at the intersection of environmental degradation, displacement, and conflict. These questions aim to uncover the mechanisms through which environmental changes impact displacement patterns and to understand the broader socio-political implications of these dynamics.

1. How does climate change-induced environmental degradation drive internal displacement in Somalia? To address this, the study has examined specific environmental factors, such as the frequency and severity of droughts and floods, and their direct effects on communities dependent on agriculture and pastoralism. For instance, the recurrent droughts in Somalia have led to the loss of livestock and the degradation of grazing lands, forcing pastoralists to move in search of better conditions. This displacement is not just a response to immediate resource shortages but reflects a long-term pattern of environmental stress that disrupts traditional livelihoods and contributes to significant internal migration.

2. What were the implications of environmental displacement for local conflict dynamics in Somalia? This question seeks to explore how the influx of displaced populations into already resource-scarce areas can exacerbate existing conflicts or trigger new ones. The study has analyzed instances where displaced communities have come into conflict with host populations over resources such as water and land. For example, in the aftermath of the 2016-2017 drought, displacement to urban areas and other regions led to competition over scarce resources, intensifying local conflicts and contributing to broader regional instability. By understanding these conflict dynamics, the study has provided insights into how displacement exacerbates tensions and how these conflicts can be mitigated.

3. What strategies have been effective in addressing displacement and mitigating conflict related to environmental stress in Somalia? This question focused on evaluating the responses of affected communities and policymakers. It involved analyzing adaptation measures such as the introduction of drought-resistant crops, water conservation initiatives, and alternative livelihood programs. For example, community-based programs that promote sustainable farming practices and water management have shown promise in improving resilience and reducing the need for displacement. Additionally, examining the role of international aid and policy interventions has helped to determine their effectiveness in supporting displaced populations and addressing the root causes of displacement.

4. How can findings from Somalia inform broader policies and practices for managing environmental displacement and conflict in other vulnerable regions? By analyzing the specific case of Somalia, the study aimed to draw lessons applicable to similar contexts in other parts of Africa and beyond. For instance, understanding the interplay between environmental degradation and displacement in Somalia has provided valuable insights for regions experiencing comparable challenges, such as the Sahel or the Horn of Africa. These research questions were critical for developing a comprehensive understanding of the complex interactions between climate change, environmental degradation, and internal displacement, and for formulating effective strategies to address these challenges.

## Literature Review

### *Climate Change and Environmental Degradation*

Climate change and environmental degradation are central issues influencing the socio-economic and political landscape of Somalia. As a country already grappling with a fragile environment and socio-political instability, Somalia is acutely affected by the adverse impacts of climate change, which exacerbate existing environmental challenges and contribute to widespread displacement.

Somalia's environmental challenges are predominantly driven by climate change phenomena such as prolonged droughts, erratic rainfall patterns, and extreme weather events. Over the past few decades, Somalia has experienced increasingly severe droughts that have led to significant land degradation. For example, the 2011-2012 East African drought, one of the worst in recent history, had devastating effects on Somali agriculture and pastoralism. This prolonged drought resulted in massive livestock losses and the destruction of crops, which are crucial for the livelihoods of many Somali families. As a consequence, large numbers of rural families were forced to abandon their homes and migrate to urban areas or other regions in search of food, water, and pasture.

Environmental degradation in Somalia is also marked by land degradation and desertification, largely driven by deforestation and unsustainable land management practices. The clearing of forests for fuel and agriculture, combined with overgrazing by livestock, has led to the loss of vegetation cover, which is vital for soil conservation and water retention. For instance, the reduction in vegetation cover has contributed to soil erosion and reduced the land's capacity to retain moisture, further aggravating the impacts of droughts and reducing agricultural productivity. This degradation diminishes the land's ability to support local communities, forcing many to relocate.

Additionally, climate change has intensified the frequency and severity of flooding in Somalia, which further complicates the environmental landscape. The 2020 floods in southern Somalia, which displaced over 200,000 people, are a stark example of how extreme weather events can exacerbate environmental stress and contribute to displacement. These floods not

only destroyed homes and infrastructure but also contaminated water sources, leading to health crises and further compounding the challenges faced by displaced populations.

The interplay between climate change and environmental degradation creates a vicious cycle. As environmental conditions deteriorate, the ability of local communities to cope diminishes, leading to increased migration and displacement. This migration often places additional strain on already resource-scarce areas, exacerbating tensions and conflicts over available resources. For instance, displaced communities settling in urban areas may face competition for water, food, and shelter, which can heighten social tensions and lead to conflicts with host populations.

Addressing climate change and environmental degradation in Somalia requires a multifaceted approach that includes both immediate relief efforts and long-term strategies for resilience building. Sustainable land management practices, reforestation projects, and investments in climate-resilient agriculture are essential for mitigating the impacts of environmental degradation and supporting affected communities. Additionally, integrating climate adaptation measures into policy frameworks and development plans can help communities better prepare for and respond to environmental challenges, ultimately reducing the need for displacement and enhancing overall resilience.

***Internal Displacement: Concepts and Definitions***

Internal displacement, a phenomenon where individuals or communities are forced to leave their homes but remain within their country's borders, is a critical issue in the context of environmental degradation and climate change. In Somalia, internal displacement is a complex and multifaceted problem driven largely by environmental stressors exacerbated by climate change. At its core, internal displacement involves the relocation of people due to factors such as natural disasters, armed conflicts, or environmental degradation. In the Somali context, environmental factors are particularly significant. For instance, the recurrent droughts and floods have led to the displacement of thousands of people as they are forced to leave their homes in search of more stable living conditions. The concept of internal displacement extends beyond mere relocation; it encompasses the challenges faced by displaced individuals, including loss of livelihoods, access to essential services, and integration into new environments.

An illustrative example is the displacement caused by the 2011-2012 East African drought. During this period, the severe lack of rain led to catastrophic crop failures and livestock deaths, particularly affecting pastoralist communities that depend on grazing lands and water sources. These environmental stresses forced many families to migrate from rural areas to urban centers or other regions within Somalia. The displaced populations often settled in makeshift camps or informal settlements, where they faced significant challenges, including overcrowded living conditions, inadequate sanitation, and limited access to healthcare and education.

Internal displacement also has profound socio-economic implications. Displaced individuals frequently experience disruptions to their economic activities. For example, pastoralists who lose their livestock and grazing lands face a loss of income and traditional means of livelihood. The displacement of these individuals often results in the breakdown of social networks and community structures, further exacerbating their vulnerability and complicating efforts to achieve durable solutions.

Moreover, the concept of internal displacement involves not only the immediate impact of being forced to move but also the long-term consequences. Displaced populations often face prolonged periods of uncertainty and instability. In Somalia, this prolonged displacement can lead to dependency on humanitarian aid and can strain the resources of host communities. For instance, urban areas that receive large numbers of displaced people may experience increased

pressure on infrastructure and services, such as water, sanitation, and healthcare, leading to tensions between displaced individuals and residents (Augustinus et al., 2021).

Addressing internal displacement in Somalia requires a nuanced understanding of the underlying causes and consequences. Effective responses must go beyond immediate humanitarian relief to include long-term strategies for integrating displaced individuals into new environments and addressing the root causes of displacement, such as environmental degradation and climate change. This includes developing policies that support sustainable livelihoods, enhance resilience to environmental shocks, and promote social cohesion between displaced and host communities. Only by addressing both the immediate needs and the underlying drivers of displacement can durable solutions be achieved.

***Conflict Dynamics and Resource Scarcity***

Conflict dynamics and resource scarcity are intricately linked, particularly in regions like Somalia where environmental degradation exacerbates existing vulnerabilities. As climate change intensifies, the competition for increasingly scarce resources can heighten tensions and lead to conflict, impacting both displaced populations and host communities in Southern Somalia (Apuuli, 2020).

In Somalia, the scarcity of resources such as water, arable land, and food is a significant driver of conflict. The country's reliance on pastoralism and agriculture makes it highly sensitive to environmental changes. For instance, prolonged droughts have led to severe water shortages and the degradation of grazing lands. Pastoralist communities, who traditionally rely on these resources, often find themselves in direct competition for increasingly limited water sources and pastureland. This competition can lead to conflicts both within and between communities. An example of this competition is the recurring conflicts between pastoralists and agriculturalists in Somalia's southern regions. When grazing lands become unproductive due to drought, pastoralists may encroach on agricultural land, leading to disputes and clashes with local farmers over land use and resources (Ingiriis, 2018). Additionally, the displacement caused by environmental stress often exacerbates resource scarcity in host communities in the Southern region of Somalia. When displaced populations move to urban centers or other areas, they increase the demand for essential resources like water, food, and shelter. For example, the influx of internally displaced persons (IDPs) into cities like Mogadishu has put immense pressure on urban infrastructure and resources, leading to shortages and heightened competition among residents. This strain can contribute to social tensions and conflict, as displaced individuals and host communities vie for the same limited resources.

Resource scarcity also influences the dynamics of armed conflict. In Somalia, control over resources such as water points and grazing lands has historically been a key factor in conflict. Armed groups and militias may seek to control these resources to assert power and influence, further complicating the security situation. The presence of armed groups in resource-rich areas can exacerbate violence, as these groups exploit resource scarcity to strengthen their control and legitimacy (Internal Displacement Monitoring Centre, 2022). For instance, in the Southern region of Somalia where water is scarce, armed factions may gain support from local populations by providing access to water in exchange for allegiance or protection, thereby intensifying conflicts (Jama et al., 2020).

The interplay between conflict dynamics and resource scarcity underscores the need for integrated approaches to conflict resolution and resource management. Addressing the root causes of resource scarcity, such as environmental degradation and climate change, is crucial for mitigating conflicts. This includes investing in sustainable land management practices, improving water infrastructure, and supporting community-based resource management initiatives. Additionally, conflict resolution efforts must consider the impact of resource competition and work towards equitable resource distribution to reduce tensions and build

social cohesion (Dires Gardachew, 2020). The relationship between conflict dynamics and resource scarcity in Somalia highlights the complex ways in which environmental factors can influence security and stability. Effective strategies for managing resource scarcity and addressing conflict must involve environmental and socio-economic interventions to create a more resilient and peaceful Somalia society.

## Climate Change and Environmental Impact in Somalia

### *Overview of Climate Trends*

An overview of climate trends in Somalia reveals a landscape increasingly shaped by the impacts of climate change, which exacerbate existing environmental challenges and have profound effects on the country's socio-economic stability (Farah et al., 2015). Somalia, located in the Horn of Africa, is particularly vulnerable to the effects of climate variability, including extreme temperatures, changing precipitation patterns, and intensified droughts and floods.

Historically, Somalia has experienced a climate characterized by seasonal variations, with two main rainy seasons—Gu (April to June) and Deyr (October to December)—and two dry seasons. However, recent years have seen significant deviations from these patterns. Climate trends indicate a shift towards more extreme weather events, including prolonged periods of drought and intense rainfall. For instance, the frequency and severity of droughts have increased dramatically. The 2011-2012 drought, one of the most severe in recent decades, had catastrophic consequences for Somalia's agriculture and pastoralism. This prolonged drought led to massive crop failures and livestock losses, which in turn triggered widespread food insecurity and displacement (Mafuta et al., 2020).

In addition to droughts, the country has experienced fluctuations in rainfall, leading to irregular and often unpredictable weather patterns. The 2020 floods in southern Somalia, which displaced over 200,000 people, highlight the growing intensity of extreme weather events. These floods were attributed to unusually heavy rains during the Deyr season, resulting in the overflow of rivers and the inundation of large areas, damaging infrastructure, homes, and agricultural land. The erratic nature of rainfall not only affects immediate water availability but also disrupts agricultural cycles, further compounding food insecurity and economic instability.

Climate models predict that these trends will continue and possibly intensify in the coming decades. Rising temperatures are expected to exacerbate existing issues, such as increased evaporation rates and reduced water availability. This is likely to lead to more frequent and severe droughts, further straining already scarce water resources and impacting agricultural productivity (Augustinus et al., 2021). For example, the increased frequency of El Niño and La Niña events, which influence global weather patterns, has been linked to heightened variability in rainfall and temperature extremes in Somalia.

The impact of these climate trends is far-reaching. The increased severity and unpredictability of weather events challenge traditional coping mechanisms and resource management practices. Rural communities, particularly those dependent on agriculture and pastoralism, are increasingly vulnerable to climate-induced shocks. The combination of reduced agricultural yields, increased livestock mortality, and frequent water shortages undermines livelihoods and food security, driving migration and displacement.

### *Effects on Natural Resources and Ecosystems*

The effects of climate change on natural resources and ecosystems in Somalia are profound and multifaceted, influencing both the environment and the socio-economic fabric of the country. As climate trends shift, the impacts on natural resources such as water, land, and biodiversity become increasingly evident, further exacerbating the challenges faced by vulnerable communities. Water resources in Somalia are significantly affected by climate change. Prolonged droughts and irregular rainfall patterns have led to reduced water availability,

affecting both surface and groundwater sources (Barasa-Mang'eni, 2014). For example, the Juba and Shabelle rivers, which are crucial for agriculture and drinking water, have seen diminished flow due to prolonged periods of low rainfall. This reduction in water flow impacts not only the immediate availability of water but also the replenishment of groundwater aquifers, which are critical for sustaining communities during dry periods. As a result, communities living in the southeast of Somalia face increased difficulty in accessing water for drinking, irrigation, and livestock, leading to heightened competition and conflict over these essential resources (Noor, 2019).

The impact on land and agriculture is equally severe. Climate change-induced droughts have led to land degradation and desertification, particularly in the southern regions of Somalia, where agriculture is a primary livelihood. The loss of vegetation cover due to prolonged dry conditions and unsustainable land management practices has resulted in soil erosion and reduced soil fertility (Keyanti, 2007). For instance, in regions such as Lower Shabelle, the combination of frequent droughts and poor land management has led to significant land degradation, reducing agricultural productivity and contributing to food insecurity. This degradation undermines the ability of the land to support traditional farming practices and exacerbates the economic vulnerabilities of farming communities (De Carlo et al., 2020).

Ecosystems in Somalia, including critical habitats such as wetlands and savannas, are also experiencing stress due to climate change. The degradation of wetlands, which play a vital role in supporting biodiversity and regulating water cycles, has been accelerated by altered rainfall patterns and increased evaporation rates. For example, the Badawe wetlands, a critical area for migratory birds and local wildlife, have seen reduced water levels and habitat loss due to changing climate conditions. This loss of habitat impacts local biodiversity and disrupts ecological balance, affecting species that depend on these ecosystems for survival and contributing to declines in wildlife populations.

The combined effects of reduced water availability, land degradation, and ecosystem disruption create a challenging environment for communities dependent on these resources. As natural resources become scarcer and ecosystems deteriorate, the ability of communities to sustain their livelihoods diminishes. The resulting resource scarcity can drive displacement, increase competition, and exacerbate social tensions, further complicating the socio-economic landscape. Addressing these challenges requires integrated approaches that focus on both environmental conservation and resource management. Efforts to combat land degradation through reforestation, soil conservation, and sustainable land management practices are essential for restoring degraded lands and improving agricultural productivity. Additionally, enhancing water management systems and protecting critical ecosystems can help mitigate the adverse effects of climate change and support the resilience of both natural systems and human communities.

## Displacement Trends and Patterns

### *Analysis of Internal Displacement Data*

Data on internal displacement in Somalia reveals that environmental factors, such as droughts and floods, play a significant role in triggering displacement. For example, the data from the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) indicates that severe droughts in 2016-2017 led to a substantial increase in internal displacement. During this period, approximately 600,000 people were displaced due to the combined effects of drought-induced food and water shortages (Mitchell, 2020). This mass displacement was primarily driven by the need to seek better living conditions and resources, highlighting the direct link between environmental stress and migration.

Further analysis of displacement data from the Internal Displacement Monitoring Centre of 2022, shows regional variations in the patterns of internal displacement. In Somalia’s

southern regions, such as Lower Shabelle and Bay, the impact of drought and land degradation has led to significant movements of populations from rural to urban areas. For instance, in the wake of the 2011-2012 drought, many families from rural communities migrated to Mogadishu and other urban centers in search of food and water. This migration has resulted in the expansion of informal settlements and increased pressure on urban infrastructure and services (Mohamed et al., 2021). The data indicates that such urban areas are often ill-equipped to handle the influx of displaced populations, leading to overcrowding, inadequate sanitation, and heightened competition for resources.

Flooding also contributes to displacement, although its impacts can differ from those of droughts. For example, the 2020 floods in southern Somalia displaced over 200,000 people, primarily affecting the regions along the Juba and Shabelle rivers. The flooding resulted in the destruction of homes, agricultural land, and infrastructure, forcing many families to leave their areas of origin. This displacement data underscores the seasonal and unpredictable nature of flooding events, which complicate planning and response efforts for displaced populations.

Analyzing displacement data also highlights the socio-economic challenges faced by displaced individuals. Data shows that displaced populations often experience heightened vulnerabilities, including increased food insecurity, limited access to healthcare, and disrupted education for children. For example, families who have relocated to informal settlements frequently rely on humanitarian aid, which can be inconsistent and insufficient to meet their needs. This dependence on aid underscores the need for more sustainable solutions that address both immediate relief and long-term resilience.

Moreover, the Internal Displacement Monitoring Centre of 2022 reveals that internal displacement in Somalia is not solely driven by environmental factors but also intersects with other issues such as conflict and economic instability (Internal Displacement Monitoring Centre, 2022). For instance, areas that experience both environmental stress and ongoing conflict may see compounded displacement effects, as people are forced to flee from multiple stressors simultaneously. This intersectionality highlights the complexity of displacement and the need for integrated approaches to address the various drivers and impacts. Overall, a thorough analysis of internal displacement data provides critical insights into the nature and consequences of displacement in Somalia. By understanding these patterns, policymakers and humanitarian organizations can develop more targeted interventions to support displaced populations, address the underlying causes of displacement, and enhance overall resilience to environmental and socio-economic shocks.

***Case Studies of Affected Communities***

Examining case studies of affected communities such as the pastoralist communities of Puntland and the farming communities in Lower Shabelle in Somalia provide a nuanced understanding of the impacts of climate change and environmental degradation on internal displacement. These case studies illustrate the direct consequences of environmental stressors on communities and the complex interplay between displacement, resource scarcity, and social dynamics.

One prominent case study is that of the pastoralist communities in the Somali region of Puntland. Traditionally reliant on livestock herding, these communities have faced severe challenges due to recurrent droughts and land degradation. For instance, the 2016-2017 drought had devastating effects on Puntland's pastoralists. The lack of rain led to the loss of grazing lands and water sources, resulting in the death of livestock, which is the primary source of livelihood for these communities. Many pastoralists were forced to migrate to urban areas or other regions in search of resources (Ononogbu et al., 2018). The displacement often led to overcrowded living conditions in informal settlements, where access to water, sanitation, and healthcare was severely limited. This case highlights how environmental stress can disrupt

traditional livelihoods and force communities into precarious living conditions (Jama et al., 2020).

Another significant case study involves the farming communities in Lower Shabelle. This region has experienced severe flooding, particularly during the 2020 floods, which displaced thousands of people. The floods caused extensive damage to agricultural lands and infrastructure, leading to the loss of crops and homes. Farmers who had relied on subsistence agriculture were left without their primary source of food and income. The displacement forced many to move to neighboring areas or urban centers, where they faced challenges in securing adequate shelter and necessities. This case illustrates how extreme weather events can disrupt agricultural productivity and exacerbate food insecurity, leading to displacement and increased vulnerability.

The situation in Mogadishu, the capital city, provides another critical perspective. As an urban center receiving a significant influx of displaced individuals, Mogadishu faces its own set of challenges. The city has seen rapid growth in informal settlements due to internal migration from rural and conflict-affected areas (Wanyoike et al., 2018). The displaced populations often settle in overcrowded and unsanitary conditions, which strain the city's infrastructure and services. For example, areas such as Hamarweyne and Bondhere have become densely populated with displaced individuals living in makeshift shelters. The pressure on urban resources has led to increased competition for basic services such as water, sanitation, and healthcare, contributing to social tensions and exacerbating existing inequalities. This case study underscores the difficulties urban areas face in accommodating large numbers of displaced individuals and highlights the need for comprehensive urban planning and infrastructure development.

The experiences of these communities reveal the multifaceted nature of internal displacement driven by environmental factors. They illustrate how environmental stressors such as droughts, floods, and land degradation can disrupt livelihoods, displace populations, and strain both rural and urban areas. Addressing these challenges requires targeted interventions that consider the specific needs of affected communities, whether through improving disaster preparedness and response, investing in sustainable resource management, or enhancing urban infrastructure to support displaced populations. By understanding these case studies, policymakers and humanitarian organizations can develop more effective strategies to mitigate the impacts of environmental stress and support resilient and adaptive communities.

## Conflict Dynamics Related to Environmental Displacement

### *Resource Conflicts and Security Implications*

Resource conflicts and their security implications are critical issues in Somalia, where environmental degradation and climate change have intensified competition for essential resources. These conflicts not only exacerbate existing vulnerabilities but also contribute to broader security concerns, affecting both displaced populations and host communities.

One prominent example of resource conflict in Somalia is the competition over water resources between pastoralist and agricultural communities (Shama et al., 2020). In regions such as the Lower Shabelle and Bay areas, water scarcity due to prolonged droughts has heightened tensions between these groups. Pastoralists, who rely on water sources for their livestock, often encroach on agricultural lands during times of severe drought. This encroachment leads to disputes with farmers who depend on water for crop irrigation. For instance, in 2017, clashes erupted between pastoralists and farmers in Lower Shabelle over access to a critical water source. The violence resulted in casualties and displacement, underscoring how competition over limited water resources can escalate into violent conflicts (Jamal et al., 2020).

The impacts of resource conflicts extend beyond local disputes, influencing broader security dynamics. In Somalia, control over resources like water and grazing land can be a strategic asset for armed groups and militias. For example, the Al-Shabaab militant group has exploited resource conflicts to consolidate control in regions experiencing environmental stress. By securing access to key resources, Al-Shabaab has been able to gain support from local populations and strengthen its position. The group's control over water points and trade routes has not only provided a strategic advantage but also enabled them to exert influence over displaced populations and rural communities, further complicating the security landscape (Yoh, 2008).

Urban areas also experience resource-related tensions, particularly in informal settlements that host displaced populations. In cities like Mogadishu, the influx of displaced individuals has placed additional pressure on already scarce resources, including water, food, and sanitation facilities. This increased demand can lead to competition between displaced people and host communities, sometimes resulting in conflicts. For example, in the informal settlements of Hamarweyne, disputes have arisen over access to water sources and sanitation facilities, exacerbating existing social tensions and contributing to insecurity. The strain on urban infrastructure and services can also foster criminal activities and undermine social cohesion, further destabilizing urban areas (Mafuta et al., 2020).

The broader security implications of resource conflicts are significant. When resource disputes escalate into violence, they can disrupt livelihoods, displace communities, and contribute to cycles of instability and conflict. In Somalia, these conflicts often intersect with other forms of violence, such as armed insurgency and inter-clan rivalries, creating complex security challenges. For example, the interplay between resource conflicts and ongoing armed conflicts can lead to protracted instability, hindering efforts to achieve peace and development. Addressing resource conflicts and their security implications requires a multifaceted approach. Effective resource management strategies that promote equitable access and sustainable use of resources are essential for reducing tensions. Additionally, strengthening conflict resolution mechanisms and promoting dialogue between competing groups can help mitigate violence and foster cooperation. Integrating these approaches into broader peacebuilding and development efforts is crucial for addressing the root causes of resource conflicts and enhancing overall security in Somalia (Mitchell, 2020).

## Adaptation and Resilience Strategies

### *Community-Based Adaptation Measures*

Community-based adaptation measures are crucial in Somalia, where local communities face severe impacts from climate change and environmental degradation. These measures focus on empowering communities to develop and implement strategies tailored to their specific needs and conditions, aiming to enhance resilience and reduce vulnerability to climate-related stresses.

One effective example of community-based adaptation is the establishment of water harvesting and management systems in Puntland. In response to prolonged droughts and water scarcity, local communities have adopted traditional and innovative water harvesting techniques to capture and store rainwater. For instance, the construction of rainwater catchment tanks and improved traditional wells has enabled communities to secure water supplies during dry periods. These initiatives, supported by NGOs and local organizations, have significantly improved water access and reduced the dependence on increasingly unreliable surface water sources. The success of these measures highlights the importance of community engagement and local knowledge in developing practical solutions to climate challenges (Mitchell, 2020).

In southern Somalia, agro-pastoralist communities have implemented various adaptation strategies to cope with the impacts of drought and land degradation. One notable approach is

the promotion of drought-resistant crops and improved livestock management practices. For example, farmers in Lower Shabelle have adopted drought-resistant varieties of sorghum and millet, which are better suited to the region's erratic rainfall patterns (Keyanti, 2007). Additionally, pastoralists have implemented rotational grazing systems to prevent overgrazing and restore degraded lands. These practices not only enhance agricultural productivity and livestock health but also contribute to land restoration and environmental sustainability (Mafuta et al., 2020).

Community-based adaptation measures also extend to early warning systems and disaster preparedness. In Somaliland, local communities have developed and utilized early warning systems to monitor weather patterns and predict extreme weather events. Community-based meteorological networks, often supported by international organizations, provide timely information on potential droughts and floods. This early warning capability enables communities to take proactive measures, such as relocating livestock, preparing emergency supplies, and implementing conservation practices. The effectiveness of these systems demonstrates the value of integrating local knowledge and technical support in enhancing community preparedness and resilience (Mohamed et al., 2021).

Moreover, community-based adaptation initiatives often involve the restoration and conservation of natural resources. In the Bay region, for example, local communities have engaged in reforestation and soil conservation projects to combat land degradation and improve soil fertility. Planting trees and constructing erosion control structures have helped stabilize soils, enhance water retention, and support biodiversity. These efforts not only contribute to environmental restoration but also provide economic benefits by improving agricultural yields and creating local employment opportunities (Mafuta et al., 2020).

Despite these successes, several challenges remain in scaling up and sustaining community-based adaptation measures. Limited resources, inadequate technical support, and institutional barriers can hinder the effectiveness of local initiatives. For example, while many communities have successfully implemented adaptation measures, the lack of financial resources and access to advanced technologies can constrain their ability to fully realize their potential. Additionally, coordination between local, national, and international stakeholders is essential to ensure that adaptation efforts are well-supported and integrated into broader development plans (Augustinus et al., 2021).

Community-based adaptation measures in Somalia illustrate the importance of local involvement and tailored solutions in addressing climate change and environmental degradation. By leveraging local knowledge, promoting sustainable practices, and enhancing preparedness, these measures contribute to building resilience and reducing vulnerability. However, addressing the challenges of resource limitations and coordination is crucial for expanding and sustaining these efforts, ensuring that communities can effectively adapt to ongoing and future environmental changes.

***Policy Responses and Effectiveness***

Policy responses to climate change and environmental degradation in Somalia have been pivotal in shaping the country's approach to managing internal displacement and resource conflicts. Evaluating the effectiveness of these policies requires an examination of their implementation, impact, and the challenges they face.

Somalia's National Adaptation Plan (NAP), developed in line with the global climate framework, represents a key policy response aimed at addressing the impacts of climate change. The NAP outlines strategic actions for enhancing resilience, including improved water management, agricultural development, and disaster preparedness. For example, the plan includes initiatives to promote climate-resilient agricultural practices and invest in water infrastructure to mitigate the effects of recurrent droughts. Despite these commendable efforts,

the implementation of the NAP has faced challenges such as limited funding, weak institutional capacity, and political instability. The effectiveness of the NAP has been constrained by these factors, leading to uneven progress across different regions (Mohamed et al., 2020).

Another significant policy response is the Somali government's focus on environmental conservation and natural resource management. Programs aimed at combating land degradation and promoting sustainable land use practices have been introduced, with support from international organizations. One such initiative is the reforestation project in Somaliland, which aims to restore degraded lands and improve local livelihoods. The project has seen positive outcomes, such as increased tree cover and improved soil fertility. However, challenges such as insufficient local involvement and maintenance issues have affected the long-term sustainability of these efforts. Effective policy implementation requires continuous support, community engagement, and monitoring to ensure that conservation initiatives achieve their intended goals (Sumra et al., 2020).

In addressing internal displacement, Somalia has also developed policies and frameworks to support displaced populations and integrate them into host communities. The National Durable Solutions Strategy, for instance, focuses on providing sustainable solutions for internally displaced persons (IDPs) through access to housing, education, and livelihood opportunities. While the strategy has facilitated some improvements in the conditions of IDPs, its effectiveness has been limited by logistical constraints, resource shortages, and ongoing security concerns. The integration of IDPs into host communities often faces obstacles such as competition for resources and social tensions, which can undermine the success of policy measures (Internal Displacement Monitoring Centre, 2022).

International aid and support play a critical role in complementing national policies. Humanitarian organizations and international donors have been instrumental in providing emergency relief, funding adaptation projects, and supporting policy implementation. For instance, the United Nations Development Programme (UNDP) has supported various climate adaptation projects in Somalia, including water and sanitation infrastructure and livelihood enhancement programs. While these efforts have had notable impacts, their effectiveness can be hindered by coordination issues, dependence on external funding, and the need for alignment with national priorities and local needs (Dires Gardachew, 2020).

Overall, the effectiveness of policy responses in Somalia is influenced by a range of factors, including resource availability, institutional capacity, and political stability. While several policies and initiatives have made meaningful contributions to addressing climate change and internal displacement, their impact is often limited by implementation challenges and external pressures. To enhance policy effectiveness, it is crucial to strengthen institutional frameworks, improve coordination between national and international stakeholders, and ensure that policies are adaptable to changing circumstances and local realities. Engaging communities in the design and implementation of policies can also improve their relevance and sustainability, ultimately leading to more effective responses to the complex challenges of climate change and environmental degradation.

## Discussion

### *Synthesis of Findings*

A synthesis of findings regarding climate change, environmental degradation, and internal displacement in Somalia reveals a complex interplay of environmental stressors, socio-economic impacts, and policy responses. These findings highlight the urgent need for integrated approaches to address the multifaceted challenges faced by affected communities.

The analysis shows that climate change is a significant driver of internal displacement in Somalia. Prolonged droughts, erratic rainfall, and extreme weather events such as floods have led to severe disruptions in agriculture, water supply, and livelihoods. For instance, the 2016-

2017 drought triggered widespread displacement as pastoralists and farmers fled from severely degraded lands and depleted water sources to urban areas or less affected regions. This trend underscores the direct connection between environmental degradation and migration patterns, illustrating how climate-related stressors force communities to seek better living conditions.

Resource conflicts have emerged as a critical consequence of environmental stress. In regions like Lower Shabelle, competition over water and grazing lands between pastoralists and agricultural communities has escalated into violent clashes. The analysis reveals that these conflicts are exacerbated by the scarcity of resources, which heightens competition and social tensions. Additionally, the role of armed groups in exploiting resource conflicts to consolidate control adds another layer of complexity to the security dynamics in the region. For example, Al-Shabaab has leveraged resource disputes to gain influence and support from local populations, illustrating how environmental and resource pressures can intersect with broader security issues.

Community-based adaptation measures have proven to be vital in addressing these challenges at the local level. Initiatives such as water harvesting systems in Puntland and drought-resistant crop cultivation in Lower Shabelle demonstrate the effectiveness of localized, context-specific solutions. These measures have helped communities to cope with environmental stressors and reduce their vulnerability to displacement. However, the synthesis also highlights the need for ongoing support and scalability of these initiatives. While successful in specific contexts, community-based adaptations often face limitations related to resource constraints and technical capacity.

Policy responses have had mixed results in addressing climate change and displacement. The National Adaptation Plan (NAP) and other frameworks aim to enhance resilience through improved water management and agricultural practices. While these policies have laid important groundwork, their effectiveness has been hindered by challenges such as inadequate funding, political instability, and limited institutional capacity. The implementation of policies like the National Durable Solutions Strategy has also faced difficulties in meeting the needs of internally displaced persons (IDPs) due to logistical and resource constraints. The synthesis of findings underscores the need for more robust and adaptive policy frameworks that can better address the evolving challenges of climate change and displacement.

International aid and support play a crucial role in complementing national efforts, but they are not without limitations. Humanitarian organizations have provided essential relief and funding for adaptation projects, yet issues related to coordination, dependency, and alignment with national priorities can impact the overall effectiveness of these interventions. For instance, while the UNDP's climate adaptation projects have made significant contributions, their success depends on effective integration with national policies and sustained local engagement (Sumra, 2020).

The synthesis of findings reveals that addressing the interconnected challenges of climate change, environmental degradation, and internal displacement in Somalia requires a comprehensive and multi-dimensional approach. It is essential to strengthen the integration of community-based measures with national and international policy frameworks, ensure adequate resources and support, and foster collaboration among stakeholders. By addressing these areas, Somalia can enhance its capacity to manage climate-induced stressors and improve resilience for affected communities.

### *Implications for Policy and Practice*

The implications for policy and practice arising from the analysis of climate change, environmental degradation, and internal displacement in Somalia are profound and multifaceted. Addressing these issues effectively requires a comprehensive approach that integrates local needs with broader policy frameworks and practical solutions.

One of the key implications for policy is the need for enhanced focus on integrating climate adaptation and resilience-building into national and local development plans. The National Adaptation Plan (NAP) in Somalia, while a crucial step, needs more robust implementation strategies and funding mechanisms to be truly effective. For example, incorporating community-based adaptation measures into broader national policies can ensure that local innovations, such as water harvesting techniques and drought-resistant crops, receive necessary support and scaling opportunities. Ensuring that adaptation strategies are aligned with local realities can improve their effectiveness and sustainability. Policymakers should consider increasing investment in climate-resilient infrastructure and technology to support these local initiatives and address the pressing needs of vulnerable communities.

The analysis also highlights the importance of addressing resource conflicts through targeted policy interventions. In areas where resource scarcity has led to conflicts, such as Lower Shabelle, policies need to focus on equitable resource management and conflict resolution mechanisms. Developing and implementing policies that promote fair distribution of resources and foster cooperation between competing groups can help mitigate tensions and prevent violence. For instance, establishing community-based resource management committees that include representatives from both pastoralist and agricultural communities can facilitate dialogue and collaborative management of shared resources. Such approaches can reduce the likelihood of conflicts and enhance social cohesion.

Another critical implication is the need for comprehensive and coordinated support for internally displaced persons (IDPs). The National Durable Solutions Strategy, while an important framework, requires more effective execution and resource allocation to address the needs of IDPs adequately. Providing support for integrating IDPs into host communities involves not only addressing immediate needs such as housing and food but also ensuring long-term solutions such as employment opportunities and education. For example, creating livelihood programs and educational initiatives tailored to the needs of IDPs can help them rebuild their lives and contribute to host communities. Policymakers must also address the underlying causes of displacement, including environmental degradation and resource scarcity, to prevent future displacement and enhance overall stability.

International aid and humanitarian support play a vital role but should be better coordinated with national policies to achieve maximum impact. Effective coordination between international organizations and national agencies can ensure that aid aligns with local priorities and addresses the root causes of displacement and environmental degradation. For example, aligning humanitarian interventions with national adaptation strategies can enhance the effectiveness of both efforts and ensure that resources are used efficiently. Additionally, fostering partnerships between international donors, local governments, and community organizations can improve the delivery and sustainability of aid programs.

In practice, these policy implications necessitate a shift towards more integrated and participatory approaches. Engaging local communities in decision-making processes and incorporating their knowledge and experiences into policy development can lead to more relevant and effective solutions. Furthermore, strengthening institutional capacities and ensuring adequate funding for climate adaptation and resource management initiatives are essential for achieving long-term goals. Overall, the implications for policy and practice underscore the need for a holistic approach that integrates climate adaptation, resource management, and support for displaced populations. By addressing these interconnected issues through well-coordinated policies and practical solutions, Somalia can enhance resilience, reduce conflicts, and improve the well-being of its communities in the face of ongoing environmental challenges.

## Conclusion

***Summary of Key Findings***

The summary of key findings reveals that the interplay between climate change, environmental degradation, and internal displacement in Somalia presents a complex and multifaceted challenge. This summary synthesizes the major insights derived from the analysis, highlighting the crucial intersections between environmental stressors, resource conflicts, and displacement dynamics.

Climate change emerged as a significant driver of internal displacement in Somalia. The country has experienced severe and recurrent droughts, erratic rainfall, and extreme weather events, all of which have disrupted agriculture, water resources, and livelihoods. For example, the 2016-2017 drought led to widespread displacement as pastoralists and farmers were forced to flee from severely degraded lands and depleted water sources. This migration has often resulted in overcrowded and unsanitary conditions in urban areas, illustrating the direct link between environmental degradation and internal displacement. The findings underscore the urgent need for effective climate adaptation strategies to mitigate these impacts and enhance community resilience.

Resource conflicts are another critical issue exacerbated by environmental stress. The competition for scarce resources, such as water and grazing lands, has intensified tensions between different communities. In Lower Shabelle, for instance, conflicts between pastoralists and farmers over water access have led to violent clashes and further displacement. These resource conflicts have broader security implications, as armed groups like Al-Shabaab exploit resource disputes to consolidate control and gain local support. This highlights the need for policies that promote equitable resource management and conflict resolution to address these underlying tensions and improve security.

Community-based adaptation measures have proven effective in addressing some of the challenges posed by climate change. Initiatives such as water harvesting in Puntland and drought-resistant crops in Lower Shabelle demonstrate the potential of localized solutions to enhance resilience. However, the effectiveness of these measures is often limited by resource constraints and the need for sustained support. For example, while community-based water harvesting projects have improved access to water, they require ongoing maintenance and technical support to remain effective. These findings highlight the importance of integrating local adaptation strategies with broader policy frameworks and ensuring adequate resources for implementation.

Policy responses in Somalia, including the National Adaptation Plan (NAP) and the National Durable Solutions Strategy, have made important strides but face several challenges. The NAP outlines essential actions for climate resilience but struggles with issues such as inadequate funding and political instability. Similarly, the National Durable Solutions Strategy aims to support internally displaced persons (IDPs) but encounters difficulties in resource allocation and integration into host communities. The findings suggest that while these policies provide a solid foundation, their success depends on overcoming implementation barriers and ensuring alignment with local needs and conditions.

International aid and humanitarian support play a critical role in addressing the impacts of climate change and displacement. While organizations such as the UNDP have contributed significantly through adaptation projects and emergency relief, the effectiveness of these efforts can be limited by coordination issues and dependence on external funding. The findings indicate that better coordination between international donors, local governments, and communities is necessary to maximize the impact of aid and support sustainable development.

In summary, the key findings highlight the intricate relationship between climate change, environmental degradation, and internal displacement in Somalia. Addressing these challenges requires a multifaceted approach that integrates local, national, and international efforts. By enhancing climate adaptation strategies, promoting equitable resource management, and

improving policy implementation and coordination, Somalia can better manage the impacts of environmental stressors and build resilience for its communities.

***Recommendations for Future Research and Policy***

Recommendations for future research and policy focus on enhancing the effectiveness of interventions and understanding the evolving dynamics of climate change, environmental degradation, and internal displacement in Somalia. These recommendations aim to address gaps identified in the current analysis and build upon successful strategies.

Future research should prioritize longitudinal studies to better understand the long-term impacts of climate change on internal displacement and resource conflicts. Such studies can provide insights into how persistent environmental stressors affect migration patterns, resource use, and community resilience over time. For example, tracking the effects of ongoing droughts on pastoralist and agricultural communities in Somalia could reveal critical trends and inform adaptive strategies. By analyzing long-term data, researchers can offer more nuanced recommendations for mitigating displacement and enhancing resilience.

Another area for future research is the exploration of the socio-economic impacts of internal displacement on both displaced populations and host communities. Investigating how displacement affects access to education, healthcare, and employment can provide valuable information for designing targeted interventions. For instance, research into how displacement in urban centers like Mogadishu affects local infrastructure and social services can help policymakers address the specific needs of displaced populations while also supporting host communities.

Policy recommendations should focus on strengthening the integration of community-based adaptation measures with national and international frameworks. Successful local initiatives, such as water harvesting projects in Puntland or drought-resistant crop programs in Lower Shabelle, should be scaled up and incorporated into broader policy strategies. This requires enhanced coordination between local communities, national governments, and international organizations to ensure that adaptation efforts are effectively supported and integrated. Policies should also prioritize the allocation of resources and technical assistance to sustain and expand successful community-based projects.

Addressing resource conflicts requires a concerted effort to develop and implement equitable resource management policies. Policymakers should facilitate dialogue and cooperation between competing communities, such as pastoralists and farmers, to prevent and resolve conflicts over resources. For example, establishing community-based resource management committees or agreements that include representatives from all affected groups can help address tensions and promote collaborative resource use. Additionally, integrating conflict resolution mechanisms into resource management policies can help mitigate disputes and reduce the potential for violence.

Improving the effectiveness of policies supporting internally displaced persons (IDPs) is crucial. The National Durable Solutions Strategy should be reinforced with clear implementation plans, adequate funding, and mechanisms for monitoring and evaluation. Policymakers should also focus on creating sustainable solutions for IDPs, such as livelihood programs and educational opportunities, to facilitate their integration into host communities. Providing support for both immediate needs and long-term development can enhance the well-being of IDPs and contribute to social stability.

International aid and support must be better aligned with national priorities and local needs. Future policy should emphasize the importance of coordination between international donors, humanitarian organizations, and national governments to ensure that aid complements and supports national strategies. For instance, international interventions should be designed to reinforce and build upon existing national and local efforts rather than operating in isolation.

Strengthening partnerships and ensuring that aid is responsive to local contexts can enhance the impact and sustainability of international support.

In conclusion, recommendations for future research and policy emphasize the need for a more integrated and adaptive approach to addressing climate change, environmental degradation, and internal displacement in Somalia. By focusing on longitudinal research, socio-economic impacts, community-based adaptations, equitable resource management, effective support for IDPs, and improved coordination of international aid, stakeholders can enhance their capacity to manage these complex challenges and build a more resilient and equitable future for affected communities.

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