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Climate change and civil conflict in Africa: understanding the interconnections

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Abstract: Climate change is a major catalyst for socio-political instability, especially in Africa, where reliance on natural resources for sustenance and economic endeavours is substantial. This study investigates the intricate relationship between climate change and civil strife, emphasising how environmental stress intensifies socio-economic inequalities and incites hostilities. The research seeks to elucidate the mechanisms connecting climate change to conflict and to provide ways for mitigating these effects while enhancing resilience in impacted communities. The study employs a qualitative methodology, utilising secondary sources including peer-reviewed articles, policy reports, and empirical case studies. The Environmental Scarcity Theory and Relative Deprivation Theory offer an analytical framework that demonstrates how resource scarcity and socio-political grievances lead to conflict. The data concentrates on areas such as the Sahel and Lake Chad Basin, where the effects of climate change are most pronounced. Thematic and comparative analyses are utilised to merge theoretical viewpoints with practical examples. The research indicates that climate change aggravates resource shortage, especially regarding

water and arable land, heightening confrontations between competing factions such as farmers and herders. Environmental displacement burdens host communities, exacerbating tensions frequently manipulated by rebel factions. Inadequate governance and institutional inefficiencies exacerbate vulnerabilities, while climate-induced economic disruptions disproportionately impact agriculture-dependent populations. The results substantiate that climate change considerably affects civil violence in Africa. Addressing this nexus necessitates a multifaceted strategy, encompassing the enhancement of governance, the promotion of sustainable livelihoods, and the encouragement of community-based resource management. Recommendations encompass the augmentation of climate adaptation strategies, the implementation of early warning systems, and the procurement of international assistance for at-risk areas. A coordinated, region-specific strategy is crucial for risk mitigation and the promotion of enduring socio-political stability.

Keywords: Climate change, civil conflict, resource scarcity, governance and displacement.

Introduction: Climate change is increasingly acknowledged as a major catalyst for socio-political instability globally, especially in areas where natural resources are essential for lives and economic stability. Comprehending the relationships between climate change and civil war in Africa is essential for formulating effective social and environmental policies that reduce risks and foster stability. Climate change has become one of the most urgent global issues of the 21st century, significantly affecting ecosystems, the economy, and human societies. The Intergovernmental Panel on Climate Change (IPCC) has consistently emphasised the rising frequency and severity of climate-related events, including droughts, floods, and heatwaves, which disproportionately impact vulnerable populations, especially in developing areas such as Africa (Garfinkel, 2021; Xu et al., 2020). These climatic changes threaten food and water security while intensifying pre-existing socio-economic disparities, resulting in increased tensions and potential conflicts (Ehiane & Moyo, 2021; Steel et al., 2022).

Africa, a continent marked by varied cultures, economies, and political environments, has experienced a notable increase in civil conflicts in recent decades. Poverty, political instability, and ethnic tensions have traditionally contributed to this

volatility (Chigudu, 2024; Kwame et al., 2022). Nonetheless, the awareness of climate change as a "threat multiplier" has intensified in recent years. Environmental degradation and resource scarcity are now seen as factors that can heighten competition for limited resources, hence worsening existing grievances and provoking conflicts (Bourekba, 2021; Depetris-Chauvin & Özak, 2020). The Lake Chad region has encountered a confluence of climate change effects and socio-political factors that have exacerbated violent extremism and conflict (Ehiane & Moyo, 2021).

Statement of Problem

Civil conflicts in Africa are frequently associated with the struggle for scarce resources, including water, arable land, and grazing areas. The Sahel region has become a focal point for resource-driven conflicts due to escalating aridity resulting from climate change (Xu, 2023). As temperatures increase and precipitation patterns become erratic, conventional coping strategies among people dependent on agriculture and animals are challenged. The outcome is increased inter-communal conflicts and, in certain cases, insurgencies driven by discontent regarding resource disparities (Müller, 2021). Despite these realities, there remains a lack of comprehensive understanding of the specific mechanisms linking climate change to civil conflict within the African context (Ignatiev & Fediushin, 2024).

The significance of governance and institutional capability is important to this discussion. Fragile state institutions, inefficient resource allocation, and insufficient conflict resolution strategies exacerbate the effects of climate change, rendering impacted areas more vulnerable to violence. Furthermore, climate-induced migration exacerbates the socio-political situation, as displaced groups frequently conflict with host communities for scarce resources. The interaction between environmental and socioeconomic elements highlights the intricacy of tackling climate-induced conflicts in Africa. The persistent data gaps and absence of robust analytical frameworks further hinder the formulation of targeted and sustainable solutions (Walker, 2024). This seminar paper seeks to bridge this knowledge gap by exploring the interconnections between climate change and civil conflict in Africa.

Aim and Objectives

This research aims to examine the complex relationships between climate change and civil conflict in Africa. This study seeks to:

- elucidate the mechanisms connecting environmental stressors to conflict in Africa.
- analyze the interconnections between climate change and civil conflict in Africa.

- To propose strategies for mitigating climate-related conflicts and fostering resilience.

Research Questions

This paper will examine several critical research questions to accomplish this objective:

- What are the specific mechanisms through which environmental stressors contribute to social unrest in Africa?
- How do the interconnections between climate change and civil conflict manifest across different regions in Africa, and what are the primary socio-political and environmental factors involved?
- What strategies can be proposed to mitigate climate-related conflicts in Africa, and how can these strategies foster long-term resilience in affected communities and regions?

Scope

This study is geographically concentrated on Africa, particularly in areas where the interaction between climate change and civil conflict is most evident. The regions of focus are the Sahel, the Lake Chad Basin, and the Horn of Africa. The study examines farmer-herder conflicts in the Sahel,

intensified by desertification and irregular rainfall patterns. The Lake Chad Basin is analysed for its distinct challenges concerning water resource depletion, displacement, and insurgent activities. The analysis in the Horn of Africa focuses on the relationship between drought, food insecurity, migration, and socio-political instability.

Significance of the Study

For its comprehensive assessment of climate change and civil conflict in Africa, this work fills crucial gaps in understanding and application. The research illuminates how climate-induced environmental stressors worsen socio-political instability, providing crucial insights for evidence-based policymaking to mitigate climate risks and strengthen vulnerable regions. This study is essential for governments, regional organisations, and international agencies facing climate-conflict issues due to its policy significance.

Governance reforms, community-based conflict resolution, and climate-resilient solutions to reduce resource-based conflicts are also stressed in the study. Institutional capability and equitable resource allocation reduce vulnerabilities and promote long-term stability. These guidelines are essential for practitioners and politicians seeking sustainable and culturally responsive climate solutions.

The paper addresses the dearth of robust data and

analytical frameworks relating climate change to African civil strife. It prepares stakeholders for future research and helps them create better interventions by synthesising literature and case studies. This contribution is crucial to climate security discourse and preparing vulnerable regions for climate change.

METHODOLOGY

This study employs a qualitative research design, integrating secondary data from peer-reviewed journals, policy reports, and case studies. The Environmental Scarcity Theory and Relative Deprivation Theory guide the analysis of how resource scarcity, displacement, and socio-political grievances drive conflict.

Data sources include the World Map, which provides spatial insights into climate vulnerabilities such as temperature shifts, rainfall variability, and resource distribution, and the Armed Conflict Location and Event Data (ACLED), which offers empirical evidence of climate-conflict linkages. ACLED's conflict mapping is cross-referenced with climate indicators, identifying hotspots such as the Sahel and Lake Chad Basin, where environmental pressures exacerbate tensions.

Thematic content and comparative case analyses integrate theoretical frameworks with empirical data, enabling a nuanced understanding of the climate-conflict nexus. This approach supports actionable insights into the roles of governance, resource management, and adaptation strategies in mitigating climate-induced conflicts in Africa.

Conceptual Framework

Climate Change

Climate change refers to significant alterations in global temperatures and weather patterns over time. It is primarily driven by human activities, particularly the emission of greenhouse gases. The consequences of climate change include rising sea levels, increased frequency of extreme weather events, and disruptions to ecosystems and biodiversity.

Climate change refers to long-term changes in temperature, precipitation patterns, and the frequency or intensity of extreme weather events. Human activities significantly influence these shifts, which have extensive implications for natural ecosystems, socio-economic structures, and global governance. The ongoing and intensifying impacts of climate change require a thorough examination of its attributes, causes, and consequences, especially in vulnerable areas like Africa (Hänsel, 2023; Singh & Aparna, 2024).

Climate change is characterised by increasing global temperatures, changes in precipitation patterns, and a rise in the frequency of extreme weather events. Global

average temperatures have increased consistently, with evidence showing that the Earth's surface temperature was roughly

1.1°C higher in 2020 compared to pre-industrial levels. The projected warming trend is anticipated to exceed 1.5°C by the mid-21st century, contingent upon the continuation of current emission trajectories (Singh & Aparna, 2024).

Alterations in precipitation patterns represent a significant indicator of climate change. Certain regions undergo extended drought conditions, whereas others encounter heightened monsoons or erratic rainfall patterns, significantly impacting water availability and agricultural output (Hänsel, 2023). The frequency and intensity of extreme weather events, including hurricanes, heatwaves, floods, and wildfires, have markedly increased, resulting in substantial environmental, economic, and social disruptions.

Climate change is primarily driven by anthropogenic factors, including fossil fuel combustion, industrial emissions, and deforestation. Greenhouse gas emissions, specifically carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), are primary factors in global warming. The atmospheric concentration of these gases has significantly increased since the Industrial

Revolution, exacerbating the greenhouse effect and retaining heat within the Earth's atmosphere (Hänsel, 2023).

Land-use changes, such as deforestation and urbanisation, intensify climate change by diminishing the Earth's ability to sequester carbon. Industrialisation and consumer-driven economic activities contribute to resource depletion and environmental degradation, thereby reinforcing the multifaceted impacts of climate change (Singh & Aparna, 2024).

Long-term changes linked to climate change impose considerable pressure on socio-ecological systems. Natural ecosystems exhibit significant vulnerability; alterations in temperature and precipitation disrupt biodiversity, result in habitat loss, and trigger species migrations or extinctions. Rising ocean temperatures have led to extensive coral bleaching, compromising the stability and resilience of marine ecosystems (Hänsel, 2023).

Climate change exacerbates vulnerabilities in human populations, especially in developing regions with limited adaptive capacities. Communities dependent on climate-sensitive sectors, including agriculture and fishing, encounter increased risks of livelihood disruptions. Erratic rainfall and prolonged droughts

pose significant risks to food security, whereas extreme weather events, including floods, compromise critical infrastructure, thereby diminishing economic productivity and escalating recovery expenses (Singh & Aparna, 2024).

Africa exhibits significant vulnerability to climate change as a result of its geographical and socio-economic conditions. The continent has undergone warming at rates exceeding the global average, resulting in significant effects on water resources, agriculture, and biodiversity. Erratic rainfall patterns and extended droughts have compromised food security, while extreme weather events,

including floods and cyclones, have resulted in significant displacement and economic losses (Hänsel, 2023).

Weak institutional frameworks and constrained financial resources intensify Africa's susceptibility to climate change. Regional initiatives, exemplified by the African Union's Agenda 2063, underscore the significance of fostering resilience via sustainable development and climate adaptation.

Civil conflict

Civil conflict, defined by armed disputes occurring within a state's boundaries, frequently includes non-state actors like insurgent groups, militias, or criminal networks (Ackah-Arthur, 2023). Conflicts often stem from entrenched socio-political grievances, such as ethnic tensions, economic inequalities, and political exclusion (Ofori-Ayeh, 2022). Comprehending the intricate dynamics of civil conflict is essential for identifying its root causes and formulating sustainable solutions.

Socio-political grievances, including the exclusion and marginalisation of ethnic or religious groups, along with governance failures, are critical factors contributing to civil conflict (Ludvík, 2023). Economic inequality and competition for resources, notably the resource curse, intensify these tensions, as demonstrated by the conflict in Nigeria's Niger Delta (Schneckener, 2022). Weak state capacity and governance failures generate power vacuums that non-state actors exploit, exemplified by the situation in Somalia (Podder, 2024).

Identity politics, characterised by the mobilisation of ethnic and religious identities for political advantage, exacerbates civil conflict, especially in multi-ethnic states (Ramirez, 2024). Non-state actors, including ideologically motivated insurgents and profit-driven criminal organisations,

significantly influence these conflicts by challenging state authority and offering alternative governance structures (Ojakorotu, 2024).

Civil conflicts result in severe humanitarian outcomes, such as fatalities, displacement of populations, and the destruction of infrastructure. The conflict in South Sudan illustrates the significant humanitarian crisis that arises from such situations (Hofmann et al., 2016).

Conflicts have significant economic repercussions, hindering activities, deterring investment, and exhausting resources, frequently resulting in persistent poverty cycles, exemplified by the situation in the Democratic Republic of Congo (Clément et al., 2021). Conflicts politically undermine governance, erode trust in state institutions, and foster conditions for further instability, thereby complicating sustainable peacebuilding efforts (Sen, 2019).

The Nexus of Climate Change and Conflict

The intricate relationship between climate change and conflict is shaped by a complex interplay of environmental, social, and political factors. This nexus is underpinned by three key mechanisms: climate-induced resource scarcity, displacement and migration-induced tensions, and weak governance structures.

- **Climate-Induced Resource Scarcity**

Climate change exacerbates the scarcity of essential natural resources like water and arable land, which are crucial for agriculture and sustenance. Rising temperatures, desertification, and erratic rainfall patterns disrupt agricultural production and deplete water supplies, leading to heightened competition over dwindling resources. In regions like the Sahel, where livelihoods heavily rely on subsistence farming and pastoralism, this scarcity intensifies disputes between farmers and herders (Abu Hatab et al., 2024). These conflicts often escalate into broader communal violence, destabilizing entire regions and hindering development.

- **Displacement and Migration-Induced Tensions**

Climate-induced displacement and migration further exacerbate intercommunal tensions. As environmental conditions deteriorate, individuals and communities are compelled to migrate in search of better living conditions and access to resources. However, the influx of displaced populations often strains the limited resources of host communities, leading to competition and, in some cases, violent confrontations. For instance, the shrinking of Lake Chad has led to significant migration in the Lake Chad Basin, exacerbating tensions between local residents and migrants (Sharifi et al., 2024). Moreover, displaced populations, often marginalized and vulnerable, are susceptible to recruitment by insurgent groups, who exploit their grievances to fuel conflict.

- **Weak Governance and Institutional Failures**

The role of governance in mediating or exacerbating climate-related conflicts is paramount. Weak governance structures and institutional failures amplify vulnerabilities by failing to effectively address resource disputes or provide equitable access to basic needs. Corruption, inefficiency, and a lack of conflict resolution mechanisms exacerbate tensions further. In many African nations, governments struggle to implement adaptive measures to address climate impacts, leaving communities to navigate these challenges without adequate support (Troise et al., 2025). This governance gap creates opportunities for insurgent groups and criminal networks to thrive, exploiting the void to consolidate power and perpetuate violence.

Theoretical Framework

Environmental Scarcity Theory (EST)

Environmental Scarcity Theory (EST) posits that resource scarcity can lead to conflict and social instability. It examines the relationship between environmental degradation, resource depletion, and socio-political outcomes. The theory emphasises the role of environmental factors in shaping human behaviour and societal dynamics.

Environmental Scarcity Theory, proposed by Thomas Homer-Dixon, asserts that the depletion of renewable resources—such as water, arable land, and forests—can lead to social unrest and violent conflict (Homer-Dixon, 1994). This theory is particularly significant in the context of climate change, which intensifies resource scarcity due to the increased frequency and severity of extreme weather events such as droughts and floods (Steel et al., 2022). This analysis examines the fundamental elements of Environmental Scarcity Theory, its implications for civil conflict, and its significance in the modern African context.

Environmental Scarcity Theory posits that the scarcity of resources can lead to competition among groups, which may escalate into conflict (Homer-Dixon, 1994). The theory delineates two main types of scarcity: supply-induced scarcity, which arises from environmental degradation or climate change, and demand-induced scarcity, which is a consequence of population growth and heightened resource demand.

Environmental scarcity may intensify social tensions, especially in areas characterised by weak governance or pre-existing social divisions. In these contexts, competition for limited resources may intensify grievances and lead to violent conflict (Buhaug & Uexküll, 2021; Steel et al., 2022).

The relationship between environmental scarcity and conflict can be analysed through the lens of

environmental scarcity, which may intensify pre-existing social divisions and heighten tensions among various groups. The scarcity of resources can heighten the vulnerability of marginalised groups, leading to a deterioration of social cohesion and an escalation of conflict (Koubi et al., 2020).

Multiple studies have empirically validated Environmental Scarcity Theory, establishing a connection between resource scarcity and conflict. Studies indicate that drought conditions markedly elevate the risk of civil conflict in agriculturally dependent regions (Uexküll et al., 2020). Households in the Democratic Republic of the Congo that experienced drought conditions exhibited a higher likelihood of supporting political violence, demonstrating the direct influence of environmental stressors on conflict dynamics (Uexküll et al., 2020).

Studies have indicated that climate-induced migration can serve as a pathway to conflict. Displacement resulting from environmental degradation can incite competition for resources within host communities, potentially leading to social tensions and conflict (Koubi et al., 2020). This dynamic is particularly evident in regions with significant migration driven by climate change, such as the Horn of Africa, where competition for resources between migrants and host communities has resulted in heightened conflict (Kenee, 2022).

Environmental Scarcity Theory offers a useful framework; however, it faces several critiques. A notable criticism is its tendency to oversimplify the intricate causes of conflict by mainly linking violence to environmental factors (Hendrix et al., 2023). Critics contend that this viewpoint may obscure the influence of political, economic, and social factors that also play a role in conflict dynamics (Koubi et al., 2020).

The theory has faced criticism for its deterministic nature, positing that resource scarcity inevitably results in conflict. Many societies have developed adaptive strategies and governance mechanisms to mitigate the impacts of scarcity and prevent conflict (Buhaug & Uexküll, 2021). Effective resource management and conflict resolution mechanisms enable communities to address resource competition without engaging in violence (Neef et al., 2022).

EST is particularly pertinent in the context of current climate challenges. The ongoing effects of climate change on resource availability heighten the potential for conflict stemming from scarcity. The rising occurrence of extreme weather events, including droughts and floods, highlights the critical need to address the climate-conflict relationship (Steel et al., 2022).

In Africa, where numerous communities are already

susceptible to the effects of climate change, the ramifications of Environmental Scarcity Theory are especially significant. The continent faces considerable environmental stressors such as desertification, water scarcity, and food insecurity, which may intensify pre-existing conflicts (Masara, 2021; Issifu et al., 2022).

Relative Deprivation Theory (RDT)

Ted Robert Gurr's Relative Deprivation Theory offers a compelling lens for understanding the dynamics of collective violence and insurgencies, particularly within economically disadvantaged and politically marginalized populations. This theory posits that a discrepancy between individuals' or groups' expectations and their reality can lead to frustration, resentment, and a proclivity toward collective violence (Baylouny, 2024; Nasser, 2024).

Relative deprivation is not merely about material deprivation but rather about the perceived gap between expectations and reality. Gurr argued that the greater this gap, the more intense the sense of deprivation, leading to increased mobilization towards violent action (Sudira, Pamungkas, & Adulsyah, 2021). For instance, a community observing rapid economic development in a neighboring region, while experiencing stagnation, may feel marginalized, sparking civil unrest or insurgent activities.

Moreover, the theory emphasizes the relational nature of deprivation, highlighting the role of intergroup comparisons in exacerbating feelings of injustice. Such perceptions are intensified in contexts of weak governance, corruption, and limited avenues for redress (Walker, 2024).

Relative Deprivation Theory has been instrumental in explaining the rise of insurgent movements and civil conflicts, particularly in developing regions. In Africa, for example, the theory elucidates the drivers of conflict in resource-rich yet economically marginalized areas like the Niger Delta in Nigeria and the Sahel region. Communities in these regions, often experiencing environmental degradation and economic exclusion, perceive themselves as exploited or neglected by central governments, fueling grievances (Basedau & Deitch, 2022).

The theory is also relevant in contexts of economic globalization and uneven development. Communities or nations witnessing rapid wealth accumulation by elites or multinational corporations, while the majority faces stagnation or impoverishment, are more likely to resort to protests or violent uprisings. This dynamic is evident in the ongoing struggles of Indigenous populations globally, whose resources are often extracted without corresponding socio-economic benefits (Cornelius, 2024).

Relative Deprivation Theory intersects with other theoretical models. Social Identity Theory explains how group identity and solidarity strengthen in response to perceived injustices, leading to collective action. Resource Mobilization Theory provides insights into how aggrieved groups translate deprivation into action by accessing resources like leadership, organizational capacity, and communication networks (Waty, Mirza, & Fadli, 2022).

Additionally, integrating Relative Deprivation Theory with systemic theories of governance highlights how institutional inadequacies exacerbate grievances. Weak state capacity to deliver equitable public goods or address intergroup inequalities intensifies perceptions of deprivation, fueling cycles of rebellion and state fragility (Hampson, Özerdem, & Kent, 2020).

While a valuable framework, Relative Deprivation Theory has limitations. Critics argue that it overemphasizes subjective perceptions, making empirical validation challenging. Furthermore, not all perceived deprivation results in collective violence; cultural, psychological, and systemic factors can mediate the trajectory from frustration to mobilization. Communities with strong conflict resolution mechanisms or cultural norms emphasizing non-violence may experience deprivation without resorting to rebellion (Furceri, Pizzuto, & Yarveisi, 2024).

Relative Deprivation Theory remains a crucial tool for analyzing the roots of civil conflict and insurgencies, particularly in contexts marked by socio-economic and political inequalities. By highlighting the role of perceived disparities and unmet expectations, the theory deepens our understanding of why some groups mobilize for collective violence.

Climate Change Impacts in Africa

Africa is disproportionately impacted by climate change, resulting in significant effects on its varied ecosystems, economies, and communities. The continent's sensitivity arises from its dependence on climate-sensitive industries such as agriculture, its constrained adaptation capacities, and its vulnerability to extreme weather phenomena.

The Sahel region has undergone significant desertification and reduced precipitation, adversely impacting agricultural output and pasturelands. The alterations have exacerbated tensions between farmers and herders about limited resources, undermining socio-economic stability (Adam et al., 2025). Prolonged droughts in Burkina Faso have markedly diminished maize harvests, intensifying food insecurity and economic difficulties for rural households (Waongo et al., 2024). Climate-smart

farming practices, although implemented in certain regions, are underutilised owing to insufficient resources and understanding.

The Horn of Africa endures persistent droughts, with nations such as Somalia, Ethiopia, and Kenya suffering extended arid periods. These droughts have resulted in significant crop failures, livestock losses, and severe food shortages. The situation is exacerbated by political instability and little foreign aid, resulting in millions dependent on humanitarian assistance (Moyo, 2024). The conventional migration routes of pastoralists have been interrupted, exacerbating intercommunal conflicts over scarce resources.

The prevalence and severity of cyclones and floods in Southern Africa have escalated, resulting in extensive infrastructure damage and fatalities. The 2019 Cyclone Idai and accompanying storms underscored the region's susceptibility to catastrophic weather events. These occurrences have relocated populations, compromised food security, and damaged local economies (Salako et al., 2024). The agricultural sector in South Africa has encountered unparalleled challenges due to alterations in rainfall patterns, which have diminished water availability for irrigation (Apio, 2024).

Agriculture, the cornerstone of several African economies, is especially susceptible to climate change. Increasing temperatures and unpredictable precipitation have markedly diminished agricultural output, jeopardising food security. In West Africa, rainfed maize output has diminished due to heightened climate unpredictability, requiring the implementation of resilient crop types (Waongo et al., 2024). Nevertheless, the elevated expenses and insufficient access to these technologies hinder their extensive adoption by smallholder farmers.

Climate change has resulted in the depletion of essential water supplies throughout Africa, heightening competition for access. The contraction of Lake Chad exemplifies a significant issue, impacting millions in adjacent nations who depend on the lake for fishing, agriculture, and potable water. This has incited resource-driven conflicts and migration, exacerbating regional instability (Okoliko & de Wit, 2024). Enhanced water management regulations and regional collaboration are crucial to tackle these concerns.

Climate change has exacerbated poverty levels, compelling several Africans to depend on informal businesses for sustenance. Disruptions in agriculture and fisheries have resulted in the loss of livelihoods, prompting individuals to migrate to urban regions in pursuit of employment. This movement frequently leads to congested urban areas, intensifying socio-economic disparities and placing pressure on public

services (Kurebwa & Kurebwa, 2025). Long-term solutions must encompass investments in sustainable livelihoods and social protection frameworks.

Mechanisms Connecting Climate Change and Civil Conflict

- **Resource Scarcity and Rivalry**

Climate change intensifies the depletion of essential natural resources, like water and arable land, increasing competition among populations. Resource shortage is most pronounced in areas such as the Sahel, where desertification and unpredictable rainfall patterns have diminished agricultural output. Conflicts between farmers and herders in Nigeria illustrate this phenomenon, as herders roam in pursuit of grazing land, frequently intruding upon farmers' domains, resulting in confrontations that escalate into extensive violence (Okoye et al., 2024). The conflicts, driven by rivalry for scarce resources, illustrate the intersection of environmental stressors and pre-existing socio-economic tensions that incite conflict.

- **Climate-Driven Migration and Displacement**

Climate change has caused considerable displacement throughout Africa, as inhabitants are compelled to abandon their residences owing to droughts, floods, and desertification. The Lake Chad Basin exemplifies a situation where diminishing water supplies have resulted in the displacement of millions, causing tensions between host communities and displaced people over limited resources. This competition frequently leads to localised violence and exacerbates regional instability (Bedasa & Deksis, 2024). Displacement undermines societal cohesion and fosters an environment conducive to insurgent groups such as Boko Haram, enabling them to exploit grievances and recruit recruits (Kwanhi et al., 2024).

- **Economic Disruptions and Livelihood Disruption**

Climate-induced economic disruptions, including agricultural failures and animal losses, jeopardise livelihoods and compel vulnerable populations to resort to extreme means. In Somalia, extended droughts have ravaged agricultural and pastoral populations, resulting in considerable economic difficulties. Such interruptions render individuals more vulnerable to recruitment by armed factions such as Al-Shabaab, which exploits complaints arising from the loss of income (Akinyetun et al., 2024). This connection highlights how economic vulnerabilities stemming from climate change can perpetuate cycles of violence and war.

- **Institutional Fragility and Governance Challenges**

Inadequate governance and institutional capability intensify the effects of climate change on conflict. Numerous African nations face challenges in efficiently managing environmental stressors due to corruption, resource limitations, and insufficient infrastructure. The mismanagement of aid and resources exacerbates grievances, while ineffective conflict resolution procedures fail to resolve issues prior to escalation. In Kenya, the failure to manage access to diminishing water supplies has resulted in ongoing conflicts among pastoralist communities (Duba, 2024). This institutional instability not only obstructs climate adaptation initiatives but also heightens the probability of violence in susceptible areas.

Case Studies of the Climate-Conflict Nexus in Africa

- **Conflicts between farmers and herders in Nigeria**

The conflicts between farmers and herders in Nigeria exemplify the relationship between climate and conflict. Desertification and land degradation in northern Nigeria have diminished grazing land, compelling herders to migrate southward, which has resulted in violent confrontations with farmers over limited resources (Ogum, 2023; Umana et al., 2023). Decreasing rainfall patterns and unsustainable agricultural practices intensify these tensions. Government initiatives such as the National Livestock Transformation Plan seek to address the issue; however, their implementation frequently faces challenges due to weak governance and socio-political divisions (Akinyetun & Ogunbodede, 2023).

- **Climate Stressors, Migration, and Ethnic Tensions in Sudan and South Sudan**

Climate-induced droughts and floods in Sudan and South Sudan have exacerbated competition for limited resources, resulting in displacement and conflict (Babatunde & Ibnouf, 2024).

Environmental stressors intensify existing ethnic tensions by heightening competition for land and water resources along ethnic lines. International interventions, including peacekeeping missions and climate adaptation programs, exhibit varied success attributed to the complexities of conflicts and opposition from local stakeholders (Lenshie et al., 2021).

- **Somalia: Drought and Insurgency Issues**

The recurrent droughts in Somalia have severely impacted rural livelihoods, increasing the vulnerability of populations to recruitment by insurgent groups such as Al-Shabaab (Busby et al., 2022). The group capitalises on grievances arising from resource scarcity to garner

support, emphasising the connection between climate stress and socio-political instability. Humanitarian aid is crucial; however, it frequently lacks sustainability and does not effectively tackle underlying issues such as inadequate infrastructure and governance (Njoki, 2023).

- **Lake Chad Basin: Displacement and Insurgency Issues**

The reduction of Lake Chad has resulted in the displacement of millions, facilitating the emergence of insurgent groups such as Boko Haram (Scheffran et al., 2022). The group exploits socio-economic grievances within displaced populations to establish a recruitment base. Regional cooperation and international support, exemplified by initiatives such as the Great Green Wall, are essential for tackling the interconnected issues of climate change and insurgency in the area. These efforts encounter substantial obstacles, such as insufficient funding, corruption, and inadequate coordination (Fonjong & Wanki, 2024).

The case studies illustrate the intricate relationships among climate change, resource scarcity, and conflict in Africa.

Challenges and Limitations

- **Data Gaps and Uncertainty**

The absence of detailed data explicitly connecting climate change to particular civil conflicts in Africa constitutes a considerable challenge. There is agreement that environmental stressors like droughts and desertification intensify socio-political tensions; however, distinguishing climate factors from other conflict drivers—such as governance failures, poverty, and ethnic rivalries—remains complex (Aragie, 2024). The interrelatedness of these variables frequently obscures causal pathways, complicating the design of targeted interventions. Furthermore, climate-conflict dynamics data is often region-specific, which restricts the applicability of findings to other contexts (Muhammed, 2023).

The uncertainty inherent in climate modelling further complicates the situation. Projections regarding temperature increases, variability in rainfall, and occurrences of extreme weather events are frequently debated, stemming from constraints in data precision

and variations in methodologies. This uncertainty diminishes the confidence of policymakers and donors in prioritising climate-resilient strategies, resulting in delays in actionable responses (Mvile & Bishoge, 2024).

- **Political and economic limitations**

Insufficient funding constitutes a significant constraint in tackling the climate-conflict relationship in Africa. Numerous countries in the region are deficient in financial resources necessary for the implementation of effective climate adaptation measures and for investment in sustainable peacebuilding initiatives (Hrynick, 2024). International financial assistance frequently comes with strict conditions or is allocated to short-term initiatives, which do not adequately address fundamental vulnerabilities.

Political opposition to reforms constitutes an additional barrier. Structural changes, including equitable resource distribution and decentralisation of governance, frequently pose a threat to the vested interests of political elites. This resistance obstructs the implementation of policies that may alleviate climate-induced conflicts. Initiatives targeting resource allocation disparities in the Sahel have encountered resistance, primarily due to concerns regarding the potential erosion of centralised control (Akram et al., 2024).

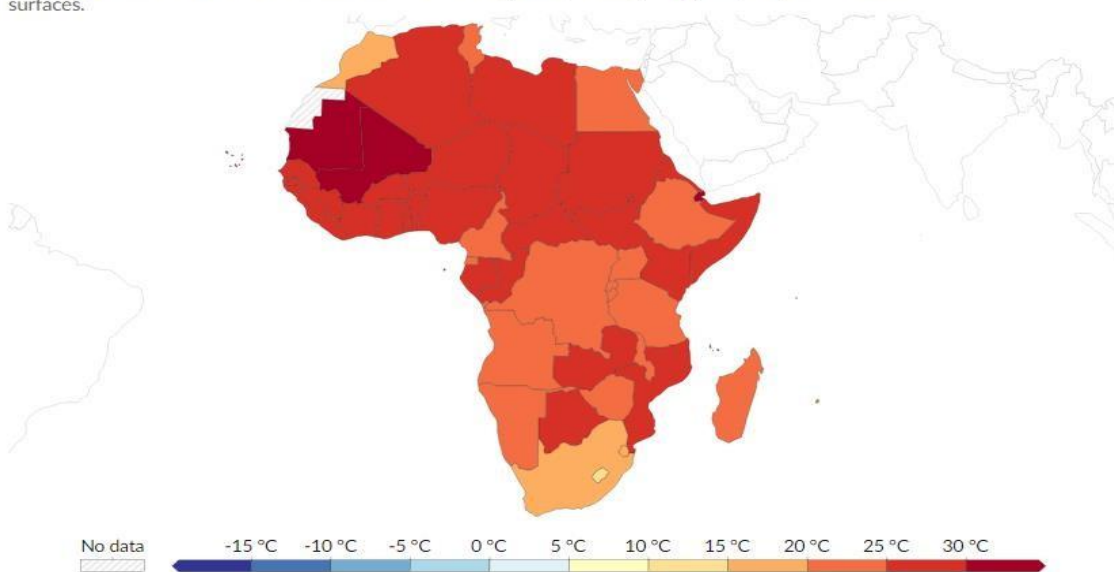
- **Social and cultural obstacles**

The interplay of social and cultural dynamics complicates efforts to address the relationship between climate change and civil conflict. In numerous impacted areas, local communities demonstrate resistance to external interventions, frequently viewing them as neo-colonial or incompatible with their traditional practices (Muhammed, 2023). The resistance hinders the execution of climate adaptation programs, particularly those dependent on international stakeholders.

Ethno-religious dynamics play a significant role. Conflicts in areas like the Lake Chad Basin and the Horn of Africa are rooted in historical grievances and identity politics, which are intensified by climate stressors rather than being caused by them.

Average monthly surface temperature, Oct 15, 2024

The temperature of the air measured 2 meters above the ground, encompassing land, sea, and in-land water surfaces.



Data source: Contains modified Copernicus Climate Change Service information (2019)

OurWorldinData.org/climate-change | CC BY

Source: Search - Our World in Data

Authors Analysis

The map shows the average monthly surface temperature in Africa as of October 15, 2024. The map uses colours to show different temperatures across the continent, highlighting that the warmer areas are mainly found in the northern and eastern parts of Africa.

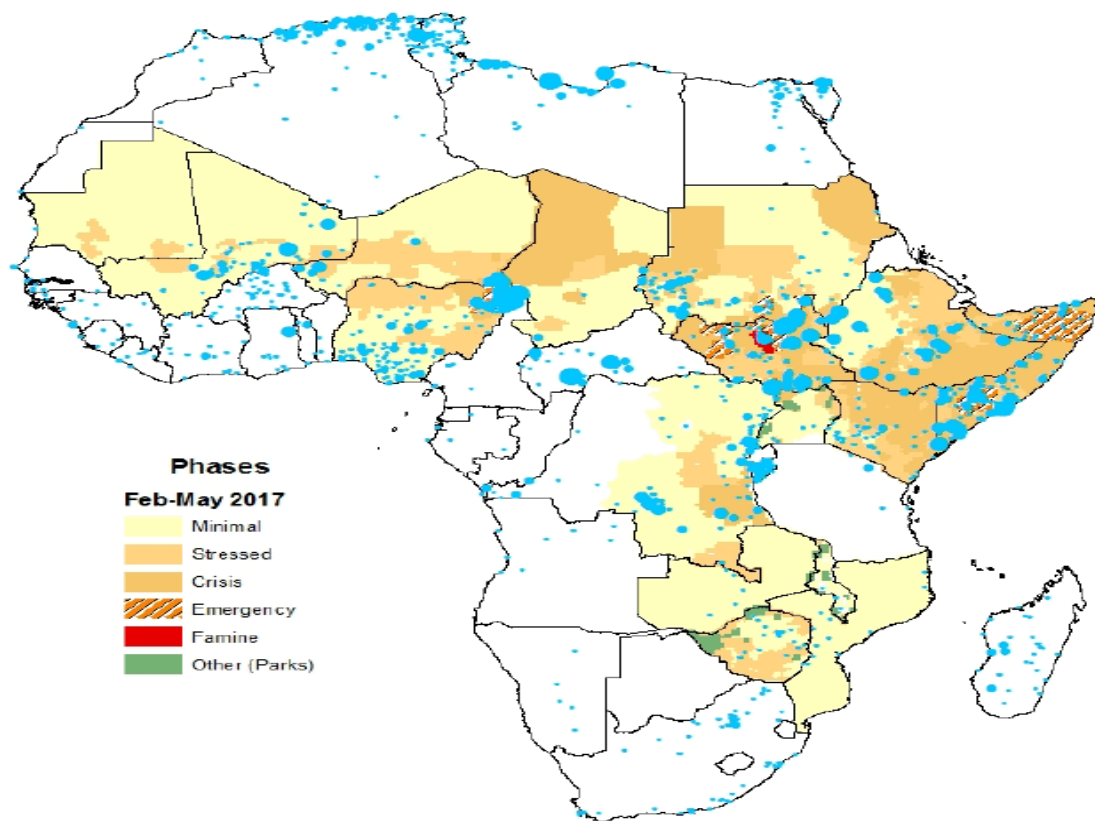
The map shows that most of the continent has temperatures over 15 degrees Celsius, and some places even go above 30 degrees Celsius. The high-temperature range makes sense considering Africa's geographical position, as it is mostly located within the tropics.

The map shows possible differences in temperature patterns across regions. The northern and eastern areas, especially the Sahara Desert and the Horn of

Africa, show much higher temperatures than the southern and western parts. This difference can be explained by things like how far north or south you are, how high up the land is, and how close it is to big lakes or oceans.

The map shows data that can help us look at different climate-related events, like heatwaves and droughts, and how they might affect agriculture, water resources, and human health. Additionally, the map can be really helpful for figuring out how temperature patterns are spread out across Africa and what that means for sustainable development and adapting to climate change.

Figure 1: FEWSNet Short Term Food Crisis Map with ACLED Data (blue) Jan-March 2017



Source: The Links between Food Crises and Violence in East, South and West Africa: An ACLED briefing note

Authors analysis

The map shows FEWS NET's assessment of Africa's February–May 2017 food crisis and ACLED's conflict statistics. The map shows significant food insecurity across the continent, with different regions experiencing distinct crises.

"Famine," the worst food crisis, is in South Sudan and Somalia. These regions have severe food shortages, malnutrition, and high mortality. Food shortages and acute malnutrition are common in South Sudan, Somalia, Nigeria, and Yemen during the "Emergency"

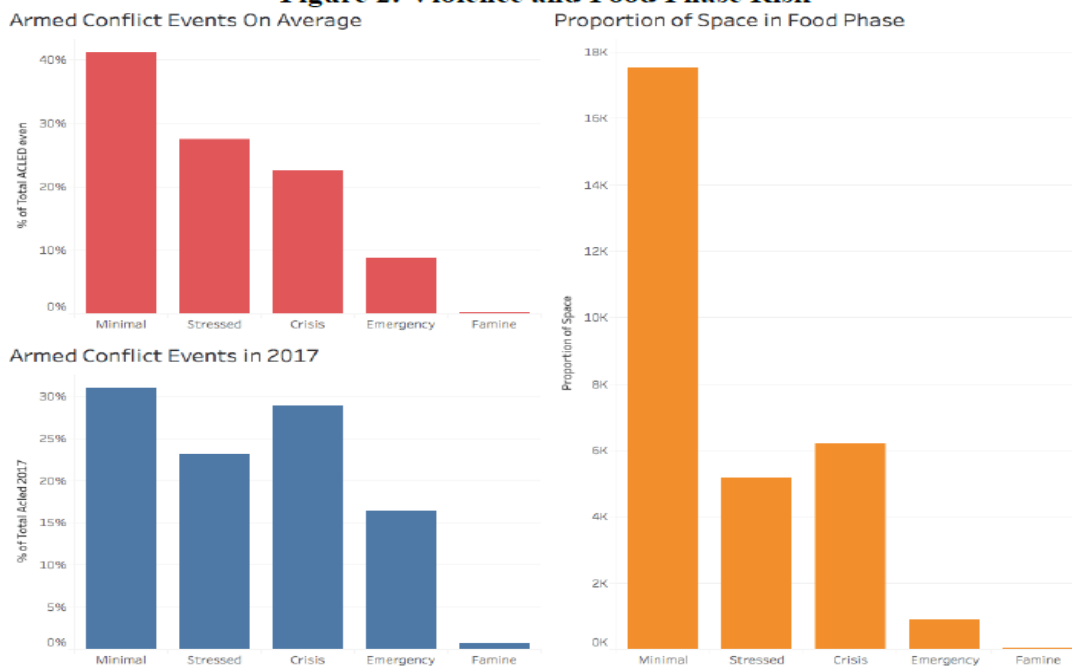
period.

Large parts of the continent are "Crisis" and "Stressed," signifying food insecurity and possible worsening. Conflict, displacement, and climate shocks worsen food shortages in these locations. Conflict data overlays show that food insecurity and conflict are linked, implying that conflict can generate and worsen food shortages.

Table 1: Summary Statistics on Food Risk and Violence

	Coverage	Conflict Average 2010-2016	Conflict Rates Since 2017
Minimal	59%	42%	30%
Stressed	17%	27%	22%
Crisis	21%	22%	28%
Emergency	3%	9%	16%
Famine	.15%	.23%	.71%
Total	33789 Grid Sqs.	100%	100%

Figure 2: Violence and Food Phase Risk



Source: http://www.fews.net/sites/default/files/Food_assistance_needs_2017.pdf

Authors Analysis

The data presented herein demonstrates a concerning correlation between conflict and food insecurity in Africa. A substantial segment of Eastern, Southern, and Western Africa endures diverse levels of food insecurity, from "Minimal" to "Famine." The prevalent vulnerability, along with rising conflict rates, especially in areas designated as "Crisis," "Emergency," and "Famine," engenders a complex and perilous scenario. The evidence illustrates a detrimental loop in which conflict intensifies food insecurity, and conversely. As war escalates, it interrupts agricultural output, obstructs food access, and ruins infrastructure, resulting in exacerbated food shortages. Conversely, food insecurity can incite social instability and war as individuals vie for limited resources.

Regional inequalities in food insecurity and violence are also apparent. Although South Sudan is presently the sole nation facing "Famine" conditions, the escalating violence and food insecurity in the region is alarming. This indicates the necessity for a thorough regional strategy to tackle these difficulties.

DISCUSSION

This seminar paper highlights the significant and complex effects of climate change on civil strife throughout Africa. Analysis of many case studies and empirical research reveals that climate-induced environmental stressors substantially contribute to socio-political instability. This discourse integrates essential insights from the study, clarifying the processes that propel these dynamics and situating them within the larger contexts of governance, resource scarcity, and socio-economic vulnerability.

A prominent conclusion is the impact of climate change on exacerbating resource shortages, especially regarding water and cultivable land. Increasing temperatures, deserts, and unpredictable rainfall patterns have significantly reduced the supply of these essential resources, consequently intensifying competition. In the Sahel region, the interaction between desertification and unpredictable weather patterns has intensified conflicts between farmers and herders regarding grazing pastures and water resources, frequently leading to violent confrontations. These

dynamics underscore the vulnerability of conventional coping strategies in response to climate change (Akinyetun et al., 2024; Okoyeuzu et al., 2024).

Additionally, resource constraint, intensified by climate change, intersects with existing socio-economic disparities, hence magnifying discontent. This discovery corresponds with the Environmental Scarcity Theory, which asserts that the exhaustion of renewable resources in susceptible areas might provoke conflict (Homer-Dixon, 1994; Uexküll et al., 2020).

Displacement and migration caused by climate change are key contributors to intercommunal relations. Communities forced to relocate owing to severe weather phenomena, such as droughts and floods, frequently inhabit regions already experiencing stress, exacerbating competition for limited resources. The reduction of Lake Chad illustrates this phenomenon, resulting in the displacement of millions and heightened tensions between host communities and migrants. Insurgent organisations such as Boko Haram have capitalised on these socio-economic issues, utilising them as possibilities for recruitment (Kwanhi et al., 2024; Bedasa & Deksis, 2024).

This confluence of displacement, migration, and conflict highlights the intricate relationship between environmental stress and socio-political vulnerability. It underscores the necessity for policy initiatives that cater to the urgent requirements of displaced populations while ensuring the long-term stability of host communities.

Inadequate governance frameworks and institutional inefficiencies substantially exacerbate the negative impacts of climate change on civil strife. Numerous African countries lack the capability to efficiently address natural resource conflicts or provide fair access to essential requirements, resulting in a void frequently exploited by non-state entities, rebel factions, and criminal organisations (Duba, 2024; Troise et al., 2025).

In Kenya, inadequate governance in water resource management has sustained disputes among pastoralist groups, but in Somalia, Al-Shabaab has used governance deficiencies to strengthen its influence in drought-affected regions. These observations highlight the essential function of government in alleviating or intensifying climate-related conflicts (Njoki, 2023; Busby et al., 2022).

Climate change has significantly affected agricultural and pastoral livelihoods throughout Africa, especially in areas reliant on rain-fed agriculture. In Somalia, recurrent droughts have severely diminished agricultural output and animal numbers, rendering

impacted communities economically precarious. Such disturbances increase individuals' vulnerability to recruitment by armed groups, as economic deprivation compels them to seek alternative survival strategies (Moyo, 2024; Akinyetun et al., 2024).

The correlation between economic vulnerability and conflict underscores the imperative for climate-resilient livelihood solutions. Investments in climate-resilient agricultural techniques and income diversification are essential to mitigate communities' vulnerability to climate-induced economic disruptions.

The results indicate that the influence of climate change on conflict differs by location, influenced by distinct socio-political, cultural, and environmental factors. The Sahel, Lake Chad Basin, and the Horn of Africa exhibit unique issues concerning resource shortages, displacement, and governance (Bedasa & Deksis, 2024; Fonjong & Wanki, 2024). These geographical disparities highlight the necessity of tailored policy interventions that tackle the specific difficulties of each location.

The results correspond with many theoretical frameworks. Environmental Scarcity Theory elucidates how resource depletion intensifies societal tensions, whereas Relative Deprivation Theory contextualises the frustration stemming from unequal access to resources and opportunities (Koubi et al., 2020). These frameworks offer a thorough comprehension of the relationship between environmental stresses and socio-political instability, underscoring the necessity for coordinated solutions that tackle both ecological and societal vulnerabilities.

The results of this seminar paper confirm the significant relationships between climate change and civil strife in Africa. Resource scarcity, displacement, governance issues, and economic disruptions are the primary mechanisms by which climate change intensifies instability.

CONCLUSION

This analysis highlights the substantial impact of climate change as a driver of civil conflict in Africa. Resource scarcity induced by climate change, especially regarding water and arable land, has become a significant catalyst for conflict, intensifying pre-existing tensions and generating new ones. The Sahel region has experienced increasing conflicts between farmers and herders, attributed to desertification and changing rainfall patterns (Akinyetun et al., 2024).

Climate-related displacement has exacerbated these challenges. Population displacements, frequently caused by floods and droughts, may result in heightened competition for resources and social tensions within host communities. The Lake Chad Basin has undergone

considerable displacement and conflict attributed to diminishing water resources, creating opportunities for insurgent groups such as Boko Haram (Ehiane & Moyo, 2022).

Inadequate governance frameworks and institutional shortcomings intensify the effects of climate change on conflict. Corrupt practices, poor resource management, and ineffective conflict resolution mechanisms can impede efforts to tackle climate-induced challenges. The absence of effective governance frequently results in prolonged conflicts and the deepening of grievances, thereby complicating peacebuilding initiatives (von Braun et al., 2022).

The relationship between climate change and civil conflict in Africa requires a thorough and coordinated response. Addressing the underlying causes of climate-induced conflict and enhancing governance can mitigate risks and foster a more sustainable and peaceful future for the continent.

Policy Responses and Recommendations

The intricate relationship between climate change and civil conflict in Africa requires a comprehensive and proactive policy strategy. To address the immediate and long-term impacts of climate-induced stressors, policy interventions must focus on climate adaptation, governance, and the underlying causes of vulnerability.

- **Enhancing Climate Adaptation Strategies**

Due to the substantial dependence of African populations on agriculture, it is essential for policies to encourage sustainable farming practices, including conservation agriculture, agroforestry, and precision agriculture. These practices improve soil fertility, increase water retention, and boost agricultural productivity, thereby reducing the negative impacts of climate variability. Integrated water resource management is essential, especially in areas such as the Sahel and Lake Chad Basin. Investment in irrigation infrastructure, rainwater harvesting, and groundwater recharge systems can mitigate resource competition and decrease the probability of intercommunal conflict.

The transition to renewable energy sources, including solar, wind, and hydropower, can diminish Africa's reliance on climate-sensitive and conflict-prone resources such as biomass and fossil fuels. This transition can facilitate sustainable development, decrease deforestation and carbon emissions, and alleviate the wider effects of climate change. Decentralised renewable energy systems, especially solar power, can supply electricity to rural regions, promoting economic opportunities and enhancing social stability.

- **Improving Governance and Mechanisms for Conflict Resolution**

Institutional capacity building is essential for the effective management of natural resources and the equitable distribution of those resources, necessitating strong institutions. Enhancing the capacity of local governments and regulatory bodies improves transparency, accountability, and the effectiveness of resource governance.

Emphasising community-based dispute resolution mechanisms can effectively address conflicts in a culturally sensitive and accessible way. These mechanisms may mitigate tensions, enhance social cohesion, and avert escalation into violence.

Early warning systems serve as proactive measures that can reduce conflict risks by identifying and addressing potential flashpoints. These systems must incorporate climate data, socio-political analysis, and conflict monitoring to deliver timely and actionable intelligence.

- **Addressing Root Causes of Vulnerability**

Socioeconomic development necessitates the addressing of poverty and unemployment to ensure long-term stability. Investment in education, skill development, and economic diversification can generate alternative livelihood opportunities and diminish dependence on climate-sensitive activities.

Community-Based Natural Resource Management enables local communities to collaboratively oversee natural resources, resulting in more equitable and sustainable outcomes. Decentralised decision-making structures and capacity-building initiatives promote community ownership and mitigate resource conflicts.

- **International Collaboration and Support**

Regional organisations, including the African Union, are essential in coordinating responses to climate-related conflicts, aligning policies, facilitating knowledge sharing, and mobilising resources.

Mobilising global climate finance through mechanisms such as the Green Climate Fund is crucial for assisting vulnerable African nations in executing climate adaptation and conflict mitigation strategies. To ensure that funds are allocated to the most vulnerable communities, it is essential to implement strong accountability mechanisms and align with local priorities.

Implementing comprehensive policy responses and recommendations will enable Africa to address the challenges of climate change, reduce conflict risks, and promote sustainable development and peacebuilding.

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