Climate Change and Inter-Community Conflict in East Africa: A Systematic Review of Pastoralist Livelihoods and Human Security

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Received 10 December 2025, Accepted 14 January 2026, Published 16 January 2026

Direct Research Journal of Agriculture and Food Science

Vol. 14(1), Pp. 50-60, January 2026

https://journals.directresearchpublisher.org/index.php/drjafs; https://www.ajol.info/index.php/drjafs

Review Article
ISSN: 2354-4147

ABSTRACT

Climate change has emerged as a major concern for governments, scholars, and development stakeholders due to its far-reaching implications for human security and social stability, particularly in developing regions. In East Africa, climate variability and extreme events increasingly intersect with existing socio-economic and political vulnerabilities, intensifying inter-community conflicts, especially among pastoralist communities. However, existing empirical studies provide fragmented and sometimes contradictory evidence regarding the relationship between climate change and conflict. This article adopts a systemic literature review approach to examine the nexus between climate change and inter-community conflict in East Africa, with a specific focus on pastoralist groups. Following PRISMA guidelines, peer-reviewed articles were systematically retrieved from Scopus, Web of Science, and Google Scholar, JSTOR, etc. covering the period 1995-2025. Studies were selected based on predefined inclusion and exclusion criteria focusing on climate change impacts, pastoralist livelihoods, conflict dynamics, and human security outcomes. The findings reveal that the relationship between climate change and inter-community conflict is highly context-dependent rather than deterministic. Climate-induced resource scarcity, livelihood disruption, migration, and pastoral mobility interact with social political processes, governance structures, and institutional weakness to shape conflict outcomes. In many cases, declining access to land and water undermine pastoralist livelihoods, exacerbate competition, and heightens human insecurity, thereby increasing the likelihood of conflict. The review contributes to the literature by systematically synthesizing dispersed empirical evidence and advancing a nexus-based analytical understanding of climate change and inter-community conflict among pastoralist communities in East Africa. It further highlights the critical role of governments and stakeholders in strengthening adaptive capacity, enhancing resilience, and promoting diversified livelihood strategies as pathways to conflict prevention and sustainable human security.

Keywords: *Climate change; inter-community conflict; pastoralism; human security; East Africa, climate resilience*

Citation: Muneza, L. (2026). Climate Change and Inter-Community Conflict in East Africa: A Systematic Review of Pastoralist Livelihoods and Human Security. *Direct Research Journal of Agriculture and Food Science*. Vol. 14(1), Pp. 50-60.https://doi.org/10.26765/DRJAFS16515192

INTRODUCTION

Climate change has emerged as a complex global challenge with far-reaching implications for humanity. Initially framed primarily as environmental concern, it is now widely recognised as a critical sustainable development issue with profound political, economic, and social dimensions. Climate change refers to long-term alterations in the Earth's climate system, including changes in temperature, precipitation patterns, wind system, and other atmospheric conditions occurring over decades or longer periods (Intergovernmental Panel on Climate Change [IPCC], 2021). These changes are likely to have significant consequences for agriculture, settlement patterns, natural disasters, disease prevalence, and economic activities (Salehyan, 2008).

In East Africa, livelihoods are highly dependent on climate-sensitive natural resources including water, pasture, and arable land. Climate variability and extreme weather events increasingly intensify pressure on these resources, contributing to competition, grievances, and, in some cases intercommunity conflicts. Understanding the relationship between climate change and such conflicts is therefore essential for policymakers, community leaders, and development actors seeking to design effective prevention and adaptation and resilience-building strategies (IPCC, 2022; FAO, 2018, Buhaug et al. 2015).
The relationship between climate change, security, and development has generated extensive scholarly debate. Some studies argue that climate change increases the likelihood of violent conflict by exacerbating competition over scarce resources, particularly in agrarian economies (Buhaug, 2010; Burke et al. 2009; Detges, 2016; Seter et al. 2018; Van Weezel, 2019). This argument is especially relevant in Africa, where economic activities are largely climate dependent and adaptive capacities remain limited. Other research highlights how climate change interact with pre-existing socio-economic and political vulnerabilities, such as weak institutions, poverty, and limited access to financial and technological resources, thereby amplifying conflict risks (Busby, 2022; UN Women, 2021).

Despite the growing body of literature on climate change and conflict, there remains no consensus on the precise role of climate change in causing violent intercommunity conflicts. While some scholars suggest that climate stressors can increase the risk of violence (Nagano & Sekiyama, 2023), others caution that conflicts are rarely driven by climate factors alone and are instead shaped by broader political, economic, and social dynamics (Koubi, 2019). Existing research has largely focused on resource scarcity and environmental security framework (Floyd & Matthew, 2013), often producing fragmented and inconclusive findings. This study proposes an environmental peacebuilding and social protection mechanism to examine how climate change influences conflict outcomes in climate affected pastoral and agricultural contexts. The mechanism conceptualizes climate change hazards as stressors that undermine livelihoods and intensify socio-economic vulnerability. It emphasizes environmental peacebuilding processes and social protection interventions as key mediators that reduce resource-based tensions strengthen social cohesion and enhance adaptive capacity. By foregrounding cooperative resource governance and protective social policies, the mechanism moves beyond deterministic climate-conflict narratives and offers a policy-relevant lens for understanding climate-related insecurity.

Research gap

Although numerous studies examine the climate change-conflict nexus, there is a lack of systematic synthesis that critically assesses how climate change interacts with local socio-political contexts to influence intercommunity conflicts especially among pastoralists communities in East Africa. This limits the ability of policymakers to draw evidence-based conclusions relevant to the region.

Purpose and objectives

The purpose of this study is to systematically review and synthesize existing scholarly literature on climate change and intercommunity conflict in East Africa. Specifically, the study aims to:

1. Examine the main theoretical and empirical approaches used to analyze the climate change-conflict nexus.
2. Assess the extent to which climate change contributes to intercommunity conflicts in East Africa; and
3. Identify key gaps and policy-relevant insights to inform future research and governance responses.

East Africa is selected as the focus of this review due to its high vulnerability to climate variability, heavy reliance on rain-fed agriculture, and limited adaptive capacity. Strengthening evidence-based understanding of climate-related conflict dynamics is crucial for promoting sustainable livelihoods, enhancing resilience, and supporting peacebuilding efforts in the region.

METHODOLOGY

The article adopts a systematic literature review method to examine and consolidate existing research about the linkage between climate change and conflicts, with a particular focus on pastoralist communities in East Africa. Kitchenham (2004) defines a systematic literature review as a review of focused research question using explicit and systematic methods to identify, select, and analyze relevant studies. The review draws on a comprehensive

body of academic and grey literature, including peer-reviewed journal articles, reports, and policy briefs produced by multilateral institutions as well as international and non-governmental organizations. Over 90 sources were reviewed in English and French. The review covered a 30-year period (1995-2025) to capture a long-term trends and shifts in climate variability and conflict dynamics in the region. This helped to identify the direction and magnitude of the relationship between climatic stressors and conflict dynamics.

Studies were selected based on predefined inclusion and exclusion criteria. Included studies focused on: i) climate change and climate variability impacts; ii) pastoralist communities; iii) climate induced or resource-related conflicts, and human security outcomes. The selected literature was systematically analyzed and synthesize, using a thematic synthesis approach, allowing patterns and recurring mechanisms linking climate stressors and conflict dynamics to be identified. The most relevant findings were compiled into annotated bibliography to ensure transparency and comparability across sources. Finally, beyond identifying climate-conflict linkages, the article examines mechanisms, policy frameworks, and institutional responses related to climate change adaptation, mobility, and conflict management. Particular attention is paid to identifying policy and governance gaps in addressing climate-related conflict and mobility challenges in pastoralist regions of East Africa.

KEY FINDINGS

This article critically reviews and synthesizes current knowledge on the complex linkages between climate change–induced ressource scarcity, inter-community conflicts, human security, and the mobility of pastoralist groups in the East African region. Across the reviewed studies, recurrent drought emerged as the most frequently reported climate hazard inked to conflict in pastoral areas. However, not only drought but also erratic rainfall, extreme heat and environment degradation, which are drivers of displacement and migration. These severe climate stresses and hazards accelerate land degradation, desertification and water scarcity. Pastoralist communities are particularly affected, as their livelihoods depends on natural resources. Mobility becomes essential as a coping strategy. Furthermore, the article found out that these challenges are exacerbated by fragile governance structures and limited resilience and adaptive capacity, intensifying pastoralist communities and region's vulnerability to climate change impacts and human security. Therefore, come conflict dynamics in the region. There is a complex interplay of environmental degradation, policy challenges and socio-political contexts where climate change acts as a threat multiplier increasing the risks of displacement and conflicts among pastoralist groups and between displaced and hosting communities. Unfortunately, resilience capacity and adaptation efforts seem to remain insufficiency while appropriate policies and strategies, more coordinated, inclusive, and conflict management approach are for a great importance. There is a need of a significant research to close policy gaps in resilience capacity and adaptive strategies.

RESULTS

Human Security Dimensions Relevant to Climate

The reviewed literature consistently conceptualizes human security as multidimensional framework that shifts the referent of security from state to individuals and communities. The concept of Human security changed gradually for the purpose of redefining and making broader the meaning of security beyond its traditional focus on states. Barry & Lene (2012) argue that the end of the Cold War and new types of threats led scholars to broaden and deepen the meaning of security to respond to the new global geopolitical changes after the collapse of the Soviet bloc, started to stressing on the individual, as the focal referent, and object of security, rather than state. Kaldor et al. (2007) highlighted that UNDP 1994 refers human security to the security of individuals and communities, expressed as both freedom from fear and their broadly security aspects. Furthermore, Hutchful (2008) emphasises that the concept of human security shifts away from traditional, force based understanding of security to encompass broader dimensions, including political security anchored in human rights, the rule of law and principles of good governance as well as social protection mechanisms such as economic and social safety nets, community cohesion and personal security. In addition, Busumtwi (2007) notes that human security expresses the condition of relative presence or absence of contingencies that threaten physical and psychosocial harms affecting human dignity, livelihoods, safety, survival and health and well-being in the political, economic, socio-cultural and ecological context within which processes of human development take place.

Table 1 summarizes the core dimensions of human security as formulated by UNDP in its Human Development Report of 1994, and associated threats (UNDP, 1997). However, UNDP's position is currently much more operational than theoretical framing. The current approach is multidimensional, preventive, localised, and adapted to modern risks like digital threats, while still rooted in the principles of dignity and agency that underpinned the 1994 report (United Nations Development Programme [UNDP], 2022). The evidence indicates that climate directly undermines environmental, food, and economic security, while indirectly affecting personal, community, and political security through increased competition over scarce resources and weakened governance structures.

Table 1: Dimensions of Human Security.

Types of security	Examples of main threats
Economic security	Unemployment, extreme and persistent poverty
Environmental security	Environmental degradation, resource exhaustion, floods and droughts, pollution
Food security	Hunger and starvation
Health security	Epidemics, unsafe food, unclean water, lack of access to basic health care
Personal security	Physical violence, sexual violence, crime, terrorism, domestic violence, child labour, war
Community security	Inter-ethnic, religious and other identity based tensions
Political security	Political repression, human rights abuses

Source: UNDP, 1994

Due to these threats, Organization for Economic Co-operation and Development (OECD, 2025) suggests that for economic security, it is essential to ensure that individuals have a basic income, either from paid employment or, at minimum, support from charitable organizations; meanwhile environmental security requires protecting individuals from both the immediate and long-term consequences of environment degradation. As for food security, it is essential to ensure that all individuals have physical and economic access to adequate food in order to survive. In terms of health security, it is crucial to ensure minimum protection from diseases and unhealthy lifestyles. Regarding personal security, it is necessary to protect individuals and groups from all forms of physical violence, whether inflicted by state, non-state actors, domestic abusers and predatory adults. In addition, community security requires protecting groups from the loss of their traditions, culture, habits, relationships, and values. For political security, it is important to ensure that individuals live in a society that respects the freedoms and rights of both individuals and groups. Ensuring all seven dimension of human security for pastoralist communities in East Africa is crucial.

Nexus between climate change and Conflict among pastoralists

The link between climate change and conflicts is not straightforward, although the connection has been proven by many analysts, authors and policy makers. Two dominant perspectives emerge. First, some studies emphasize that there are direct, linear and causal linkages between environmental change, resource scarcity and violent conflict, usually based on assumptions about population growth and the competition over resources (Pörtner et al. 2022; Adegboyo et al. 2025; Vanden & Vargas, 2025). Second, and more prominent studies recommend indirect linkages between climate change and conflict, claimed that climate change itself do not cause conflict. They agree that conflict is an inevitable outcome, but emphasize the role of other factors like local institutions and behaviours within countries and societies that lead to conflicts on the pretext of climate change and resources scarcity (Ribot et al. 2020; Lahsen & Ribot 2022; Karesdotter et al., 2025; Muzamil et al. 2021; Bedasa and Deksisa, 2024). The synthesis supports the argument that climate change intensifies stress in already fragile contexts.

The review identifies several climate-related hazards including prolonged droughts, erratic rainfall, flooding, and rising temperatures as recurrent stressors affecting pastoralist livelihoods. The results of these hazards are heavy drought and famine, unproductive farmlands due to water shortage and, extend deserts in some cases like Sudan. The impact of those climate hazards are not isolated in causing violent conflict. After all, Christensen et al. (2007) pointed out that the increased evidence of these hazards can be implicated in all phases of the conflicts cycle, from contributing to the outbreak and perpetuation of violence to undermining prospects for peace and security. Thereby, we mention three dimensions that reveal the potential of these hazards for driving conflicts, especially in the developing countries including East African region. In the first dimension the climate change accelerates environmental degradation such as land degradation and desertification. This leads to the lowering the environmental conditions necessary to the human survival, undermines livelihoods and heightens vulnerability. In the second dimension, climate change instigates natural resource scarcity for example land and water. A good example, according to Saferworld (2008), is displayed in the Kasese and Arua locations of the northern Uganda. The two locations highly depend on rain-fed agriculture to ensure their food security and to produce income. Their main economic activities, namely, pastoralism and agriculture rely on sufficient tracks of pasture and water availability. Empirical evidences demonstrate that prolonged extreme weather events reduce the available water for irrigation or for livestock, while also causing soil erosion in some area and droughts in others (IPCC, 2022). At the same time Eekhout et al. (2022) and Dunkerley (2019) argue that increased intensity of heavy precipitation events raises rainfall erosive and accelerates the loss of soil during episodic storms, particularly following antecedent dry periods that leave soils more vulnerable. Moreover, they hamper the expansion of pastures for livestock. During dry seasons, environmental degradation occurs and population vulnerability increases, compelling pastoralist communities to move their livestock in search of pasture

(Pantuliano & Pavanello, 2009; Pickson & Boateng, 2022). This practice leads to tension and competition between different groups such as farming and pastoralist groups or the hosting community and new comers. A third and last dimension consist in migration induced by climate change. In fact, by degrading ecosystems and reducing resource access, climate change often forces people to migrate both internally and across borders. These impacts manifest in declining food production and income generating activities as well as the reduction of employment opportunities, particularly in farm-based activities (Vinkel et al. 2022; Kahiluoto, 2020). According to the Council for a New America (CAN) Military Advisory Board (2007), climate-related changes can add significant stress to already fragile contexts, particularly where weak policies, economic instability, and limited governance capacity exist. Such pressure can further contribute to massive population movements and increase the likelihood of violent conflict, especially in areas already experiencing instability and completion over limited resources (CAN, 2007). Moreover, Navarro et al. (2025) contend that although environmental factors contribute to pastoral conflict, they primarily intensify underlying structural causes rather than acting as direct triggers. Pantuliano (2009) points out that during the dry seasons the pastoralists, that are basically nomads, move to neighbouring lands in search of pastures and water. Because of the competition over decreasing natural resources, the nomad pastoralists and hosting people break into violent conflicts. Several analysts, authors and policy makers prove the link between climate change and some insecurity and instability. In this line, in June 2007, United Nations Secretary General Ban Ki-Moon argued that at Darfur conflict's roots, there are more complex dynamic and that amid the diverse social and political causes, the Darfur conflict began as an ecological crisis arising at least in part from climate change.

Figure 1 illustrates the analytical framework synthesizing these pathways, demonstrating the dynamics relationships among climate hazards, environmental degradation, livelihood strategies, human and social behavior, emphasizing how these factors mutually reinforce one another. Tsuma (2011) asserts that climate change contributes to environmental degradation, which reduce the availability of natural resources. This scarcity intensifies competition among livelihood systems, potentially escalating social tensions and even leading to conflict.

Our findings confirm that the climate change over a long period of time affects the access of people on a number of vital resources for their survival, consequently the competition over scarce resources induced by climate change, results in violent and endless conflict. The findings also indicate that these factors contribute significantly to rapid migration in many parts of Africa, with East Africa being particularly affected, resulting in social tensions in host communities and heightened stress on governance

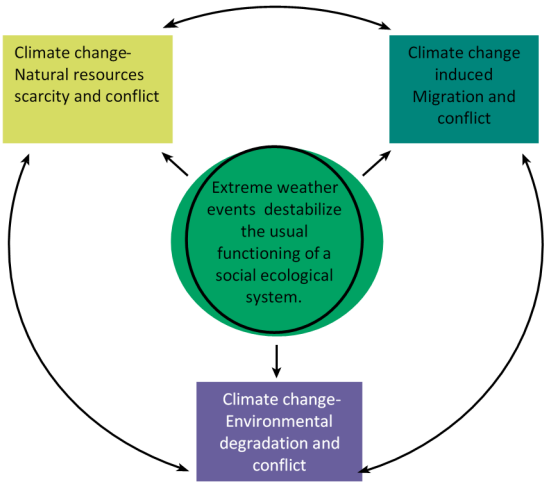

Figure 1: Analytical Framework for understanding the linkages between climate change and conflict

Source: Tsuma (2011)

system.

Empirical Patterns Liking climate change and Conflict in East Africa

Based on the findings of Raleigh and Kniveton (2012), in East Africa the adverse effects of climate change are especially severe since much of the population depend on rain-fed farming and pastoral activities. Several case studies, as well as numerous statistical analyses support this argument, showing that the risk of violent in East Africa increases during periods when climatic conditions are unfavourable for agriculture and pastoralism (Schilling, Opiyo & scheffran 2012; Ember et al. 2014; Maystadt & Ecker 2014; Maystadt, Calderone, & You 2015). In line with that, Busby et al. (2014) observe that the East Africa region has a high risk to climate change related conflict because of a combination of factors including high dependence on natural resources for livelihoods, extreme poverty and limited adaptive capacity. In this region, the link between climate change and conflict is particularly observed between livestock herders themselves and sometimes involving farmers. Empirical examples from East Africa consistently demonstrate the interaction between climate stress and conflict dynamics. In northern Kenya, recurrent droughts have intensified competition over scarce grazing land and water resources among pastoralist communities, such as the Turkana and pokot. These climates driven pressures often trigger violent clashes as communities migrate in search of pasture and water (Schilling et al. 2012; Raleigh and Kniveton, 2012). Similar patterns are observed in the semi-arid Karamoja region of north-eastern Uganda recurrent droughts where erratic rainfall patterns have intensified cattle raiding and armed clashes among pastoralist groups. Moreover, scarcity of water and pasture often drives cross-border

conflicts with neighbouring communities from Kenya, and South Sudan, making climate stress a key factor in insecurity in the area (Stites et al. 2007). Empirical evidence shows also that in Tanzania reduced pasture availability linked to shifting rainfall patterns has increased conflicts between Maassai pastoralist and farming communities. As herders move in search of grazing land, they often come into violent conflict with farming communities over land use (Benjaminsen et al. 2009; Homewood et al. 2012).

A case in point is observed in Central Turkana between 2006 and 2009, the region that experienced the worst droughts to ever hits the region (Nkedianye et al. 2011; Opiyo et al. 2015). According to Sonwa et al. (2016) drought in Kenya occur at least once every five years, rather than once every 10 years as in the past. Schilling et al. (2012) highlight that these draughts caused a loss of vast numbers of livestock, severely undermined livelihoods and compromised food and health security. Furthermore, population growth and newly established boundaries, which have altered the context in which mobile pastoralist production systems operate, pose additional threats to the daily lives of communities in the region. As pastoral communities struggled to sustain their basic living standards, crime and violence flourished within and across the region's porous international boundaries. Asokan et al. (2025) argue that today, Central Turkana suffers from a climate change based migration and conflict. Cycles of severe and recurring drought have resulted in a significant drop in livestock production, increasing competition over scarce resources, growing incidences of violent conflicts and lawlessness, high rates of malnutrition and regular outbreaks of communicable diseases due to lack of access to adequate water, sanitation and hygiene.

The severe drought that struck Kenya's Turkana region in 2009 (Opiyo et al. 2015), coupled with the subsequent increase in intercommunity violence in the northern part of the country, underscored a potential link between climate change and conflict. This analysis indicates that long-term climate change undermines people's access to vital resources essential for survival. The resulting competition over increasingly scarce resources heightens the risk of violent and protracted conflict. Pastoral systems are especially vulnerable, as climate variability affects mobility, a key pillar of pastoral resilience.

DISCUSSION

Vulnerability, Resilience, and Human Security

The findings demonstrate that vulnerability mediates the climate- conflict relationship. The extent to which climate change constitutes a threat to human security is determined by the affected society's level of vulnerability which refers to the susceptibility to be affected. Consistent with IPCC definitions, vulnerability reflects sensitivity to climate hazards combined with limited adaptive capacity (IPCC, 2007; 2014).

For the purpose of this work, it should be noted that vulnerability is considered as an internal risk factor and climate variability as an external factor on which the society or a system is exposed to. At the time the system fails to cope with changes in climate patterns, conflicts among communities come out. The combination of non-climatic factors considered in this article as internal risk such as poverty, inequalities and institutional weaknesses that acting on ecosystems are significant in East Africa countries among other developing countries in Sub-Sahara and could worsen social vulnerability and potential conflict under conditions of climate change. Barnett and Adger (2007) draw attention to the imminent interaction between climate change, human security and conflict. As shown in (Table 2), non-climatic factors such as poverty, weak institutions, and insecure livelihoods significantly amplify the impact of climate change. These factors transform environmental stress into human insecurity and conflict risk.

Capelli (2023) suggests that vulnerability is driven by factors that undermine just and balanced resources, income and opportunities distribution. Similarly, inequality in income distribution, ethnic status, and in access to key resources, such as water and food are acknowledged as factors enhancing vulnerability to both climate change and conflicts in different areas (Hegre et al. 2003; Cappelli et al. 2021; Ide et al. 2020; Alam 2017; Otto et al. 2017). Previous studies suggest that drylands in arid and semi-arid regions, particularly in East Africa are subject to significant threats arising from climate change, with progress aridification accelerating processes of land degradation and desertification (Huang et al. 2017; Park et al. 2018).

Since East Africa is highly vulnerable to climate change because its societies are exposed to rapid changes in temperature while having limited capacity to adapt; resilience is for a great importance. Schipper et al. (2022) pointed out that in the 6th report of IPCC, i.e IPCC 2022 report, resilience is defined as "the capacity of social, economic, and environmental systems to cope with a hazardous event or trend by maintaining their essential function, identity and structure, while also maintaining the capacity for adaptation, learning and transformation".

A study by Ng'ang'a et al. (2020) contend that pastoralists communities are actively implementing a broad range of climate change adaptation strategies encompassing irrigation practices, strategic livestock migration, fodder cultivation, the adoption of improved livestock breeds, rainwater harvesting and storage, and the utilisation of agricultural extension services to enhance awareness and capacity among agro-pastoralists on improved livestock rearing and management practices. With particular emphasis on resilience, Siya et al. (2024) mentioned coping and strategies that pastoralists in mount Elgon in Uganda use. These strategies involve adjusting

Table 2: The Relationship between determinants of existing vulnerability and climate change.

Non-climate factors	Processes that climate change could affect / exacerbate
Vulnerable livelihoods	Impact of climate change on livelihood will be felt by the people with high natural resource dependency, through water shortage, food insecurity, extreme weather events and diseases. Long term and gradual climate decline productivity of agricultural land.
Poverty (relative/ chronic/ transitory	Climate change can both directly and indirectly heighten absolute, relative and transient poverty by reducing access to natural resources and weakening governments' capacity to provide social safety nets, thereby pushing some groups into greater marginalization and vulnerability.
Weak states	Extremes weather events, including floods, droughts, and rising sea levels raise the cost of providing adequate public infrastructure. When combined with limited institutional and technological capacity, these pressures reduce the government's ability to effectively address the impact of climate change.
Migration	People whose livelihoods are undermined by climate change are often forced to move from one area to another. Consequently, this movement can increase the risk of conflict between new comers and the hosting communities.

Source: adapted and modified from Barnett and Adger (2007).

herd sizes, shifting to different livestock breeds, supplementing with alternative feeds, harvesting and storing wild grasses, enhancing veterinary care and culling weaker cattle at the onset of droughts. Another example was mentioned by Jean-Claude et al. (2023) that in West Pokot, where Kenya Pastoralists use diverse strategies to cope with climate change; such as migration to greener pastures, harvesting wild plants, collecting firewood burning, reducing animal rearing, constructing water pans and dams, practicing arid farming, and utilizing drought – resilient vegetables and animal.

The review confirms that pastoralist communities in East Africa are particularly vulnerable due to their high dependence on climate-sensitive livelihoods and limited access to social protection mechanisms. However, sustained commitment by authorities to strengthen traditional and existing strategies while fostering innovative, context-specific solutions is critical to enhance resilience.

Governance, Institutions, and Policy Responses

The analysis highlights governance as a decisive factor shaping climate-conflict outcomes. A range of regional mechanisms, policy frameworks, and cooperative initiatives have emerged, reflecting a growing effort to address the climate-conflict-mobility nexus; however, their effectiveness depends on coordination, implementation capacity, and political commitment. Strong institutions and effective natural resource management reduce conflict risk, while weak governance exacerbates insecurity (Marcel and Fana, 2011). Continental and regional frameworks emphasize coordinated, climate-resilient development pathway. However, implementation gaps remain, particularly at local levels where climate impacts are most acutely felt. Atem (2025) warns about oversimplifying the link between climate change and violent conflict and recommends national framework to prioritize climate resilience and conflict management by strengthening local governance and conflict resolution mechanisms and investing in climate-resilient infrastructure and early warning systems. On the other hand, Greenbaum et al. (2025) suggest prioritizing local community engagement, integrating the climate-conflict nexus into risk assessment frameworks, and promoting innovative approaches to climate adaptation finance. Sax et al. (2023) and kenduiywo et al. (2023) argue that cross-border agreements promoting equitable resource sharing and community-led conflict-resolution mechanisms as elements of inclusive governance, particularly those engaging marginalized groups, can contribute to sustaining peace and reducing forced migration. Similarly, the OIM (2025) emphasizes the importance of expanding economic opportunities in areas of origin to prevent involuntary and unsafe migration, advocating for comprehensive development programmes that enhance resilience to climate change and socio-economic instability.

At continental level, African Union provided a climate change strategy that operates within the broader framework of various international and continental strategies and initiatives including UNFCCC's Paris Agreement, UN's Agenda for Sustainable Development Goals, AU's Agenda 2063 among others (African Union [AU], (2022). The AU CC strategy provides an outline for harmonised and coordinated approach to respond to climate change. It focuses on strengthening policy and governance, and adopting pathways towards transformative climate-resilient development.

At the region level, East African countries developed National Adaptation Programes of Action (NAPAs) and Nationally Determined Contributions (NDCs) to address national emissions and climate adaptation need (Kweyu et al., 2023). Other regional organizations such as Intergovernmental Authority on Development (IGAD) provide platforms for regional frameworks like Kampala

Convention and Khatoum Process which offer solid foundations. Moreover, IGAD facilitates the implementation of these plans by supporting member states through its Centre of Excellence for Climate Adaptation and Environmental Protection (CAEP), a regional hub for climate adaptation coordination and capacity development (Intergovernmental Authority on Development [IGAD], 2023).

According to Halvard *et al.* (2008) the indirect effects of climate change through economic and institutional aspects of development imply the need for policies that promote sustainable economic growth and strength political institutions. Therefore, at the national level, it is essential for governments to understand how, to what extent, and under which conditions climate change may contribute to conflict. Since, climate change is widely recognized to have multiple and far-reaching impacts on both the physical environment and human societies. Governments also need to create suitable environment and facilitate partners in establishing their projects in vulnerable areas, in result, people will find out new alternative activities generating income rather than pastoralism and agriculture only (Ojango et al., 2023).

The findings support calls for integrated policies that address both environmental stress and structural drivers of conflict, including inequality, marginalization, and institutional weakness. This study also highlights the importance of integrating seasonal movements of pastoralists communities, which are essential for them to access livestock pasture. As highlighted earlier, environmental peacebuilding offers pathways to address environmental degradation and conflict-induced migration through sustainable resource governance and conflict resolution processes whereas social protection mechanisms play a critical role in enhancing stability for displaced and hosting populations.

Community Level Adaptation and Resilience Building

At the community level, pastoralist employ diverse adaptation strategies, including livestock diversification, strategic mobility, fodder cultivation, and water harvesting (Ng'ang'a et al. 2020; Siya et al., 2024). These practices enhance resilience but are increasingly constrained by land fragmentation and restricted mobility. Some regions characterized by high levels of pastoral mobility experience relatively lower incidences of conflict, largely due to robust governance arrangements, effective customary institutions, and sustained disarmament initiatives. For instance, cooperative land management practices supported by governance systems along the South Sudan-Ethiopian border (Sulieman et al. 2024, Navarro et al. 2025)

Adgar (2006) advocate for participatory governance and community empowerment in reducing social and environmental vulnerability. He argues that participatory engagement with local communities helps to understand their daily problems, to identify their vulnerability and to prioritize theirs needs. As far as local communities are allowed to have voice and participate into planning, they will reduce their vulnerability and eventually improve their resilience status.

The study postulates that strengthening customary institutions, securing land tenure, and supporting livelihood diversification emerge as critical strategies for mitigating climate-related conflict. This will require adaptation planners to be aware of power dynamics within a community, as well as issues surrounding gender, age, religion and ethnicity and how these factors affect vulnerability and adaptive capacity.

CONCLUSION

This review underscores the complex and multifaceted linkages between climate change, human security and conflict among pastoralist communities in East Africa. Evidence indicates that climate variability acts primarily as a threat multiplier, exacerbating existing vulnerabilities including poverty, resource dependency, weak governance, and limited adaptive capacity, rather than as a direct cause of conflict. Human security conceptualized in seven dimensions (economic, environmental, food, health, personal, community, and political), provides a critical lens for understanding how climate stress translates into insecurity and conflict risk. Empirical cases from Turkana, Karamoja, and Massai regions demonstrate that recurrent droughts erratic rainfall, and resource scarcity intensify competition over water and pasture, stimulate population movements and increase the likelihood on inter-communal and cross-border conflicts. However, literature demonstrates that community-based and institutional adaptation strategies including strategic livestock mobility, livelihood diversification, participatory decision making, and strengthen governance can significantly enhance resilience and reduce vulnerability. The review highlights three key insights for police and practice:

(i) Integrated human security approaches are essential, addressing multiple dimensions simultaneously rather than focusing solely on environmental or economic factors;
(ii) Governance and institutional capacity play a decisive role in mediating the climate-conflict nexus, emphasizing the need for locally adapted, participatory, and context-specific interventions;
(iii) Community-based adaptation and empowerment are critical, as pastoralist groups demonstrate considerable capacity to implement effective coping strategies when supported by enabling policies and resources.

In conclusion, climate alone does not generate conflict, rather, it interact with socio-economic and political vulnerabilities to shape the security landscape. Effective mitigation requires a holistic, multi-scalar approach that

strengthens resilience, safeguards livelihoods, and promotes equitable access to resources. Future research should focus on quantitative assessments of adaptive capacity, longitudinal assessment of climate-conflict interactions, and evaluation of policy interventions aimed at reducing vulnerability among pastoralist populations.

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