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CLIMATE CHANGE

IMPLICATIONS OF CLIMATE CHANGE ON CONFLICT EVENTS IN KENYA'S DRYLANDS

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ABSTRACT

Purpose of the study: To explore the implications of climate change on conflict events in Kenya's drylands.

Short introduction of problem statement: One of the incipient drivers of violent conflicts is climate change. Consequently, climate change has emerged as one of the major priorities on the security agenda of many states and non-state entities in recent years. This can be attributed to its real and potential effects on state and human security and has thus become a major focus of attention among policymakers and scholars. Climate change-in specific contexts-can escalate violent conflict risks and significantly alter the dynamics of existing conflicts. Notably, climate change can also instigate new conflicts over vital resources such as water, pastures and arable land, thus threatening the peaceful existence of communities. However, results remain inadequate despite considerable work done with a view to establishing a link between the two variables

Method/methodology: The study utilized an analytical framework that links climate change and violent conflict. This study was based on desktop research and personal insights to achieve its objectives. Findings presented in this study are the result of an analysis of secondary data obtained from various sources which include policy documents, legal frameworks, journal articles, reports and relevant websites

Results of the study: The results revealed that climate change through four pathways -worsening livelihoods conditions, migration and mobility, tactical considerations exploitation of local grievances by the elite has contributed to violent conflicts in Kenyan's drylands.

Conclusion and policy recommendation: The Government of Kenya in conjunction with relevant stakeholders should strengthen the local governance component of climate adaptation programs in Kenyan Drylands in order to provide security services and efficient management of resources.

Keywords: *Climate Change, Conflict Events, Kenya, Drylands, Pathways*

INTRODUCTION

Climate change is triggering widespread adverse impacts on human societies and ecosystems, with significant implications for peace and security, particularly in fragile contexts (Black et al., 2022). The climate crisis is increasingly reshaping Earth's climatic conditions and is presently changing more rapidly than at any point in contemporary civilization history (Reidmille et al., 2018). Consequently, climate change has emerged as one of the major priorities on the security agenda of many states and non-state entities in recent years. This can be attributed to its real and potential effects on state and human security, thus becoming a major focus of attention among policymakers and scholars (Brzoska, 2012).

The articulation of climate change as a fundamental threat to human, national, and international security has been propagated in both political declarations and scientific publications since 2003 (Oels, 2012). Notably, climate change represents one of the greatest dangers to peace and security in the 21st century. Its effects also deteriorate health security, livelihood security, food security, as well as physical safety (Mobjörk et al., 2016). Due to its ability to diminish people's access to natural resources—which play a critical role in livelihood sustenance—climate change is undermining and will continue to undermine human security in the foreseeable future. A key concern is the anticipation of conflicts in global areas that are prone to adverse climate events and social instability (Cappelli et al., 2023).

While substantial discussion on the nexus between climate change and security continues, there is extensive consensus among researchers and policymakers that conflict is indirectly associated with climate change. A number of studies have observed that intricate and non-linear relationships exist between land, climate change, and conflict (Froese and Schilling, 2019; Helman et al., 2020; Mach

et al., 2019; Pacillo et al., 2022). As a threat multiplier, climate change will magnify present risks and generate new risks for human and natural systems (Dodson et al., 2020). Climate change-under specific contexts-can escalate violent conflict risks and significantly alter the dynamics of existing conflicts. It is important to note that while climate change can precipitate violent conflict, conflict also has the potential to increase a society's susceptibility to climate change.

Violent conflict events across the African continent since the 1960s are the product of numerous factors, including but not limited to historical acrimonies, competition over limited resources, external factors, politics of exclusion, poor governance, extremist ideologies, contested legitimacy, and globalized conflicts. These conflicts have resulted in significant economic and human losses despite several efforts to foster durable peace. Over time, the causes and nature of violent conflict have dramatically changed as social, political, environmental, and economic contexts have evolved (Gilpin, 2016). Climate change represents one emerging driver of violent conflicts.

Research shows that climate change not only poses a threat to human security but can also exacerbate violent conflict risk occasioned by political, economic, and social motives (Tarif, 2022). This demonstrates the interwoven and complex nature of the relationship between climate change and insecurity. Notably, this relationship has not been fully explored and comprehended. Robust scientific evidence reveals that the nature of this relationship is ambiguous. Importantly, there is contestation regarding research findings that suggest a linear relationship exists between climate change and conflict (Adger et al., 2014). Notwithstanding the above proposition, it is generally agreed in recent literature that the intersection between conflict-vulnerable areas and climate change effects is plausible. While some researchers maintain that there is robust empirical evidence that the risk of conflict is systematically increased by climatic changes, other studies find weak evidence or no link at all (Scheffran et al., 2012). For example, Fjelde and Uexkull (2012) identify a connection between rising temperature or reduced precipitation and armed conflicts. Conversely, authors such as Adams et al. (2018) find no significant impact.

STATEMENT OF THE PROBLEM

Previous literature demonstrates that the dynamics and risk of destructive conflict are driven by climate change. However, results remain inadequate despite considerable work undertaken to establish the relationship between the two variables (Selby and Hoffmann, 2014; Gemenne et al., 2014). Additionally, Koubi (2019), in a current and comprehensive literature review on the subject

matter, elucidates that the debate on whether variations in climatic conditions escalate the scale and risk of conflict remains open. To advance the generation of new insights that inform better understanding, some scholars have underscored the need to focus on mechanisms through which climate change may affect the risk of violent conflict or the dynamics of existing hostilities (Seter, 2016).

Therefore, in the light of the existing gaps, this research seeks not only contribute to the foregoing debate but also respond to the aforementioned gap using the case of Kenya. This study has policy implications. It contributes to solid understanding of mechanisms relevant for developing and strengthening frameworks as well as strategies and for detecting, preventing and/or solving conflicts potentially linked with climate change. A clear understanding of pathways linking climate change and violent conflict is vital for embedding climate linked security risks into policy analysis as well as developing useful strategies to prevent or mitigate conflicts potentially associated with climate change (Vivekananda, 2014). This paper therefore explored and discussed the nexus between climate change and violent conflicts with a view to provide new insights using impact pathway analysis.

THEORETICAL FRAMEWORK

Homer-Dixon's Environmental Scarcity Theory

This study was based on Homer-Dixon's Environmental Scarcity Theory. He views population pressure as closely associated to the potential scarcity of renewable resources. While he argues that scarcity of resources leads to violent intrastate conflict under unfavorable conditions. Homer-Dixon and Jessica Blitt distinguish among three main causes of resource scarcity. Supply-induced scarcity results from degradation or depletion of natural resources. Non-sustainable use may not allow a resource to regenerate. In some cases, this process causes a resource to become irreversibly and permanently degraded even though the human activities that led to degradation are halted. Homer-Dixon& Blitt,1998).

Demand-induced scarcity is primarily caused by population growth. If a resource base is constant, the availability of resources per person diminishes as the number of persons sharing it increases. Such scarcity can also arise from an increase in demand per capita. A third form, structural scarcity, applies only to certain groups who, relative to other groups, are excluded from equal access to

particular resources. Such unequal social distribution of a resource does not presuppose actual scarcity if the resource were to be distribution. Resource scarcities can lead to constrained agricultural and economic productivity, causing widespread poverty. Migration can occur either because the environmental quality of a habitat has become unlivable (push factors) or, more commonly, because the migrants' economic outcome is likely to be better in areas with greater resource availability (pull factors).

Relative deprivation theory

Ted Gurr is one of main proponent of relative deprivation theory. He argues that conflict is not merely a passing social event but an inseparable part of the human experience. Conflict has its own foundations in people's mind. People or community who feel deprived of some good(s) or resource(s) tend to have conflict. Individuals or community who are lacking some good, service, or comfort are more likely to unleash an armed conflict to improve their material conditions. (Gurr, 2015)

EMPERICAL REVIEW

The following sections summarizes empirical review of related studies on the nexus between climate change and violent conflicts.

Table 1: Summarized arguments on the relationship between climate Change Violent Conflicts

Author and Year of Publication	Title	Methods	Core findings
Whitaker et al, 2023	Climate Security Study: Kenya	**Mixed**	There is strong evidence that climate variability leading to the failure of food systems is an important driver of conflict. Across Kenya, climate change and environmental pressures have contributed to violent conflict in multiple settings and this is expected to continue or further increase in the future as the impacts of climate change worsen. Kenya is increasingly affected by farmer-herder conflict, as climate change disrupts forage and water resources, depleting pastures and leading herders to move their livestock over vast distances, occasioning conflict with local communities
Tesfaye Beza (2022)	Climate Change and Conflict in the Sahel	Qualitative	Climate change is already significantly affecting the Sahel, contributing to greater weather variability, extreme events, and steadily warming temperatures. These changes have disrupted livelihoods, food systems, health, and traditional ways of life. A lack of options for coping and adaptation leaves the most

			vulnerable communities in a position of human insecurity, creating grievances to be exploited by VEOs and other nonstate actors
Madu, I. A., & Nwankwo, C. F. (2021	Spatial pattern of climate change and farmer–herder conflict vulnerabilities in Nigeria	Quantitative	The result of the regression model indicates that climate change vulnerability is the best predictor of the farmer–herder conflict in Nigeria but the effect is negative. Thus, it argues climate change is not necessarily the cause of the conflict because the change in the pattern of herder's migration does not automatically lead to climate change causing conflict. Migration is important but the mechanism establishing the migration–conflict nexus has to be explained by taking cognisance of identity differentials between herding groups and local communities.
Issifu et al (2022)	Climate change, migration and farmer–herder conflict in Ghana	Mixed	The findings offer insights into how other non-climatic and ecological conditions reinforce the so-called climate induced conflicts, exposing the limitations of the scarcity-theory. Importantly, this study has provided an illustrative argument centered around the contextual dynamics of the nexus between climate change and farmer–herder conflict in Agogo to contribute to national, regional, and continental discussion on this critical topic.
Vally Koubi, 2019	Climate Change and Conflict	Qualitative	It finds that the literature has not detected a robust and general effect linking climate to conflict onset. Climatic conditions breed conflict in fertile grounds: in regions dependent on agriculture and in combination and interaction with other socioeconomic and political factors such as a low level of economic development and political marginalization.
Froese, R., & Schilling, J. (2019).	The Nexus of Climate Change, Land Use, and Conflicts	Qualitative	Climate change has been perceived as a threat multiplier, directly aggravating human security risks, such as food and water insecurity, as well as indirectly contributing to (violent) conflict in regions vulnerable to climate change
Mach et al, 2019	Climate as a risk factor for armed conflict	Qualitative	Climate variability and change shape the risk of organized armed conflict within countries. However, the role of climate is judged to be small compared to other conflict drivers, and the mechanisms of climate's effect on conflict are uncertain
Abel, G et al 2020	Climate, conflict and forced migration	Quantitative	Results indicate that climatic conditions, by affecting drought severity and the likelihood of armed conflict, played a significant role as an explanatory factor for asylum seeking in the period 2011–2015. Impact of climate on conflict and asylum-seeking flows is limited to specific time period and contexts.
Stijn van Weezel (2019)	On climate and conflict: Precipitation decline and communal conflict in Ethiopia and Kenya	Quantitative	The main estimates show that there is a negative correlation between precipitation and communal conflict with a probability of 0.90. This suggests that there are other more salient factors underlying communal violence in Ethiopia and Kenya. As such, in this case the link between climate and conflict should not be overstated.
Ali, F et al, 2018	Climate Change-Induced Conficts in Pakistan: From National to Individual Level	Mixed (Qualitative and Quantitative)	There is a significant causal relationship between climate change, migration, and conflicts

Tiitmamer, N., Mayai, A. T., & Mai, N. H. (2018).	Climate Change and Conflicts in South Sudan	Quantitative	Insignificant link between climate change and conflicts, While the meteorological data demonstrate a lack of link, historical records relate conflicts to climate induced disasters. Conflicts occur after floods or droughts, implying that climate change has been contributing to conflicts in South Sudan.
Linke et al , (2018)	Drought, Local Institutional Contexts, and Support for Violence in Kenya	Quantitative	There is some evidence of a direct, though limited, link between observed drought and violent attitudes.
Scheffran, J., Ide, T., & Schilling, J. (2014	Violent climate or climate of violence? Concepts and relations with focus on Kenya and Sudan	Quantitative	The impact of climate change is less direct in Sudan than in Kenya
Adem, T et al (2012).	Dangerous geography: Spatial distribution of livestock raiding in northwestern Kenya. Ethnology	Qualitative	Raids by the Turkana are motivated by drought conditions when the survival of the herd depends on temporary access to pastures in dangerous areas. Authors also note a suggestive link between violence and commonly shared water sources. More violence appears to occur in quadrants with flowing water and longer rivers than in blocks with privately owned wells
Njiru, B.N. (2012)	Climate change, resource competition, and conflict amongst pastoral communities in Kenya	Mixed	Violent conflict involving pastoralists is associated with resource competition which is, among other factors such as interstate and intercommunal tensions and political instabilities, aggravated by climate change
Theisen, O. M. (2012).	Climate clashes? Weather variability, land pressure, and organized violence in Kenya, 1989–2004	Quantitative	Using a most-likely case design on Kenya 1989–2004, with new geographically disaggregated data on armed conflicts below the common civil conflict level, this study finds that climatic factors do influence the risk of conflicts and violent events. I find quite strong evidence for years following wetter years being less safe than drier years.
Witsenburg, K & Adano, (2009).	Of rain and raids: Violent livestock raiding in northern Kenya. Civil Wars	Mixed	Raiders like to attack during wet years because of high grass, strong animals, dense bush to hide in and the availability of surface water, which makes it easier to trek with the animals") There are three times more killings during rainy season than during the dry seasons. This indicates that in northern Kenya raids-related violence is influenced by climatic fluctuations, which also implies that climate change will have an effect on (in)security

CONCEPTUAL FRAMEWORK

The framework is premised along four established 'pathways': (1) worsening livelihood conditions (2) Migration and mobility (3) tactical considerations by armed groups; and (4) elite exploitation of local grievances (Mobjörk, and Van Baalen , 2016), (Tarif, 2022). Pathways in this research means mechanisms linking climate change and violent conflicts. The framework was adopted from Mobjörk, and Van Baalen, 2016. The framework was chosen because it has been successfully

applied in explaining the nexus between climate change and conflict and it is flexible as it can suit into different contexts.

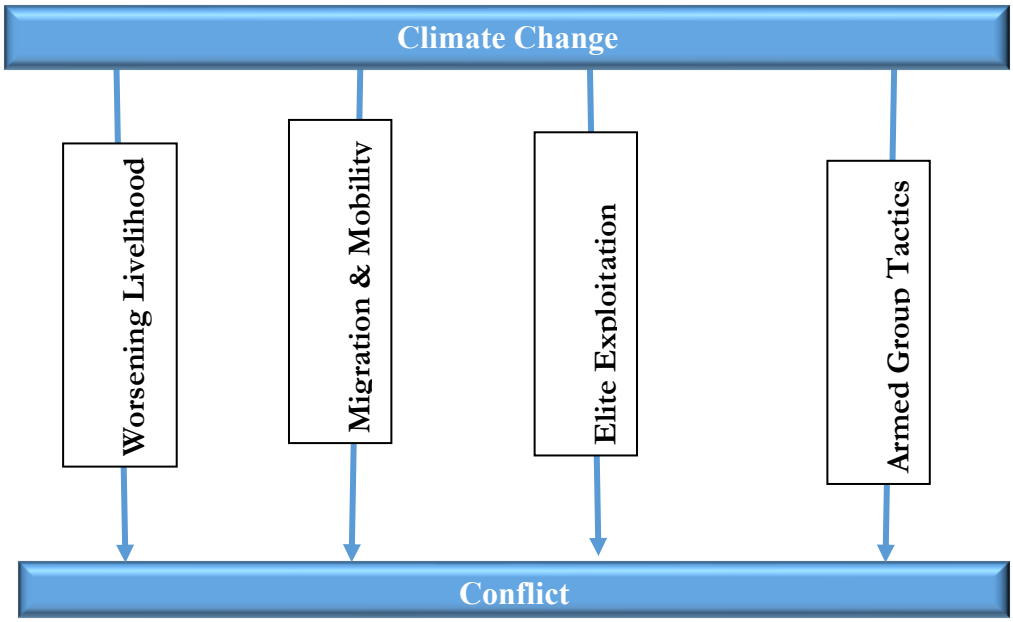

Figure 1: Conceptual Framework adapted and modified from (Mobjörk, and Van Baalen, 2016)

METHODOLOGY

This study was based on desktop research and personal insights to achieve its objectives. Findings presented in this study are a result of analysis of secondary data obtained from various sources which include policy documents, legal frameworks, journal articles, reports and relevant websites

RESULTS AND DISCUSSIONS

Worsening Livelihood conditions

The worsening of livelihood conditions represents one of the pathways that links climate change and violent conflicts. Harsh climatic conditions worsen livelihoods and thus create a vicious cycle that endangers wellbeing and subsequently disrupts social order. Empirical results reveal the existence of an association between changes in temperature and precipitation patterns-which have unfavorable effects on the living conditions of people in susceptible areas-and violent event occurrence (Dell and Olken, 2014). Therefore, shifts in climatic conditions represent a significant

factor in the escalation of conflict propensity and risk (Cappelli et al., 2023). Generally, human populations are directly or indirectly impacted by climatic change (Buhaug, 2015).

Direct impacts manifest in the form of heightened violent behaviors linked with high temperatures. As a result of extreme drought conditions occasioned by climate change, people tend to become nervous or violent in their quest for access to scarce water resources. Indirect effects are explained by the impacts on anthropogenic activities, as in the case of agriculture and pastoralism. Consequently, over-reliance on agro-pastoralism increases people's susceptibility to the undesirable effects of climate change. Therefore, deteriorating livelihood conditions feed political, social, and economic grievances by highlighting the marginalization of affected groups. In the absence of viable livelihood options, violence becomes an alternative strategy to access or protect limited natural resources (Van Baalen and Mobjörk, 2018).

A combination of livelihood pressures such as political marginalization and environmental changes can create perfect conditions for violence to occur. Notably, access to scarce resources can be achieved through the use of force. Loss of livelihood characterized by income loss from pastoralism and agriculture is further reinforced by perceptions of diminishing opportunity cost. This notion advocates that deteriorating livelihood conditions are associated with amplified risk of violent conflict. Some people are inclined to believe, or base their actions on the strong belief, that they have little or nothing to lose by utilizing violence or becoming members of armed groups when their livelihood is threatened. Additionally, the use of raiding as a strategy for recuperating livestock numbers after prolonged periods of drought- or disease-induced losses occasioned by climate change results in violent events (Toulmin, 1995). Therefore, the risk of violent conflicts increases during prolonged periods when climatic conditions are unfavorable for activities that support human existence. Over the last twenty years, Kenya has experienced an increasing degree of susceptibility to climate-induced disasters—specifically high-intensity flooding and recurring prolonged droughts. It is projected that without mitigating interventions, climate change will continue to impact negatively on Kenya's ecosystems.

Notably, inhabitants of Kenyan drylands predominantly practice pastoralism as their main source of economic activity. The major productive assets (pasture, water, and land) that support livestock rearing as well as food production systems are significantly shrinking as a result of climate change and variability against increasing demand driven by population growth. Extreme drought and

unpredictable rainfall occasioned by climate change affect herding and farming communities who largely rely on the availability of frequent rain events for pasture rejuvenation and crop cultivation (Whitaker et al., 2023). Therefore, a shift in precipitation patterns may lead to meager harvests or reduced pasture. This will have an immediate negative implication for food production and the revenue of large sections of the local population (Stern, 2006). In addition, intensifying temperatures result in an increase in plant pests and diseases, consequently reducing the quality of agricultural yields (Pelser and Chimukuche, 2022).

The above argument holds true for Garissa, Isiolo, Kajiado, Turkana, Kitui, Mandera, Marsabit, Laikipia, Samburu, Tana River, and Wajir counties situated in Kenya's drylands, which are highly vulnerable to climate change. In 2022, these counties were categorized at the "alarm stage," indicative of the worst kind of drought emergency. The Arid and Semi-Arid Lands in Kenya record low crop production, reduced livestock productivity, acute livestock mortality rates, meager income, and food insecurity. In addition, struggles over scarce water and pasture resources have amplified conflict trends among pastoralists, thus resulting in additional livestock deaths occasioned by raids (Rall and Horne, 2018). Hence, climate change decreases the feasibility and multiplicity of livelihoods, lowering resilience due to adverse impacts on livelihoods (Whitaker et al., 2023).

Between 2020 and 2022, herders lost approximately 2.5 million heads of cattle (International Crisis Group, 2023), and the remaining 10 million heads at that time were at risk of death due to scarcity of water and pasture resources. This led to the loss of job opportunities that account for 90 percent of youth employment and provide over 95 percent of family incomes in Northern Kenya (Mokku, 2023). In the worst-case scenario, the attenuation of environmental resources (pastures and water) emanating from varying climatic conditions may pose a significant threat to pastoralism, a key source of livelihood. In the absence of alternative sources of livelihood to livestock rearing, young male adults may be pushed to join cattle-rustling and armed violence groups (Campbell et al., 2009). Deprived of a source of income, it has been reasoned that people are more ready to fight due to lessened opportunities (Collier and Hoeffler, 2004; Miguel et al., 2004). Participation in violent acts serves as a viable option to generate income and acquire status (Barnett and Adger, 2007). A case in point is that gradual impoverishment has made young pastoralist men susceptible

to being recruited by criminal groups in the aforementioned counties (International Crisis Group, 2023).

In order to restock lost herds occasioned by prolonged drought due to climate change and disease outbreaks, communities have adopted cattle raiding/rustling as a coping mechanism. Traditionally, livestock raiding as a cultural activity was authorized and controlled by elders and characterized by minor-scale violence (Osamba, 2000). However, more recently, due to the proliferation of small arms and light weapons and the commercialization of livestock rustling, it has morphed into large-scale violent cattle theft between neighboring communities in the Kenyan drylands. It has over time evolved into a huge criminal commercial enterprise, leading to increased incidence of violence, conflicts, loss of lives, and livestock (IGAD, 2019). It occurs on a frequent basis and is distinguished by its damaging nature. On one hand, raiding/rustling generates cynicism between communities, which is a driver of conflict (Mwangi, 2006). On the other hand, communities use raiding as a tool for articulating hostility toward rival communities (Eaton, 2009).

The recurrent violent conflicts related to pastoralism primarily revolve around livestock and its associated productive assets—land, water, and pasture—which are significantly declining against increasing demand by the communities residing in Kenyan drylands. Arguably, scarcities of the aforementioned resources could trigger disputes that may degenerate into violence (Homer-Dixon, 1999). This is in line with scarcity theory advocated by Homer-Dixon, who maintains that resource scarcity (in the Kenyan context mostly caused by drought) increases the likelihood of violence. Other than depending solely on food aid, raiding has been the only survival strategy for livelihoods in light of decreasing levels of water, pasture, and livestock resources (Schilling, 2012).

Notably, violent intercommunal conflict is recurrent in Wajir, Baringo, Isiolo, Samburu, Laikipia, Turkana, Lamu, Marsabit, and Tana River counties. The intensification of conflicts occurs during drought seasons as communities compete for limited pasture and water resources. Local areas that have not been largely affected by drought become targets for attack by neighbors due to the availability of resources. Consequently, the impacts of these resource-based conflicts include but are not limited to displacements and deaths of people, and disruption of economic and educational activities (ACAPS, 2022).

The areas largely impacted by climate change are also highly vulnerable to violent conflict due to over-reliance on rain-fed economic activities and low resilience levels. For example, communities

living in the northwestern part of Kenya have traditionally competed for land and water access, which are vital in the livestock production economy. In sum, conflict risk may be amplified directly and indirectly due to climate variability through its adverse economic effects (Von Uexkull, 2014). Generally, security threats such as those in northern Kenya weaken adaptive strategies that support livelihoods, and hence communal groups become susceptible to the impacts of climate change (Eriksen and Lind, 2005). Notably, conflict events may hinder the movement of pastoralists from one place to another, thus restricting them to safe but small areas characterized by resource exhaustion. As a result, a negative cycle ensues whereby struggles over scarce resources intensify insecurity, which in turn subverts existing adaptive strategies, itself causing more insecurity (Campbell et al., 2009).

Migration and mobility

The relationship between climate change, displacement and conflict are context specific, complex, contested and is characterized by multi-layered drivers and outcomes (Sturridge and Holloway, 2022). Environmental stressors and shocks occasioned by climate change may result in temporary or permanent migration within the affected countries and beyond its borders (Tegebu, 2022). Recent research has emphasized mobility as a form of adaptation to climate change (Thornton et al, 2020). Climatic changes can trigger differentiated migration and mobility patterns which may increase risk of violent conflicts. First, resource scarcities occasioned by climate change in pastoralist zone can lead to temporary migration to areas of resource availability. Consequently, competition over water and pasture resources with local community can result in violent conflicts. Secondly, pastoralist communities without common conflict resolution mechanism and institutions are likely to engage in violent conflicts in time of resource limitations occasioned by harsh environmental conditions. Third, using mobility as adaptation strategy, pastoralist groups may be forced to seek new migrations routes devoid of customary agreements or where the host population may not cope with up with growing pressures on resources, consequently enhancing risk of violence. This is contrary to when they use traditional routes where they strictly follow the existing customary agreements and negotiate access reduces the risk of conflict (Mobjörk, 2017).

Climate change is regularly framed as threat multiplier for increased migration and conflict. A robust association exists between areas most prone to climate change and conflict fragile or hotspot (White House, 2021). Climate change may trigger migration of people in multiple settings. Climate

change can plumate existing scarce resources and hence directly driving conflict events. In addition, it may induce migration of people in exposed situations who attempt to secure livelihoods in new environments (Brzoska and Fröhlich, 2016). The resultant movement of immense population of people, by choice or by force, and thus brings them in contact with new groups. Consequently, a potential shift in power balances occurs, generating further scarcity of resource, or triggering tensions between previously different communal groups (UN,2018).

Turkana County situated in Northern Kenya have experienced higher frequency of livestock raids during drought season. This can be attributed to herd mobility and migration generated by reduction of pasture grounds and water resources (Troicare, 2020). Migration of pastoralists brings them into contact with hostile groups and thus heightening the prospects of violence (Froese and Schilling, 2019). Pointedly, pastoral communities in Turkana County have been characterized by drought-driven conflicts. cross-borders conflict over limited water and pasture zones have been experienced by pastoralists in northern part of the country specifically along the Ethiopia, Uganda South Sudan borders. Such climate induced conflicts manifest in varied forms include conflicts among different pastoralist groups and between herds and other land users such as farmers. As violent conflicts involving pastoralists is closely related to volatile weather conditions in local areas, protracted droughts in Karamoja Cluster location largely force pastoralist to migrate into areas occupied by other herding or farming communities, thus aggravating conflicts as diverse groups concurrently fight to have access the same limited resources.

In Laikipia County, conflicts occur on cyclic basis. In many (if not most) instances, perennial, prolonged, and frequent droughts have often resulted in clashes pitting herders against the small-scale agricultural communities, foreign ranch owners, wildlife conservancies, and tourist facilities (Ogega, 2017). A case in point is the shooting of Tristan Voorspuy, one of owners of Sossian ranch and nature conservancy by armed herders while in the inspection tour of his burnt lodge on his ranch. Ranch (Muok et al 2021). In the same period at a later date, Kuki Gallmann, international prominent author, was attacked and killed instantly on her extensive private ranch and nature conservancy located in Laikipia West (Schetter et al, 2022). van Weezel, 2019 avers that approximately 10,000 herders instigated havoc where in look for of pasture for their animals clashing with the host population in February 2017(Wafula, 2022). Environmentally induced

migration of this kind, whereby influx of migrants result in shift of demographic composition and hence pile pressure on existing resources, which in turn sparkle conflict (Reuveny, 2007).

Tactical Considerations

Changes in weather patterns and climate variability have significant implications for the dynamics of enduring conflicts. This is visible through the tactical considerations of armed groups. Analysis from empirical studies reveals that excessive precipitation contributes to increasing violence (Salehyan and Cullen, 2014). Therefore, changes in weather patterns, more specifically rise in rainfall intensity, inform the movement of banditry groups as well as the ability of bandits to camouflage. Livestock-related violence is mostly experienced during wet seasons due to several tactical reasons. First, the availability of rainwater and vegetation enables livestock to be strong and well-fed, making mobility from one place to another easier. Second, the presence of large swathes of vegetation covers due to water resources required for growth provides hiding grounds for livestock raiders and stolen animals. The provision of camouflage during wet seasons makes raiding activities very plausible. Third, surface water flowing during wet seasons washes away footprints of raiders, making it difficult for them to be followed.

Livestock raids in some parts of Kenyan drylands increase significantly in wetter seasons due to these tactical factors (Schilling and Werland, 2023; Ong'eta, 2021; Ong'eta and Mose, 2021). This negates the popular assumption that the core driver of livestock violence is pasture and water scarcity (Ember et al., 2012). Traditionally, livestock raids are more ubiquitous in wetter periods occasioned by the availability of abundant pasture for herds, and newly-obtained cattle are not burdensome. In rainy seasons, animals have an increased probability of surviving long journeys from raiding hotspots to the attackers' camps. This can be attributed to good health conditions resulting from water and pasture availability. Moreover, well-grown vegetation offers protective cover for raiders (Witsenburg and Adano, 2014; Eaton, 2008).

A review of related literature reveals that, although raiding of livestock occurs throughout the year, livestock-related violence intensifies during wet seasons. In the East African region, specifically in Kenya, violence between and among communities unusually rises after wet periods (Raleigh and Kniveton, 2012). Notably, between August and October, at the onset of rainy seasons in Kenya, high numbers of cattle rustling activities are registered when pastoralists return to community-owned pastures from dry season pastures. The seasonal pattern is clearly defined: in

January–March, relatively few people are killed in raids. The number of violent raids increases during the wet season of April–June but then decreases during the dry period of July–September. Raid-related violence again rises during the wet season of October–December (Adano et al., 2012). This greater propensity for raids is informed by the need to replenish decimated animals affected by drought conditions (Daghar and Okumu, 2021).

It has been Observed that the number of deaths is two or three times higher in wet seasons compared to dry periods. Therefore, a conclusion may be drawn suggesting that raids and counter-raids are more lethal and violent during wet seasons than during dry seasons (Witsenburg and Adano, 2014). A case in point is in Marsabit and Moyale, where livestock-related casualties increase threefold during wet seasons as opposed to dry periods (Witsenburg and Adano, 2014). Young men in Marsabit County undertake cattle rustling during wet seasons with the aim of restocking lost herds from dry seasons (Reinvent Kenya, 2022). In addition, the intensity and frequency of livestock-related violent conflicts are higher in wetter areas on highly elevated ridges and plateaus in Turkana (Adem et al., 2012). These examples provide explanations of how conflict dynamics are influenced by changing tactical considerations of violent groups occurring due to climate change (Van Baalen and Mobjörk, 2018). The evidence demonstrates that weather patterns significantly shape the strategic calculations of armed groups, challenging conventional assumptions about resource scarcity as the primary driver of pastoral conflicts.

Exploitation of local grievances by the elite

Limited resource against the high demand creates a conducive environment for exploitation by the elite. Owing to the presence of organizational structures vital for occurrence of violence, elite can take advantage of prevailing grievances and tensions to trigger conflicts. Therefore, this pathway does not illuminate why destructive conflict happens; but it brings new dimension on dynamics of conflict and how conflicts in local areas can be exploited to generate bigger conflicts (Mobjörk, 2017). This pathway provides insights on how conflict over limited resources at local level offer ripe circumstance for capitalization by the elite. Kenyan case study depicts a classic example of elite exploitation of grievances. Orchestration of violence between the farmers and pastoralists was carried by Moi regime with efforts made to undermine the call for democracy. Environmental factors made mobilization along group divide easy(Kahl, 1998. The following years characterized by national political contest in Kenya associated with raiding of livestock, one hand as an

appropriate cover by political elites with intention of inflaming tensions between different ethnic groups in the run up to general elections and other hand as a vital source of income (Hendrickson et, 1998, Bond, 2007).

Conclusion and Recommendations

This paper aimed at exploring the implications of climate change on violent conflicts in Kenyan drylands. Findings reveal that the relationship is complex aimed context specific. Through the four mechanisms which include worsening of livelihood, migration and mobility, tactics of armed groups and elite exploitation, climate influences conflict occurrences compounded with other social, economic and political factors. On the basis of findings, this study recommends the following.

1. The pastoral communities living in Kenyan Drylands should diversify their income sources such as climate smart agriculture. This will play a critical role in to avoid overdependence on livestock keeping.
2. The Government of Kenya in conjunction with relevant stakeholders should strengthen local governance part of climate adaptation programs in Kenyan Drylands. This will play a vital role in provision of services such as security as well as efficient management of resources
3. The Government of Kenya should build on local conflict resolution mechanism as a viable platform for addressing intercommunal conflicts as determine sharing of resources in terms of scarcity
4. The Government of Kenya together with development partners should invest in water harvesting strategies such as dam construction in arid and semi-arid areas to tap water during raining and preserved for use in drier periods
5. There is need to commission research by Government of Kenya with a sole aim of comprehending interaction among susceptibility to climate change social relations and political institutions This will provide concrete insights to relevant stakeholders that can aid them to anticipate, avert, and respond to the complex web of risks entangling climate change and violent conflict, while at the same time develop resilient communities.

6. The Government of Kenya should deliberately promote socioeconomic development of Kenyan Drylands through sufficient allocation of financial resources to open up the region for growth.

REFERENCES

Abel, G. J., Brottrager, M., Cuaresma, J. C., & Muttarak, R. (2019). Climate, conflict and forced migration. Global Environmental Change, 54, 239-249.

ACAPS. (2022). Kenya: Impact of drought on the arid and semi-arid regions (Thematic report). Retrieved from https://www.acaps.org/fileadmin/Data_Product/Main_media/20220331_acaps_thematic_report_kenyaimpact_of_drought.pdf

Adams, C., Ide, T., Barnett, J., & Detges, A. (2018). Sampling bias in climate–conflict research. Nature Climate Change, 8(3), 200-203.

Adano, W. R., Dietz, T., Witsenburg, K., & Zaal, F. (2012). Climate change, violent conflict and local institutions in Kenya's drylands. Journal of Peace Research, 49(1), 65-80.

Adem, T. A., Ember, C. R., Skoggard, I., Jones, E. C., & Faas, A. J. (2012). Dangerous geography: Spatial distribution of livestock raiding in northwestern Kenya. Ethnology, 1-29.

Ali, F., Khan, T. A., Alamgir, A., & Khan, M. A. (2018). Climate change-induced conflicts in Pakistan: From national to individual level. Earth Systems and Environment, 2, 573-599.

Barnett, J., & Adger, W. N. (2007). Climate change, human security and violent conflict. Political Geography, 26(6), 639-655.

Black, R., Busby, J., Dabelko, G. D., De Coning, C., Maalim, H., McAllister, C., ... Staudenmann, J. A. (2022). Environment of peace: Security in a new era of risk.

Brzoska, M. (2012). Climate change as a driver of security policy. In Climate change, human security and violent conflict: Challenges for societal stability (pp. 165-184). Springer.

Brzoska, M., & Fröhlich, C. (2016). Climate change, migration and violent conflict: Vulnerabilities, pathways and adaptation strategies. Migration and Development, 5(2), 190-210.

Buhaug, H. (2015). Climate–conflict research: Some reflections on the way forward. Wiley Interdisciplinary Reviews: Climate Change, 6(3), 269-275.

Campbell, I., Dalrymple, S., Craig, R., & Crawford, A. (2009). Climate change and conflict: Lessons from community conservancies in northern Kenya.

Cappelli, F., Conigliani, C., Consoli, D., Costantini, V., & Paglialunga, E. (2023). Climate change and armed conflicts in Africa: Temporal persistence, non-linear climate impact and geographical spillovers. Economia Politica, 40(2), 517-560.

Collier, P., & Hoeffler, A. (2004). Greed and grievance in civil war. Oxford Economic Papers, 56(4), 563-595.

Crawford, A., & Hutchinson, S. (2016). Mapping the contours of 'everyday security': Time, space and emotion. British Journal of Criminology, 56(6), 1184-1202.

Daghar, M., & Okumu, W. (2021). Cattle rustling: A flourishing illicit market in East Africa. Retrieved from https://enactafrica.org/enact-observer/cattle-rustling-a-flourishing-illicit-market-in-east-africa

Dell, M., Jones, B. F., & Olken, B. A. (2014). What do we learn from the weather? The new climate-economy literature. Journal of Economic Literature, 52(3), 740-798.

Dodson, J. C., Dérer, P., Cafaro, P., & Götmark, F. (2020). Population growth and climate change: Addressing the overlooked threat multiplier. Science of the Total Environment, 748, 141346.

Eaton, D. (2008). The business of peace: Raiding and peace work along the Kenya–Uganda border (Part I). African Affairs, 107(426), 89-110.

Eaton, D. (2009). Violence, revenge and the history of cattle raiding along the Kenya-Uganda border, c. 1830-2008. Library and Archives Canada.

Ember, C. R., Abate Adem, T., Skoggard, I., & Jones, E. C. (2012). Livestock raiding and rainfall variability in northwestern Kenya. Civil Wars, 14(2), 159-181.

Eriksen, S., & Lind, J. (2005). The impacts of conflict on household vulnerability to climate stress: Evidence from Turkana and Kitui Districts in Kenya. Paper presented at Human Security and Climate Change International Workshop, Oslo.

Fjelde, H., & Von Uexkull, N. (2012). Climate triggers: Rainfall anomalies, vulnerability and communal conflict in sub-Saharan Africa. Political Geography, 31(7), 444-453.

Froese, R., & Schilling, J. (2019). The nexus of climate change, land use, and conflicts. Current Climate Change Reports, 5, 24-35.

Gemenne, F., Barnett, J., Adger, W. N., & Dabelko, G. D. (2014). Climate and security: Evidence, emerging risks, and a new agenda. Climatic Change, 123, 1-9.

Gilpin, R. (2016). Understanding the nature and origins of violent conflict in Africa. In Minding the gap: African conflict management in a time of change (p. 21).

Gurr, T. R. (2015). Why men rebel. Routledge.

Helman, D., Zaitchik, B. F., & Funk, C. (2020). Climate has contrasting direct and indirect effects on armed conflicts. Environmental Research Letters, 15(10), 104017.

Hendrickson, D., Armon, J., & Mearns, R. (1998). The changing nature of conflict and famine vulnerability: The case of livestock raiding in Turkana District, Kenya. Disasters, 22(3), 185-199.

Homer-Dixon, T. F., & Blitt, J. (Eds.). (1998). Ecoviolence: Links among environment, population and security. Rowman & Littlefield.

IGAD Centre for Pastoral Areas and Livestock Development. (2019). Social and economic costs of cattle rustling (Policy Brief Series No. ICPALD 20/CLE/1/20-17). Retrieved from https://icpald.org/wp-content/uploads/2019/04/KENYA-CATTLE-RUSTLING-FINAL.pdf

International Crisis Group. (2023). Absorbing climate shocks and easing conflict in Kenya's Rift Valley (Crisis Group Africa Briefing No. 189). Retrieved from

https://www.crisisgroup.org/africa/east-and-southern-africa/kenya/b189-absorbing-climate-shocks-and-easing-conflict-kenyas-rift

Issifu, A. K., Darko, F. D., & Paalo, S. A. (2022). Climate change, migration and farmer–herder conflict in Ghana. Conflict Resolution Quarterly, 39(4), 421-439.

Kahl, C. H. (1998). Population growth, environmental degradation, and state-sponsored violence: The case of Kenya, 1991-93. International Security, 23(2), 80-119.

Koubi, V. (2019). Climate change and conflict. Annual Review of Political Science, 22, 343-360.

Linke, A. M., Witmer, F. D., O'Loughlin, J., McCabe, J. T., & Tir, J. (2018). Drought, local institutional contexts, and support for violence in Kenya. Journal of Conflict Resolution, 62(7), 1544-1578.

Madu, I. A., & Nwankwo, C. F. (2021). Spatial pattern of climate change and farmer–herder conflict vulnerabilities in Nigeria. GeoJournal, 86(6), 2691-2707.

Meier, P., Bond, D., & Bond, J. (2007). Environmental influences on pastoral conflict in the Horn of Africa. Political Geography, 26(6), 716-735.

Miguel, E., Satyanath, S., & Sergenti, E. (2004). Economic shocks and civil conflict: An instrumental variables approach. Journal of Political Economy, 112(4), 725-753.

Mobjörk, M. (2017). Exploring the climate–conflict link: The case of East Africa. In SIPRI yearbook 2017: Armaments, disarmament and international security (pp. 287-299). Stockholm International Peace Research Institute.

Mobjörk, M., & Van Baalen, S. (2016). Climate change and violent conflict in East Africa: Implications for policy (Policy Brief).

Mobjörk, M., Gustafsson, M. T., Sonnsjö, H., Van Baalen, S., Dellmuth, L. M., & Bremberg, N. (2016). Climate-related security risks: Towards an integrated approach. SIPRI.

Mokku, J. (2023). Climate change destroys the livelihoods of Kenyan pastoralists. Africa Renewal. Retrieved from https://www.un.org/africarenewal/magazine/january-2023/climate-change-destroys-livelihoods-kenyan-pastoralists

Muok, B. O., Mosberg, M., Eriksen, S. E. H., & Ong'ech, D. O. (2021). The politics of forest governance in a changing climate: Political reforms, conflict and socio-environmental changes in Laikipia, Kenya. Forest Policy and Economics, 132, 102590.

Mwangi, G. (2006). Kenya: Conflict in the 'badlands': The Turbi Massacre in Marsabit district. Review of African Political Economy, 33(107), 81-91.

Oels, A. (2012). From 'securitization' of climate change to 'climatization' of the security field: Comparing three theoretical perspectives. In Climate change, human security and violent conflict: Challenges for societal stability (pp. 185-205). Springer.

Ogega, O. M. (2017). Globalization and global warming: A case of Laikipia County, Kenya. Journal of Energy and Natural Resource Management.

Ong'eta Mose, W. (2021). Resources, climate change, and implications to positive peace among the pastoral communities in Kenya. In The Palgrave handbook of positive peace (pp. 761-774). Springer.

Osamba, J. O. (2000). The sociology of insecurity: Cattle rustling and banditry in North-Western Kenya. African Journal on Conflict Resolution, 1(2), 11-37.

Pelser, A. J., & Chimukuche, R. S. (2022). Climate change, rural livelihoods, and human well-being: Experiences from Kenya. In Vegetation dynamics, changing ecosystems and human responsibility. IntechOpen.

Raleigh, C., & Kniveton, D. (2012). Come rain or shine: An analysis of conflict and climate variability in East Africa. Journal of Peace Research, 49(1), 51-64.

Rall, K., & Horne, F. (2018). 'There is no time left': Climate change, environmental threats, and human rights in Turkana County, Kenya. In Routledge handbook of human rights and climate governance (pp. 301-311). Routledge.

Reidmiller, D. R., Avery, C. W., Easterling, D. R., Kunkel, K. E., Lewis, K. L. M., Maycock, T. K., & Stewart, B. C. (2018). Fourth national climate assessment. Volume II: Impacts, risks, and adaptation in the United States.

Reinvent Kenya. (2022). Conflict analysis on the impact of Covid-19 pandemic in Marsabit County. Retrieved from https://www.reinvent-kenya.com/wp-content/uploads/2021/01/RAPID-CONFLICT-ANALYSIS-IN-THE-CONTEXT-OF-COVID-19-MARSABIT.pdf

Reuveny, R. (2007). Climate change-induced migration and violent conflict. Political Geography, 26(6), 656-673.

Salehyan, I., & Hendrix, C. S. (2014). Climate shocks and political violence. Global Environmental Change, 28, 239-250.

Scheffran, J., Brzoska, M., Kominek, J., Link, P. M., & Schilling, J. (2012). Climate change and violent conflict. Science, 336(6083), 869-871.

Scheffran, J., Ide, T., & Schilling, J. (2014). Violent climate or climate of violence? Concepts and relations with focus on Kenya and Sudan. In Climate change and genocide (pp. 117-138). Routledge.

Schetter, C., Mkutu, K., & Müller-Koné, M. (2022). Frontier NGOs: Conservancies, control, and violence in northern Kenya. World Development, 151, 105735.

Schilling, J., & Werland, L. (2023). Facing old and new risks in arid environments: The case of pastoral communities in Northern Kenya. PLOS Climate, 2(7), e0000251.

Schilling, J., Opiyo, F. E., & Scheffran, J. (2012). Raiding pastoral livelihoods: Motives and effects of violent conflict in north-western Kenya. Pastoralism: Research, Policy and Practice, 2, 1-16.

Selby, J., & Hoffmann, C. (2014). Rethinking climate change, conflict and security. Geopolitics, 19(4), 747-756.

Seter, H. (2016). Connecting climate variability and conflict: Implications for empirical testing. Political Geography, 53, 1-9.

Stern, N. (2006). Stern review: The economics of climate change.

Sturridge, C., & Holloway, K. (2022). Climate change, conflict and displacement: Five key misconceptions.

Tarif, K. (2022). Climate change and violent conflict in West Africa: Assessing the evidence.

Tegebu, F. N. (2020). Climate change-induced migration in the Horn of Africa [Doctoral dissertation, University of the Witwatersrand].

Tesfaye, B. (2022). Climate change and conflict in the Sahel. Council on Foreign Relations.

Thornton, F., McNamara, K., Dun, O., Farbotko, C., McMichael, C., Yee, M., Coelho, S., Westbury, T., James, S., & Namoumou, F. (2020). Multiple mobilities in Pacific Islands communities. Forced Migration Review, 64.

Tiitmamer, N., Mayai, A. T., & Mai, N. H. (2022). Climate change and conflicts in South Sudan. Sudd Institute.

Toulmin, C. (1995). Tracking through drought: Options for destocking and restocking. In I. Scoones (Ed.), Living with uncertainty: New directions in pastoral development in Africa. Intermediate Technology Publications.

Trocaire. (2020). The nexus between climate change and land conflict in Turkana County (Policy Brief No. 3). Retrieved from https://www.trocaire.org/wp-content/uploads/2021/04/Policy-Brief-No.3-The-Nexus-between-Climate-Change-and-Land-Conflict-in-Turkana-County-_-Final.pdf

United Nations, Department of Economic and Social Affairs, Population Division. (2018). World urbanization prospects 2018.

Van Baalen, S., & Mobjörk, M. (2018). Climate change and violent conflict in East Africa: Integrating qualitative and quantitative research to probe the mechanisms. International Studies Review, 20(4), 547-575.

Van Weezel, S. (2019). On climate and conflict: Precipitation decline and communal conflict in Ethiopia and Kenya. Journal of Peace Research, 56(4), 514-528.

Vivekananda, J., Schilling, J., & Smith, D. (2014). Climate resilience in fragile and conflict-affected societies: Concepts and approaches. Development in Practice, 24(4), 487-501.

Von Uexkull, N. (2014). Linkages between climate variability, vulnerability and armed conflict in sub-Saharan Africa: A review. In Conflict-sensitive adaptation to climate change in Africa (p. 161).

Wafula, C. M. (2022). Rethinking the climate change and conflict linkage: Towards a co-evolutionary approach.

Whitaker, E., Destrijcker, L., Dieffenbacher, J., Caitlin, K., & Hannah, E. (2023). Climate security study: Kenya. Adelphi. Retrieved from https://www.weatheringrisk.org/sites/default/files/document/Climate_Security_Study_Kenya.pdf

White House. (2021). Report on the impact of climate change on migration. White House.

Witsenburg, K. M., & Adano, W. R. (2014). Of rain and raids: Violent livestock raiding in northern Kenya. In A micro-sociology of violence (pp. 118-142). Routledge.