ClimBeR: Building Systemic Resilience Against Climate Variability and Extremes

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How does climate exacerbate root causes of conflict in Kenya?

Climate Security Pathway Analysis

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This factsheet gives answers on how climate exacerbates root causes of conflict in Kenya, using a climate security pathway analysis. Two main pathways are identified:

1. Resource availability and access: Climate-related impacts limit the availability of valuable resources such as water, pasture, livestock, and fish, making access to these resources highly contested. This is especially true in the country's drought-affected arid and semi-arid lands (which cover more than 80% of the land area), where small-scale resource-related conflicts between pastoral groups are facilitated by the proliferation of small arms, as well as grievances fed by marginalization, a lack of basic services, limited employment opportunities, weak governance, and erosion of formal institutions. The resulting climate-related insecurity has the potential to spread across administrative boundaries within Kenya as well as internationally.

2. Livelihood and food insecurity: Rising temperatures, erratic rainfall, and flooding all threaten climate-sensitive livelihoods and food security by reducing agricultural productivity. Rural populations may migrate to other rural or urban areas in response to rising food prices, food and nutrition insecurity, and a lack of alternative livelihood options. The strain on local infrastructure and resources can exacerbate tensions between host communities and migrants. Those who remain in rural areas, particularly dissatisfied youth who lack access to education and employment, may become targets for recruitment by armed groups offering financial incentives.

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1. **How does climate exacerbate root causes of conflict?**
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   Scopus analysis**
2. **Where are the climate insecurities hotspots?**
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   Social media analysis
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* Questions 1, 2, 3, 5 are analyzed at country level through a Climate Risk Lens (impact pathways, economic, spatial, network and social media analyses). The policy coherence and scopus analyses are at continental level.

**Scopus is one of the largest curated abstract and citation databases, with a wide global and regional coverage of scientific journals, conference proceedings, and books. We used Scopus data for analyzing: (1) how global climate research addresses the dynamics between climate, socio-economic factors, and conflict, and (2) how the countries studied are represented in the database.

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1. CONTEXT

With a diverse topography and with more than 80 percent of land area under the fragile arid and semi-arid lands (ASALs) ecosystem, Kenya experiences a mix of climatic conditions: from the hot and arid north and northeast, a hot and humid coastline, to the cooler and more temperate central highlands (The World Bank Group, 2021). Kenya's western, central, and coastal areas, while comprising less than 20 percent of the entire country, are home to 90 percent of its 55 million population. These densely populated areas also feature a rich natural resource base, including forests, wetlands, aquatic and marine resources, together with productive and primarily rainfed agricultural land (The World Bank Group, 2021).

Unlike temperatures, there is high variability in rainfall across the country. While characterized by two distinct wet seasons, rainfall patterns in Kenya are also heavily influenced by shifts in the Inter Tropical Convergence Zone (ITCZ). Geographical and seasonal variations in rainfall are not only connected with extreme rainfall events and flooding, but also to prolonged droughts, both of which have become more common in recent decades. Drought cycles now occur every 2 to 3 years, whereas earlier they were recorded every 5 to 10 years. Along with drought, extreme flooding remains one of the leading causes of land degradation and soil erosion, adversely affecting the highly climate-sensitive livelihoods of the rural poor (The World Bank Group, 2021). Moreover, long-term average temperatures in Kenya are projected to rise (1.7°C by the 2050s and 3.5°C by the end of the century) across all emission scenarios (Ministry of Environment and Natural Resources, 2016; The World Bank Group, 2021).

As a country highly exposed to ecological threats, Kenya faces serious consequences from both drought and flooding (Institute for Economics & Peace, 2020, The World Bank Group, 2021). There have been 28 recorded incidents of severe drought in the past 100 years and the increasing frequency and severity of such events have had huge socio-economic impact. For example, the economic cost of the 1998 to 2000 drought was approximately $2.8 billion, mainly owing to the loss of crops and livestock, damage to fisheries, and the adverse effects on energy production and water supply (National Environment Management Authority, 2015). This severe drought affected food security for millions of Kenyans, while rising temperatures also resulted in the further spread of diseases like malaria (Government of Kenya, 2010). As of 2022, people in Kenya´s ASAL regions have experienced a fourth consecutive below-average rainy season (OCHA, 2022). This ongoing drought is the longest reported in the country for over 40 years, and has left at least 4 million people experiencing acute food insecurity. The amount of people without access to water has increased by 50% in the last year alone, and pastoral communities have faced significant losses in livestock, with more than 1.5 million cattle having died as a result of drought.

Faced with these challenges, socio-economically disadvantaged Kenyans are becoming increasingly more exposed and vulnerable. Owing to their physical locations in hazard-prone zones, counties like Baringo, Kisumu, West Pokot, and Laikipia face a risk of disaster, necessitating significant investment in protection measures (Development Initiatives Kenya, 2019; Ministry of Foreign Affairs, 2018). Furthermore, while low-lying coastal plains and wetlands remain at risk from saltwater intrusion and storm surges due to rising sea levels, other areas in the country face water stress as glacial losses on Mount Kenya and inland flooding contribute to diminished availability and quality of water for agricultural, energy, and domestic use (USAID, 2018).

The agricultural sector (including crop, livestock, and fisheries sub-sectors), contributes around one-third of Kenya's GDP and is highly vulnerable to the impact of climate variability and extremes. Supporting more than 70 percent of the rural population (FAO, 2021), this sector, serving as a major source of food production and livelihood security for the rural poor, remains heavily dependent on seasonal rains (The World Bank Group, 2021). Climatic stressors such as rising temperatures, rainfall variability and increasing frequency and intensity of drought and floods have caused huge losses and damage to crops and livestock, with serious consequences for human lives and security (Government of Kenya, 2015; USAID, 2018).

Despite being one of the fastest growing and largest economies in Sub-Saharan Africa, Kenya continues to face challenges related to poverty, inequality, weak investments, and corruption, as well as internal and external shocks (World Bank, 2021). Economic disruptions due to the COVID-19 pandemic, along with pressure on health care infrastructure, have exacerbated these challenges. With a major portion of the population living in poverty, and a widening gap between rich and poor, more than two-thirds of families in Kenya experience vulnerabilities due to food insecurity and poor nutrition and health outcomes (USAID, 2021). Further, as a net wheat, fuel, and fertilizer importer, Kenya's economy remains vulnerable to global price shocks, such as that from the Russia-Ukraine war (World Bank, 2022a).

In comparison to most of its neighbours with violent histories of civil conflict, Kenya has enjoyed prolonged civil peace, albeit punctuated with brief periods of violence (Theisen, 2012). In this ethnically and culturally diverse context, violence has usually been found to be associated with the occurrence of elections, especially during the polls that took place in 1992, 1997, and 2007 (Theisen, 2012). Following the violence around the contested 2007 election, the fragile states index (FSI) for Kenya peaked. Effects of this violence led to long-term population displacement, domestic supply chain disruptions, and food insecurity (Kenya Food Security Network, 2008). A reformed political economic governance system was introduced with the passage of a new constitution in 2010, and an ambitious decentralization process initiated aimed to transfer autonomy and decision-making power to county governments at subnational level (Kebede et al., 2021; World Bank, 2022). Devolution remains a key factor for Kenya, with implications for shaping local decisions and adaptive capacity of vulnerable communities in the face of worsening climatic shocks and stresses.

2. CLIMATE SECURITY PATHWAYS

Introduction

Unlike some of its neighbours, Kenya enjoys relative stability and an absence of civil war. Nonetheless, there are occurrences of small-scale intercommunal resource-related conflict, along with political disputes and tensions, spanning different regions of the country. In the arid and semi-arid lands, for instance, where pastoralism features as the main source of livelihood, climate-induced scarcity of land and water has been connected with resource-based violent conflicts (Government of Kenya, 2015). Prominent examples include violence between groups such as the Samburu and Pokot, and between the Turkana and Pokot, (Greiner 2012; Ide et al., 2014). In Machakos and Makueni Counties of Eastern region, there has been an observed rise of conflicts over pasture and water in the last few years, undermining inter-communal peace (Maguta et al., 2020). This has possible spillover effects across Kenya's internal administrative boundaries as well as international boundaries with neighbouring countries.

While climate may not be directly responsible for driving such localized conflict dynamics, the impact of climate variability and extremes, interacting with a range of socio-economic and political factors, can shape and exacerbate risks of human insecurity, conflict, and fragility. How might such indirect and complex linkages between climate and conflict, quite extensively studied for the African continent (Scheffran et al., 2019), manifest in a context like Kenya? The following pathways represent logical mechanisms of how the climate-security nexus may operate in Kenya, based on a triangulation approach combining: 1) a systematized search and interpretation of existing knowledge in academic and grey literature; 2) key points of discussion emerging from the June 2022 ClimBeR Climate Security workshop held in Nairobi; and 3) preliminary findings from fieldwork conducted in September 2022 across specific sites representing distinct ecosystems and livelihoods within Kenya.

PATHWAY #1: Resource availability and access

Summary

Climate-induced impacts on land, water, and food systems across Kenya may not only limit the availability of precious scarce resources, including water, pasture, livestock, and fish, but also make access to these resources highly contested. This is especially the case in the drought-affected arid and semi-arid lands (or ASALs, comprising more than 80 percent of land area in the country), where small-scale resource-related conflict between pastoral groups, usually manifesting in the form of livestock raids by male youth, are exacerbated by the proliferation of small arms, along with grievances fed by experience of marginalization, lack of basic services, limited employment opportunities, weak governance, and erosion of legitimacy of formal institutions. The resulting climate-related insecurity can spillover administrative boundaries within Kenya as well as across international boundaries.

Pastoral Communities

The effects of climate variability and extremes, interacting with existing socio-economic and political factors, can increase the risk of violence between communities relying on climate-sensitive pastoral livelihoods. The “spiral of violence” between Turkana and Pokot communities, for instance, can be connected to grievances fed by the experience of marginalization and insecurity, exacerbated by drought, heat stress, diseases, and hunger affecting the livestock, which could even lead to their death (Scheffran et al., 2014, USAID, 2018, Siedenburg, 2021).

Livestock deaths are potentially both economically and culturally devastating for pastoralists, who might move in search of water, pasture, and market access to avoid losing their livestock, coming into conflict with other communities seeking the same resources (Siedenburg, 2021). An increasing frequency of drought not only affects livestock health, but also threatens pastoral livelihoods by affording pastoralists less time to recover from livestock losses (Schilling et al., 2014; Opiyo et al., 2015). Contested access to scarce resources like water, pasture, and livestock, along with the availability of small arms can shape risks of insecurity and violence, typically manifested in the form of livestock raids carried out by male youth (Scheffran et al., 2014).

Neither drought nor conflict are new phenomena in Kenya's ASALs. Pastoral communities like the Turkana have historically depended on alternative tactics, including mobility and use of social networks, to access resources like pasture and water spanning over large areas, with accompanying ecological benefits (Akall, 2021; Western et al., 2020). Declining drought resilience, land degradation, together with land use changes and conversion for agricultural development and wildlife reserves, have led to a breakdown of traditional pastoral institutions based historically on social reciprocity and resource regulation (Western et al., 2020). As a logical consequence, when faced with the impact of climate variability on resource availability, as evidenced through an increase in prevalence of drought and diseases, and in a context characterized by access to small arms and deepening reliance on famine relief, there would likely be conflict over limited resources, including livestock (Blackwell, 2010).

In a study on Turkana County, Ember et al., (2012) find that the intensity of violence is associated with periods of less than normal rainfall. The reasoning for this is framed around the desperation of groups seeking survival in situations of scarcity and where access to resources cannot be arranged peacefully. Conversely, other research has found that drier periods in the drylands potentially reduce the risk of conflict and increase the possibility of cooperation, making violent incidents like livestock raiding much less likely (Witsenburg & Adano, 2009). This has been attributed to the imperative for survival during harsher conditions, a decline in the economic value of livestock, and realization that "fighting during a drought is suicidal'' (Eaton 2008), making times of hardship during drought-induced scarcity relatively peaceful.

Indeed, there is strong evidence for the time following wetter years to be less safe than the drier years (Theisen, 2012), fueling opportunistic behavior as more time and effort can be given to strategically plan raids (Seter, 2016). Hence, rather than scarcity, conditions of abundance, including periods with more abundant vegetation, seem to be associated with a greater risk of violence and a higher incidence of livestock raiding (Meier et al., 2007, Witsenburg & Adano, 2009). Furthermore, little evidence has been found that scarcity in itself and in election years would lead to violence (Theisen, 2012).

This is not to say resource scarcity or abundance by themselves inevitably lead to conflict, but rather to underline that under certain conditions the availability and access to water, pasture, and forage, due to unreliable rainfall, may inform risks of conflict among pastoral groups who depend on these resources for their livelihood security.

For example, empirical evidence from community conservancies in Laikipia and Samburu counties of northern Kenya reveals the influence of climate on conditions of resource scarcity and competition, which can heighten the risk of insecurity and conflict. But the extent to which climate may act as a risk multiplier in this context, and at what point competition over critical resources may catapult towards violent conflict, depend on the question of "how resources are managed in times of scarcity" as well as the adaptive capacity of communities (Campbell et al., 2009).

Moreover, conflict can itself be a part of the political dynamics of adaptation instead of being a factor inhibiting local adaptive capacity. This is the case in areas like Turkana, where the loss of livestock in raids that are increasingly becoming more violent and predatory, carry implications such as impoverishing

social networks and ties that previously played a key role in replenishment and exchanges through loans and gifts (Eriksen and Lind, 2009).

Insights from a recently conducted fieldwork (Medina et al., in press) in Kenya reveals that communities in other parts of the ASAL region are also witnessing increasing intensity of violence during livestock raids. For instance, the Yakuu Indigenous Peoples of Mukogodo forest, living in an ecotone between the arid and fertile rangelands around Mount Kenya, have traditionally experienced instances of cattle rustling by neighbouring communities. Cattle rustling, although involving acts of violence, is also a long-established and culturally accepted practice, aiding in cattle replenishment, dowry exchange, and representing a rite of passage for male youth "warriors." Individual instances of rustling are not necessarily deemed an act of conflict by the Yakuu community. Today, however, cattle rustling dynamics have shifted significantly. Death of cattle is a constant stressor for pastoralist wellbeing, mostly fuelled by drought, lack of pasture and diseases—all related to the effects of climate change. Longer migratory routes, adopted by pastoralists due to a lack of pasture in the more arid regions to the north, imply that a higher number of pastoralists now come in contact inside and around Mukogodo. In recent years, members of the Yaaku report a noticeable increase in the frequency and intensity of rustling conducted by neighbouring communities, which they directly relate to the impacts of drought over livelihoods and the availability of resources. Attacking raiders not only steal cattle, but also destroy infrastructure and displace people to secure access to land, waterholes, and pasture.

This is echoed in key insights emerging from discussions during a June 2022 workshop on climate security held in Nairobi as part of the One CGIAR initiative: Building Systemic Resilience against Climate Variability and Extremes (ClimBeR). As highlighted in a pathway named "warrior culture" in the workshop report "Towards a Common Vision of the Climate-Security Nexus in Kenya"[1] (Medina et al., 2022), there is a significant gap in how climate-induced resource scarcity might influence "religious environmental sense-making" of pastoral communities in the ASALs, with the potential to shape localized conflict dynamics "driven by sacred beliefs around entitlements and attachments to cattle." Group discussions with experts and practitioners during the workshop revealed that religious organizations, including churches, other faith-based organizations and even non-state armed groups with certain religious orientation can facilitate both radicalization as well as peacebuilding through resource sharing and cooperation, by offering resource support and filling a vacuum created by regional marginalization, lack of basic services, and eroding legitimacy of governmental institutions.

Furthermore, influenced by a development policy bias of the state that has overlooked pastoralism as a viable livelihood in the drylands, relief operations have historically tried to relocate herders to more sedentary activities like fishing and irrigated agriculture schemes, leading to a shift away from livestock-keeping (Eriksen and Lind, 2009). Such strategies, under a conventional development paradigm, are not only ineffective in reducing inequity in distribution of resources, they also erode the legitimacy of formal institutional interventions by failing to consider local needs, aspirations, and adaptation efforts. Thus, conflict-sensitive institutional arrangements such as peace committees, and governance mechanisms considered critical for fostering cooperation and peace, could be

[1] *This report combines key insights emerging from a series of common visioning exercises around the climate security nexus in the ASALs, conducted with 45 diverse stakeholders working across humanitarian, development, climate, and peace sectors in Kenya.*

disregarded as being imposed structures in parts of the ASALs (Eriksen and Lind, 2009; Adano et al., 2012; Scheffran et al., 2014).

This is evidenced in conservation efforts involving rural communities as participants and beneficiaries, which though intended to ameliorate existing conflict outcomes actually result in the opposite, heightening risks of further conflict over communal resources. In the drought-prone East Pokot, along with neighbouring counties of Samburu, Turkana, Laikipia and Baringo, violence associated with livestock raids, and facilitated by the proliferation of small arms and weapons since the 1980s (Mkutu, 2008), is increasingly becoming embedded in politically-driven conflicts over control of land, infrastructure and territorial rights along ethnic lines and administrative boundaries (Schlee, 2010, Greiner, 2012). This can be negatively influenced by interventions in existing land use and tenure systems, such as the establishment of conservancies on group ranches that limit pastoral mobility and alienate groups from existing claims over lands, especially if they fail to consider regional communal dynamics related to past and present struggles over access and use of common pool resources (Greiner, 2012).

Extractive activities like oil exploration with the discovery of reserves in northwestern Kenya, mainly in Turkana and surrounding areas, have the potential to amplify already existing climate vulnerabilities and conflict risks (Schilling et al., 2015). Oil extraction in the region has been justified by the government as contributing to national economic growth, facilitated by a marriage of interests between local elites and external investors. But this process can have detrimental consequences for the local environment and people of this region, through pollution of land and water, dumping of toxic wastes, disruption of pastoral migration routes, as well as marginalization and displacement of local populations (Mkutu and Mdee, 2020).

This rush to extract oil could further feed a downward "spiral of violence" and vulnerability, aggravating existing climate-related conflict dynamics between the Turkana and Pokot communities in this arid area, one already harshly impacted by rainfall variability and frequent droughts (Scheffran et al., 2014). The risk of conflict between local communities and the oil interests may be amplified, as expectations around employment and development remain largely unmet in a region already suffering from weak governance and lack of access to basic services and security (Schilling et al., 2015). Adequate resource governance efforts, including institutional mechanisms for land use and rights, sharing of oil revenues among different stakeholders, as well as for mediating non-violent interactions between local communities, oil companies and the government, would be needed to address and mitigate this potential vicious cycle of climate-resource-conflict nexus (Schilling et al., 2015).

Farming and Fishing Communities

Moving the spotlight from the pastoral dynamics to livelihoods based on farming and fisheries in the arid and semi-arid lands as well as other parts of the country can help illuminate how Pathway #1 might operate in specific sub-national contexts. Communities in Burat and Kinna of Isiolo County engaged in agricultural livelihoods, and dependent on natural resources like water, strongly perceive the impact of drought in terms of water stress, crop failure and declining yields. Under particularly harsh drought conditions, households relying on irrigation have also turned to erosive coping strategies such as charcoal making, using nearby forest resources. Conflicts over scarce resources

were reported from these communities, mainly in the form of livestock raiding, inter-ethnic clashes, and disputes with local wildlife authorities over access to grazing lands within the Meru National Park (Quandt, 2021).

With livestock an important asset for millions of rural Kenyans, conflict occurs not only between drought-affected pastoral groups but also between mobile pastoralists and sedentary farmers competing for diminishing resources, including water, land, and fodder (Mugonya and Hauser, 2022). For example, increasingly frequent droughts and erratic rainfall have amplified resource-related conflicts between Pokomo farmers and Orma herders in the Tana River Delta. While the Pokomo inhabit the riverbanks to cultivate crops in this wetlands area, the Orma herds, needing access to the river, pass through the agricultural lands, resulting in damaged crops and sparking intercommunal conflict. With the violence reaching a peak ahead of the 2013 elections, there was not only mistrust between the communities, but also toward the authorities, with local people securing arms for their own protection (Climate Diplomacy, 2012).

Along with access to water, the question of effective governance of land resources is key to understanding the dynamics of cooperation and conflict over resources. This is especially relevant in livelihood transition zones, where actors depend on diverse livelihoods yet the same resources may collide with each other. Triggers like drought or political tensions around elections can tip the scale toward violent conflict (Greiner, 2013; Fox, 2018). For instance, recent research on Mukogodo forest in Laikipia County has found that in this zone of transition from pastoralism to agro-pastoralism, with a variety of land tenure arrangements, users and overlapping claims to resource rights, there exist tensions between multiple actors at multiple levels of governance and decision-making over forest and rangeland resources—national and county governments, communities, and NGOs. Despite a devolved governance system and the passage of the Community Land Act of 2016, the replacement of traditional mechanisms of cooperation by formalized institutions may erode social cohesion and exacerbate alienation, further marginalizing those historically deprived of formal rights to these land resources (Muok et al., 2021).

Struggles over access and rights to resources characterize the condition of several communities across Kenya, especially those facing the increasingly harsh impact of a changing climate amidst global shocks and an evolving political-economic landscape. Drawing on preliminary insights from recently conducted fieldwork in the country, the experience of the Endorois community can exemplify such dynamics. The Endorois Indigenous Peoples, inhabitants of the area around Lake Bogoria for several centuries, were forcefully displaced by the Kenya government in the 1970s for the creation of Lake Bogoria Game Reserve. The community has since the 1980s organized in demanding the restoration of their rights and compensation for past injustices. More recently, the Endorois have been experiencing violent attacks from the neighbouring Pokot, with characteristics like other tribal territorial conflicts across Kenya. Driven by election-based violence, these conflicts have continued to revolve around political boundaries, access to land and the interests of political and economic elites. With thousands of internally displaced persons (IDPs) dwelling within the Endorois territory, many hundreds killed, dozens of thousand livestock stolen or killed, and infrastructure like water tanks and roads destroyed, the Endorois people today reject the term “cattle rustling”, referring instead to “terrorism”. Given that poverty and marginalization drive the recruitment of Pokot youth, mainly 13 to

20-year-olds participating in the attacks, increasing degrees of vulnerability could be understood as enhanced through climate impacts, rendering young populations more susceptible to recruitment for violence. At the same time, the effects of conflict have worsened Endorois' vulnerability to climate risks y undermining collaborative and adaptive capacities.

Compared to populations engaged in pastoral and agricultural livelihoods, communities relying on fishing can be found scattered across the country, located along the coastline, wetlands, and lakeshores. Traditional fishing activities in lakes and floodplains around the Tana River have decreased over recent decades with the decline in fish yields (Leauthaud et al., 2013). This can be attributed to changes in the frequency and duration of floods, and the resultant drying up of lakes, along with dwindling populations of fish that served as a vital resource and source of identity for the Pokomo community. Artisanal fishing communities mostly live without alternative sources of income, and with low levels of education—factors which make them highly dependent on natural resources (Dzoga et al., 2019). Changes in the flooding regime, reduced water availability, and climate-induced degradation of productive capacities have spelled serious consequences for human security and social cohesion in the region (Leauthaud et al., 2013).

Along Kenya's coastal lowlands, there are households dependent on marine fishery resources (Somoebwana et al., 2021). Fish catches in these fisheries are affected by warming seawater temperatures and the variability of the monsoons, influenced by El-Niño/La-Niña events (Kamau et al., 2021). With a growing population dependant on coastal resources, and climatic stressors projected to alter ecosystem dynamics, effective management and governance of near-shore fisheries becomes critical for avoiding resource over-exploitation and habitat degradation, with long-term benefits for the Blue Economy (Kamau et al., 2021).

Commercial fishing in offshore waters also faces governance issues related to Illegal, Unreported, and Unregulated (IUU) fishing, at great cost to the country's economy (Benkenstein, 2018). Kenya's maritime governance, crucial to ensure access to coastal resources, is complicated by boundary disputes with the neighbouring countries of Somalia and Uganda. While the dispute with Uganda is around an island on Lake Victoria, the dispute with Somalia is over demarcation of a maritime boundary needed to strengthen security in the context of surging Somali-based maritime piracy in the Indian Ocean after 2005, as well as non-traditional security challenges, including illegal fishing, disasters, climate impact, marine pollution and the smuggling of drugs, weapons and people (McCabe, 2019). Overall, there remains an obvious gap in the literature around the role of fishery resources in influencing climate-related security of Kenyan communities.

Nevertheless, any understanding of climate security pathways in Kenya focusing on 1) availability and access to land and water resources, as well as 2) livelihood and food insecurity, remains incomplete without adequately considering the transboundary dynamics and spill-over effects linking the impact of climate on localized and cross-border conflict outcomes.

PATHWAY #2: Livelihood and food insecurity

Summary

Livelihood and food insecurity can act as an mediating mechanism between climate and conflict risk, not only in the context of drought-induced resource scarcity, but also in relation to risks of flooding. Rising temperatures and rainfall variability challenge climate-sensitive livelihoods by affecting productivity of agriculture, livestock, and fisheries. Rural populations confronted by rising food prices, food and nutrition insecurity, and lack of alternative livelihood options, may migrate to urban areas. Whether it is internal migrants in urban slums or refugees in camps, the pressure on local infrastructure and resources can fuel tensions between the host community and migrants. On the other hand, those staying in rural areas, especially discontent youth with lack of access to education and employment, may become targets for recruitment by armed groups offering economic incentives.

ASAL Region

As elaborated in Pathway #1 on resource availability and access, communities practicing climate-sensitive livelihoods in the arid and semi-arid lands face risks of conflict with similar or different livelihood groups competing over dwindling resources. Over longer time, they can also experience food and nutrition insecurity, gradual livelihood erosion and eventual livelihood loss. Availability and access to resources including water, land, and food become critical here. In the words of a participant in the ClimBeR climate security workshop:

> *In Kenya, we have seen an increasing frequency of droughts, which are now almost a continuous occurrence and affect an increasing number of people. The decreasing availability of water affects people´s livelihoods in multiple ways and induces conflict amongst communities. As we speak, whole areas of Marsabit are under curfew due to drought-driven conflict. (Joshua Laichena, Kenyan Institute for Public Policy Research and Analysis).*

Discussions during the workshop highlighted the role of food insecurity in mediating climate-conflict linkages (Medina et al., 2022). Cattle rustling by male youth from drought-affected pastoral communities could be used to replenish livestock and food reserves. Communities can also turn to alternative—and less harmful—strategies for their source of income and survival. For example, in Turkana, during times of food shortages, a common practice has been to sell livestock for food. Other avenues may include gathering wild food, engaging in informal trade, and providing casual labour (Eriksen and Lind, 2009).

With adaptation options in Turkana largely shaped by colonial and post-colonial development policies biased towards "*settling*" pastoralists (Lind and Eriksen, 2006), in past decades irrigation and fishing schemes have been introduced as part of relief operations. However, as fishing or farming alone could not meet all the needs for food and nutrition security, efforts to adopt sedentary livelihoods in such an arid area made pastoral communities even more vulnerable, rendering Turkana a hotspot where climate and conflict risks coincide (Eriksen and Lind, 2009).

Empirical research focusing on other parts of the ASALs, such as Laikipia County, find that adaptation pathways are not homogenous for entire communities, but rather shaped by axes of social differentiation, including gender, age, and wealth (Ng'ang'a and Crane, 2020). At the scale of individuals, research finds that those who have reported moving due to drought and water shortages are more likely to experience violence than those who have not (Linke et al., 2018).

Whether violence is an outcome or a driver of migration, climate and conflict-induced human mobility and insecurity play a key role in this pathway. The presence of refugees from Somalia and other African countries in the Dadaab camps, located in Garissa County of northeastern Kenya, has been identified as a factor stressing local resources (Kumssa and Jones, 2014). The majority of refugees in these camps are fleeing political instability and violence in Somalia, but their continued influx into this area close to the Kenya-Somali border should also be understood in the context of environmental and socio-economic impact of drought and famine on the region.

Short-term humanitarian aid provided by international agencies and other NGOs is inadequate for sustaining the refugees in Dadaab, who are in need of longer-term development support and a durable solution to their plight. With a growing refugee population in and around the camps, there are concerns around reduced economic opportunities, along with human security challenges including sexual and gender-based violence faced by women, in part owing to a dearth of adequate shelter and having to walk long distances to collect firewood. Climatic stressors like inadequate rainfall in this highly drought-prone region compound risks of insecurity, mainly related to food and livelihoods for refugees and host communities alike, pushing them toward erosive activities like cutting trees. In the absence of adequate government policy and capacity-building programmes to address pressure on local resources, such a situation can in turn exacerbate environmental degradation, further fueling tensions between the host community and refugees (Kumssa et al., 2014).

More recently in northeastern Kenya, there have been repeated incidents of violence on schools and teachers perpetrated by Al-Shabaab, the Somalia-based militant group opposing the Somali government. In retaliation against Kenya's military deployment to Somalia in 2011 to fight their insurgency, Al-Shabaab's activities in Kenya have mainly focused on bordering northeastern counties like Mandera, Wajir and Garissa, in addition to attacks in the capital Nairobi and a military airstrip in Lamu County. As one of the most marginalized and underdeveloped parts of Kenya, there are glaring regional inequalities between the northeast and the rest of the country, reflected in poor indicators of public health, education, and employment. These inequalities are deeply entrenched in the socio-economic fabric of the northeast, with its roots in policies developed during the colonial era that largely neglected this Muslim-majority region (The World Bank, 2019).

Security risks in this part of the country have continued to persist even after Kenya's policy of devolution, which aims to provide greater autonomy to county governments by distributing power and resources away from Nairobi (The World Bank, 2019). By mobilizing grievances related to persistent inequalities and a sense of marginalization in the region, Al-Shabaab's violent activities have forced the Kenyan government to withdraw all non-local teachers from the affected counties, resulting in what is being called an "education crisis" affecting the already long-neglected northeast. Effects of climate variability in this drought-prone region can exacerbate the crisis, with dire implications for

security, including livelihood and food insecurity, providing Al-Shabaab with fertile ground to recruit youth discontented with a lack of access to education and employment (International Crisis Group, 2020).

Non-ASAL Regions

Livelihood and food insecurity act as major drivers of conflict risk in other parts of the country as well. In western Kenya, the Nyando river basin, comprising the Kano floodplains and the Nyando wetland, part of the bigger Lake Victoria Basin, represents one such fragile ecosystem, with land use divided between crop production and livestock rearing as the dominant sources of livelihood. According to official statistics of the Kenya government, over 70 percent of the population in this wetland region, which faces an increasing risk of flooding, live below the national poverty level (UNDP, 2009). Weak socioeconomic and health indicators, together with a growing youth population, can explain the heavy dependence of local people on its dwindling natural resource base for subsistence, resulting in over-exploitation and environmental degradation (Raburu et al., 2012).

Additionally, the combined effects of variability in rainfall and river discharge, resulting in frequent floods (Kitheka et al., 2021), along with poor infrastructure and lack of access to basic services can compound risks of livelihood and food insecurity, which in turn can have devastating ecological consequences for the wetlands. Furthermore, shifting of rivers and water levels in the region can be linked to risks of human-human and human-wildlife conflicts. These can take multiple forms, including boundary disputes between communities like the Nyakach and Kano, as well as displacement of wildlife such as the hippopotamus due to destruction of papyrus swamps. Another type of risk can be seen emerging in this context, when resource use by local people, such as excessive water use, papyrus harvesting, sand harvesting, or immature fish harvesting, come into conflict with conservation efforts (Masese et al., 2012).

For many Kenyans in areas around the lakes, wetlands, and the coast, fish constitute a major source of nutritious food. Harvested fish resources, along with crops, and forest products serve as dietary safety nets during challenging times (Fiorella et al., 2015). With women largely excluded from fishing and trading activities within the local economy, they often enter into jaboya relationships (involving transactional sex-for-fish exchanges) with fishermen to gain better access to fish for selling. Examining how the Lake Victoria ecology can influence these relationships, Fiorella et al., (2015) find that a climate-induced decline in fish catch is resulting in a “scramble for the fish,” heightening the importance of jaboya relationships for fish access, albeit with risks of HIV infection and social stigma.

Insights from empirical observations during recent fieldwork further reveal the climate-induced livelihood insecurity faced by fishing communities around the Lake Victoria region, such as the Banyala Indiegenous Peoples of Busia County (Medina et al., in press). The Banyala are a traditional fisherfolk community who have been transitioning towards subsistence and small-scale cash crop farming since the 1990s owing to the plummeting of fish stocks in Lake Victoria and increasingly harsh regulation imposed by the Kenyan and Ugandan governments. However, with the increase in flooding, finding viable alternative sources of livelihood is becoming extremely challenging. Despite a reduction in the number of fishermen during past decades, recent years have seen an increase in their numbers. Faced with diminishing fish populations and changing behavioural patterns of fish

resulting from the impact of climate change, Banyala fishermen are forced to go deeper into the lake and across the Ugandan border, where they are subject to risks of arrest, torture, and even death by Ugandan authorities and pirates.

Kenya's post-independence period has been characterized by government policies protecting industry at the expense of the agricultural sector, which has been relatively neglected and penalized, thereby accounting for high rural poverty levels, limited diversification of agriculture, poor rural infrastructure, and gaping inequalities between rural and urban areas (Alila and Atieno, 2006). Together, they act as a push for internal migration from rural to urban areas, largely driven by livelihood insecurity in rural areas, which, in turn, is increasingly linked to the impact of climate variability on agricultural production, food and nutrition insecurity and lack of alternative livelihood options. The presence of migrants in urban areas puts pressure on urban infrastructure, leading to overcrowded living conditions and competition for jobs, which together with lack of access to public services can fuel ethnic and cultural tensions between urban residents and migrants (Spilker et al., 2020).

It is worth noting here the gendered dynamics of rural-urban migration, with men migrating to urban areas for alternative livelihood sources, leaving women in rural areas with the added burden of agricultural and household work. Along with the expectation of adhering to climate-sensitive gender roles in providing food for households, this can make existing structural inequalities even more deeply entrenched; for instance, through denial of land rights and barriers in access to land for women (Etale and Simatele, 2021). The interaction of gender inequality with climate variability and other factors can make women differentially more vulnerable to food insecurity and risks of violence, including gender-based violence at home, despite women playing a key role in climate adaptation efforts.

CONCLUSION

Key insights emerging from the analysis of climate security pathways in Kenya can be summarized as follows:

1. Firstly, the two pathways discussed above do not operate in isolation. Rather, they are inter-dependent and mutually reinforcing. Lack of adequate access to critical resources may challenge livelihood and food security, while livelihood and food insecurity may further push people toward harmful alternative strategies that lead to degradation and depletion of vital resources.
2. Secondly, there are linkages and inter-dependencies between the ASAL and non-ASAL regions that can become especially visible in the livelihood transition zones. Climate-induced resource depletion and scarcity in the ASAL region can exacerbate competition and overlapping claims over limited resources that can be found in the non-ASAL regions.
3. Thirdly, the climate-security nexus in Kenya represents a vicious cycle between climate and conflict. The impact of climate, acting as a "risk multiplier," can indirectly influence conflict risks through intervening mechanisms, the effects of which then further restrict coping and adaptive capacities when confronted by the impact of conflict on resources and livelihoods.
4. Fourthly, although there is a growing understanding of the climate-security nexus in Kenya as captured in academic and grey literature, the empirical focus to examine climate-conflict linkages remains overwhelmingly on pastoral livelihoods. There is scope for a more nuanced understanding and unpacking of the nexus in the context of agriculture and fishery-based livelihoods.
5. Finally, the analysis of climate security pathways for Kenya reflects the need for more empirical examinations of intervening mechanisms through which climate impacts may indirectly amplify and translate into conflict risks. Developing multi-methods research frameworks with complementary quantitative and qualitative analyses could be the way forward.

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