INITIATIVE ON
Climate Resilience

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How does climate exacerbate root causes of conflict in Somalia

Climate Security Pathway Analysis

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This factsheet gives answers on how climate exacerbates root causes of conflict in Somalia using a pathway analysis. Four main pathways are identified:

1. Resource Access and Availability: illustrates how climate impacts affect natural resource availability, leading to different forms of resource related conflicts.

2. Livelihood and Food Insecurity: examines how climate change impacts agricultural production and livelihoods in Somalia.

3. Disaster and Conflict Displacement: delves into the compounding effects of climate-induced and conflict-driven displacement on insecurity dynamics in Somalia.

4. Fragility, Conflict and Exploitation: examines how climate change exacerbates existing socioeconomic inequalities, political representation, power dynamics and grievances within the country.

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This publication is part of a factsheet series reporting on the findings of the CGIAR FOCUS Climate Security Observatory work.
The research is centered around 5 questions*:

1 How does climate exacerbate root causes of conflict?

Climate security pathway analysis

Ethiopia Guatemala Kenya Mali Nigeria Senegal Sudan Uganda Zimbabwe

Econometric analysis

Kenya Mali Nigeria Senegal Sudan Uganda Zimbabwe

Scopus analysis**

2 Where are the climate insecurities hotspots?

Spatial analysis

Kenya Mali Nigeria Senegal Sudan Uganda Zimbabwe

3 What is the underlying structure of the climate, conflict, and socio-economic system?

Network analysis

Kenya Mali Nigeria Senegal Sudan Uganda Zimbabwe

4 Are climate and security policies coherent and integrated?

Policy coherence analysis

5 Are policy makers aware of the climate security nexus?

Social media analysis

Kenya Mali Nigeria Senegal Sudan Uganda Zimbabwe

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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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CGIAR FOCUS Climate Security

CGIAR INITIATIVE ON Fragility, Conflict, and Migration

KEY MESSAGES

1. **Climate shocks are compounding structural, institutional and relational driver of conflict, increasing the competition around the access over natural resources:** Climate impacts and extreme events of droughts and floods decrease availability of natural resources, like land, pasture and water. Compounded with inconsistent land tenure and resource management systems governing the access to resources, the reduced availability of natural resources is contributing to tensions around land disputes and eviction of people.

2. **Climate impacts on pasture and water are altering traditional grazing routes of pastoralist, leading to conflicts between pastoralist and among farmers and herders, within areas in which resources are relatively more abundant.** Traditional reciprocal agreements of sharing resources in times of droughts are being eroded through the higher frequency and intensity of extreme events, affecting social cohesion and clan related conflicts.

3. **Coping capacities of population vulnerable to climate change are overburdened, driving maladaptive behaviour with repercussive effects on insecurity dynamics:** Climate change and variability significantly impact crop and livestock productivity on which Somalia heavily relies. Fluctuation in food prices and pressures on livelihoods, leads population to resort to maladaptive behaviour, such as charcoal production or overgrazing, but also resorting to criminal activities or joining armed groups, exacerbating insecurity dynamics in the country.

4. **Climate and violence induced displacement of people, mainly towards urban areas are exacerbating conflicts and insecurity within receiving areas:** Extreme climate events like droughts and floods, induced eviction, as well as violence and conflict, are main drivers of displacement. Displaced populations strain available resources and basic services in receiving areas, leading to intensified competition and tensions, particularly in urban areas as the main destination of most IDPs. Additionally, desperation may drive some displaced people towards illicit activities, making them susceptible to recruitment by non-state armed groups.

5. **Climate impacts within fragile and conflict affected areas are being used strategically by armed groups and militias with repercussive effects on peace and security:** Climate change exacerbates existing structural factors of socioeconomic inequalities, political representation, power dynamics and grievances within the country. As resources and food become less available due to climate change, controlling their access is used to solidify power by certain actors. Al-Shabab exploits climate induced humanitarian crisis to act as an alternative relief provider and impose taxes. And clan-based power sharing has led to elite exploitation and resource grabbing, in which climate impacts are opening opportunities and marginalizing vulnerable groups further.

1. CONTEXT

Climate, Conflict and Socioeconomic Vulnerability

Somalia is highly affected by climate change and variability, with climate hazards increasing its vulnerability (Craparo et al. 2024). The ND-GAIN Index ranks Somalia as one of the most vulnerable and least prepared countries worldwide (University of Notre Dam 2021). Annual mean temperatures are around 30°C throughout the country and have risen by ca 1°C according to historical data (WBG 2020). In the predominantly arid and semi-arid country with two rainfall seasons, the average annual rainfall is around 200mm, with the northern coastline receiving significantly less and the southwest having the highest amount of rainfall (WBG 2020). The frequency and intensity of extreme events, such as drought and highly unpredictable floods, have increased, undermining rainfed agriculture and pastoralist systems (Rep of Som 2013). A devastating drought from 2021 – 2023, marking the worst drought in over four decades, had placed nearly 8.3 million Somalis, nearly half of the population, into acute food insecurity (IPC 2022). In 2023, the still recovering population had been exposed to heavy rains within the deyr season, leading to flooding in most of the country, imposing devastating loss and affecting around 700.000 people (OCHA 2023). Climate projections for the future indicate a 0.3-0.7°C increase of mean temperature by 2035 and high variability within rainfall patterns, with a general increase in precipitation, characterized by high spatial and temporal differences (Ogallo et al. 2018).

Somalia is a highly fragile and conflict affected country, ranking first in the fragile state index and having ongoing conflict between the Islamic militant group Al-Shabaab, controlling territories in central and southern Somalia, and the coalition forces of the government, clan militias and the African Union (Haken 2019; ACLED 2023). The country has been affected by conflict over several decades. There is some disagreement of when to date back the beginning of the complex conflict dynamics. Various factors had played into the collapse of the central state in 1991, including the aftermath of the Ogaden War with Ethiopia and various inter-clan conflicts fuelled by power struggles over strategic areas within the country (The World Bank 2005). In the early 2000s, the conflict took a further, more religious dimensions with the emergence of the Islamic Courts Union (ICU) and later its former military wing Al Shabab. The radical Islamic terrorist group, aiming to seize control over the country, is fought by a coalition of internal and international counterinsurgency forces, but up to now holds Somali territories within the South of the country and exerts violence and fear (Klobucita et al. 2022; ACLED 2024).

Since the establishment of the Transitional Federal Government and its successors, Somalia is pursuing a challenging path of state building to respond to the high level of fragility. Clan based politics dominating Somalia's society, as well as militant groups destabilizing the region are imposing significant challenges for the government to assert control over the entire territory (Keating and Waldman 2018). Relational factors, such as the deep-rooted clan divisions are hindering national reconciliation, while the large-scale displacements through climate and conflict are reshaping demography and complex clan relations in the country. Compounding effects of climate and conflict have led to high levels of food insecurity and large portions of the population living below the poverty line (IPC 2024; Rep of Som 2022). The economy is highly dependent on remittances of Somali Diaspora and International Aid, which, while crucial, constitutes an unsustainable economic system with high number of unemployment, particularly among youth (Majid et al. 2018). According to IOM data, in 2021, 33 percent of migrants in Somalia were youth aged 18 to 29, facing significant challenges such as lack of employment

opportunities and increased exposure to violence (Villa & Belli, 2024). The majority of the local Somali economy is reliant on agricultural production, which under the current climate exposure is highly vulnerable, increasing livelihood insecurity, fuelling discontent and provide incentives for joining NSAG, further contributing to fragility and the insecurity dynamics (Rep of Som 2022; Erlöw and Krampe 2019). As a result, a substantial number of young people opt for irregular migration patterns as opposed to more regular or organized alternatives (Villa & Belli, 2024).

To find suitable solutions addressing the compounded risks of climate change and conflict dynamics, it is imperative to understand the various interlinkages, that manifest climate security risks within Somalia. To do so this study has identified various pathways in which climate exposure and vulnerability affects social interactions, regulated through structural, institutional and relational factors (Lederach 2014), on the localized and national level, that may compound existing insecurity dynamics within the country. The analysis of the climate security pathways is based on a literature review and validated through expert knowledge of governmental and non-governmental actors, participating in a national workshop, conducted on in June 2024 in Mogadishu by CGIAR in partnership with FAO and IGAD Centre of Excellence for Adaptation and Environmental Protection (CGIAR et al. 2024).

PHOTO: Caroline Rusten

2. CLIMATE SECURITY PATHWAYS

PATHWAY #1: Resource Access and Availability

The resource access and availability pathway in Somalia illustrates how climate impacts affect natural resource availability, leading to different forms of resource related conflicts. Climate change, including slow-onset changes and extreme events like droughts, diminishes resources such as land, pasture and water. This results in two key sub-pathways: the first explores land availability, affected by drought, degradation and governance issues, leading to competition and conflicts. The second focuses on water and pasture availability, disrupted by climate changes and land-use changes, altering traditional migratory routes and intensifying conflicts between farmers and herders.

Climate Impacts on Natural Resources

Climate change-induced droughts and prolonged dry spells have significantly reduced the availability of water and fertile land, decreasing the areas suitable for agriculture (Jalango et al. 2021). In a country with over 80 percent arid and semi-arid land, the available food, land and water systems are already considered to be fragile and limited in its productive capacities (Rep of Som. 2022). Somalia´s topography allows for agricultural and agro-pastoral livelihood zones in the South along and between the Shabelle and Juba rivers as well as within Somaliland, coastal and fishing communities can be found along the shore of the Indian ocean, and vast areas of pastoral land stretching along the Horn from Galgadud to Togdheer (FSNAU 2015). Climate hazards of droughts are particularly strong within the pastoral and agro-pastoral zones, while flooding has the strongest effects within the coastal and riverine areas (Rep of Som 2022).

One of the most immediate and severe consequences of climate change in Somalia is the reduced availability of water. Climate impacts alter the conventional hydrological cycle, giving rise to shifting rainfall pattern and thereby reduces the available surface water (CGIAR et al. 2024). Lack of sufficient water sources has detrimental effects on irrigation patterns and cultivation prospects, causing wells to dry up quickly, and exacerbating challenges for communities who rely strongly on them (Rep. of Som. 2013). The most recent drought has exacerbated the scarcity of freshwater sources and grasslands, leading to long-term declines in vegetation cover, making it challenging for pastoral communities to find suitable grazing areas for their livestock (Maesho et al 2021). Increasing temperatures and more frequent drought events were similarly linked to land degradation by increasing evaporation, reducing soil moisture, and causing the redistribution of plant and animal species (Rep. of Som. 2013; CGIAR et al. 2024). Increasing frequency and intensity of floods further induce significant impacts on the land, causing damage to crop production, soil fertility and infrastructure (Jimale et al. 2023). Somalia is prone to three types of flooding; riverine flooding, flash floods and coastal flooding. In the last decades, a combination of climate impacts and human induced degradation has increased the intensity and frequency of flooding around the Juba and Shabelle rivers, with devastating effects on human lives and economic loss (Rep of Som 2022).

Human induced degradation

Compounding the more direct effect of climate on the availability of natural resources, are also indirect dynamics, in which communities exposed to climate effects increasingly engage in maladaptive behaviour, such as deforestation, use of chemical fertilizers or overgrazing, which further contribute

towards land degradation (Jalango et al. 2021; CGIAR et al. 2024). Poor agronomic practices, including the burning of animal manure and the lack of soil and water conservation, compound these challenges (Mohamed and Nagaye 2021). The lack of access to electricity in Somalia, with a significant portion of the population relying on traditional biomass and illicit practices such as charcoal production or illegal logging, have detrimental effects on land, degenerating rangelands, destroying biodiversity, and causing soil erosion, intensifying the deterioration of the vegetative base (Jalango et al. 2021). It is a subtle yet pervasive process, that exhausts soils and erodes gullies, leading to the depletion of land productivity and necessitating resettlement of species (Omuto et al. 2011). The Lower Juba area, for instance, lost 50% of its forest cover between 1993 and 2014, highlighting the rapid pace of deforestation and desertification (Ogallo et al. 2018). In addition, human-induced factors such as conflict, displacement, land grabbing, and changes in land use further exacerbate land degradation, impacting the amount of land suitable for cultivation and livestock (Ali et al. 2023). Land degradation is significantly reducing agricultural production with projections of losing vast hectares of land due to depletion resulting in a significant decline in agricultural production within the country (Mohamed and Nagaye 2021).

Resource Management compounding Human Security and Tensions

Structural and institutional factors need to be considered within the question of resource availability, differentiating between the de facto availability of the resource, like for example water that may available and the perceived availability of that resource which may be denied, as communities are lacking the access towards that water source, prompting them to conclude water is unavailable (CGIAR et al. 2024). Considering for example the water level in Juba and Shabelle rivers, which was very low in 2023 due to reoccurring droughts and a negative effect on irrigation water availability, causing a decline Sesame production with repercussive effect on exports. A major reason for the reduction of the water level in the rivers was however due to the lack of maintenance of canals as well as transboundary water management issues (CGIAR et al. 2024). Similar dynamics can be witnessed as well in regard to floods whose impacts are amplified due to the lack of infrastructure and reservoirs as well as maintenance of canals downstream, compounding the intensity of natural hazards (Rep of Som. 2021).

In the case of land, as arable land is becoming scarcer, the tensions around land resources are increasing. However, the way how tensions may revolve into conflicts largely relies on the existing mechanisms to manage resources and mediate disputes. Somalia is lacking clear land governance systems, with often competing claims over communal or private land, as well as competing interests of providing livelihood and shelter on the one hand and the desire for profit on the other (Jama et al. 2018). Insecure tenure is increasing the vulnerability of people through land grabbing and forced eviction of indigenous people without compensation, contributing to tensions and grievances (Halakhe and Miller 2023). Governance around land is strongly influenced by clan and political considerations, giving room for political patronage as well as clan tribalism, that can exacerbate tensions around land into larger violent conflicts (Jama et al. 2018; Chaudhry and Ouda 2021). One significant driver contributing to land conflict is the conversion of communal grazing land into crop lands. While communal land ownership has also shown to decrease the accountability, leading towards insufficient investments into the management of the land and decreasing its sustainably to conserve it for future use (CGIAR et al. 2024), the conversion into private land is affecting the availability of pasture, increasing the vulnerability of pastoralist and sparking conflicts between farmers and herders (Chaudhry and Ouda 2021). The growing pressure on land resources requires urgent conflict resolution and mediation efforts to mitigate tensions and curb

marginalization. However, the challenging security situation in various parts of the country, including areas controlled by al-Shabab, complicates these efforts (Erlöw and Krampe 2019; CGIAR et al. 2024).

Resource-related Tensions of Pastoral Communities

Climate impact on the availability of water and pasture are altering traditional grazing routes of pastoralist, leading to human security risks, as well as pastoral and farmer-herder conflicts. Reoccurring droughts have diminished the availability of freshwater sources and grasslands, leading to long-term declines in vegetation cover, making it challenging for pastoral communities to find suitable grazing areas for their livestock (Maesho et al 2021). Irregular precipitation and temperature variations have made traditional grazing routes unusable, compelling herders to adapt their behaviour, disrupting the patterns that communities relied on for generations (Jalango et al. 2021). This can lead to pastoralist migrating longer distances coming in the vicinity of other groups within areas of relatively more abundant availability of water and pasture. Overcrowding and overgrazing lead within those areas, is leading to loss of vegetative cover, contributing significantly to environmental degradation (Thulstrup et al. 2020). Some impoverished households are also lacking resources for the movement of their animals, forcing them to remain in affected areas during drought seasons, leading to devastating losses, including human lives, due to lack of water, pasture, and fatigue (Chaudhry and Ouda 2021). Adding to the challenges of pastoral mobility are conflict operations, which further limit herders' access to traditional grazing grounds, reducing their mobility and increasing their vulnerability to drought (Tarif et al. 2023).

As pastoral communities moving into neighbouring territories, livestock theft and competition with other pastoral groups, as well as sedentary farmers increase, within transition areas and the areas communities are migrating to (Rep of Som 2013; Chaudhry and Ouda 2021). Limited access to water points and grazing lands has led to heightened local resource competition and increased food insecurity (Broek and Hodder 2022). Droughts amplify tribal and clan conflicts due to resource scarcity, leading to clashes between pastoralists and agro-pastoralists as they move their animals through farms, some of which are semi-private (Chaudhry and Ouda 2021). In Somaliland, the challenge of accessing water is particular acute, with only 3% of rural households having access to improved water sources, compared to 47% in urban areas (Jalango et al. 2021). The lack of improved water sources, especially in rural areas, exposes Somalis to a range of threats to human security, such as waterborne diseases but also risks such as gender-based violence and human rights violations, due to the need to walk long distances (Thulstrup et al. 2020). As climate affects the water availability, some communities are migrating into the territory of other clans and start to build water catchments for their cattle, locally called "Barkads", which is often a cause of tensions between the communities (CGIAR et al. 2024). In Somalia, rural communities have several traditional resource sharing agreements in place that regulate the access to pasture, land and water. These reciprocal agreements are supporting livelihoods in need through collaborations, when communities in exposed areas are asking for support from neighbouring communities. However, as climate change is increasing the exposure within most of the country, less communities can share what they have. As these traditional mechanisms erode through climate impacts, tensions between communities are rising through the necessity of providing for one's livelihood, turning previously cooperative into conflictive behaviour, particularly in areas affected by conflict (CGIAR et al. 2024). One example for this is also the application of the traditional dispute mechanism "xeer", that loses its effectiveness as the loss of livestock is increasing through climate impacts and clans are less able to provide reparation fines, which increases the likelihood of retaliation killings and clan conflicts (Farah

2021). The proliferation of arms and weapons, facilitated by the lack of rule of law, has exacerbated inter- and intra-clan armed competition over scarce resources, including rangelands, forests, and water, resulting in a continuous rise in casualties (Erlöw and Krampe 2019; Broek and Hodder 2022).

PATHWAY #2: Livelihood and food security

The livelihood and food insecurity pathway examine how climate change impacts agricultural production and livelihoods in Somalia. Droughts and erratic rainfall patterns significantly impact agricultural production in Somalia, a nation heavily reliant on natural resource and rainfed farming for its economic sustenance. Consequently, these climatic challenges exert considerable influence on food security, leading to fluctuations in food prices and disrupting livelihoods. Affected populations may resort to maladaptive coping strategies, some of which harm the environment, such as charcoal production and overgrazing. Others contribute to insecurity as people turn to crime, piracy, or join armed groups, emphasizing the complex interconnection between climate change, coping mechanisms, environmental impact, and insecurity dynamics.

Climate impacts on Agricultural Systems

Somalia is typically characterized by four seasons in a year, first a dry season Jilaal running from December to March, followed by the main rainy season Gu running until mid year, when from around July to September the Haggai season cools the weather down and turns rainy again during the Deyr season until November (FAO SWALIM 2020). Agriculture in Somalia operates on seasonal patterns closely linked to labour cycles, creating dependency on specific periods like the Gu and Deyr seasons for cultivation and harvest (FEWS NET 2021). In recent years however, Somalia has faced unprecedented challenges due to climate-induced droughts, exemplified by the failure of five consecutive rainy seasons in 2022, making it the worst drought in over four decades (IPC, 2022). Nearly 8.3 million Somalis were affected by drought in 2022, facing acute food insecurity at crisis levels or worse (IPC 2022). Irregular rainfall and temperature changes are resulting in declining crop production, with flooding destroying crops during excessive rainfall and severe food insecurity during extended dry seasons (Said and Bashir, 2023). The country's vulnerability to climate change is thereby exacerbated by the unpredictability of rainfall, particularly during the bimodal Gu and Deyr rainy seasons, exerting severe consequences on both crop and livestock production (Ali et al. 2023).

While all rural livelihoods dependent on natural resources are impacted by climate change, the ramifications may look differently for among various livelihood options:

Agriculture

In 2023, Jowhar experienced heavy and unpredictable rainfall, which caused multiple flash floods, that disrupted crop production in the area (OCHA 2023; CGIAR et al. 2024). Increasing frequencies of floods and cyclones have also led to growing numbers of desert locust populations, where outbreaks in 2019 and 2020 have been the worst in 25 years (FAO, 2019). The country finds itself in the grip of multiple crises, including failed rainfall seasons, high dependency on agriculture, ongoing conflicts, and high grain prices, exacerbated by global grain price hikes (Majid et al., 2022). The high dependency of Somalia on agriculture under current climate impacts has devastating effects on the country's economy and people´s livelihoods. Somalia's economy and the livelihoods of its people are intricately intertwined with agriculture, pastoralism, forestry, and fisheries, with around 80 percent of the population employed in

these sectors (MoAI 2024). The agricultural sector, which contributes approximately 75% to Somalia's GDP and 93% to the country's total income, has historically been the backbone of the nation's economy (Said and Bashir 2023). Somalia's semi-arid climate, coupled with recurrent droughts every 3–4 years and major droughts every 8–10 years, underscores the fragility of the agricultural sector in the face of climate change (Said and Bashir 2023). Rising temperatures are projected to lead to a three percent decline in agricultural production per degree Celsius increase (Mohamed and Nagaye 2021). The impact of climate change on staple foods, such as maize, wheat, sorghum and rice is projected to decrease by 2-16% by 2030 under climate change scenario and highlights the challenges of malnutrition in Somalia (Jalango et al. 2021). Even staple crop sorghum, considered as a more drought resilient crop, is vulnerable to the increased temperatures and water shortages, leading to reduced yields (Warsame et al. 2022).

Pastoralism

The implications of these climate risks extend beyond crop yields, impacting as well as livestock and rural livelihood patterns (Jalango et al. 2021). The dependence of nomadic pastoralists on regular rainfall for their livestock makes them highly susceptible to climate-induced fluctuations in precipitation (IOM/UNEP 2021). Drought conditions have decimated agro-pastoral incomes due to soaring water and fodder prices, coupled with dwindling livestock numbers, exacerbating poverty, property destruction, and the absence of livelihood opportunities (Warsame et al., 2022). Livestock sales, vital for many households, have suffered due to the deteriorating condition and reduced value of animals, with pastoralists losing up to 15 percent of the herd in the hardest-hit regions (Majid et al., 2022). Herders, facing extreme weather conditions like drought and high temperatures, are compelled to flood the market with livestock during extended dry seasons prices (Maystadt and Olivier, 2014). Given that 94 percent of Somalia's nomadic population lives in poverty, this influx of animals destabilizes an already fragile market and increases their livelihood insecurity of pastoralist due to low prices (Ogallo et al., 2018).

Fishing

Climate hazards, such as rising temperatures, heat stress, sea level rise and coastal floods have also shown to a reduction of fish species, fish availability and fishing activities, leading to a loss of coastal and marine livelihoods (Odhimabo et al. 2024). Stronger internationally regulated and better managed fisheries favouring local economies, can show a promising opportunity for many to sustain their livelihood through transitioning from the more climate sensitive alternatives of agriculture and pastoralism towards fishing (WBG/FAO 2018). However, without adequate training and equipment to withstand changing conditions, fishermen are increasingly pressured (Odhimabo et al. 2024). Socioeconomic conditions of fishers are however challenged by fishing regulations, land ownership and inequalities between poorer and more well of fishers, as well as gender disparities, increasing the vulnerability of marginalized groups (Hassan and Hossain 2023). Nonetheless, as climate change, along with change-induced pests, diseases, and invasive plant species, are causing pastoralists and farmers to experience loss of their livelihoods, many are relocated to coastal areas to engage in fishing activities as an alternative to their lost livelihood strategy, which has occasionally led to tensions with local coastal communities (CGIAR et al. 2024). There are some indications, placing climate related impacts on coastal livelihoods as a driver for piracy, as many pirates have a background in fishing and are engaging as "occasional pirates" to make ends meet, which is becoming pressure as climate are contributing towards a decrease in fish population (Jiang and LaFree 2023). It needs to be noted however, that other factors such as large-scale illegal fishing of international cooperation have contributed towards a more immediate depletion of fish stock, contributing towards fishermen engaging in piracy (CGIAR et al. 2024).

Maladaptive Behaviour compounding Human Security and Tensions

In Somalia, climate change has significantly disrupted traditional coping mechanisms, pushing affected populations toward maladaptive behaviours that not only exerts more pressure on natural resources through deforestation or overgrazing as elaborated above, but also can exacerbate violence and illegal activities (CGIAR et al. 2024). The loss of livelihood through climate impacts onto agriculture and pastoralism is contributing to maladaptation, increasing illicit action and reducing the opportunity costs for recruitments into NSAG. As traditional adaptation mechanisms are overburdened, more actors are engaging in maladaptive behaviour to sustain the livelihoods (Jalango et al. 2023). The diminished livelihood options due to climate-induced impacts, compounded by weak governance, conflict and corruption are thereby contributing to a rise of organized crime, especially in regions like Somaliland and Puntland (Chesson et al. 2017). The absence of viable livelihood options and increased poverty lead to societal pressures that fuel grievances and incentivize illicit activities, including human trafficking and charcoal trading (Maystadt and Olivier 2014). The economic desperation resulting from climate-related losses in agricultural productivity and plummeted local market prices after droughts also makes recruitment offers from armed groups and engaging in livestock raiding more appealing to those struggling to support their families (CGIAR et al. 2024). Armed groups, particularly al-Shabab, capitalize on these dynamics by specifically targeting vulnerable population and young men to join their ranks (Broek and Hodder 2022).

GENDER-RELATED CLIMATE SECURITY RISKS

Vulnerability towards climate and conflict differs along lines of gender, placing women into higher risk. In Somalia, the intersection of climate change and conflict amplifies the vulnerabilities faced by women, subjecting them to a multitude of social, economic, and physical challenges (Jalango et al. 2021). Women in Somalia are deeply entrenched in social and economic inequalities, a situation exacerbated by cultural norms (Croome and Hussein 2020). They have limited access to essential resources and opportunities, including production technologies, healthcare, and education, in stark contrast to their male counterparts (CGIAR et al. 2024). Women in Somalia face significant disparities in representation and economic standing within governance and clan-based structures, falling prey to poverty and limited rights to land ownership (Rep of Som 2013). The consequences of conflict and climate-induced displacement weigh heavily on women, increasing their vulnerability to exploitation and violence (Tarif et al. 2023). As families struggle to secure their livelihood after droughts, a common dynamic is to marry off their daughters to wealthier men, contributing towards higher number of early child marriages (Croome and Hussein 2020). When displacement occurs, families are often fragmented, with women and younger children becoming the primary movers, leaving men and adolescent boys behind to safeguard their assets in their villages of origin (Majid et al. 2022). During droughts, the burden on women intensifies as they are expected to stay at home, caring for other livestock, while men are tasked with finding water for their animals. This division of responsibilities adds to the vulnerability of women and children, increasing their exposure to abuse and exploitation, and adding to their already overwhelming daily workload (Erlöw and Krampe 2019). The situation exacerbates when women have to travel longer distances to fetch water and firewood, exposing them to direct security risks such as sexual violence and human rights violations. Areas like water points, livestock grazing zones, and firewood-collection areas pose significant dangers for women, who are often subjected to violence and assaults, partly due to insufficient shelter or lighting (Croome and Hussein 2020).

PATHWAY #3: Disaster and Conflict Displacement

The disaster and conflict displacement pathway delves into the compounding effects of climate-induced and conflict-driven displacement on insecurity dynamics in Somalia. Extreme climate events like droughts and floods, coupled with violence and conflict, are main drivers of displacement. As displaced populations move to new areas, they strain available resources and basic services, leading to intensified competition and tensions. Additionally, desperation may drive some displaced people towards illicit activities, making them susceptible to recruitment by non-state armed groups. The intricate interplay between climate, conflict, displacement, resource scarcity, and recruitment underscores the multifaceted nature of insecurity in Somalia.

Climate-induced extreme events, of frequent flooding, erratic rainfall, and prolonged droughts have far-reaching implications, disrupting livelihoods, heightening insecurity within the population and triggering internal displacement (Warsame et al. 2022; Jalango et al. 2021). In the timeframe of 2020-2023 there were 4.5 million reported cases of internal displacement attributed to natural disaster in Somalia, with the majority being induced by floods, followed by drought (IDMC, 2024). Flooding, a recurring natural disaster during the rainy season, wreaks havoc on communities, claiming lives, displacing large amount of people, and devastating crops. The destruction caused by these floods exacerbates vulnerability, compelling numerous families to abandon their homes in search of safer environments (Said and Bashir 2023). High temperatures and escalating violence positively correlate with forced migration, driving individuals to seek refuge in more hospitable environments (Jalango et al. 2021). Low seasonal peeks of rain, such as from October to December 2016, were followed by high peaks of displacement (Yuen et al. 2022). Concurrently, temperature and precipitation shocks act as catalysts for internal displacement, with even minor changes leading to significant increases in predicted internal displacement (Thalheimer et al. 2023). South-Central Somalia, encompassing regions such as Hiraan, Bay, Bakool, Gedo, Shabelle Dhexe, Shabelle Hoose, Juba Dhexe, and Juba Hoose, facing the most out-migration, due to extreme weather events and their complex interplay with weak governance and socio-economic difficulties (Jalango et al 2021).

Additionally, conflict dynamics further induce displacement in the country, due to armed groups, including clan militias and extremist organizations, perpetuating violence, leading to widespread fear and insecurity among the population. In the same timeframe of 2020-2023 another 2.1 million cases of displacement were recorded, that have been attributed to conflict and violence (IDMC, 2024). Armed groups play a central role in displacement, engaging in territorial disputes, controlling strategic areas, and imposing their own rules, which force local communities to flee their homes (Jalango et al. 2021). Modelling of Thalheimer et al. (2023) have shown the correlation of violent events and occurrences of displacement, predicting a large increase in the number of IDPs through conflict events based on their data. Climate induced displacement however still constitutes the main driver (FAO 2022) and it can be witnessed, that climate and conflict induced displacements are strongly intertwined with predominant dynamics of conflict consisting of climate related competition around natural resources turning into violence and leading to increasing displacement of affected population (FAO 2022; CGIAR et al. 2024). As agriculture and pastoralism are vital for livelihoods in Somalia, climate-induced challenges lead to competition over scarce resources, triggering conflicts between communities, that are being exploited by armed groups, exacerbating existing grievances and contributing to further displacement (Jalango

et al. 2021; Eklöw and Krampe 2019). Compounding displacement dynamics are various incidents of forced evictions. Indigenous communities are being displaced from their traditional land due to social grievances. Small-scale farmers are facing ownership exclusionary governance, losing their homes and fields without adequate compensation due to ineffective changing grazing or alternative methods, while national security forces have, on multiple occasions, evicted communities or internally displaced persons without clear policies or regulations (CGIAR et al. 2024). Push factors for displacement for displacement can be found therefore in the aforementioned effects on natural resource and livelihoods and correlated insecurity dynamics (drought and flood, food insecurity, conflict and human insecurity, lack of income, and lack of pasture/livestock feed) so that this pathway can be viewed as a consequence emerging from the previous two pathways (FAO 2022).

Pull factors on the other hand include better livelihood opportunities, access to basic services, access to humanitarian assistance and presence of family members (FAO 2022). These factors can be better accessed within urban and peri-urban areas, so that most displacement is occurring from rural towards urban areas, leading to unsustainable rates of urbanisation (Halakhe and Miller, 2023). Conflict and climate change impacts, compounding rural livelihoods unsustainable, have driven millions of Somalis to seeking stability and safety in urban centres, particularly in cities like Mogadishu or Baidoa, where governance structures are relatively established (Chaudhry and Ouda, 2021). According to the UN, around 45 percent of Somalia's population, approximately 6.83 million people, are settled in urban areas, and this number is expected to rise to 4 million by 2025 (UN Habitat 2018). The rapid urbanization is posing challenges for urban planning, leading to a rise in informal settlements, where most IDPs reside (Halakhe and Miller, 2023). The establishment of IDP camps, is often on private lands within urban areas, which has led to forced evictions, causing secondary displacements, as well as land disputes and conflicts among different clans and communities, aggravating social tensions and fostering animosities within the receiving areas (NRC, 2018). International aid is partly contributing towards the high level of displaced population within urban areas, as safety net programs are incentivising IDPs to remain in receiving areas, relying on aid instead of pursuing alternative livelihood strategies, which had led to a lack of work force within agricultural areas (CGIAR et al. 2024).

Within urban areas, the rural skills of pastoralists and farmers do not readily translate to urban life, leaving them struggling to find work in cities, where they lack social networks and knowledge about available services, often becoming trapped in a cycle of poverty and aid dependence with little hope or future, rendering them the 'new urban poor' (Halakhe and Miller 2023). Desperation and limited opportunities in IDP camps push individuals towards illegal behaviours, making them susceptible to criminal influence, while the vulnerable situation of displaced populations in urban areas, coupled with the lack of security, has escalated sexual and gender-based violence (Eklöw and Krampe 2019). Some IDP camps have become hotspots for recruitment as the lack of social cohesion, frequent conflicts, and insecurity within these settlements make it easier for armed groups like Al-Shabab to gain the trust of especially young men, while the camps' disarray allows insurgents to assimilate into the environment, identifying potential recruits and offering them a sense of belonging, immediate protection, and income (CGIAR et al. 2024; Eklöw and Krampe 2019).

PATHWAY #4: Fragility, Conflict and Exploitation

The fragility, conflict and exploitation pathway examines how climate change exacerbates existing socioeconomic inequalities, political representation, power dynamics and grievances within the country. As resources and food become less available due to climate change, controlling access to resources and food are used strategically both by military actors. Climate extreme events are leading to humanitarian crisis, which Al-Shabab learned to use to increase its legitimacy by acting as an alternative relief provider. Clan-based power sharing has led to elite exploitation and resource grabbing, in which climate impacts are opening opportunities and marginalizing vulnerable groups further.

Multiple reinforcing dynamics that compounded humanitarian crisis in Somalia, including the severe droughts from 2021-2023, severe flooding in 2023, the ongoing conflict between the government and Al Shabab have placed the country in a fragile situation (IRC 2024). This volatile situation gives room for certain actors to use the induced loss and suffering for their own agendas. Humanitarian crisis induced by climate hazards are being used by Al Shabab to increase their legitimacy by taking advantage of inefficient distribution of international aid within fragile and conflict affected areas and acting as an alternative aid provider (CGIAR et al 2024). The level of how climate induced food insecurity may revolve into famine, depends on governmental and international respond mechanisms and their ability to provide food aid. In the 2011 famine, severe drought impacts coincided with a military offensive against Al Shabab, leading to a challenging environment for providing aid and facilitating migration, due to several policies restricting migration and humanitarian access, aggravating the humanitarian crisis (Majid et al., 2022). Al Shabab had manipulated humanitarian aid by controlling entry points and inducing taxation methods, as well as blocking aid deliveries, burning food and committing other acts of sabotage (Harnisch, 2010). Heavy taxation and the presence of numerous militia checkpoints are constituting a major hurdle for the value chain of agricultural production, still standing in the way to tap the full potential of Somalia's agriculture and increasing pressure on farmers (SCALA 2024).

As the suffering within the famine had increased grievances, decreasing support of the local population, Al Shabab had revised its strategy. By portraying themselves as a provider for the people through their propaganda, Al Shabab thereby aims to increase its legitimacy, using newly established drought committees to act as an alternative relief provider in the midst of climate extreme events and humanitarian disaster (CGIAR et al. 2024). Exploiting the vacuum left by weak state services, as well as the high dependency on aid, induced by international aid system, Al Shabab strategically acts as a provider for the population, while collecting taxes, increasing their legitimacy and funds, contributing to insecurity dynamics in the country (Eklöw and Krampe 2019).

The way of how Al Shabab had secured their funds was changing over the years and displays a high level of flexibility to adapt to new dynamics (CGIAR et al. 2024). While initially external funding was being secured through ties with al-Qaeda and Somali diaspora communities seeing the Islamic Court Union (ICU) and its military arm of Al Shabab as a valid opportunity to provide stability, the fall of the ICU and the international sanctions placing Al Shabab on the terrorist list, had effectively cut out most of external money flows towards the organisation (Levy and Yusuf 2019). As a response, Al Shabab shifted

towards internal funding sources, relying on an elaborated taxing system, imposing taxes on businesses, illicit trade, farm land, livestock and various other taxes (Mubarak and Jackson 2023). Considering the devastating effects of climate impacts on small scale farmers and pastoralists, the often exorbitant payments are putting strong burdens on rural livelihoods in territories controlled by Al Shabab (Levy and Yusuf 2019; CGIAR et al. 2024). This approach follows a dual purpose, not only to increase funds, but also to pressure people, who are not able to pay the taxes into working for the group and become new recruits (Levy and Yusuf 2019).

Climate-induced impacts are also altering and compounding the complex relationships between clans, affecting power dynamics and inducing human security risks and grievances (CGIAR et al. 2024). Vulnerability towards climate impacts is also partly depended on clan power hierarchies and the marginalization of certain groups within society. Somalia's political landscape is deeply entrenched in clan-based power structures, where access to resources and political positions is determined by one's clan affiliation (Keating and Waldman, 2018). Groups such as the Rahanweyn or Somali Bantu are marginalized, due to their weak representation within diaspora communities, affecting their political visibility and economic security via remittances (Majid et al. 2022). Women within these vulnerable groups bear a disproportionate burden, being under-represented in governance and more susceptible to poverty, displacement, exploitation, and violence (Tarif et al., 2023). Security constraints further compound these challenges of addressing the needs of marginal groups, preventing access to certain exposed areas, hindering engagement, and exacerbating social fragmentation (Halakhe and Miller, 2023).

The 2011 flood in the Shabelle River Basin serves as a striking example in which clan dynamics compounded climate impacts, as it induced displacement of weaker minority clans, only to have their lands seized by more powerful clan elites prior upon their return (Tarif et al 2023). Climate change however has also altered historical clan hierarchies, rendering new communities, which are highly exposed to become displaced and enter the categorization of marginalizing groups (CGIAR et al. 2024). The rapid influx of displaced population into new areas changes the demographic composition within the receiving area, bringing power sharing agreements into question, which complicates national reconciliation and the broader state building (Eklöw and Krampe 2019). The prevailing clan-based power structures in Somalia provide a convenient framework for elites to exploit grievances related to climate impacts. Public and political positions are intricately linked to clan affiliation, enabling elites to leverage these connections to further their agendas, manipulate local struggles arising from environmental degradation and resource scarcity, escalating these issues into broader conflicts (Broek and Hodder 2022).

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CGIAR aims to address gaps in knowledge about climate change and food security for peace and security policies and operations through a unique multidisciplinary approach. Our main objective is to align evidence from the realms of climate, land, and food systems science with peacebuilding efforts already underway that address conflict through evidence-based environmental, political, and socio-economic solutions.