

CHAPTER 7

Climate Change and Violent Extremism in Africa: A Contested Link

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In recent years, climate change and environmental degradation have been increasingly linked to regular incidents of violent conflict. Theories that drought led to the Syrian conflict and the rise of the Islamic State in Iraq,¹ and the impact of environmentally induced food shocks² are just a few examples of this line of thought. Research suggests that a growing class of security challenges arising from climate change and environmental degradation now confront states and societies around the world.³ This is especially true in Africa, where climate change, demographic change and economic growth is accelerating environmental degradation and exacerbating security risks. While the growing impact of climate change does not automatically lead to more fragility and conflict, it does raise threats to security because it has an influence on social, economic, and political structures. This chapter will introduce debates on climate security and the conflict-climate thesis. It will then outline pathways linking environmental (in)security and extremism in Africa, and how ecological considerations have had an impact on the rise, success and tactics of Boko Haram in the Lake Chad Basin and Al-Shabaab and Somalia. This chapter will conclude with an assessment of the climate-fragility-extremism link and point to further areas that need research to better understand this complex relationship.

Today, international and regional organisations, including the UN, the G7, the AU, EU, IGAD and ECOWAS, and an increasing number of states, have classified climate change as a threat to global and/or national peace and security.⁴ Most members of the international community recognise the severe consequences of human activity on the climate system such as changes in rain patterns, increasing desertification and temperature disturbance.⁵ In this narrative, the effects of global warming on the world's physical landscape often lead to geopolitical changes that threaten

to destabilise already vulnerable regions. The stresses on natural resources undermine the capacity of nations to govern themselves and increase the chances of conflicts. Climate fragility and stress provide an opportunity for extremist organisations waging internal conflict to use this situation to their advantage, either by attracting more members thanks to adverse conditions, or by actively weaponising the environment for strategic and tactical ends.⁶

What is Climate Security?

It is widely accepted that non-state armed groups proliferate in areas of low state presence and increased fragility. As a threat multiplier, non-state armed groups aggravate already fragile contexts and contribute to social upheaval and even, in some cases, violent conflict.⁷ Since the end of the Cold War, the nature of armed conflict has shifted from interstate war to civil wars and armed conflicts within states.⁸ Within this environment, non-state actors, defined broadly as groups that challenge the state's monopoly on power and its capacity to control violence throughout its territory, are contesting the supremacy of the state. The Intergovernmental Panel on Climate Change (IPCC) sets out the impact climate change is having on human security and violent conflict in its latest report, published in 2014.⁹ This impact, however, is not uniform across the globe. Climate change-driven water stress in arid and semi-arid countries, and tensions over water and land supply, is a growing trend.¹⁰ These countries – which are primarily situated in the global south – are consistently experiencing chronically dry climates and unpredictable droughts. Predicted climate impacts include higher temperatures, longer dry seasons and increasingly variable rainfall. The impact of these developments will only increase in the 21st century and continue to place stress on these regions.¹¹

The broadening of traditional concepts of security to include environmental and transnational threats mirrors the inclusion of ecological considerations in conflict analysis. However, the national security approach still holds the state as the fundamental object to be secured, and equates national interest with national security and hence with the preservation and expansion of state power. In this view, the link between climate change and violent extremism is connected to the state's ability to govern its internal territory and maintain its sovereignty. If climate change facilitates the rise of organisations as mentioned above, then climate change may be viewed as a threat to the state's survival.

In contrast to this view, human security takes a fundamentally different methodological position, focusing on the individual as its unit of analysis.¹² Tracing its origins to the UN Human Development Report 1994 on human security and defined by the phrases ‘freedom from want’ and ‘freedom from fear’, this approach extends the field of security studies into numerous research disciplines, including development studies and human rights.¹³ In this view, threats can be external or internal to the state in which the individual resides, and environmental threats negatively impact human wellbeing and security. Human security is a variable condition where people and communities have the capacity to manage stresses to their needs, rights, and values.¹⁴ Examples include changing disease patterns, drought, loss of topsoil, and environment-forced migration.

In both cases, dividing lines have been drawn between those who want to expand the fields of human and national security to include environmental factors and those who believe that this approach will misdirect responses to environmental threats,¹⁵ and that by labelling environmental destruction as a security threat, it allows the global north to securitise global inequalities.¹⁶ Clearly, the link between climate change and violent extremism impacts both state and human security. While the debates described above have impacted the field and policy responses, recent attempts to provide a comprehensive approach to climate security have shifted the analysis towards a risk-based approach, which seeks to build upon the human security approach but also addresses the interplay between different dimensions of security.¹⁷ This is appropriate for analysing the links between climate change and extremism, as individuals are primarily impacted by the local destruction of their ecological environment.

The Contested Link: Assessing the Environmental Conflict Thesis

Underpinning the climate-conflict debate is an interconnected set of debates over whether climate change is an attributing factor in the occurrence of violent conflict. While a causal link is widely disputed,¹⁸ climate change has been increasingly linked to sub-state conflict. In recent years, several environmental and political analysts have said that resource scarcity, including water, has the potential to undermine national, international, and human security.¹⁹ Most notably, Thomas Homer-Dixon has theorised that diminishing environmental resources, intensified by resource capture and ecological marginalisation, have a negative impact on societal relations, and

in certain circumstances cause violent conflict. Specifically, Homer-Dixon outlines three pathways between environmental scarcity and conflict. First, supply-side scarcity describes how the depletion and pollution of resources reduce the total available volume. Second, demand-side scarcity explains how changes in consumer behaviour and demography can cause demand to exceed supply. Third, structural scarcity occurs when some groups receive a disproportionate amount of the total volume of resources, leaving other social groups with small amounts.

In addition, several quantitative meta-analysis studies have correlated changes in climate and violent conflict.²⁰ However, modifying contested elements of this meta-analysis, a study by several prominent climate-conflict researchers found no 'evidence of findings on climate variability and civil conflict'.²¹ In a comprehensive 2010 statistical study, Halvard Buhaug found that while there were significant changes in temperature and precipitation patterns – Africa as a continent was notably drier and hotter over the past 50 years – this did not correlate with armed conflict in Africa.²² Similarly rigorous studies concur with this view, finding no significant correlation between the two, and they have criticised meta studies that have found a causal link for their underlying methodological inconsistencies, causal homogeneity, and sample representativeness.²³ In short, while these large-N statistical studies do provide valuable insights into general trends, they struggle to effectively integrate the influence of climate change into economic, social, and political systems. This confusion is reflected in the IPCC's Fifth Assessment Report, which stated in the human security chapter that: 'collectively, the research does not conclude that there is a strong positive relationship between warming and armed conflict'.²⁴

Pathways Between Environmental (In)security and Extremism

How does climate change and environmental degradation increase the proliferation of extremism groups? While large-N studies have struggled to identify a causal link, qualitative studies using climate change as a risk multiplier have found that it can increase fragility at a state and sub-state level. Climate change is never the sole or even the primary reason for the proliferation of violent extremism or armed conflict at the sub-state level. Rather, it interacts with structural drivers of violence. Galtung conceptualises these dynamics as structural violence, where political, social and economic institutions can act as instigators of violence, while armed groups

instrumentalise individual and group grievances like marginalisation, discrimination and poverty for recruitment.²⁵ In this model, climate change acts as a multiplier to disrupt these social structures and deepen grievances.

However, the links between climate change, conflict, fragility, and violent extremism are not simple or linear. The increasing impact of climate change does not automatically translate into an increased risk of violent conflict and extremism.²⁶ If the social, political, and economic dynamics that drive violent extremism exist, then other factors such as climate change and environmental degradation can act to further stress these social systems. The combined pressures of climate change, demographic growth, urbanisation, environmental degradation and rising socio-economic inequality can even overwhelm stable societies.²⁷

In 2015 the G7 commissioned a landmark report, *A New Climate for Peace*, outlining seven climate-fragility risks that pose a serious threat to the stability of states and societies.²⁸

- **Local resource competition:** a resource scarcity argument, whereby increased demand leads to increasing pressure on natural resources and even violent conflict.
- **Livelihood insecurity and migration:** this risk factor specifically looks at human insecurity, and the impact of climate change on the livelihoods of the world's poorest. This can, in turn, lead to illegal sources of income generation.
- **Extreme weather events and disasters:** climate shocks will exacerbate fragility challenges and increase vulnerability.
- **Volatile food prices and provision:** dramatic changes to food prices will likely increase food insecurity, the risk of protests and violent conflict.
- **Trans-boundary water management:** international rivers are frequently a source of tension.
- **Sea-level rise and coastal degradation:** increasing migration towards coastal cities will lead to growing displacement and marginalisation.
- **Unintended effects of climate policies:** as more ambitious climate-change mitigation and adaptation policies are implemented, the risk of unintended negative consequences, especially in fragile contexts, will increase.

It is important to note that while several of the impacts of climate-fragility risk outlined above are already occurring, the effects of climate change as it relates to conflict cannot be separated from the economic, social, and polit-

ical systems in which they are imbedded.²⁹ Additionally, these risks are felt at the local, national and international level. Local natural-resource conflict, such as the farmer-pastoralist conflict in the Nigeria Middle Belt, can have a significant national and regional impact and act as an additional risk multiplier, fuelling migration. Conversely, disputes over international rivers at the national level can impact access to natural resources and livelihoods at a local level. Taking these seven impacts as a starting point, four pathways are outlined below – each of which has a distinct impact on populations and insecurity, and where climate change can act as a multiplier for extremism.

Resource Conflict

As climate change intensifies, with resource scarcity and increasing competition for resources, non-state actors – and specifically extremist groups – can proliferate and operate more easily in these fragile and conflict-ridden contexts. The likelihood of sub-state resource conflict, leading to the proliferation of extremism, is more likely to occur where the state has little or no authority and lacks legitimacy. In some cases, extremist groups even seek to provide services to gain legitimacy and secure trust among the local population.³⁰

Increasing resource stress → increased fragility → proliferation of armed groups

Livelihood Insecurity

While a direct causal link between unemployment and participation in violence is disputed among scholars, there is research showing that precarious situations with little socio-economic prospects, including situations of unsteady or underemployment, can drive people to join armed groups.³¹ Climate change is having an increasingly negative impact on livelihoods through food insecurity or resource scarcity, such as water and land scarcity. In societies where the majority of the population has climatically vulnerable livelihoods, any change to this fragile ecological and social environment can have a severe knock-on impact on their personal security and the wider security of the state.

As the affected population grows more vulnerable, they become increasingly susceptible to recruitment by extremist organisations offering alternative livelihoods and economic incentives, and/or who respond to political and socio-economic grievances.

*Environmental degradation → livelihood destruction → food insecurity
→ increased recruitment as a means of survival*

Environmental-induced migration

According to Robert McLeman, states that are already politically fragile are the most likely future epicentres of climate-related violence and forced migration events.³² The World Bank has estimated that climate change will cause 86 million internal climate migrants.³³ This dramatic long-term displacement can interact with violent extremist organisations in two ways.

First, environmental migration in fragile contexts can increase human insecurity and contribute to livelihood destruction, therefore aiding recruitment. Second, migration into populated areas and competing narratives of indigeneity can lead individuals to seek extremist groups as a security guarantor, often for payment. Such population density can also lead to ecological feedback loops, where incoming populations stress the carrying capacity of the environment. The term environmentally-induced migration reflects the difficulty in separating those environmental factors that can lead to migration from other social, economic, and political factors.

Climate change → increased fragility → environmentally-induced migration → increased recruitment and financing

Weaponisation of natural resources

A relatively new development is the use of natural resources as a weapon of war. By prohibiting access to an ecological resource, it exacerbates resource scarcities that are already increasing due to climate change. The scarcer resources become, the more power is given to those who control access to them. Water and land are the most commonly weaponised resources, as they are crucial to environmental security, both at the national and sub-national level.³⁴

Marcus King identifies three types of weaponisation in this regard.³⁵ The first, strategic weaponisation, is a situation where an ecological resource is used for virtual or actual control of a geo-strategic area, population or infrastructure – for instance, where an extremist organisation blocks access to water points or arable land. The second, tactical weaponisation, is where the control of an ecological resource such as water is used directly against military targets. The third, coercive weaponisation, would be a situation where an ecological resource is used as an instrument of subjugation by

threatening non-combatants with environmental destruction or contamination. Ecological stress, poor governance, and state fragility all encourage extremist groups to exploit ecological resources such as water and land as a weapon. However, the extent of that sort of weaponisation – and the choice of strategy – is heavily dependent on the ecological environment, the objectives of the extremist organisation, and the socio-political context in which they operate.

Climate change → increased resource scarcity and fragility → natural resource weaponisation

It is clear that climate change can impact on the social conditions which give rise to extremist groups and their perceived legitimacy. Similarly, conditions of livelihood and environmentally induced migration can directly impact the success of these groups in controlling territory and their battlefield effectiveness.

Furthermore, climate change also has an impact on the strategic and tactical actions of extremist groups, as seen in the recruitment tools used and the weaponisation of ecological resources discussed above. The four pathways described above can be identified, to varying degrees, in the following case studies of Boko Haram and Al-Shabaab.

Boko Haram in the Lake Chad Basin

The emergence of Boko Haram must be understood against the background of the social, economic, political, and ecological dynamics of the region – in particular, the role of marginalisation within the Nigerian state. These long-term environmental factors have acted both to fuel recruitment and increase social tensions. The weaponisation of natural resources by insurgents must also be recognised.

Boko Haram began as a non-violent sectarian Islamic movement in opposition to the more moderate forms of Islam in northern Nigeria in 2003. However, in the wake of the brutal suppression of their uprising against the Nigerian government in 2009, they actively started fighting against the state. This insurgency has subsequently spread to Niger, Cameroon, and Chad – an area that broadly constitutes the Lake Chad Basin (LCB). It has killed more than 20 000 people and is responsible for the displacement of two million more.³⁶ In 2015, Boko Haram was named the deadliest terrorist organisation in the world,³⁷ and while attacks have decreased in subsequent

years, they are still ranked among the four most violent terrorist organisations in the world.³⁸

The Economic, Social and Political Context

The reasons behind Boko Haram's emergence are multifaceted and driven by historic political, economic and ecological marginalisation, coupled with ethnic and religious tensions. This marginalisation by the Nigerian state, along with a lack of capacity for peaceful conflict resolution and the hearing of grievances, has been identified as a key driver in Boko Haram's growth as people feel there is no choice but to join a group to make their grievances heard.³⁹ Additionally, vertical and horizontal inequality has increased economic grievances in northern Nigeria. While Nigeria is the largest economy in Africa and has maintained annual growth rates of 7% for the past decade,⁴⁰ the economy is heavily reliant on oil exports, which accounted for 65% of government revenue in 2018.⁴¹

Demographic factors have also played a role in the increasing fragility of the region. The population of the LCB has grown from 13 million in 2013 to 47 million today.⁴² The rural population around the lake is composed of more than 70 ethnic groups, each relying on the area's natural resources for their livelihoods in climate-sensitive agricultural activities.⁴³ Additionally, the LCB has a long history of violent conflict, including civil war and rebellion in Chad, Niger and Nigeria, with the drivers of violence being deeply rooted in the ethnic social cleavages and religious divisions of the region.⁴⁴ Also, the Notre Dame Global Adaptation Index, which measures a country's exposure, sensitivity, and ability to adapt to the negative impacts of climate change, has ranked Nigeria the 22nd least-ready country to deal with the impact of climate change.⁴⁵

Social marginalisation is also prevalent. In terms of health, Nigeria ranks poorly compared to the African average, with 37 neonatal deaths per 1 000 live births compared to the sub-Saharan average of 31 in 2013.⁴⁶ In addition, Nigeria has low literacy levels and high school completion rates, especially in the northern provinces. In fact, the low literacy and high school completion rates are often cited as contributing factors in the emergence of Boko Haram and the group's ability to sustain recruitment. First, low literacy and high school completion rates increase the economic marginalisation of the LCB region, and second, they contribute to a poor understanding of Islamic texts, with young people increasingly relying on preachers, thus making them vulnerable to recruitment and radicalisation.⁴⁷ Furthermore,

due to an underdeveloped national identity and political marginalisation, Boko Haram is effectively able to instrumentalise religion to win over young people.⁴⁸

Climate Fragility Risks

The LCB is facing severe human insecurity, brought on by a combination of slow-onset environmental degradation, increased human activity and violent conflict.⁴⁹ Both climatic and human factors have contributed to the surface area decline of the lake, with reduced rainfall and increased demographic and economic pressures accounting for most of this. The underlying drivers of this insecurity are environmental in nature, with shrinking water resources and demographic pressures combining to overwhelm endogenous capacity and indigenous conflict-resolution mechanisms. Furthermore, since 1960, Lake Chad has shrunk by over 90% to just 2 400 000 km², and growing demand for the lake's natural resources has had economic, social, political and security ramifications for the 2.3 million people who rely on it for their livelihood.⁵⁰ These factors have forced agricultural communities to turn to groundwater extraction to feed their crops.⁵¹ Other economic activities within the region are also climate sensitive: fishing, hunting, and pastoralism all provide vital nutrition for the population, and a lack of those lead to severe food insecurity.⁵²

The convergence of these underlying factors, along with poor governance and low levels of capacity, has led to a rise in violent conflict and increased food insecurity. Low amounts of human, social, and technical capital in the region compound and exacerbate downward pressure on environmental capital.⁵³ This has accelerated and exacerbated the already complex migration patterns seen in the region.⁵⁴ Additionally, the four Lake Chad countries rank lower than the sub-Saharan African average in nearly every category of the Human Development Index.⁵⁵ Regional institutions have also struggled to adequately respond to this human-security crisis, including the Lake Chad Basin Commission (LCBC), which, despite its mandate to promote security within the region, struggles from a lack of funding and data.⁵⁶

It is within this fragile environment that Boko Haram has exploited the ecological conditions to meet its tactical and strategic objectives. Boko Haram is responsible for the overwhelming majority of deaths from violent conflict in this region, with recent attacks being examples of the overall trend.⁵⁷ This conflict has important links to the environmental degrada-

tion seen in the LCB. Ecological factors are an element in the conditions that have fuelled the rise of Boko Haram and recruitment, but also in the tactics the organisation uses. And another effect of the insurgency has been growing food insecurity.

Resource Conflict: Although the academic literature does not establish direct links between conflicts around natural resources and Boko Haram, these conflicts contribute to overall fragility, thus creating more hospitable conditions for the organisation to mobilise support, commit acts of violence, and engage in organised criminal activities.⁵⁸ Climate change in the LCB is contributing to resource scarcity, thereby increasing competition for land and water, which fuels social tension and violence. Several studies point towards strong evidence that the socio-economic impact of a receding Lake Chad, through one of several factors, has played an important role in fuelling violence and facilitating Boko Haram's activities.⁵⁹ ⁶⁰ Moreover, this scarcity erodes livelihoods, increases poverty and unemployment, leading to population displacement and fuelling recruitment.

Livelihood Destruction: Economic and social frustrations make extremist organisations more attractive, particularly to young people with few prospects. There is also a gender component, as opportunities for traditional routes to manhood, including owning farmland, are reduced. In this context, recruitment could be driven by financial incentives as well as a desire to increase one's social standing through marriage.⁶¹

Ecological factors certainly play into this scenario. Eighty per cent of the LCB's population relies on the lake's shrinking resources for their livelihood, primarily in farming, fishing, and livestock.⁶² In addition to these climate-sensitive livelihoods, unemployment and underemployment cause further stress to these ecological resources. In rural Nigeria, almost 60% of youth are unemployed.⁶³ In Cameroon, Chad, and Niger, 9–13% of all youth are unemployed, and up to 80% underemployed. The United Nations Office for West Africa found that youth unemployment and a poor socio-economic environment 'foster conditions in which people are recruited into armed conflicts' in the region.⁶⁴ The US Institute of Peace has also identified poverty, unemployment, illiteracy, and weak family structures as the main reasons that make young people, especially men, vulnerable to religious radicalisation in the LCB.⁶⁵ A number of studies underscore the link between climate change impacts, deteriorating livelihoods, and increasing recruitment by Boko Haram.⁶⁶

Environmentally-Induced Migration: The link between environmentally-induced migration and violent extremism is seen in both first- and

second-order impacts. First, livelihood destruction causes displacement, which leads to high-density populations near scarce resources. This, in turn, leads to increased resource tension and increased fragility. Displacement in the LCB has also had the effect of pushing vulnerable populations towards regions dominated by Boko Haram.

Economic activity in the LCB is characterised by a high degree of mobility and flexibility, and changes in the region's resources have had an impact on migration patterns, particularly in the lake's wetlands, which serve as fallback areas for farmers in times of drought. As these wetlands degrade, social groups have to migrate closer to the shoreline in search of viable resources, and in some cases across borders, increasing population density in the remaining intact wetlands.⁶⁷ The concentration of people around scarce resources increases the rate of contact between population groups with different livelihood strategies and has, in some incidences, caused new social tensions and led to violent conflict.^{68 69}

The Weaponisation of Natural Resources: In a more recent phenomenon, Boko Haram has resorted to using natural resources as a weapon in their wider operational strategy, including strategic weaponisation, where the organisation has sought to gain command over ecologically-strategic resources such as waterways and arable land. They use coercive weaponisation too: poisoning water sources and making them dangerous to people and livestock.⁷⁰ This weaponisation underlines the strategic importance of natural resources.

The Rise of Al-Shabaab: Environmental Drivers of Fragility

Despite Al-Shabaab's emergence in extremely ecologically-fragile regions, the link between climate change and the organisation's rise and spread are relatively unexplored. Since AU forces expelled it in 2012 from Somalia's capital, Mogadishu, Al-Shabaab has conducted an insurgency campaign against the Somali government and its international allies, controlling a significant portion of state territory.

Al-Shabaab emerged as the radical youth faction of Somalia's now-defunct Islamic Courts Union (ICU), which governed Mogadishu in 2006, before being forced out by Ethiopian forces. Since this point, Al-Shabaab has expanded its presence to 9 000 fighters, to which the AU has responded with its most expensive peacekeeping mission to date, the African Union Mission in Somalia (AMISOM). However, despite the significant cost of this mission in both monetary and human terms, the role of ecological

factors and climate change in driving the insurgency is rarely explored. Understanding the role of climate change and its impact on patterns of drought, as well as integrating environmental factors into peace-building responses, is critical.

Since the formation of the Somali state, both internal and foreign jihadists have fought various versions of the government and the international actors who support it. Al-Shabaab's goals are varied, with different factions within the group having different objectives. Hardliners within the organisation seek the establishment of a 'greater Somalia' under a Saudi-inspired Wahhabi version of Islam. While there are cleavages within Al-Shabaab that advocate for a nationalistic agenda, the unifying idea is opposition to the western-backed government.⁷¹ Primarily financed through illicit activities, including racketeering, checkpoint taxation on charcoal, and smuggling contraband sugar across the border into Kenya, Al-Shabaab has imposed strict Sharia law on the Somali citizens within its territory. Since it was ousted from Mogadishu, Al-Shabaab has been driven back to the central and southern regions of Somalia and has resorted to insurgency to maintain a tactical advantage. While their territorial power has been reduced, they remain a significant threat.

Social, Economic, and Political Context

The rise and continued success of Al-Shabaab as an extremist organisation is linked to historic grievances within Somalia. Indeed, the negative domestic reaction to the 2006 US-backed Ethiopian invasion of Somalia gave the group the popular support it needed to radicalise ordinary citizens and cement its place within the region's social, economic, and political environment.⁷²

Since the fall of Siad Barre's regime in 1991, Somalia has lacked a unifying central government. Additionally, the country ranked second on the Fragile State Index in 2018 and has been in the top five since 2007 – a sign of continued instability and vulnerability.⁷³ This state of affairs has led to a decentralised and weak form of governance that is divided among the Al-Shabaab insurgency, clan warlords, the largely ineffective Transitional Federal Government, and AMISOM.⁷⁴

Somalia is also experiencing a demographic bulge, with 70% of its population younger than 30.⁷⁵ This is despite the highest infant mortality rates in the world, at 132 per 1 000 births.⁷⁶ Although population density remains low, it is estimated that Somalia will be home to 33 million people

by 2050, up from an estimated 15 million in 2019.⁷⁷ Studies have found that countries with a ‘youth bulge are more likely to suffer outbreaks of civil conflict’,⁷⁸ and while the direct causes of conflict are generally considered to be competition for power and resources, Somalia’s very youthful age structure could create additional opportunities for recruitment into a violent uprising.⁷⁹ Climate risk multipliers could also exacerbate these dynamics.

Climate Fragility Risks

The Horn of Africa is particularly vulnerable to the impact of climate change, given the structural fragilities of the region’s states and their significant exposure to climate risks. Somalia, Ethiopia, Eritrea, Sudan, and South Sudan are all ranked in the top 20 of most fragile states.⁸⁰ This raises the likelihood of conflict and instability on the peninsula. Additionally, Somalia is the least equipped of any country to deal with climate change, as assessed by the Notre Dame Global Adaptation Index.⁸¹

Since the retreat of formal governance in the 1990s, Somalia has experienced a cycle of drought, with three periods of protracted drought and two periods of famine.⁸² Since 2012, food insecurity has steadily increased, and in 2018, 6.2 million people needed humanitarian aid.⁸³ While civil war has exacerbated human insecurity in Somalia, the country is also heavily reliant on its natural resource base and the provision of eco-system services – further increasing its vulnerability to climate change.⁸⁴

Climate change feeds armed conflict in Somalia in several ways: by exacerbating tensions between clans, boosting the ranks of Al-Shabaab, and increasing migration.⁸⁵ Moreover, 70% of Somalis directly depend on the ecological environment for their livelihood and human security, and by extension on predictable climate patterns.⁸⁶ However, over the past decade, climate change-related desertification has expanded in Somalia, making the local population even more vulnerable to destabilising effects.⁸⁷

Resource Conflict: Growing resource scarcity and fragility, along with the retreat of traditional governance actors, created an environment that facilitated the rise of Al-Shabaab. Climate risks have acted as a multiplier to increase tensions between different communities, warlords, and Al-Shabaab over already scarce resources, leading to tensions and even open disputes between clans. In a country facing such challenges, resources like food and water are not only a basic need, but also a source of power.⁸⁸ These stresses increase tensions and conflict between communities and precipitate the need for people to move – impacting on the price of livestock and other

goods. This feedback loop has led to further increases in malnutrition and outbreaks of disease, and has had an adverse impact on food security.⁸⁹ In such an environment, non-state actors have sought to align strategically with Al-Shabaab, both for protection and for strength.

It is important to note that climate change does not directly cause conflict over diminishing resources, but rather it multiplies underlying natural resource stressors, increasing the risk of societal tension and violent conflict. In such an environment, Al-Shabaab has used a variety of techniques to solidify its presence. In contrast to Boko Haram, Al-Shabaab has, in certain areas, sought to tackle this environmental insecurity by undertaking adaptation and resilience projects. These include building canals in the Lower Shabelle region to make local farmers less dependent on rainfall, thus cultivating goodwill and increasing the number of recruits.⁹⁰ However, it is important to note that these efforts are few and far between, and Al-Shabaab's activity in preventing aid outweighs any food security gains from these small-scale efforts. Nevertheless, it shows how the group has used growing environmental scarcity to its advantage.

Livelihood Destruction: Livelihood destruction is an important driver of violence and migration in Somalia, fuelling food insecurity and recruitment. Sixty per cent of Somalis depend on livestock for survival.⁹¹ In the most recent famine that began in 2015, families lost between 20-40% of their herds, a vital source of income and nutrition for already food-insecure communities.⁹² Al-Shabaab plays a role in contributing to continued food insecurity by increasing insecurity around land tenure and effecting levels of access to markets.⁹³

Despite its role in worsening food insecurity and famine, Al-Shabaab has been successful in attracting young people who are affected by famine and food insecurity and who have no job prospects. A report by the Institute of Security Studies (ISS) found that 39% of interviewees referred to economic reasons specifically as their reason for joining Al-Shabaab.⁹⁴ This vulnerability has been further exacerbated by Al-Shabaab's control of access to humanitarian aid.

Environmentally-Induced Migration: Environmentally-induced migration is a complex phenomenon. Its exact causal factors are difficult to disentangle from the social, economic, and political environment in which such migration takes place. Extremist groups further complicate the picture. For instance, an extremist group could weaponise the ecological environment, acting as a push factor. Low-level violence between government forces and Al-Shabaab could also be contributing to displacement.

In 2017, at least 1.15 million Somalis were displaced inside the country, where they were exposed to protection risks, discrimination, and gender-based violence.⁹⁵ Before the most recent drought in 2015, more than 1.1 million Somalis were already living with protracted displacement, largely in the south and centre of the country.⁹⁶ Drought was an important factor in this displacement, but the fragile context and violence perpetrated by Al-Shabaab were also important push factors.

The concentration of displaced – often the most vulnerable – people in refugee camps, creates a hotspot for humanitarian aid. In these areas, Al-Shabaab and other criminal organisations often act as ‘gatekeepers’ to control people’s access to aid, in some cases using them to attract it while insisting on taxation.⁹⁷ In short, climate change has exacerbated drought conditions in Somalia, which, among other factors, has led to forced displacement and created conditions that benefit Al-Shabaab.

The Weaponisation of Natural Resources: In 2011 Somalia was hit by regional droughts that have been linked to climate change. Since then, the region has continued to experience persistent environmental and food insecurity.⁹⁸ During this time, as King notes, Al-Shabaab moved from guerrilla tactics to open-area denial. The weaponisation of resources was also seen in 2012, when Al-Shabaab sabotaged famine relief efforts by restricting access to humanitarian agencies, fuelling food insecurity and using the underlying climate factors to boost recruitment.⁹⁹

Coercive weaponisation has also been used to cut off water from liberated cities. Climate change, lack of food, and continued conflict involving water weaponisation took an enormous social toll. The limited access granted to humanitarian agencies, exacerbated by Al-Shabaab’s actions, led to more than a quarter of a million deaths and hundreds of thousands of displaced people.¹⁰⁰

Conclusion: Towards a Holistic Understanding of Climate Conflicts

The case studies above show how climate change can facilitate and boost the impact of extremist organisations in Africa. However, this link is subtle and complex, and climate change is by no means the only interdependent variable in understanding the connection between drought, food insecurity, conflict and its associated mechanisms, and the proliferation of extremist organisations.

The interactions are complex and create feedback loops that contribute to a vicious cycle of increasing violence, conflict and fragility.¹⁰¹ The link between climate change and extremism is increasingly recognised by African politicians.¹⁰² While politicians have been accused of overemphasising the role of climate change to conceal their inability to stem the violence, these concerns should not be overlooked. Such concerns should be integrated into policy responses. Instability, poor state capacity and military prioritisation have tended to sideline climate-change issues. This is despite the fact that climate change exacerbates existing problems and intensifies violence. For instance, although desertification perpetuates and expands levels of violence in Somalia – with a possible spillover into neighbouring states, as is already the case in Kenya – climate change has received relatively little attention when compared to anti-terrorism and security-sector reform.¹⁰³ While it is beyond the purview of this chapter, an important area for future research is how climate security considerations can be incorporated into future conflict prevention planning and conflict management.

As the impact of climate change continues increasingly to be felt, the issues outlined in this chapter will only become more important in understanding and countering violent extremism in Africa.

Endnotes

- 1 Schwartzstein, P. (2017) 'Climate Change and Water Woes Drove ISIS Recruiting in Iraq,' *National Geographic*. Published 14 November 2017. Available at <https://news.nationalgeographic.com/2017/11/climate-change-drought-drove-isis-terrorist-recruiting-iraq/>
- 2 Adano W., Witsenburg K., Dietz T., and Zaal F. (2012) 'Climate change, Violent Conflict, and Local Institutions in Kenya's Drylands,' *Journal of Peace Research* 49, pp. 65–80
- 3 Bremberg, N. (2018) 'European Regional Organizations and Climate-Related Security Risks: EU, OSCE, and NATO,' *SIPRI*. Published February 2018. Available at https://www.sipri.org/sites/default/files/2018-02/sipriinsight_1802_01_igos_and_climate_change.pdf
- 4 Nett, K. and Rüttinger, L. (2016) 'Insurgency, Terrorism, and Organised Crime in a Warming Climate, Adelphi.' Available at <https://www.adelphi.de/en/publication/insurgency-terrorism-and-organised-crime-warming-climate>
- 5 IPCC (2014) *Climate Change 2014: Synthesis Report*. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Geneva: IPCC. p. 151
- 6 King, M. and Burnell J. (2017) 'The Weaponization of Water in a Changing Climate' in *Epicentres of Climate and Security: The New Geostrategic Landscape of the Anthropocene*. Available at <https://climateandsecurity.files.wordpress.com/2017/06/>

- epicenters-of-climate-and-security_the-new-geostrategic-landscape-of-the-anthropocene_2017_06_091.pdf
- 7 Rüttinger, L., Stang, G., Smith, D., Tänzler D. and Vivekananda J. (2015) A New Climate for Peace – Taking Action on Climate and Fragility Risks. Executive Summary. Berlin/London/Washington/Paris: Adelphi/International Alert/The Wilson Center/EUISS. Available at <https://www.newclimateforpeace.org/>
 - 8 Kaldor, M. (2013) 'In Defence of New Wars,' *Stability: International Journal of Security and Development* 2:1, pp. 1-16
 - 9 Adger, W., Pulhin, J., Barnett, J., Dabelko, G., Hovelsrud, G., Levy, M., Oswald Spring, U. and Vogel, C. (2014) 'Human security' in *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 755-791
 - 10 Schulte, P. (2014) 'Defining Water Scarcity, Water Stress, and Water Risk: It's Not Just Semantics,' *Pacific Institute Insights*. Published 4 February 2014. Accessed at <http://pacinst.org/water-definitions>
 - 11 IPCC (2014) Climate Change 2014
 - 12 Millennium Project (2018) Environmental Security Study
 - 13 UNDP (1994) Human Development Report. New York: United Nations, p. 24
 - 14 Matthew, R. et al. Global Environmental Change and Human Security (London: MIT Press, 2010): p. 18
 - 15 Levy, M. (1995) 'Is the Environment a National Security Issue?' *International Security* 20(2) p. 31
 - 16 Chalecki, E. (2013) *Environmental Security: A Guide to the Issues*. Baltimore: Praeger. p. 9
 - 17 Mobjörk, M. et al. (2016) Climate-Related Security Risks: Towards an Integrated Approach, SIPRI, Stockholm. p. 5
 - 18 Ide, T. (2016) 'Toward a Constructivist Understanding of Socio-environmental Conflicts,' *Civil Wars* 18 (1), p. 70
 - 19 Swain, A. (2002) 'Managing the Nile Water: The Role of Sub-Basin Co-operation,' in Chatterji, M., Arlosoroff, S. and Guha, G. (eds) *Conflict Management of Water Resources*, Aldershot: Ashgate, p. 145
 - 20 Hsiang, S., Burke, M., Miguel, E. (2013) 'Quantifying the influence of climate on human conflict,' *Science* 341, pp. 1–14
 - 21 Buhaug, H. et al. (2014) 'One effect to rule them all? A comment on climate and conflict,' *Climate Change* 127, p. 394
 - 22 Buhaug, H. (2010) 'Climate not to Blame for African Civil Wars,' Peace Research Institute Oslo. Available at <https://www.pnas.org/content/pnas/107/38/16477.full.pdf>
 - 23 Theisen, M. et al. (2018) Climate Wars? Assessing the Claim that Drought Breeds Conflict, *International Security* 36 (3), pp. 79-106
 - 24 Adger W. et al. Human Security, p. 772
 - 25 Galtung, J. (1969) Violence, Peace, and Peace Research, *Journal of Peace Research* 6 (3), pp. 167-191
 - 26 Nett and Rüttinger, Insurgency, Terrorism, and Organised Crime in a Warming Climate, p. 8
 - 27 Rüttinger et al. A New Climate for Peace
 - 28 Ibid, executive summary
 - 29 Nett and Rüttinger, Insurgency, Terrorism, and Organised Crime in a Warming Climate, 9

- 30 Mohamad, H. (2014) 'Somali Farmers Benefit from Al-Shabab Reforms,' Al Jazeera. Published 11 March 2014. Available at <https://www.aljazeera.com/indepth/features/2014/03/somali-farmers-benefit-from-al-shabab-reforms-201431053038814400.html>
- 31 Cramer, C. (2010) 'Unemployment and Participation in Violence,' *World Development Report*
- 32 McLeman, R. (2017) 'Migration and Displacement in a Changing Climate,' in Werrell, C. and Femia, F. (eds) *Epicenters of Climate and Security: The New Geostrategic Landscape of the Anthropocene*, p. 105
- 33 Rigaud, K. et al. (2018) 'Groundswell: Preparing for Internal Climate Migration,' World Bank, Washington, DC. Available at <https://openknowledge.worldbank.org/handle/10986/29461>
- 34 King and Burnell, *Weaponization of Water*, p. 68
- 35 This typology takes from King and Burnell, p. 68 but expanded to include ecological resources beyond water
- 36 OCHA (2015) Niger and Chad: 'A fragile island of stability in a region of conflict, says OCHA Operations Director,' Published 6 May 2015. Available at <https://www.unocha.org/story/niger-and-chad-%E2%80%9C-fragile-island-stability-region-conflict%E2%80%9D-says-ocha-operations-director>
- 37 Institute for Economics and Peace (2015) Global Terrorism Index 2015. Available at <http://economicsandpeace.org/wp-content/uploads/2015/11/2015-Global-Terrorism-Index-Report.pdf>
- 38 Institute for Economics and Peace (2018) Global Terrorism Index 2018. Available at <http://visionofhumanity.org/app/uploads/2018/12/Global-Terrorism-Index-2018-1.pdf>
- 39 IRIN News (2011) 'Understanding Nigeria's Boko Haram radicals.' Published 11 July 2011. Available at <http://www.irinnews.org/2011/07/11/understanding-nigeria%E2%80%99s-boko-haram-radicals>
- 40 African Development Bank (2019) African Economic Outlook 2019. Available at https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/2019AEO/AEO_2019-EN.pdf
- 41 'Nigeria Extractive Industries Transparency Initiative (2018) Nigeria: Overview.' Available at https://eiti.org/es/implementing_country/32
- 42 Geerken, R., Vassolo, S. and Bila, M. (2010) 'Impacts of Climate Variability and Population Pressure on Water Resources in the Lake Chad Basin,' *Global Water System Project Conference of the Global Catchment Initiative (GCI)*, Bonn: The Global Water System Project, pp. 116-124
- 43 Solomon, O. and Belal, E. (2012) Identification and Reduction of Climate Change Vulnerability in the Fisheries of the Lake Chad Basin: What have we learned and what can we do better? Food and Agriculture Organization
- 44 Gould and Pate, *State Fragility Around the World: Fractured Justice and Pierce Reprisal*
- 45 Notre Dame Global Adaptation Initiative (2018) ND-GAIN Country Index. Available at <https://gain.nd.edu/our-work/country-index/>
- 46 Johnson, S. (2018) Boko Haram and Counter-Insurgency in Nigeria, in Tschudin, A., Buchanan-Clarke, S., Coutts, L., Russell, S. and Tyala, M. (eds) *Extremisms in Africa*, Good Governance Africa, Johannesburg, p. 178, Jacana
- 47 Onuoha, F. (2014) Why Do Youth Join Boko Haram? *Special Report 348*, Washington, DC: United States Institute of Peace

- 48 Barkindo, A. (2014) 'Boko Haram: Ideology, Ethnicity and Identity.' Published 29 September 2014. Available at <https://institute.global/insight/co-existence/boko-haram-ideology-ethnicity-and-identity>
- 49 The countries of Cameroon, Chad, Nigeria, and Niger make up the Lake Chad Basin
- 50 UN Office for the Coordination of Humanitarian Affairs (2018) 'Lake Chad Basin: Crisis Overview,' *ReliefWeb*. Published 26 March 2018. Available at <https://reliefweb.int/report/nigeria/lake-chad-basin-crisis-overview>
- 51 Okonkwo, C. and Demoz, B. (2014) 'Identifying anthropogenic "hotspots" and management of water resources in Lake Chad Basin using GIS,' *Journal of Natural Resources Policy Research* 6 (2-3), pp. 135-149
- 52 Okonkwo, C. and Demoz, B. (2014) 'Identifying anthropogenic "hotspots" and management of water resources in Lake Chad Basin using GIS,' *Journal of Natural Resources Policy Research* 6 (2-3), pp. 135-149
- 53 Rizzo, J. (2015) 'A Shrinking Lake and a Rising Insurgency,' in Gemenne, F., Zickgraf, C. and Ionesco, D. (eds) *The State of Environmental Migration 2015*, Geneva: International Organization for Migration, pp. 13-30
- 54 Ibid, 13
- 55 Kaufmann, D., Kraay, A. and Mastruzzi, M. (2018) 'The Worldwide Governance Indicators (WGI) project,' World Bank. Available at <http://info.worldbank.org/governance/wgi/index.aspx#home>
- 56 Odada, E., Oyebande, L. and Oguntola, A. (2006) Lake Chad: Experience and lessons learned brief, Shiga, Japan: International Lake Environment Committee
- 57 Al Jazeera (2018) 'Chad troops kill 17 Boko Haram fighters after Lake Chad attack,' *Al Jazeera*. Published September 29, 2018. Available at <https://www.aljazeera.com/news/2018/09/chad-troops-kill-17-boko-haram-fighters-lake-chad-attack-180929140628227.html>
- 58 Nett and Rüttinger, Insurgency, Terrorism, and Organised Crime in a Warming Climate, 16
- 59 Onuoha, F.C. (2014): 'Why Do Youth Join Boko Haram?' United States Institute of Peace. Available at https://www.usip.org/sites/default/files/SR348-Why_do_Youth_Join_Boko_Haram.pdf
- 60 Maplecroft (2015) 'Climate Change and Environmental Risk Atlas 2015'. Available at <https://maplecroft.com/portfolio/new-analysis/2014/10/29/climate-change-and-lackof-food-security-multiply-risks-conflict-and-civil-unrest-32-countries-maplecroft>
- 61 Botha, A. and Abdile, M. (2017) Reality Versus Perception: Toward Understanding Boko Haram in Nigeria, *Studies in Conflict and Terrorism*
- 62 Lake Chad Basin Commission (2016) Adaptation to Climate Change in the Lake Chad Basin, *GIZ*. Available at <http://www.cblt.org/en/projects/ACC-GIZ>
- 63 African Development Bank; Development Centre of the Organisation for Economic Co-Operation and Development and United Nations Development Programme 2014: African Economic Outlook 2014. Retrieved 07.09.2016 from http://www.africaneconomicoutlook.org/sites/default/files/content-pdf/AEO2014_EN.pdf
- 64 UNOWA 2005: Youth Unemployment and Regional Insecurity in West Africa. Dakar: United Nations
- 65 Onuoha, F.C. (2014): 'Why Do Youth Join Boko Haram?'
- 66 Darby, M. (2015) 'Global warming raises tension in Boko Haram region,' *Climate Home News*. Published 16 January 2015. Available at <https://www.climatechangenews.com/2015/01/16/global-warming-raises-tensions-in-boko-haram-region/>

- 67 Shettima, A.G. and Tar, U.A. (2008) Farmer-Pastoralist Conflict in West Africa: Exploring the Causes and Consequences. In: *Information, Society and Justice* 1:2, pp. 163-184. Available at http://eprints.londonmet.ac.uk/55/1/InformationSocietyAndJustice_v1n2_p163-184.pdf
- 68 Nett and Rüttinger, *Insurgency, Terrorism, and Organised Crime in a Warming Climate*, 15
- 69 Odjugo, P. (2010) 'General Overview of Climate Change Impacts in Nigeria,' *Journal of Human Ecology* 29 (1), pp. 47-55
- 70 Vanguard (2015) Boko Haram poisons water sources in Borno. Published 1 October 2015. Available at <http://www.vanguardngr.com/2015/10/boko-haram-poisons-water-sources-in-borno/>
- 71 Felter, C., Masters, J., Sergie M. (2019), Al-Shabab: Backgrounder, *Council on Foreign Relations*. Published 31 January 2019. Available at <https://www.cfr.org/backgrounder/al-shabab>
- 72 Maruf, H. and Joseph, D. (2018) *Inside Al-Shabaab: The Secret History of Al-Qaeda's Most Powerful Ally*. Bloomington, IN: Indiana University Press
- 73 Fund for Peace (2019) *Fragile States Index*. Available at <http://fundforpeace.org/fsi/country-data/>
- 74 Menkhaus, K. (2007) Governance without Government in Somalia: Spoilers, State Building, and the Politics of Coping, *International Security* 31 (3), pp. 74-106
- 75 Madsen (2011) In Somalia, Beyond the Immediate Crises, Demography Reveals a Long-Term Challenge, *New Security Beat, Wilson Center*. Published 21 December 2011. Available at <https://www.newsecuritybeat.org/2011/12/in-somalia-beyond-the-immediate-crises-demography-reveals-a-long-term-challenge/>
- 76 World Bank (2018) *World Bank Open Data*. Available at <https://data.worldbank.org/>
- 77 UN (2017) *Population Division: World Population Prospects 2017*. Available at <https://population.un.org/wpp/>
- 78 Madsen, In Somalia, Beyond the Immediate Crises
- 79 Yair, O. and Miodownik, D. (2016) 'Youth bulge and Civil War: Why a Country's Share of Young Adults Explains Only Non-Ethnic Wars,' *Conflict Management and Peace Science* 33 (1), pp. 25-44
- 80 Fund for Peace (2019) *Fragile States Index*. Available at <http://fundforpeace.org/fsi/country-data/>
- 81 Notre Dame Global Adaptation Initiative (2018) *ND-GAIN Country Index*. Available at <https://gain.nd.edu/our-work/country-index/>
- 82 UN Environment (2018) *Mapping the devastation of Somalia's drought*. Published 30 January 2018. Available at <https://www.unenvironment.org/news-and-stories/story/mapping-devastation-somalias-drought>
- 83 Ibid
- 84 World Bank (2018) *Somalia Droughts Impact and Needs Assessment: Volume I (Synthesis Report)*. Available at <http://documents.worldbank.org/curated/en/901031516986381462/pdf/122991-v1-GSURR-Somalia-DINA-Report-Volume-I-180116-Digital.pdf>
- 85 Kuele, G. and Miola, A. (2018) *Climate Change is Feeding Armed Conflict in Somalia, Institute for Security Studies*. Published 6 April 2018. Available at <https://issafrica.org/iss-today/climate-change-is-feeding-armed-conflict-in-somalia>
- 86 Ibid
- 87 UNDP (2019) *Somalia*. Available at <https://www.adaptation-undp.org/explore/eastern-africa/somalia>

- 88 Kuele and Miola, Climate Change is Feeding Armed Conflict in Somalia
- 89 Maystadt, J. and Ecker, O. (2014) 'Extreme Weather and Civil War: Does Drought Fuel Conflict in Somalia through Livestock Price Shocks?' *American Journal of Agricultural Economics* 96 (4), pp. 1157-1182
- 90 Al Jazeera (2014) 'Somalia Farmers Benefit from Al-Shabab Reforms.' Published 11 March 2014. Available at <https://www.aljazeera.com/indepth/features/2014/03/somali-farmers-benefit-from-al-shabab-reforms-201431053038814400.html>
- 91 Ibid
- 92 Oxfam International (2018) 'Drought, Displacement and Livelihoods in Somalia/Somaliland.' Available at <https://reliefweb.int/sites/reliefweb.int/files/resources/bn-somalia-drought-displacement-protection-gender-250618-en.pdf>
- 93 Alinovi, L., Hemrich, G., and Russo, L. (2007) 'Addressing Food Insecurity in Fragile States: Case Studies from the Democratic Republic of the Congo, Somalia, and Sudan,' ESA Working Paper No. 07-21, Agricultural Development Economics Division, The Food and Agriculture Organization of the United Nations. Available at <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.545.6894&rep=rep1&type=pdf>
- 94 Botha, A. and Abdile, M. (2014) 'Radicalisation and al-Shabaab Recruitment in Somalia,' *ISS Paper No. 266, Institute for Security Studies*. Available at <https://issafrica.s3.amazonaws.com/site/uploads/Paper266.pdf>
- 95 Somalia NGO Consortium (2018) 'Families Face Heightened Risk after Evictions and Destruction of IDP Settlements in Mogadishu, Somalia,' - *ReliefWeb*. Published 9 January 2018. Available at <https://reliefweb.int/report/somalia/families-face-heightened-risk-after-evictions-and-destruction-idp-settlements>
- 96 Ibid
- 97 Bryld, E., Kamau, C., Moller, S., Mohamoud, M. (2017) 'Engaging the Gatekeepers: Using Informal Governance Resources in Mogadishu.' Available at <https://tanacopenhagen.com/wp-content/uploads/2017/03/Gatekeeper-paper.pdf>
- 98 FAO (2016) 'Somalia Continues to Face Large-Scale Food Insecurity Compounded by Poor Rainfall and Drought,' *Food and Agricultural Organization of the United Nations*. Published 8 February 2016. Available at <http://www.fao.org/news/story/en/item/382546/icode/>
- 99 Abdi, H. (2017) 'Somalia conflict and famine: the causes are bad governance, not climate change,' *The Conversation*. Published 4 October 2017. Available at <https://theconversation.com/somalia-conflict-and-famine-the-causes-are-bad-governance-not-climate-change-84166>
- 100 Kuele and Miola, Climate Change is Feeding Armed Conflict in Somalia
- 101 Nett and Rüttinger, Insurgency, Terrorism, and Organised Crime in a Warming Climate, 19
- 102 Eichelberger, E. (2014) How environmental disaster is making Boko Haram violence worse. Available at <https://www.motherjones.com/environment/2014/06/nigeria-environment-climate-change-boko-haram/2/>
- 103 Kuele and Miola, Climate Change is Feeding Armed Conflict in Somalia

References

- Abubakar, A.R. 2015. 'The Case of Boko Haram in Nigeria.' In: Javan, J. and Wieland-Karimi, A. (eds) *Understanding a new Generation of Non-State Armed Groups*. Turin: United Nations System Staff College, pp. 43-52

- Adano, W.R., Dietz, T., Witsenburg, K. and Zaal, F. 2012. 'Climate Change, Violent Conflict, and Local Institutions in Kenya's Drylands,' *Journal of Peace Research*, Volume 49, pp. 65-80
- Adger, W.N. et al. 2014. 'Human Security.' *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge: Cambridge University Press, pp. 755-791
- African Development Bank, 2019. *African Economic Outlook 2019*, s.l.: African Development Bank Group
- Al Jazeera, 2018. *Chad troops kill 17 Boko Haram fighters after Lake Chad attack*. [Online] Available at <https://www.aljazeera.com/news/2018/09/chad-troops-kill-17-boko-haram-fighters-lake-chad-attack-180929140628227.html> [Accessed 29 September 2018]
- Alinovi, L., Hemrich, G. and Russo, L. 2007. *Addressing Food Insecurity in Fragile States: Case Studies from the Democratic Republic of the Congo, Somalia, and Sudan*, Washington, DC: Agricultural Development and Economics Division, The Food and Agriculture Organization at the United Nations
- Al Jazeera, 2014. *Somali Farmers Benefit from al-Shabab Reforms*. [Online] Available at <https://www.aljazeera.com/indepth/features/2014/03/somali-farmers-benefit-from-al-shabab-reforms-201431053038814400.html> [Accessed 14 February 2019]
- Barkindo, A. 2014. *Boko Haram: Ideology, Ethnicity, and Identity*. [Online] Available at <https://institute.global/insight/co-existence/boko-haram-ideology-ethnicity-and-identity> [Accessed 23 November 2018]
- Botha, A. and Abdile, M. 2017. 'Reality Versus Perception: Toward Understanding Boko Haram in Nigeria.' *Studies in Conflict and Terrorism*
- Botha, A. and Abdile, M. 2-14. *Radicalisation and al-Shabaab Recruitment in Somalia*, Pretoria: Institute for Security Studies
- Bremberg, N. 2018. *European Regional Organizations and Climate-Related Security Risks: EU, OSCE, and NATO*, Stockholm: Stockholm International Peace Research Institute
- Bryld, E., Kamau, C., Molle, S.K. and Mohamoud, M.A. 2017. *Engaging the Gatekeepers: Using Informal Governance Resources in Mogadishu*, s.l.: Tana
- Buhaug, H. 2010. *Climate not to Blame for African Civil Wars*, Oslo: Peace Research Institute Oslo
- Buhaug, H. et al. 2014. 'One Effect to Rule them all? A Comment on Climate and Conflict,' *Climate Change*, 127(3-4), pp. 391-397
- Chalecki, E. 2013. *Environmental Security: A Guide to the Issues*. Baltimore: 2013
- Cramer, C. 2011. *Unemployment and Participation in Violence*, s.l.: World Development Report
- Darby, M. 2015. *Global Warming Raises Tensions in Boko Haram Region*. [Online] Available at <https://www.climatechangenews.com/2015/01/16/global-warming-raises-tensions-in-boko-haram-region/> [Accessed 15 November 2018]
- Eichelberger, E. 2014. *How Environmental Disaster Is Making Boko Haram Violence Worse*. [Online] Available at <https://www.motherjones.com/environment/2014/06/nigeria-environment-climate-change-boko-haram/2/> [Accessed 23 November 2018]
- FAO, 2016. *Somalia continues to face large-scale food insecurity compounded by poor rainfall and drought*. [Online] Available at <http://www.fao.org/news/story/en/item/382546/icode/> [Accessed 25 November 2018]
- Felter, C., Masters, J. and Sergie, M.A. 2019. *Al-Shabab: Backgrounder*. [Online] Available at <https://www.cfr.org/backgrounder/al-shabab>. [Accessed 5 February 2019]

- Fund for Peace, 2019. *Fragile States Index*. [Online] Available at <http://fundforpeace.org/fsi/country-data/> [Accessed 14 February 2019]
- Galtung, J. 1969. 'Violence, Peace, and Peace Research,' *Journal of Peace Research*, pp. 167-191
- Geerken, R., Vassolo, S. and Bila, M., 2010. 'Impacts of Climate Variability and Population Pressure on Water Resources in the Lake Chad Basin,' *Global Water System Project Conference of the Global Catchment Initiative (GCI)*. Bonn: The Global Water System Project, pp. 116-124
- Gould, L. and Pate, M. 2016. *State Fragility Around the World: Fractured Justice and Fierce Reprisal*. Boca Raton, FL: CRC Press
- Hsiang, S.M., Burke, M. and Miguel, E. 2013. 'Quantifying the Influence of Climate on Human Conflict,' *Science*, 341(6151)
- Ide, T. 2016. 'Toward a Constructivist Understanding of Socio-Environmental Conflicts.' *Civil Wars*, 18(1), pp. 69-90
- Institute for Economics and Peace, 2018. *Global Terrorism Index 2018*, Sydney: Institute for Economics and Peace
- IPCC, 2014. *Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, Geneva: Intergovernmental Panel on Climate Change
- IRIN News, 2011. *Understanding Nigeria's Boko Haram Radicals*. [Online] Available at <http://www.irinnews.org/2011/07/11/understanding-nigeria%E2%80%99s-boko-haram-radicals> [Accessed 11 January 2019]
- Johnson, S. 2018. 'Boko Haram and Counter-Insurgency in Nigeria.' In: Tschudin, A. et al. (eds) *Extremisms in Africa*. Johannesburg: Good Governance Africa, pp. 176-204, Jacana
- Kaldor, M. 2013. In Defense of New Wars. *Stability: International Journal of Security and Development*, 2(1), pp. 1-16
- Kaufman, D., Kraay, A. and Mastruzzi, M. 2018. *The Worldwide Governance Indicators (WGI) Project*. [Online] Available at <http://info.worldbank.org/governance/wgi/index.aspx#home> [Accessed 29 September 2018]
- King, M.D. and Burnell, J. 2017. The Weaponization of Water in a Changing Climate. In: Werrell, C.E. and Femia, F. (eds) *Epicenters of Climate and Security: The New Geostrategic Landscape of the Anthropocene*. Washington, DC: The Center for Climate and Security, pp. 67-73
- Kuele, G. and Miola, A.C. 2018. *Climate Change is Feeding Armed Conflict in Somalia*. [Online] Available at <https://issafrica.org/iss-today/climate-change-is-feeding-armed-conflict-in-somalia> [Accessed 23 January 2019]
- Lake Chad Basin Commission, 2016. *Adaptation to Climate Change in the Lake Chad Basin*, s.l.: GIZ
- Levy, M. 1995. 'Is the Environment a National Security Issue?' *International Security*, 20(2), pp. 35-62
- Madson, E.L. 2011. *In Somalia, Beyond the Immediate Crises, Demography Reveals a Long-Term Challenge*. [Online] Available at <https://www.newsecuritybeat.org/2011/12/in-somalia-beyond-the-immediate-crises-demography-reveals-a-long-term-challenge/> [Accessed 1 February 2019]
- Maplecroft, 2015. *Climate Change and Environmental Risk Atlas 2015*. [Online] Available at <https://maplecroft.com/portfolio/new-analysis/2014/10/29/climate-change-and-lackof-food-security-multiply-risks-conflict-and-civil-unrest-32-countries-maplecroft/> [Accessed 24 December 2018]

- Maruf, H. and Joseph, D. 2018. *Inside Al-Shabaab: The Secret History of Al-Qaeda's Most Powerful Ally*. 1 ed. Bloomington, IN: Indiana University Press
- Maystadt, J.-F. and Ecker, O. 2014. Extreme Weather and Civil War: Does Drought Fuel Conflict in Somalia through Livestock Price Shocks?. *American Journal of Agricultural Economics*, 4(1), pp. 1157-1182
- McLeman, R. 2017. Migration and Displacement in a Changing Climate. In: Werrell, C. and Femia, F. (eds) *Epicentres of Climate and Security: The New Geostrategic Landscape of the Anthropocene*. Washington, DC: The Center for Climate and Security, pp. 100-108
- Millennium Project, 2018. *Environmental Security Study*. [Online] Available at <http://107.22.164.43/millennium/es-2def.html> [Accessed 12 November 2018]
- Mobjork, M. et al. 2016. *Climate-Related Security Risks*, Stockholm: Swedish International Peace and Research Institute
- Mohamed, H. 2014. *Somali Farmers Benefit from Al-Shabab Reforms*. [Online] Available at <https://www.aljazeera.com/indepth/features/2014/03/somali-farmers-benefit-from-al-shabab-reforms-201431053038814400.html> [Accessed 1 January 2019]
- Nigeria Extractive Industries Transparency Initiative, 2018. *Nigeria: Overview*. [Online] Available at https://eiti.org/es/implementing_country/32 [Accessed 4 January 2019]
- Notre Dame Global Adaptation Initiative, 2018. *ND-GAIN Country Index*, IN: University of Notre Dame
- OCHA, 2016. *Niger and Chad: 'A Fragile Island of Stability in a Region of Conflict' says OCHA Operations Director*. [Online] Available at <https://www.unocha.org/top-stories/all-stories/niger-and-chad-%E2%80%9C-fragile-island-stability-regionconflict%E2%80%9D-says-ocha-operati> [Accessed 15 November 2019]
- Odada, E., Oyebande, L. and Oguntola, A. 2006. *Lake Chad: Experience and Lessons Learned Brief*. [Online] Available at http://www.worldlakes.org/uploads/06_Lake_Chad_27February2006.pdf [Accessed 28 September 2018]
- Odjugo, P. 2010. General Overview of Climate Change Impacts in Nigeria. *Journal of Human Ecology*, 29(1), pp. 47-55
- Okonkwo, C. and Demoz, B. 2014. Identifying Anthropogenic 'Hotspots' and Management of Water Resources in Lake Chad Basin Using GIS. *Journal of Natural Resources Policy Research*, 6(2-3), pp. 135-149
- Onuoha, F.C. 2014. *Why do Youth Join Boko Haram?*, Washington, DC: United States Institute of Peace
- Oxfam International, 2018. *Drought, Displacement, and Livelihoods in Somalia/Somaliland*, London: Oxfam
- Rigaud, K.K. et al. 2018. *Groundswell: Preparing for Internal Climate Migration*, Washington, DC: World Bank
- Rizzo, J. 2015. 'A Shrinking Lake and a Rising Insurgency.' In: Gemenne, F., Zickgraf, C. and Ionesco, D. (eds) *The State of Environmental Migration*. Geneva: International Organization for Migration, pp. 13-30
- Rüttinger, L. and Nett, K. 2016. *Insurgency, Terrorism, and Organised Crime in a Warming Climate: Analysing the Links Between Climate Change and Non-State Armed Groups*, Berlin: Adelphi
- Rüttinger, L. et al. 2015. *A New Climate for Peace: Taking Action on Climate and Fragility Risks*, Berlin/London/Washington/Paris: Adelphi/International Alert/The Wilson Center/EUISS
- Schulte, P. 2014. *Defining Water Security, Water Stress, and Water Risks: It's not just Semantics*. [Online] Available at <http://pacinst.org/water-definitions>. [Accessed 2 February 2019]

- Schwartzstein, P. 2017. *Climate Change and Water Woes Drove ISIS Recruiting in Iraq*. [Online] Available at <https://news.nationalgeographic.com/2017/11/climate-change-drought-drove-isis-terrorist-recruiting-iraq/> [Accessed 10 February 2019]
- Shettima, A.G. and Tar, U. 2008. Farmer-Pastoralist Conflict in West Africa: Exploring the Causes and Consequences. *Information, Society, and Justice*, 1(2), pp. 163-184
- Solomon, O. and Belal, E. 2012. *Climate change Implications for Fishing Communities in the Lake Chad Basin*, s.l.: Food and Agriculture Organization
- Somalia NGO Consortium, 2018. *Families Face Heightened Risk after Evictions and Destruction of IDP Settlements in Mogadishu, Somalia*. [Online] Available at <https://reliefweb.int/report/somalia/families-face-heightened-risk-after-evictions-and-destruction-idp-settlements> [Accessed 23 January 2019]
- Swain, A. 2002. Managing the Nile Water: The Role of Sub-Basin Co-operation. In: *Conflict Management of Water Resources*. Aldershot: Ashgate, pp. 145-162
- Theisen, O.M., Holtermann, H. and Buhaug, H. 2011. Climate Wars? Assessing the Claim that Drought Breeds Conflict. *International Security*, 36(3), pp. 79-106
- UN Environment, 2018. *Mapping the Devastation of Somalia's Drought*. [Online] Available at <https://www.unenvironment.org/news-and-stories/story/mapping-devastation-somalias-drought> [Accessed 3 January 2019]
- UN News, 2019. *Climate Change Recognized as 'Threat Multiplier', UN Security Council Debates its Impact on Peace*. [Online] Available at <https://news.un.org/en/story/2019/01/1031322> [Accessed 30 January 2019]
- UN Office for the Coordination of Humanitarian Affairs, 2018. *Lake Chad Basin: Crisis Overview*. [Online] Available at <https://reliefweb.int/report/nigeria/lake-chad-basin-crisis-overview> [Accessed 28 September 2018]
- United Nations Development Programme, 1994. *Human Development Report*, New York: United Nations
- United Nations Development Programme, 2019. *Somalia*. [Online] Available at <https://www.adaptation-undp.org/explore/eastern-africa/somalia> [Accessed 13 February 2019]
- United Nations, 2017. *Population Divison: World Population Prospects 2017*. [Online] Available at <https://population.un.org/wpp/> [Accessed 24 November 2018]
- Werrell, C.E. and Femia, F. 2018. *Climate Change Raises Conflict Concerns*. [Online] Available at <https://en.unesco.org/courier/2018-2/climate-change-raises-conflict-concerns> [Accessed 2 February 2019]
- Williams, P.D. 2018. 'Joining AMISOM: Why Six African States Contributed Troops to the African Union Mission in Somalia,' *Journal of East African Studies*, 21(1), pp. 172-192
- World Bank, 2018. *Somalia Drought Impact and Needs Assessment: Volume 1 (Synthesis Report)*, Washington, DC: World Bank Group
- World Bank, 2018. *World Bank Open Data*. [Online] Available at <https://data.worldbank.org/> [Accessed 14 February 2019]
- Yair, O. and Miodownik, D. 2016. 'Youth Bulge and Civil War: Why a Country's Share of Young Adults Explains only Non-Ethnic Wars,' *Conflict Management and Peace Studies*, 33(1), pp. 25-44