Climate change and Conflict: Balancing on a Knife's Edge
Master Thesis

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Abstract

The physical and societal impacts of climate change pose major conflict risks. The past couple of decades have researched extensively on discovering a general link between climate change and violent conflict, but the climate – conflict scholarship continues to remain divided with no consensus over what theoretical concepts govern the causal mechanisms. Thus, tracing down the processes in complex conflict situations becomes a necessary task in order to develop a comprehensive understanding concerning how the effects of climate change increase conflict risks. To that end, this Master Thesis tested causal explanations that theoretically link climate change to violent conflict. In the backdrop of a major meteorological drought in 2002, this research tested how worsening livelihood conditions and changes in pastoral mobility patterns increase the risk of communal conflict between ethnic Afar and Issa (Dir) groups in Ethiopia. The causal pathways tested were successful in translating the impacts of climate change into communal conflict. The research found that the link between environmental stress and violent conflict is not direct, but contingent on factors such as the existence of horizontal inequalities and existing vulnerabilities of populations.

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Word Count: 23992

List of Figures, Tables and Maps

List of Abbreviations

CCKP	Climate Change Knowledge Portal
fAPAR	Fraction of Absorbed Photosynthetically Active Radiation
HI	Horizontal Inequalities
IO	International Organization
IPCC	International Panel on Climate Change
JRC	Joint Research Centre
SMA	Soil Moisture Anomaly
SPI	Standard Precipitation Index
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
UCDP	Uppsala Conflict Data Program
UN	United Nations
UNEP	United Nations Environment Programme
WHO	World Health Organization

1. INTRODUCTION

Near the invention of the steam engine in the late 18th century, the world entered the 'Anthropocene' - a new geologic epoch, where the influence of human activity continues to significantly alter the geology and ecosystems of the planet (Brauch and Scheffran 2012). The term was coined in early 2000's by Nobel Laureate Paul Crutzen with the intention to distinctly separate a modern era of human civilization marked by the advent of global climate change.

Today, theses physical effects of anthropogenic climate change pose serious challenges to societal stability. Triggered by the physical and societal impacts of climate change, researchers, policymakers and scientists alike, have studied the potential security implications of climate change. The past couple of decades have researched extensively on discovering a general link between climate change and violent conflict, but developments remain inconclusive (Ballen and Mobjörk 2018; Nordås and Gleditsch 2007; Nordås and Gleditsch 2014; Seter 2016; Gemenne et al 2014). Notwithstanding, the generally accepted view emerging from fierce debates acknowledges the role climate change can play in aggravating the underlying situations in conflict-affected regions of the world (Von Lossow et al 2021). As ecological systems shift to new equilibriums, environmental factors are increasingly undermining existing sociopolitical conditions (Mobjörk et al 2016). For instance, climate shocks in the form of sudden droughts, excessive rainfall or surges in heat waves can accentuate situations of resource scarcity and force pastoral groups or sedentary communities to compete for them. Communities that are not climate-resilient and principally depend on natural resources to sustain their livelihoods are especially vulnerable to facing climate-induced environmental stresses. In regions particularly vulnerable to the impacts of climate change where underlying societal tensions pre-exist, climate-induced environmental stress can lead to various forms of conflict – communal conflicts, civil wars and even risk interstate wars (Theisen et al 2013). Thus, climate change has certainly evolved to become a 'security problem' and forces researchers to investigate the security implications of climate change (Barnett & Adger 2007).

But how does climate change affect violent conflict? What are the mechanisms at play that translate the impacts of climate change into violent conflict? And how do the effects of climate change interact with exogenous conflict-promoting factors in society?

In attempting to answer these questions, researchers have entered heated debates with diametrically opposing studies failing to arrive at any consensus (IPCC 2022, 4-54; Ide et al 2014; Theisen et al 2013; Solow 2013). Although important early strides have been made in identifying plausible indirect causal pathways between climate change and worsening conflict-outcomes, the research field continues to remain understudied (Busby 2019; Ballen and Mobjörk 2018). A growing body of literature aimed toward empirical climate-conflict research has seen a plethora of quantitative scientific reviews primarily focus on exploring the direct correlations between climatic conditions and conflict outcomes (von Uexkull and Buhaug 2021; Ballen and Mobjörk 2018). This leaves room for several research gaps and shortcomings (Glenditsh 2012). For instance, there is a burgeoning need for the climate-conflict scholarship to prioritize, "theoretical and empirical modelling of complex and context-sensitive causal processes" (von Uexkull and Buhaug 2021). This suggests that causal mechanisms that explain 'how' climate change may affect the risk of violent conflict remain understudied (Busby 2019; Ballen and Mobjörk 2018; Sweijs et al 2022). Scholars with the same critical assessment have declared a call to arms for the research community to prioritize focus on further exploring indirect causal pathways and have demanded future studies to conform with underlying conditions and contexts of conflict areas in their research– an aspect most quantitative studies previously overlooked (von Uexkull and Buhaug 2021).

To push the research frontier forward, there must be a concerted focus on theoretical perspectives that can explain 'how' climate change can affect the dynamics of hostilities (Meierding 2013; Salehyan 2014). Even among the few that have attempted to focus their study on causal mechanisms, there is little or no consensus over what theoretical concepts govern the causal mechanisms and what factors to operationalize during empirical research (Seter 2016). This represents a disturbing disposition within the climate – conflict scholarship that fails to adequately connect underlying theoretical arguments with empirical testing and analysis (Buhaug 2015; Seter 2016). Although many quantitative studies have been able to prove a statistically significant correlation, this cannot be automatically accepted as a conclusion confirming a causal relationship. Tracing down the processes in complex conflict situations is a necessary task in order to safely develop an understanding of how climate change effects can increase conflict risk (Seter 2016).

Cognizant of the overall contention in the academic space on climate and conflict, contemporary empirical research has managed to outline potential causal pathways that provide an indirect link between climate change to violent conflict. These causal pathways can sometimes overlap, be interlinked and address both, the causes and dynamics of violent conflict

(Ballen and Mobjörk 2018). In essence, these pathways serve as explanations to the missing 'how' element in the climate – conflict relationship where they explicate and provide when and under what conditions we are expected to see climate change precipitate violent conflict.

For this research to fundamentally understand how climate change causes conflict, the focus must be on testing for the presence / absence of these existing causal pathways at the heart of the climate-conflict nexus. By testing for the presence / absence of a causal pathway in a within-case setting, would mean proving or disproving the contentious causal relationship between climate change and conflict. This demands empirical research. If the propagated causal pathway does not appear in the selected case study, then we can safely disregard a causal relationship for the prescribed case study setting. On the contrary, should empirical evidence support the operating presence of a causal pathway, then we can confirm and establish a causal link.

To that end, this study will utilize '**theory-testing process tracing**' to test causal pathways that underpin a causal relationship between climate and conflict. The use of process tracing which involves the study of causal mechanisms allows us to address the aforementioned research gaps and contributes to the climate – conflict scholarship by delving into the theoretical perspectives that can explain 'how' climate change can affect the dynamics of hostilities. The objective of this research will be to illustrate the underlying causal mechanism that was operational in a specific case study where the effects of climate change produced violent conflict. Next, witnessed by the interplay of causal forces in the causal mechanism, the aim will be to generate a discussion on the fundamental scope conditions that necessitate the outcome of violent conflict.

To test causal pathways, this research will be required to select a case study and conduct an in-depth within-case analysis to fundamentally understand how climate change and conflict are linked. For this, we select the case of communal conflict between ethnic Afar and Issa (Dir) communities in the Afar region of Ethiopia. Both groups are pastoralists and agro-pastoralists who dependent on the environment to sustain their livelihoods. Given their vulnerability to climate extremities, this makes them an ideal case study to investigate how the effects of climate change affect violent conflict. In addition, considering their particular vulnerability to extreme weather phenomena's, this study will specifically look into assessing if at all and how extreme weather events incite communal behavior. Finally, this brings us to our interlinked research question(s): ***How do extreme weather events shape communal conflict? And what are the necessary conditions that translate the effects of climate-related environmental change into communal hostilities?***

1.1. Organization of the Thesis

In total, this thesis is divided into seven chapters. Chapter 1 is the introduction which discusses the topic of general level and links it with the research question and case study. In Chapter 2, we conduct a thorough literature review to understand the (1) background on climate conflict research; (2) discuss causal pathways linking climate change and conflict; and (3) explore existing literature specific to our variables of interest. Next, using the causal pathways section as a base, we discuss the theoretical framework of the thesis in Chapter 3. In chapter 4, we introduce the research design and present our variables. Starting from Chapter 5, we begin our empirical analysis. We structure our analysis under a chronological approach with the intention of re-conceptualizing the theoretical mechanism using empirical observations. Considering that we are also dealing with causal mechanism, a step-by-step analysis helps in understanding how causal forces affect the outcome. Thereafter, in Chapter 6, we discuss how the empirical analysis comes together into a causal mechanism (based on the theoretical framework) to test and explain how the effects of meteorological drought in 2002 led to the outbreak of communal conflict between Issa and Afar groups in the Afar region of Ethiopia. The discussion is extended to incorporate the *horizontal inequalities* theoretical framework which supports the causal mechanism in accomplishing the outcome variable. Finally, in Chapter 7 we conclude our research, acknowledge the limitations and offer recommendations for future research.

2. LITERATURE REVIEW

2.1. Climate Change as a Security Threat

The anthropogenic effects of climate change are unlikely to reverse, and continuing patterns of warming of the planet will only bring about lasting changes in all components of the climate system (IPCC 2014, 2-8). This has renewed the interest of scholars and practitioners to comprehend the security implications of climate change, with special attention on the risk of violent conflict. Building on the debate in the 1990s that entertained studies on environmental security, the climate security scholarship began producing studies that attempted to empirically link the rapid-onset of climate shocks with incidences of violent conflict (Trombetta 2008).

Accounting for the far-reaching impacts of climate change from a security perspective, David King, then Chief Scientific Advisor of the UK Government stressed that climate change was a much more serious threat than international terrorism (Leake, 2007). Merits in the overall debates on climate-conflict linkages increasingly gained salience, and finally in 2007, the UN Security Council held a special session to discuss the interlinkages between energy, climate and security (UNSC 2007). Multilateral engagements to discuss the security implications of climate change accelerated and language on climate change and security was progressively seen inculcated in Security Council outcomes (Security Council Report 2021, 5) Simultaneously, to educate specific pathways that can link the physical onsets impacts of climate change and conflict, the Intergovernmental Panel on Climate Change (IPCC) produced an array of reports (IPCC 2001; IPCC 2007). In Working Group II contribution to the Fifth Assessment Report on Impacts. Vulnerability and Adaptation, IPCC for the first time addressed a separate chapter on the consequences of climate change for human security (IPCC 2014). Building on the reports, in 2009 report of the UN Secretary-General on Climate change and its possible security implications, a conceptual framework was developed that explained and popularized climate change as a 'threat multiplier' (UN Secretary-General 2009).

The concept of human security within the climate-conflict scholarship provides a different approach to conceptualizing ‘security’ wherein climate change is the overarching non-traditional threat to peace and stability (von Lossow et all. 2021; Hardt 2012). Shifting of the focus from state-centric interpretations of security is not a complete shift of the broader discourses on ‘security’, rather it is a re-articulation of the wider threats that affect mankind (Trombetta, 2008). These include recognizing the impacts of climate change on livelihoods,

vulnerable populations and food and water system. Changes in the Earth's climatic conditions in the form of sea-level rise, temperature spikes or excessive downpour of rainfall, signal deviations from mean conditions beyond natural climate variability (IPCC 2022). More frequent and intense extreme weather events such as drought, floods, storms, cyclones, heatwaves, wildfires and epidemics considerably affect human systems – where the most vulnerable are disproportionately affected. Extreme weather events also significantly the mobility dimension and drive migration of populations particularly sensitive to changes in resource availability and natural ecological systems. For instance, famines in the late 19th Century that killed tens of millions of people in the tropics were drought-related and were triggered by extremities in the El Niño-Southern Oscillation. This demonstrates how the effects of the changing climatic system can pose threats to human security. Fundamentally, this eco-centric approach to human security realizes the risks faced to human civilization by the detrimental impacts of climate change and focuses on the dominant relationship between nature and humans (Hardt 2012).

Yet, studies have also clarified that other non-climatic factors such as policy failures, lack of access to natural resources, or high poverty and inequality can play an equally important role in undermining human security during period of major climatic changes. The environmental dimension to human security argues that extreme climate variability (which significantly alters the ecological systems), combine with existing issues in society to accentuate the stresses faced by the famine-affected communities in the tropics (Barnett and Adger 2007). Thus, the threat to human insecurity emerges from the interaction of multiple factors, where climate change is one important and central factor (Adger et al 2014).

This holds key implications for all research aimed at discovering a general link between climate change and conflict. Specific to our research, it informs us that to understand how climate change can intensify societal instability and promote conflict, the focus must be on the human-dimension of security. Furthermore, it educates our research to acknowledge and integrate the role played by non-climate factors in exacerbating conflict situations during times of climatic distress. In other words, these factors can play a significant role as causal forces in the conceptualization of the mechanism where these factor can interact with or complement the effects prompted by the trigger variable.

2.2. Causal Pathways linking Climate Change to Violent Conflict

Learning from the previous section, we gather climate change has many potential consequences for the physical environment, quality of life and human society. Thus, many studies have been attempting to capture these profound implications for society by empirically trying to prove a causal relationship between climate change and conflict-oriented loss of life.

Contemporary empirical literature on climate change and conflict has speculated many causal pathways that link both variables of interest. Consensus over the number of pathways or pathologies and which ones are empirically recognized within the climate-associated conflict studies is missing (Seter 2016). However, one critical study offers a systematic literature review of 43 peer-reviewed quantitative and qualitative articles on climate change and violent conflict that tests and develops causal explanations within the climate-conflict literature. "These explanations are often complimentary, intrinsically interlinked, and applicable to different stages of the chain from climate-related environmental change to violent conflict" (Ballen and Mobjörk 2018). Following are four major causal pathways identified across the scholarship. These causal pathways provide explanations for how climate change interacts with exogenous conflict-promoting factors to precipitate violent conflict in East Africa.

To begin with, the first conflict avenue refers to W*orsening Livelihood Conditions* (Ballen and Mobjörk 2018). Communities that depend on renewable natural resources such as freshwater, forest areas or fertile soil for their livelihoods are especially vulnerable to the social and economic impacts of climate change. For instance, the persistence of extreme weather events can lead to the decrease and destruction of factors that support people's livelihoods. Degradation of arable land, depletion of freshwater resources, killing of livestock or crop failures are some examples of ecological impacts of climate change that can put considerable pressure on community livelihoods. When these climate-induced environmental pressures interact with other existing societal pressures (such as political marginalization), people are likely to resort to violence while competing for scarce natural resources (Ballen and Mobjörk 2018). In the backdrop of dwindling natural resources and losses in income from agriculture and pastoralism, communities may use violence or join armed groups to secure access to contingent environmental resources (Homer-Dixon 1999).

A second causal argument pertains to *Increasing Migration and Changing Pastoral Mobility Patterns* (Ballen and Mobjörk 2018). The physical, economic, and socio-political consequences of climate change threaten to cause the largest refugee crisis in human history;

over 200 million people, predominantly across Africa and Asia, are at immediate risk of climate-induced dislocation. (Biermann and Boas 2012). Climate migration can occur as a consequence of the physical impacts of climate change such as the rapid on-set of disasters or environmental degradation; or climate migration could take form as an adaptation strategy for communities that have their livelihoods and physical safety jeopardized by climate change (Mobjörk et al 2020). Patterns of migration could see resource-dependent communities move to regions with better livelihood options such as urban areas or places where resources are accessible (Rigaud et al 2018). Similarly, climate-induced land degradation can influence the mobility patterns of pastoral communities by forcing them to meander in grazing areas and search water points traditionally claimed by other pastoral groups. This can lead or contribute to community-based violent conflict as settler and migrant communities compete for the same resources (Reuveny 2007; Homer-Dixon 1999). Such resource-based conflict assumptions are experienced in East and West Africa where herders and farmers are frequently engaged in conflict over land because climate change has compelled pastoralists to enter unfamiliar and new territories (often used by other communities) in search for water and pasture for their livestock (Njiru 2012). The interaction of causes, goals and identities of host and migrant communities with the existing social, political and economic contexts will determine the dynamics of hostilities and likelihood of communal conflict (Brzoska and Fröhlich 2015).

Unequivocally, climate extremes are driving displacements and increasing the conflict vulnerability of populations by interacting with non-climatic factors that are dominant drivers of existing violent conflict; albeit the statistical association between extreme weather and climate events and intrastate violent conflict is weak (IPCC 2022). Considering the inherent challenges associated with quantifying migration flows and measuring the assumed role of climatic conditions in determining the decision to migrate, this causal explanation requires more empirical research (von Uexkull and Buhaug 2021; Boas et al 2019).

The third causal approach takes note *Tactical Considerations by Armed Groups* as an explanation for conflict behavior (Ballen and Mobjörk 2018). Consensus among social scientists supports the assumption that climate change can affect the strategic decision making and tactical consideration of groups in three important ways: (a) communities use coping strategies to reinforce group food security; (b) communities use the strain of climate-related impacts to boost recruitment (c) communities adapt behavior to opportunistically capitalize on climate pressures (Mobjörk et al 2020; Nordqvist and Krampe 2018). In all three roadways, armed groups benefit from climate change via securing access to resources like productive lands (especially when scarcities are more acute) or meeting political objectives such as

increase recruitment in the face worsening livelihoods or extreme weather conditions. Some theoretical mechanisms even reveal that 'economic favorable conditions' in the form of abundant resources increases the overall danger of violence, since those participating in violent action are likely to also benefit economically (Seter 2016).

Dissimilar from the first two causal pathways where worsening livelihood considerations and climate migration were aggravating the risk of violent conflict, tactical consideration instead serve as enablers of conditions that 'contribute to and shape' violent conflict (Ballen and Mobjörk 2018). This distinction is important because armed groups act on the opportunities provided by climate-related environmental change rather than being reactive to the detrimental impacts of climate change (Selby 2014).

Finally, the fourth causal pathway refers to *Elite Exploitation of Local Grievances* (Ballen and Mobjörk 2018). Lower-level conflict playing out over scarce resources or local grievances present fertile ground for elite exploitation. Elite individuals or groups constitutive of a relative amount of wealth, privilege, power and influence can exploit existing enmity and hostilities among competing communities in society. Elites undertake exploitative behavior to consolidate greater control over resource conflicts and strengthen strategic alliances with national elites. In the process, taking advantage of low-intensity resource conflicts heightens the risk of more organized forms of violence or ethnic cleansing. Local elites capitalize on the mismanagement of natural resources. Control over aid distribution allows them to accrue power and legitimacy by controlling who receives aid and who does not. Facilitating conditions of unequal access to crucial resources further empowers them. The interaction of climate change with existing institutional practices and political processes affects the dynamics of communal conflict.

Building on all the potential causal pathways identified above, it should be noted that different causal explanations apply to different regions of the world. For instance, conflict situations arising out of climate-induced migration and mobility patterns apply more to conflict situations in East Africa instead of northern Europe, because harsh environments within the geographical area of the Horn of Africa prompts mobility as means of survival. Furthermore, certain studies have even concluded that countries with low human development are particularly vulnerable to both, the impacts of climate change and violent conflict (Scheffran et al 2012).

In addition, (Sakaguchi et al 2017) conducted a systemic review of sixty-nine peer reviewed studies examining the potential links between climate change and conflict. The reviewed studies conceded diverse causal relationships which were grouped into four paths.

These groupings are based-off of the nature of interactions taking place between climate and conflict factors: (A) a 'direct path' where climate variables affect some form of violence (B) An 'interacting path' where climate variables with economic/resource or migration factors which can subsequently cause violent conflict (C) a 'mediation path' where climate variables are mediated by certain conditions like the distribution of wealth or historical relations between communities – which can then affect dynamics (D) a 'combination of interaction and mediation paths' (Sakaguchi et al 2017).

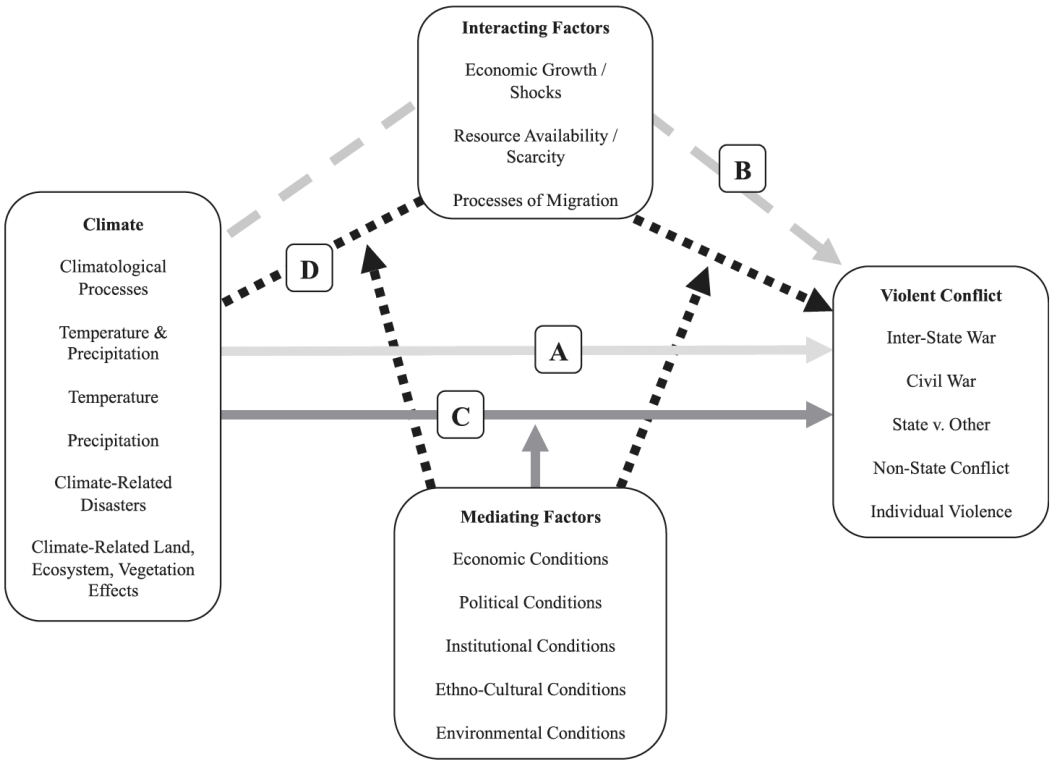


Figure 1: Causal Pathways linking climate change and violent conflict

The identification of causal pathways in this section was crucial to this research because causal pathways form the basis of the theoretical mechanism that will be tested in this research. The explanations provided in this section for each pathway was again vital for this research to understand how these pathways mainspring conflict ends. These explanations also form the blueprint of the hypothesized causal mechanism that link climate change to violent conflict. In the end, with respect to the case study of Afar–Issa conflict in Ethiopia, this research will test *worsening livelihood conditions and increasing migrations and changing pastoral mobility patterns* as the main causal pathways that bridge the gap between climate change impacts and resultant communal conflict.

2.3. Extreme Weather Events & Communal Conflict: Existing Scholarship

Anthropogenic climate change is causing extreme weather events to increase in frequency and intensity. This means climate-related disasters in the form of floods, droughts, landslides, heatwaves, wildfires, hurricanes or storms are likely to increase in frequency and intensity as well. The consequences of such events on human security and socio-economic development are considerable. These climate-related events are known to cause significant damage to essential infrastructure, economic loss, populations displacement, loss of human life and even risk violent conflict (Bell et al 2017; IPCC 2022).

Considering the severity of the threats posed by climate-related weather events, UN Security Council debates increasingly began incorporating disasters in their evaluation of security risks (Peters 2018). Since then, climate-conflict research has labored extensively on investigating an empirical link between extreme weather events and violent conflict (Brzoska 2018). Although, many have argued that the persistence of disasters (such as droughts for instance) might be attributable more to issues such as over-consumption or governance failures, specific research has been carried out in the past that inform that extreme weather events can be responsible for the initiation as well as intensification, de-intensification, prolongation, and termination of collective violence (Brzoska 2018). More specifically, large-N studies continue to provide that extreme weather events increase the likelihood of collective violence (Brzoska 2018). Many other studies have been able to link extreme weather events and violent conflict (Maystadt and Ecker 2014)

Research specifically pertaining to the impacts of droughts has revealed that the likelihood of collective violence appears greater in ethnically divided societies; drought-prone areas not marked by ethnic conflict see little or no correlation (Brzoska 2018). Others in the research community have also found the necessity of certain scope conditions such as ethnic heterogenicity (Schleussner et al 2016), political exclusion (von Uexkull et al 2016) or autocratice governance (Wood and Wright 2016) before detecting a link between the onset of climate-related disasters and violent conflict (Ide et al 2020). Research carried out in conflict studies (independently of factoring for climate change) have supported the assertion that disasters increase the risk of armed conflict (Kikuta 2019; Nel and Righarts 2008).

At the same time, certain studies have concluded otherwise by suggesting that climate-related natural disasters in fact reduce the risk of conflict eruption (Salehyan and Hendrix 2014). Other statistical studies have been unable to conclude a link between the onset of natural disasters and conflict occurrences (Bergholt and Lujala 2012; Koubi et al 2012 Slettebak 2012).

Similarly, certain qualitative case studies have also provided the same assessment using examples of civil war in Syria (Ide 2018) or armed conflict in Darfur (De Juan 2015). Hence, similar to the broader study of climate-conflict relationship, even the research community examining extreme weather events and violent conflict continues to remain divided. Some scholars have advocated for reconciling fundamental differences in the field with respect to entry points, frameworks, and methodologies (Brzoska 2018).

Meanwhile, even within the critics, some have alluded to the potential of extreme weather events provoking other forms of conflict beyond organized violence (Salehyan and Hendrix 2014). These can include unorganized riots, interpersonal disputes, small-scaled low-intensity conflict occurrences or communal clashes between ethnic groups. In more recent years, climate – conflict studies have increasingly begun research on the potential implications for communal conflict (von Uexkull and Buhaug 2021). Communal clashes are fundamentally ethnic, regional, religious identity-based groups competing over interrelated issues over territoriality, local power dynamics, access to resources or historical disagreements (Raleigh 2014). The nature of communal clashes makes it a more likely form of conflict behavior (especially if triggered by climate-related weather events) owing to the fewer constraints and resource scarcity-driven triggers (Theisen 2012; Nordkvelle et al 2017).

Presently, much of the established literature is focused on the effects of drought or rainfall on communal conflict (Fjelde & von Uexkull, 2012). Scholars have claimed that unusually dry and wet or long intervals of rainfall are known to increase the likelihood of a communal conflict events (Nordkvelle et al 2017; Hendrix and Saleyhan 2012; Schilling et al 2014), while some other have disassociated a link using statistical methods (van Weezel 2019; Benjaminsen et al 2012). Linked with water resources, using large-N analyses – one study has zeroed-in on the lack of groundwater access in Africa and the Middle East to find that water scarcity is associated with a higher risk of communal conflict (Doring 2020).

Furthermore, accounting for the role of scope conditions, a particular study reveals that pronounced horizontal inequalities can reduce inter-ethnic trust of communities heavily exposed to drought conditions, thereby increase the risk of communal conflict (De Juan and Hanze 2021). Similarly, (Fjelde and von Euxkull 2012) find that the likelihood of communal violence is higher for politically excluded groups because marginalized groups have fewer opportunities and strategies to combat acute resource shortages and thus resort to violent action in consolidating access and power (Vestby 2019). When resource-related conflicts tap into the existing cleavages of society, smaller-level resource-based interpersonal disputes can spiral into larger political and social mobilization along ethnic/tribal lines (Eck 2014).

Often, the primary connecters between climate-related environmental change and communal conflict outbursts are disputes over land use and the associated land-cover changes because farmers and herders utilize land for subsistence farming and pastoralism. Hence, the foundations of many communal conflicts in Africa can be traced down to disputes over land. Overall, communal conflict is viewed as a more plausible outcome of environmental degradation than more organized forms of violence; but the causal link explaining a connection remains tenuous at best (von Uexkull and Buhaug 2021).

In principle, this section establishes that communal conflict is a likely outcome in ethnically divided societies that are especially prone to extreme weather events. In particular, it provides that drought is a major phenomenon responsible for inciting communal conflict and that certain scope conditions play a commanding role in the promotion of violent behaviour. With respect to our research purpose, this guides us to test the role of drought (as an extreme weather event) in conflict situations by explaining how farmer and pastoral groups that compete for land and water-related resources frequently end up mobilizing along ethnic lines and educates us of the structural role of certain non-climatic factors in the build-up to communal conflict. We now have a fair idea behind our trigger variable and outcome variable in this research which we will hereafter subject to the selected case study of Afar – Issa communal conflict in Ethiopia.

3. THEORETICAL FRAMEWORK

3.1. Theoretical Framework behind Causal Pathways

As discussed in the literature review, (Ballen and Mobjörk 2018) provide theoretical explanations that connect climate change to violent conflict. Up until this point, we have referred to them as causal pathways. These pathways can be considered as theoretical explanations or mechanisms because they provide the underlying causal reasoning that ties two concepts together – in our case, climate change and violent conflict (Orlandi and Heugens 2017).

It is this theoretical mechanism that will be tested in this research using the case study of Afar – Issa conflict in Ethiopia. The identified causal pathways that will be tested in this research are *Worsening Livelihood Conditions and Increasing Migration and Changing Pastoral Mobility Patterns.* It is important to illustrate how the mechanism is expected to operate on a general level first. Figures 2 provides a diagrammed illustration of the theoretical mechanism explaining how the causal pathways operate to cause communal conflict.

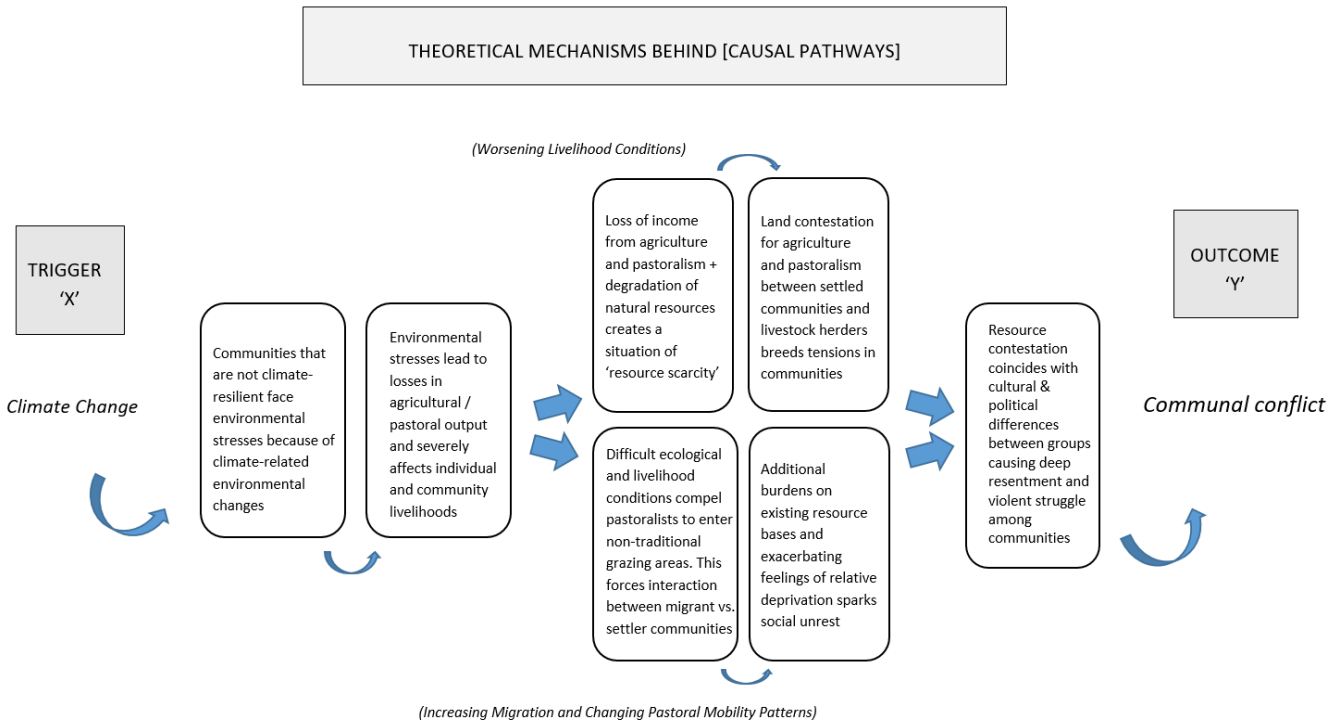


Figure 2: Theoretical Framework behind the operation of identified causal pathways

(Ballen and Mobjörk 2018) also make an important intervention explaining that these pathways are intrinsically interlinked and applicable to different stages of the chain from climate-related environmental change to violent conflict. This means that these pathways can even appear together in a singular theoretical mechanism that produces communal conflict ends. This theoretical framework of the two identified causal pathways will broadly be applied to selected case study of Afar – Issa communal conflict situation in Ethiopia. Based on empirical evidence collected and analyzed ahead in the research, we will test for the presence / absence of the aforementioned theoretical mechanism specific to our case study.

Additionally, to incorporate a comprehensive analysis relevant to the social, political and economic components within the pathways linking climate change to violent conflict, this study will depend on another theoretical framework in *Horizontal Inequalities* to support the explanations posited in the pathways. The latter stages of both pathways postulate that the effects of climate change interact with existing social, political and economic circumstances of aggrieved populations to spur communal conflict. To understand complex interactions such as this, we rely on the *Horizontal Inequalities* theoretical framework to explain what role socially constructed inequalities play in connecting climate change to violent conflict.

3.2. Horizontal Inequalities

The persistence of inequalities and how that might incite conflict has a long intellectual trajectory. At its heart, the theory provides that inequality in society presents motive and opportunity for people to engage in conflict behavior (Hillesund et al 2018). When cultural, ethnic or identity-base differences in society coincide with economic and political differences between groups, it can lead to deep resentment and precipitate violent communal conflict (Stewert and Brown 2007: 222). Building on Gurr's 'relative deprivation theory' which argues that violent outbursts are reactions to frustrations stemming from unfulfilled social, economic or political well-being (Gurr 1970), horizontal inequality theory underlines that both, deprived and privileged groups can view collective violence as an opportunity (Cederman et al 2013). Different forms of HIs also exist in society: (a) economic HIs focus differences in ownership of assets, employment opportunities and income levels; (b) political HIs refer to disparities in power distribution and political opportunities; (c) social HIs concern deprivation from social services such as accommodation, healthcare, education; (d) cultural HIs focus on gaps in the recognition of customs, dialects and practices (Stewart 2011).

Many quantitative studies have shown horizontal inequalities can lead to communal conflict (Fjelde and Østby 2014; Mancini, Stewart, and Brown 2008). For instance, in Sub-Saharan Africa, socioeconomic inequality is known to cause violent conflict as intergroup grievances due to exclusionary politics tend to mobilize communal groups (Fjelde and Østby 2014). The interaction of extreme weather events with existing HIs is responsible for the outbreak of communal conflict because subsequent climate-induced environmental stresses are expected to worsen existing HIs in societies. Majority of the social scientists engaged in climate-related conflict studies believe that climate change and their effects on human life can be understood in conjunction with vulnerability (Scheffran et al., 2012). Tapping into the vulnerabilities of communities by looking at the circumstances of political exclusion, lack of access to natural renewable resources or other forms of marginal social treatment can help theoretically explain how conflicts along ethnic lines can transpire in environmentally-stressed communities suffering from existing HIs.

Thus, at this stage in our research judging from the broadly conceptualized theoretical mechanism, we can assume environmentally-stressed communities suffering from existing HIs end up resorting to partake collective action in communal violence. To fit this with our understanding of causal pathways, we come up with the following hypothesis that we expect to see in our selected case study upon empirical research:

HI. ***Ethnic pastoral / agro-pastoral communities suffering from existing HIs will engage in communal conflict if the effects of climate change worsen their livelihood conditions and drive changes in their pastoral mobility patterns.***

We can base our hypothesis on the rationale that deteriorating livelihood conditions and changing pastoral mobility patterns, both, ensure situations of natural resource contestation. Central to this logic is the discourse of Neo-Malthusianism which fundamentally offers that as conditions of scarcity become more acute (which is occurring in the backdrop of climate-related environmental change), the propensity for violence among populations increase (Homer-Dixon 1991; 1994). The struggle for scarce resources is strongly experienced between populations whose livelihoods depend on natural resources. When ethnic groups competing for common resources already have a strong sense of marginalization, injustice and a history of violence, the situation can escalate to a form of communal conflict (Reuveny 2007).

4. RSEARCH DESIGN

4.1 Methodology: Theory-testing process tracing

Process tracing methods are tools that allow researchers to gain a greater understanding of the nature of causal relationship between two variables of interest. The utilization of the methods goes beyond understanding causality in a neo-Humean fashion, where causality is purely seen in terms of patterns of regular association or correlation; rather, causality herein is interpreted with a deeper connection between cause and effect (Beach and Pederson 2013, 23). This ontological position on causality relates to a deterministic and mechanismic understanding of causality where the focus is firmly on the theoretical process whereby X causes Y through a mechanism that links the two variables (Bogen 2005). Causality is only confirmed when we can empirically witness causal forced being transmitted through a series of interlocking parts that produce an outcome – together which forms the causal mechanism (Glennan 1996; 2002).

Causal mechanisms can be comprehended using a machine analogy where "each part can be thought of as a toothed wheel that transmits the dynamic causal energy of the causal mechanism to the next toothed wheel, ultimately contributing to producing outcome Y" (Beach and Pederson 2013). Between X and Y, there should exist a system of interlocking parts that transmit causal forces in a sequential manner (Glennan 1996; 2002). Each stage that is conceptualized inside the mechanism should be composed of *entities* undertaking certain *activities*. *Entities* engage in activities, by virtue of certain properties of their own. They can be individual persons, groups, states, classes or even structural phenomena (and can be theoretically conceptualized as nouns). *Activities* are the actual producers of change constitutive of the transformations that yield new states of affairs or new products (and can be theoretically conceptualized as verbs) (Machamer et al 2000). By itself, each part of the mechanism should be seen as individually insufficient to produce the outcome, but rather as a necessary part of the whole. Following is a diagramed conceptualization of the causal mechanism that will be similarly required to be constructed using empirical evidence for this research.

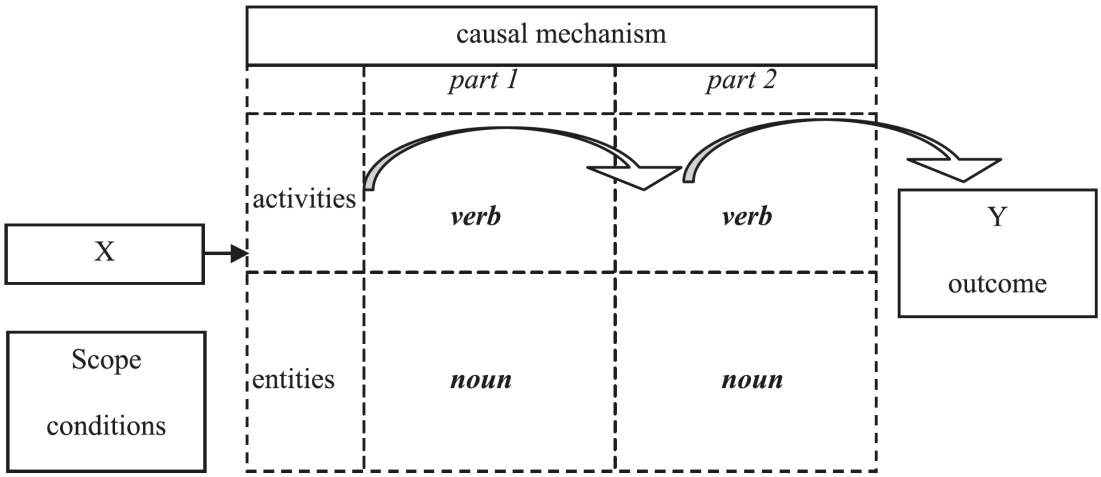


Figure 3: A mechanismic conceptualization of a causal mechanism (Source: Beach and Pederson 2013)

In total, there are three different research avenues wherein process-tracing can be utilized, theory-testing process tracing; theory-building process tracing; explaining-outcome process tracing (Beach and Pederson 2013, 11). This research will undertake '**theory-testing process tracing**'. At the heart of theory-testing process tracing is the need to conceptualize mechanisms in a manner that can allow for the study of what takes place between 'X' and 'Y'. The method tests for the presence / absence of a causal mechanism and require the researcher to select a single case where both X and Y are present and there is sufficient context to allow for the mechanism to operate in (Beach and Pederson 2013, 11).

For this research, conducting theory-testing process tracing would mean investigating into the black box of causality that connects climate change to violent conflict. This can be accomplished by challenging the presence of a hypothesized causal pathway that links our 'X' and 'Y'. It would mean tracing all activities and processes leading up to the outcome variable right from identifying a trigger to the outcome variable, and, in the process, explain how causal forces propel or provide the agency to effect change. If this research can conceptualize a series of interlocked activities (empirically-backed) that produce change all the way up to the outcome, then we can confirm that existence of a hypothesized causal mechanism with a reasonable degree of certainty as X and Y would then be causally connected by the mechanism (Beach and Pederson 2013).

Thus, this research will be required to test the theoretical mechanism behind the causal pathways that explain which causal forces are play and how they are producing the outcome. Then, using empirical research, the objective will be to apply the theoretical causal mechanism

to the case study and examine whether the now case-centric mechanism is holding or not. Specific to Afar – Issa communal conflict, the re-building of a causal mechanism (one that is disaggregated into a series of parts composed of entities engaging in activities) will test for the presence / absence of a causal relationship between extreme weather events and climate change. In the process, the causal mechanism would be able to explain how extreme weather events can shape communal conflict situations.

In addition, the fundamental component of scope conditions in within-case social science research hold important implications for the value of this research. Scope conditions are parameters or boundaries that define the circumstances in which a theory is applicable (Gauquelin 2021). In theory-testing process tracing, scope conditions represent parameters or elements that specify the domain in which the theorized causal mechanism is supposed to hold. Identifying the corresponding core scope conditions within the applied case study would allow the research to make contributions to the climate – conflict scholarship concerning the prerogative conditions which facilitate and oversee the effects of climate change translate into violent conflict. For this research, identifying them would mean we are able to understand and take note of the necessary conditions under which extreme weather events aggravate communal hostilities. In general, this holds major implications for governance and policy-making in terms of designing effective strategies that prevent or mitigate the influence of these scope conditions associated with expediting climate-related conflict risks.

4.2. Variables: Conceptualization and Operationalization

Communal Conflict (dependent variable)

Within the climate – conflict scholarship, there is also an imbalance which tends to prioritize the study of specific violent conflicts such as civil war (von Uexkull and Buhaug 2021). Other forms of sub-national level hostilities such as communal conflict are less widely studied (Fjelde and Nilsson 2012; Kalkavan 2017). Yet, contemporary empirical literature has pointed out that communal forms of conflict are a more likely to be witnessed as a consequence of extreme weather events over any other form of violent conflict (Brzoska 2018).

Hence, communal conflict is our dependent variable. To operationalize communal conflict under a qualitative lens, we follow the description put forward by (Krause 2018). Along these lines, communal conflict is considered as a non-state conflict between social

groups that define themselves along identity lines, such as ethnicity, religion, language, and culture (Krause 2018). Such conflict types are known to precede or succeed a civil war. Usually, these conflicts are fought over (local) government control and/or over territory. This includes rural land for resource extraction and agriculture-related activities such as crop cultivation or pastoralism-related grazing of pastures (Krause 2018). At the heart, these conflicts are accompanied by an element of polarization of social identities. In addition, (Krause 2018) provides a typology of patterns of violence in communal conflicts along four dimensions: geography; type of violence; level of organization among armed civilians; and role of state and the national context (refer to table 1.0).

Table 1: Patterns of violence in communal conflicts (Source: Krause 2018)

Dimension	Spectrum	
Type	(One-sided) Pogrom	(Dyadic) Communal Clashes
	Attacks; Massacres	*Battles, (Joint) Attacks; Massacres*
Geography	Urban – Peri-Urban – Rural	
Armed Actors	Neighbours – Vigilantes – Thugs – Gangs – Communal Militias – Security Forces	
National Context	E.g. Regime Change – Civil War – Democratization – Elections	

To begin with, communal conflict can range between Pogrom, where violence is predominantly one-sided and directed against a minority, to dyadic clashes where violence takes place between two similarly strong groups. Next, the geography of communal clashes is limited to neither rural, nor urban areas, and understanding it can enable a more nuanced understanding of mobilization and legacies of previous clashes – both important components in the dynamics of communal conflict. Thirdly, and most importantly, armed actors need to be non-state groups that can range from mobs, thugs, rioters, civilians, but must share a common identification along ethnic, clan, religious, national or tribal lines. Finally, the national context is equally important when looking at communal conflicts. For instance, intense political competition along ethnic lines or the incapacity of state institutions to protect their population from killings can explain communal conflict (Krause 2018).

Extreme Weather Events (independent variable)

One way to manifest anthropogenic climate change can be through specifically studying extreme weather events. Extreme weather phenomena are much more current, dramatic, and visibly observable as opposed to the slow-onset impacts of climate change. As a consequence, their potential to cause shocks and affect human society on a large scale in the form of physical damage or destruction of livelihoods can go a long way in helping us understand the relationship between climate change and conflict (Brzoska 2018).

According to the IPCC, 'extreme weather event' refer specifically to the initial and consequent physical weather-related phenomena that project extremes in variability from average historical measurements (Lavell et al 2012). Importantly, extreme weather events occur in a climate system that has changed by human influences.

For this study to be able to test a causal connection between extreme weather events and communal conflict, it is important that we understand and assess the impact of extreme weather events on the environment and human life. The first step will be to select which climate-related disasters will be selected for assessment: (1) 'meteorological drought' – a climatic anomaly characterized by prolonged and abnormal periods of precipitation and moisture deficiency, which may be exacerbated by high temperature (Palmer 1965).

Next, to capture drought from a qualitative lens, it is important to measure the effects of persisting drought on the environment and human life using sub-variables: (a) climate-induced environmental stress and (b) livelihood vulnerabilities. Assessing 'climate-induced environmental stress' will help this research understand how extreme weather events affect physical conditions and how they can expedite situations of resource-scarcities. Thereafter, assessing 'vulnerabilities of livelihoods (as a consequence of drought and subsequent environmental stress) will allow this research to tangibly manifest the sociopolitical and economic impacts of extreme weather events on human life and capture the vulnerabilities faced by communities following the onset of extreme weather events.

Following is the conceptual framework behind the choice of variables and how they fit together:

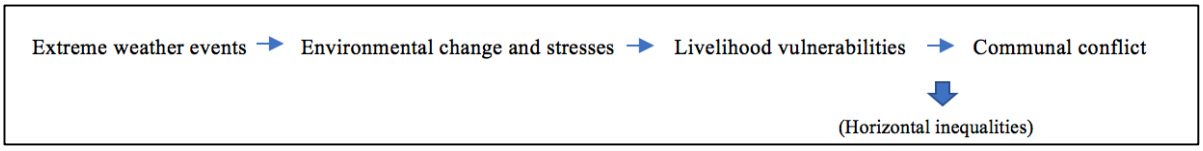


Figure 4: Conceptual link between variables

4.3. Data Collection

In conducting this research, there was a heavy reliance on secondary sources. There was extensive use of a diverse set of data sources. These include academic articles, peer-reviewed journal articles, books, IO and NGO reports and publications, archived government-surveys, climate databases, conflict datasets and on-the-ground situation reports.

To collect conflict data, the study primarily relied on datasets provided by the Uppasala Conflict Data Program (UCDP), namely *Non-state Conflict Dataset (Version 21.1)* and *Non-state Conflict Issues and Actors Dataset (Version 1.0).* In addition, to avoid relying on a single source and gain context of conflict data, we relied on situation reports from the OCHA and WHO to learn the background on the nature of hostilities, ethnic group involvement, vulnerabilities assessments, pastoral mobility patterns and overall drought impacts. Context surrounding conflict data and hostility dynamics was further provided by few journal articles.

To gather climate-related information and data, the study relied on the Climate Change Knowledge Portal (CCKP) database created by the World Bank for temperature and precipitation (observed and future trends) data. Thereon, for drought-related data, we used the Global Drought Observatory created by the Joint Research Centre (JRC) of the European Commission which provided data on drought-indicators.

5. EMPERICAL ANALYSIS

In the analysis chapter, the focus will be on gathering empirical evidence and assessing it with respect to causal pathways that explain how climate change and conflict are linked. The theoretical mechanism of the causal pathway illustrated in figure 2, needs to be analyzed with reference to the Issa-Afar conflict in Ethiopia. To confirm the theoretical mechanism, empirical evidence needs to be collected as only when all parts of the hypothesized causal mechanism are present and there is sufficient evidence to back it up with empirical research, we could approve / disapprove the relationship between climate change and conflict. Therefore, this analysis chapter will follow a sequential structure – one that begins with the extreme weather event as trigger – up all the way to conflict outcome, and in the process explicating all the causal forces at work amidst every stage / part of the mechanism.

Considering that our case study is the Afar – Issa conflict, we begin the analysis by briefly explaining the climatology of the geographical region to realize the vulnerability from extreme weather events of the population located in the region. Next, we delve into the specific drought event (meteorological drought of 2002) that occurred in Ethiopia which constitutes our trigger extreme weather phenomenon. Thereafter, we examine the effects of the drought on (a) the environment through assessing the level of environmental stress (b) human life by assessing the drought-related vulnerabilities of the people's livelihoods in the affected regions. The first section on how and in what ways drought causes environmental stress is illustrated and explained entirely in **Appendix B**. The empirical analysis will begin directly from the stage of assessing the impact of drought on the livelihoods of Afar and Issa communities. In the next stage, we move to the involvement of actors by understanding primarily who ethnic Afar and Issa groups are and how do their pastoral patterns of mobility clash. Thereafter, we delve into the communal conflict scenario and finally closely examine the independent role of non-climatic factors in promoting the conflict between the Issa and Afar.

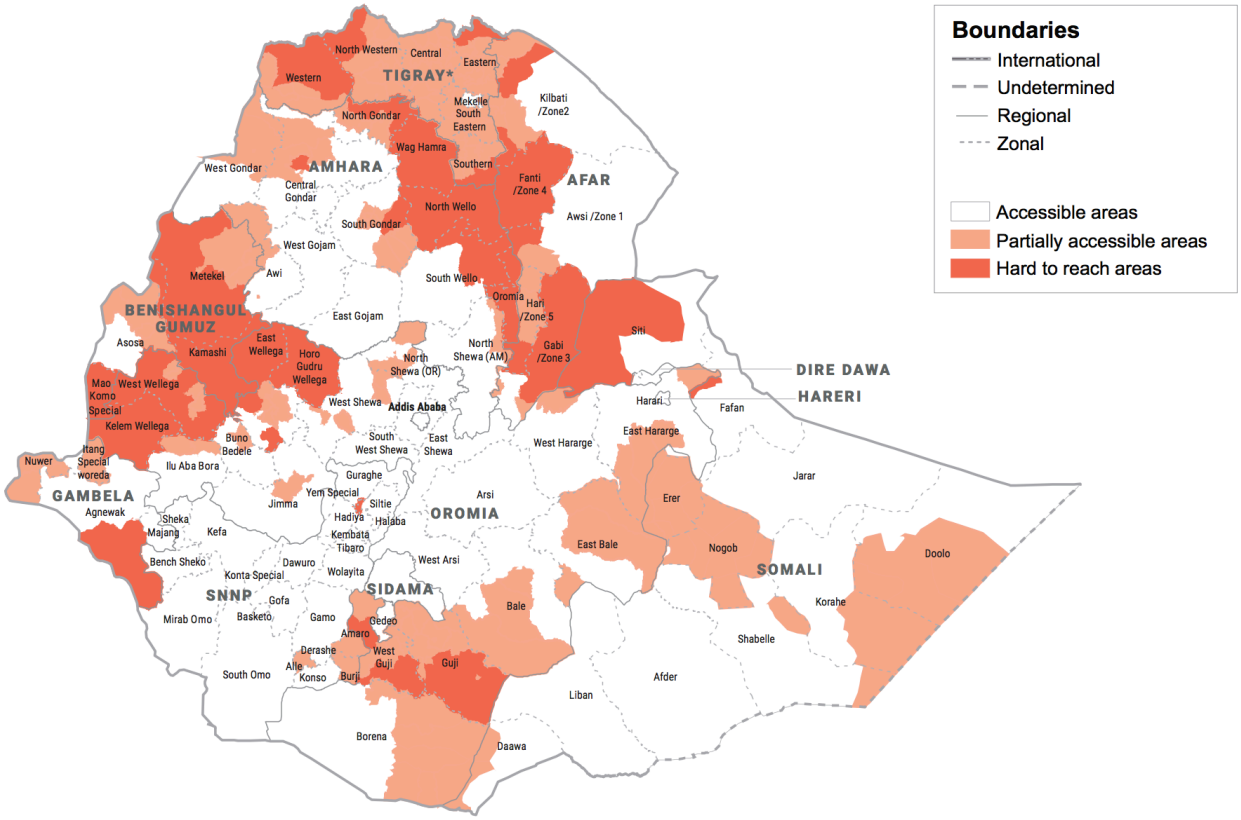
5.1. Overview of climatic conditions and onset of drought in Ethiopia

To gather an overview of climatic conditions of East Africa and Ethiopia and to affirm the increasing changes in the climate of the region due to anthropogenic climate change, refer to **(Appendix A).** This section provides information on the historic climatic conditions of the

region and connects it with projected trends and present-day changes to confirm the onset effects of anthropogenic climate change.

5.1.1. *Overview of climatic conditions in Afar region*

Ethiopia is regionally subdivided into ten ethnolinguistic regions and two city-Administrations. The Afar region in North-eastern Ethiopia has a population of nearly 1.3 million people. Northern parts of Afar are low-land areas (one of the lowest in Africa – Danakil depression), while the southern parts are formed by the Awash River Valley. Most times of the year, Afar region hosts hot desert-like climates or hot semi-arid climates.



Map 1: Regional divisions of Ethiopia (Source: OCHA 2021)

Interpreting from Map 1, we can see the Afar region is divided into five zonal administrative areas. Inside Afar, zone 3 and 5 locate to areas outside of the Danakil desert and comprise the Awash River Valley. Thus, making them popular areas for water point accessibility and grazing of pastures among pastoralists. These zone also inhabit populations of ethnic Afar and Issa

communities. Before, heading into the context of actors involved, we analyze the climate trends in Afar that sustain agriculture-based livelihoods in the Afar region.

Climate trends in the Afar see maximum temperatures reach as high as over 36°C in peak summer months. Meanwhile, mean precipitation sees extreme variability. Mean precipitation in the monsoon season (July & August) crosses the 80 mm mark, while the mean precipitation in winter months from October–February experience extremely low rainfall under 20 mm per month (Figure 5). This leaves the arid and semi-arid areas in the Afar region with limited access to water and facing prolonged dry period. Rural population most dependent on the climate for its agriculture production system is most affected by the high variability in Afar (Tsegaye et al 2013).

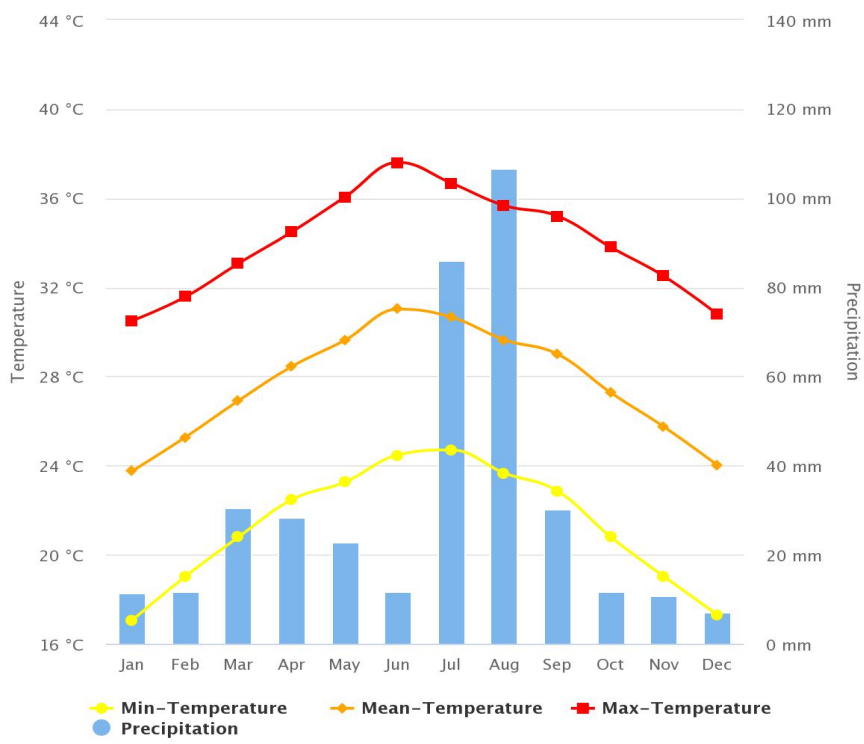


Figure 5: Monthly climatology of min – max temperatures & precipitation in Afar region (1991 – 2020) Source: CCKP 2022)

As a consequence of the jagged climate conditions, the Afar region is especially prone to frequent and recurring meteorological droughts. Since 1990, the Afar region on average has been suffering with drought every 2-3 years. The onslaught of drought causes major humanitarian emergencies in Afar as water security is increasingly threatened, agriculture production faces huge losses and famine hits major swathes of the population. The country's

long history of recurring droughts has only increased in magnitude, frequency and severity since the 1970s (refer to figure 6).

In figure 6, we can quantify the occurrence of all major drought events that have taken place in Ethiopia between 1950 to 2016 as per the Global Drought Observatory. The bar length is proportional to the duration of the event. We can also make sense of the severity of the drought events by looking at the y-axis.

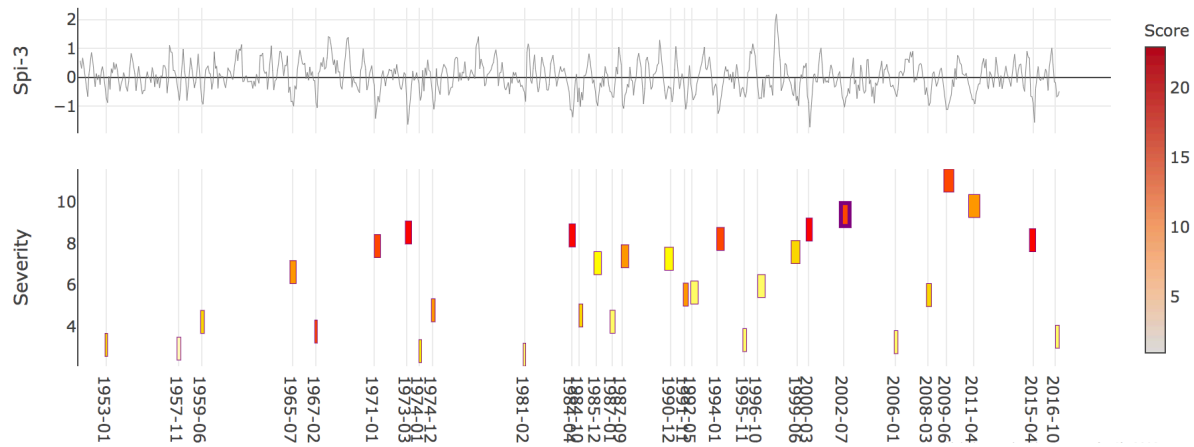


Figure 6: Drought events faced by Ethiopia from 1950 - 2016 (Source: Global Drought Observatory 2022)

From figure 6, we can note that certain years in recent timeline such as 2002, 2009 and 2011 experienced severe droughts. For this research, we select the drought in 2002 as our trigger variable in attempting to test a the causal relationship between climate change conflict.

5.1.2. Major Drought in 2002/2003

In 2002, Ethiopia faced a major drought that continued till late 2003. Over 13.2 million people were affected by the drought causing massive food shortages and increased child mortality (De Waal et al 2006). With Ethiopia already facing major public health crises with respect high malnutrition, malaria and measles, the onset of drought aggravated serious humanitarian threats by undermining the human security situation of Ethiopia (OCHA 2003). The main reason behind the drought was attributed to below average belg (short rainy season typically extending from early February to late May) and sporadic meher (main rains that

continue from July to September). Table 2 provides general climatology indicators that represents high variability suitable for drought-like conditions.

Table 2: Climatology of Mean Temperature, Min – Max limit of mean temperature, and mean precipitation in Ethiopia for 2002 *(Source: CCKP 2022)*

(ETHIOPIA)	**Five-year smooth mean (1997–2001)**	**Annual Mean (2002)**
Mean Temperature	27.62°C	28°C
Mean Temperature (Max limit)	34.65°C	34.33°C
Mean Temperature (Min limit)	20.96°C	21.4°C
Mean Precipitation	365.08 mm	307.64mm

The year 2002 recorded an abnormally high annual mean temperature in the Afar region at 28°C (only years 2005, 2015 and 2016 ever recorded higher means) (CCKP 2022). Similarly, the mean of maximum temperature in 2002 were among the highest than any year between 1901–2020 (except only 2008 and 2015). Mean precipitation data of 2002 also shows a major decrease below the five-year smooth mean. Sufficient rainfall in the belg period is important because mean temperatures in those months are rising to max-limits – increasing evapotranspiration and decreasing soil moisture. Meanwhile, a healthy meher period is important because it accounts for nearly 70% of the total annual rainfall in Ethiopia (Suryabhagavan 2017).

The data collected from the European Drought Observatory (under a SPI-3 indicator) provides that Ethiopia experienced a major drought in 2002. With reference to Table 3, we can observe that the onset of drought lasted for 7 months in total (as a per SPI-3 indicator) covering an average area of 31% during the 7 months. Referring back to figure 6, we can observe that the drought of 2002 is one of the most severe drought events between 1950–2016 with severity score 9.39. Severity refers to the departure from normal of an index, where a threshold for severity is accounted for when a drought has begun, when it ends, and the geographic area affected (Handbook of Drought Indicators and Indices 2016).

Table 3: Meteorological Drought in Ethiopia in 2002 (Source: Global Drought Observatory 2002)

Start	Peak	End	Max Ext	Duration	Severity	Intensity	Average area involved	Score	Widest area involved

May 2002	July 2002	Nov 2002	July 2002	7 months	9.39	1.34	31%	13	46%

From table 3, we can also learn that the peak term of drought in Ethiopia was in the month of July. Figure 7 offers a close more-analytical look into drought conditions during the peak month of July 2002 through a Combined Drought Indicator (CDI) analysis to grasp the severity of the drought.

Combined Drought Indicator (CDI) is used as an indicator of drought severity with respect to agricultural impacts. The assessment indicator calculates warning levels based on integrating three indicators, SPI, soil moisture and remotely sensed vegetation data. CDI is composed of three levels of alarm: (a) watch; (b) warning; (c) alert. *Watch* refers to when mean precipitation levels are overall low; *warning* refers to when there is a precipitation shortage that translates into soil moisture shortage; *alert* indicates that both, precipitation shortages and soil moisture deficits have dangerous impacts for vegetation. The three levels of alarm (watch, warning, and alert) are calculated after integrating three drought indicators: SPI, soil moisture and remotely sensed vegetation data (Handbook of Drought Indicators and Indices 2016).

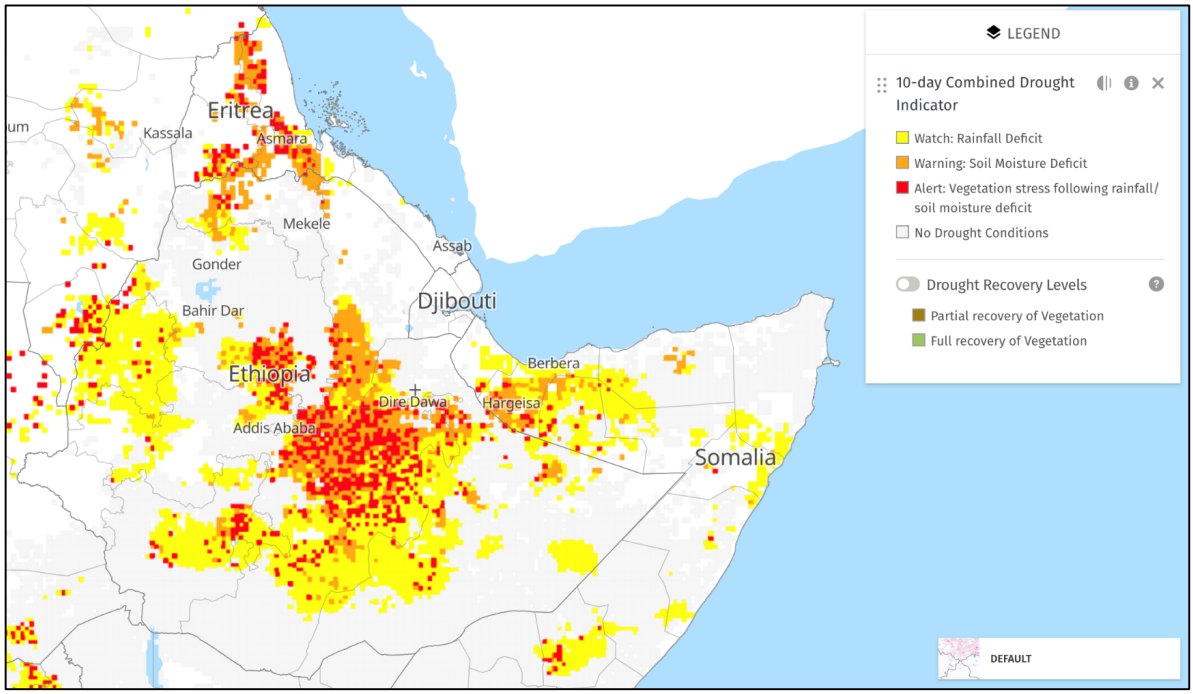


Figure 7: Overview of drought conditions in Ethiopia during peak period (July 2002) (Source: East Africa Drought Watch)

In figure 7, we can clearly see that major parts of central Ethiopia were facing severe drought under CDI analysis. Narrowing it down further, we can evidently see the southern parts

of the Afar region, namely zone 3 and 5) faced major effects of the drought. Population exposed in drought-affected are by CDI reveals that 98,738,345 people in total were threatened by the drought in July 2002. Table 4 provides a breakdown of affected population based on level of alarm.

Table 4: Drought impact 2002 (Source: East Africa Drought Watch)

Population exposed in affected areas

Category	Population	% of whole region
Alert	8,120,973	8.22 %
Watch	22,804,355	23.1 %
Warning	10,782,176	10.92 %

Total population estimate for area: **98,738,345**

At the end of this section, we can safely affirm that there was a major drought in 2002, which can be classified as a major trigger event affected the lives of many people in Ethiopia.

5.2. Impact of Drought-related Environmental Change on Population

The next natural step in this research study will be to understand how the onset of the 2002/03 major drought in Ethiopia affected the environment (in the Afar region). What environmental change did it drive, and what was the impact of the drought-related environmental change on the population? In the next section we first discuss (a) drought-related environmental stress and then (b) drought-induced vulnerability of livelihoods.

For analysis on drought-related environmental change, refer to **Appendix B.** Cumulating the assessments made from looking at the Standard Precipitation Index (SPI), Soil Moisture Anomaly (SMA) and fAPAR Anomaly we can safely affirm that the onset of drought starting mid-2002 brought upon considerable environmental stress in the Afar region – especially with regard to the agricultural component of society. It remains important now to understand how these drought-related climate stresses impact the rural population of the Afar.

5.2.1. Climate-induced environmental stress: **(Appendix B)**

5.2.2. Climate-induced vulnerabilities of livelihoods

Environmental stress is increasingly interpreted as a systemic factor which contributes to conflict (Rademaker et al 2016). The view resonates Homer-Dixon's principal argument concerning how rising renewable resource scarcities contribute to social instability and civil strife (Homer-Dixon 1991; 1994; 1999). These arguments are however premised around the central notion that climate-induced environmental change and stresses increase the vulnerabilities of people. These vulnerabilities could be in the form of forced displacement, migration, worsening livelihoods, or increased risk from natural hazards. Ultimately, they translate into violent conflict.

The 2002 drought in Afar threatened and exacerbated the livelihood vulnerabilities of the population by affecting the agricultural sector of Ethiopia. Agriculture is considered the backbone of Ethiopia's economy. It employs between 80-85% of the working population. The sector is a major source of economic development as it contributes to 40–50% Ethiopia's total GDP – with livestock and livestock products contributing 20% the agricultural GDP. The sector is also rapidly growing at an average of 8.6% per year (Ethiopian Ministry of Environment and Forest 2015). With a highly agrarian construction of Ethiopian society, land becomes a valuable resource. Land is used for various purposes and can be divided into 15 different land use patterns – the dominant patterns are however cultivation and grazing involving farmer and pastoralist communities. Even among them two, they have diverse methods of land use with farmers exhibiting 48 different cropping patterns across six farming systems, while pastoralists employing 19 livestock patterns (Ethiopian Ministry of Environment and Forest 2015). Thus, agriculture upholds livelihood and household security in Ethiopia. The following section paints an overview of how deeply people's livelihoods depends on the agricultural sector in Ethiopia and how the effects of drought can significantly undermine their livelihood security. Analysis here is dissected under two agriculture-based way of life, farming-based livelihood system and pastoralism-based livelihoods, with a greater focus into the latter.

5.2.2.1. Farming

Ethiopia's agricultural sector is however extremely dependent on natural rainfall for the produce of most crops, so much so that a mere 1% of total cultivation accounts from irrigated agriculture. (Ethiopian Ministry of Environment and Forest 2015). This leaves most farming processes (particularly those of smallholder farmers) exceptionally sensitive to climate changes. This is high dependence among Ethiopia's small-holder farmers remains because they tend to grow slow-maturing high-yield crops that are contingent on two rainy seasons (belg and meher) to reach harvest. Moreover, these farmers use plot-lands that are smaller than ½

hectare which further makes it difficult to sustain household food security or income in the event of insufficient harvests.

The onset of major droughts is known to negatively affect agricultural production. Since drought conditions bring upon environmental stress in the form of reduced soil moisture and drying up of underground reservoirs, it can lead to diminished crop yields and crop hectarage. Lack of soil moisture can stunt the growth of crops since it plays a critical role in regulating soil temperature, salinity, nutrients availability, providing soil structure and prevents soil erosion – all necessary conditions for healthy crop yield. Moreover, some studies have also found that the impact of drought is much more severe on rainfed crops rather than irrigated crops (Ray et al 2018). This holds grave implications for farmers in Afar considering their high dependence on natural rainfed agriculture.

The drought in 2002 had a major impact on farmer livelihoods in the Afar region. Using figures in Appendix B for (Soil Moisture Anomaly) and (fAPAR Anomaly), we can already learn that zone 3 and 5 of Afar were seeing anomalies in soil moisture and vegetation productivity. This will have detrimentally affected agricultural production in affected areas. OCHA situation assessment reports from the ground in 2002, confirm that the agricultural sector was facing major crop failures as a result of the drought. Specifically, maize and sorghum cereal crops experienced near complete failure. The extended period of moisture stress at key flowering, pollination, and fecundation stages of the growth process ensured that maize and sorghum plants are unable to provide seeds (OCHA 2002). To contextualize th impacts that these crop failures would have had on agriculture-dependent farmer households, we must consider the distribution of crop harvest in Afar.

Table 5: Estimates of agricultural production in Afar (Source: Central Statistical Authority 2000)

CROP TYPE	TOTAL AREA ('000 hectare)	TOTAL AREA %	TOTAL PRODUCTION ('000 quintal)	TOTAL PRODUCTION %	YIELD (QT/HA)
Cereals	26.85	91.73	74.43	100.00	2.77
Teff	8.26	28.22	-	-	-
Barley	*	*	-	-	-
Wheat	*	*	-	-	-
Maize	6.75	23.06	72.95	98.01	10.81
Sorghum	11.25	38.44	*	*	*
Millet	-	-	-	-	-
Oats	-	-	-	-	-
Pulses	1.54	5.26	-	-	-
Horse Beans	-	-	-	-	-
Field Peas	*	*	-	-	-
Haricot Beans	*	*	-	-	-
Chick Peas	1.17	4.00	-	-	-
Lentils	*	*	-	-	-
Vetch	-	-	-	-	-
Others	.88	3.01	-	-	-
Neug	-	-	-	-	-
Linseed	*	*	-	-	-
Rapeseed	-	-	-	-	-
Ground Nuts	-	-	-	-	-
Sunflower	.49	1.67	-	-	-
Sesame	.36	1.23	-	-	-
Fenugreek	*	*	-	-	-
All Crops	29.27	100.00	74.43	100.00	-

Table 5 (albeit based on closest available agricultural data for Afar to 2002), provides that maize (accounting for 23.06%) and sorghum (accounting for 38.44%) were the major crops that farmers and agro-pastoralists would cultivate in Afar in 2000/01. Using this information, we can learn that maize and sorghum-dependent farmer livelihoods would have suffered tremendously with near complete failures following drought in 2002 spearheading them into poverty.

Continuing the analysis regarding how people's livelihoods in Ethiopia are incredibly susceptible to drought impacts, we now shift the focus to pastoral-based livelihoods. In the next section, we will analyse how pastoral livelihoods show extreme vulnerability to drought-related environmental change.

5.2.2.2. Pastoralism

Pastoralism in Ethiopia offers a way of life to 12-15% the population comprising almost 12 million people . In Ethiopia, pastoralists mainly occupy lowland areas that are characterized by arid or semi-arid conditions. Majority of the pastoralists are based in Somali region constituting 53% of the total pastoralist population followed by the Afar region, which comprises 29% of the total pastoralist population (Sandford and Habtu 2000). Inside Afar is a

different story as over 92% of the Afar population practice pastoralism as means of survival (Flower 2016).[6] Nomadic and semi-nomadic pastoralist communities in Afar rear goat, sheep, camel and cattle across the Afar landscape. As a result, most land area inside Afar is used for pastoral purposes, with limited land area in the Awash valley being irrigation. Geographically, southern areas in Afar are considered dominant for vegetation patterns attracting a lot of pastoralists and agro-pastoralists (Pantuliano and Wekesa 2008).

Mobility is central to pastoral systems. In the backdrop of high temperatures and low precipitation, movement offers pastoralists the ability to circumvent environment-related issues such as sparse availability of vegetation and relatively low fertility of dry lands. Pastoral mobility patterns can be split into two broad types of mobility (a) *Transhumance* where we see highly regular, seasonal patterns of mobility that carried out under demarcated or previously established corridors. Movement is observed towards resources. Permeant households that also have small-scale agriculture are associated with these patterns of movement. (b) *Nomadic* mobility is characterized by flexibility where we see highly irregular, seasonal migratory patterns dependent on the water and fodder requirements of herd animals. Herein, pastoralists use their knowledge of pasture, rainfall, disease, market access and boundaries to develop migration routes (Flower 2016).

According to closest available data to 2002, in 2000, the Afar region accommodated 992,000 pastoralists. Owing to high pastoralism, Ethiopia is also estimated to have the largest livestock population in Africa (Central Statistical Authority 2005). Table 6 provides an overview of livestock number in the Afar region in 1998 (closest available livestock data to 2002).

Table 6: Estimated number of livestock in pastoral areas of Afar region based on Agricultural Sample Survey 1997/98 (Source: Central Statistical Authority 1998)

		Male		Female		Both sex	
		Number	%	Number	%	Number	%
Cattle	Zone 1	35.7	15.70	108.29	20.03	143.99	18.75
	Zone 3	153.36	67.45	298.11	55.14	451.47	58.79
	Zone 5	38.31	16.85	134.20	24.82	172.51	22.46
	Total	227.37	1.43	540.66	2.78	767.97	100
Sheep	Zone 1	23.3	14.20	58.54	18.07	81.84	16.77
	Zone 3	125.57	76.54	227.93	70.37	353.51	72.45
	Zone 5	15.17	9.25	37.41	11.55	52.29	10.78
	Total	164.05	100	323.89	100	487.94	100
Goats	Zone 1	24.39	10.92	55.86	10.22	80.25	10.42
	Zone 3	154	68.93	310.49	56.81	464.49	60.32
	Zone 5	45.04	20.16	180.23	32.97	225.27	29.26
	Total	223.43	100	546.57	100	770	100
Goats	Zone 1	24.39	10.92	55.86	10.22	80.25	10.42
	Zone 3	154	68.93	310.49	56.81	464.49	60.32
	Zone 5	45.04	20.16	180.23	32.97	225.27	29.26
	Total	223.43	100	546.57	100	770	100
Asses	Zone 1	1	6.06	0.46	1.81	1.46	3.48
	Zone 3	10.83	65.6	15.86	62.37	26.69	63.64
	Zone 5	4.69	28.41	9.11	35.82	13.8	32.9
	Total	16.51	100	25.43	100	41.94	100
Mules	Zone 1	-	-	-	-	-	-
	Zone 3	0.71	100	0.34	100	1.05	100
	Zone 5	-	-	-	-	-	-
	Total	0.71	100	0.34	100	1.05	100
Camel	Zone 1	8.01	10.24	1.8	1.23	9.81	4.36
	Zone 3	61.21	78.26	124.83	85.16	186.04	82.76
	Zone 5	8.98	11.48	19.97	13.62	28.95	12.88
	Total	78.21	100	146.59	100	1.05	100

In pastoral systems, livestock is central to people's livelihoods as people depend on livestock for eating meat and drinking milk for themselves, or exchange livestock or their products (in the form of meat, milk, honey, eggs, cheese, and butter) for grains and other goods and services. In table 6, we observe that cattle is the most kept livestock in the Afar region. This is because cattle are a high-risk, high-yield investment since cows breed fast and produce surplus milk. However, they also note high rates of mortality in the event of drought. Goats provide low-output, but are more resilient. Camels are most sturdy, but they breed slow (Economist 2002). Nonetheless, when droughts occur, there is a significant decline in livestock productivity complemented by the degradation of grazing pastures overall (Algur et al 2021).

Drought directly affects livestock. Dry pastures overall see lower availability of feed – the most essential component for pastoral communities as grazing constitutes food for the livestock. With lower natural vegetation yield being available during drought, livestock tend to face deficiencies in nutrition. When vegetation productivity is extremely low, livestock even face death as a consequence of poor nutrition and hunger. The risk of disease is also increased in livestock (for instance, susceptibility to ticks and worms increases) which is also an important consideration in the overall health of the animal.

The drought in 2002 perished considerable numbers of livestock in the Afar region (US AID 2003). Situation reports from OCHA post-peak-drought periods informs that nearly 50% of the total livestock population in the Afar region constitutive of tens of thousands of livestock has perished (OCHA 2002). Among surviving livestock, many were facing serious health problems with more dying in the course of time. These health problems appeared as a consequence of high concentration interactions between malnutrition livestock at dry grazing grounds or watering points which intensified the spread of communicable parasitic diseases (such as blackleg, trypanosomiasis, geramole, gosso, pneumonia) (OCHA 2002). The impact of dying livestock was severe on the lives of Afar and Somali pastoralists.

Deceased livestock was a direct loss, but even the surviving livestock held no good market value at the time owing to poor health conditions. Drought-related degradation of pastures further caused interruptions in the breeding cycles of livestock. This dire situation for agro-pastoralists was compounded by accompanying crop failures of maize and sorghum making it difficult for them to sustain themselves in the short-term. Under the acute circumstances, pastoralists and agro-pastoralists are pushed further and further into poverty and requiring external assistance.

In fact, it was observed in the Afar region that, nomadic and semi-nomadic pastoral population, who are historically averse to the idea of settling down, have increasingly begun rearing maize to become 'agro-pastoralists' in order to not remain entirely dependent on incomes from pastoral activates which are subject to rising instability (Economist 2002). Traditional subsistence based on livestock husbandry has failed to sustain the livelihoods of many pastoralists because of the highly vulnerable nature of lifework. The change was an adaptation strategy in response to many environmental changes, altered market and political conditions (Tsegaye et al 2013). In a survey-based study carried out in Southern Afar, it was found that 28.8% pastoral households were highly vulnerable to climate-induced shock (they would require intense care). Remaining 53.6% were moderately vulnerable (they would need

some support recover), while only 17.6% of the pastoral households were found capable of coping. (Melka et al 2019).

In the end, it is clear that the impacts of climate change are causing extreme stress on the natural environment that pastoralists and agro-pastoralists depend on for survival. To constantly adapt to these extreme weather events, we see pastoralists shift migration and mobility patterns. Overall, across sub-Saharan Africa, changes in pastoral patterns for livelihood sustenance have been observed in areas that witness increased land fragmentation and reduced access to vegetation pastures (Tsegaye et al 2013). As the onset of major drought events jeopardize the livelihoods of many pastoralists and agropastoral, changing patterns of mobility is emerging as an adaptation strategy for people. Movement-based changes in traditional patters of pastoral activities holds grave implications for the security of rural pastoralists, as often the search for new pastures or water resources can spiral into violent contestation with other settled communities.

The next section will focus on how the effects of drought in 2002, caused the outbreak of communal conflict between the rural Afar and Issa groups in the Afar region of Ethiopia.

5.3. Communal Conflict between Afar and Issa (Dir) communities

The relationship between the Afar and Issa (Dir), two predominantly pastoral communities inhabiting at least three countries in the Horn of Africa, has been marked by unending acrimony. More recently, the nature of conflict between the two groups has been premised around access to water, pasture, migration routes and cultural values and tradition. Although, elements of modern political disputes are increasingly realized in terms of territorial expansion and politico-economic hegemony, along with frequent clashes over competition for natural resources (Yasin 2010).

Before we leapfrog into communal conflict incidences and link them with the causal role of drought-related environmental change, it is important to understand the ethnic identity of both communities, their relations with one another and patterns of pastoral interaction. Understanding these contextual elements is important because they play a systematic role in the outbreak of communal conflict between the Afar and Issa groups. For instance, learning from the theoretical mechanism behind causal pathways (refer to figure 2.0), we can grasp the importance of tracing pastoral movement as clashing patterns can spur conflict

between certain communities who have a history of hostility. Hence, we begin this chapter by firstly learning about the two ethnic groups.

5.3.1. Introduction to ethnic Afar community

The Afar, (also known as *Danakil*, *Adali*, and *Odali)* are a cross-boundary ethnic community of pastoralists and agro-pastoralists in the Horn of Africa. Nearly 70% of the Afar people live inside Ethiopia (Prunier and Ficquet 2015). However, historic colonial map-making that typically ignored the ethnic make-up of societies was responsible for dividing the ethnic Afar population into adjacent states of Eritrea and Djibouti (Yasin 2008). The Afar community speak the Afar language, an Afroasiatic language belonging to the Cushitic branch giving them distinct cultural and linguistic identity of their own. In terms of religion, the Afar predominantly believe in Sunni form of Islam (Prunier and Ficquet 2015). Affinity to Islam can be traced back to the 13th Century when traders and holy men from the Arab peninsula interacted with Afar people (Miran 2005). Afar values conform with the lifestyles of ancient Arab camel herders.

Since AD 1500, the Afars have remained distinctly divided into two groups, the Asemara (Reds), who are most dominant politically; and the Ademara (Whites) settled in the more inhospitable desert areas (Haskins and Biondi 1995). Afar social structure sees eleven tribes in total, over hundred clans and even more sub-clans which intermingle with one another through kinship and pacts of alliance (Prunier and Ficquet 2015). Their social fabric retains strong and complex history of conflicts, population movements and patterns, migrant minority identities and natural disasters continue to shape their genealogical and territorial realities (Prunier and Ficquet 2015).

In the end, within every generation, the Afar are inextricable linked with pastoralism. It is believed that the Afar were the first inhabitants of Ethiopia to expand their pastoral life into full-scale nomadism (Britannica 2019). Over the years, Afar pastoral communities have had knowledge and control of scarce local resources, otherwise survival under harsh arid conditions would not have been possible. Every clan, sub-clan, or lineage in Afar society possess its own pastures and water points where they herd their livestock communally and remain united to defend their settlements, pastures, and livestock from other pastoral groups (Prunier and Ficquet 2015). Considering how the Afar are largely restricted to raising livestock, the community continues to remain isolated and unsophisticated (Markakis 2003).

5.3.2. Introduction to ethnic Issa community

The Issa (also known as Eesah, Esa or Aysa) are a section of the Dir clan of the Somali. They primarily reside in Djibouti where their population is estimated at 300,000. About a quarter of a million Issa also reside in the coastal areas of the Awdal region of Somaliland – a self-proclaimed autonomous region in northern Somalia. The Issa also inhabit the Somali regional state (neighboring the Afar region) where they are the second biggest Somali clan after the Ogaden (Yasin 2010). Within Ethiopia, majority of the Issa are located in Dire Dawa, however their spread covers Oromia and Afar regions. Their immediate Neighbors to the West are the Afar communities with whom they have co-existed in a constant state of enmity exhibited by a strong sense of clan identity (Lewis 1961).

Similar to the Afars, the Somali clans are Cushtic-speaking people that consider themselves descendants of the Arab. Mythical claims allude to their ancestry with prophet Mohammed at the top of ancestry tree (Abdalla O. 1995). Alike Afar classification, the Issa also have Issa Adde (White) and Issa Madobe (Black) divisions based geographical distribution where the former inhabits north and seawards of the line of hills running from Djibouti to Harar, whereas the latter occupy all remaining areas including the right banks of the Awash river (Yasin 2008). Issa population settled east of the Awash River contest the exclusive claim to the grazing lands of region, namely Alighedi plain against Afar pastoralists (Markakis 2003).

The Issa (Dir) are mainly pastoralist communities. They are known to inhabit arid and semi-arid areas where the environmental conditions are fragile, harsh and inhospitable. In order to access natural resources, Issa pastoralists often cut across boundaries, official administrative or traditional which many times extend along pastures claimed by the Afar. Beyond pastoralism, Issa groups are also involved in trade and transport making them a more dynamic and sophisticated group with connections throughout the region (Markakis 2003).

5.3.3. Regional Pastoral Mobility Patterns

5.3.3.1. General Mobility Patterns of Pastoral Afar and Issa groups

Fundamental to pastoral Afar and Issa communities is access to water resources and pastures for grazing. In their pursuit for natural resources, respective mobility patterns of communities can often conjuncture at overlapping water points and rangeland areas. During

dry periods (October–June), there is pressure on riverine areas associated with grazing; during rainy and post-rainy periods (July-October), the spread for grazing is wider because of the availability of seasonal watering points and fresh grass growth (Gadamu et al 1999).

Afar clans herd their livestock under seasonal migration patterns that roughly range from the foothills of the Ethiopian highlands in the West, to the Red Sea in the East. Major portions of the Awash valley are comprised within. The Afar trace their history back over five to six generations of ancestral settlements in the Awash valley, thus claim most routes, water points and pastures. (Gadamu et al 1999). The Awash River that flows through much of the area is primarily responsible for supporting the livelihoods of transhumant pastoralists – making it an essential natural renewable resource (Said 1994). During the dry months, there is significant grazing-related pressure on the Awash River as pastoralists tend to concentrate at the available pastures and water points. Overgrazing remains a huge concern for resource-dependent population, especially in the backdrop of tough environmental conditions. Hotspot areas such as Amibara and Gewane in the Awash valley face significant issues in rangeland regeneration due to years of drought-induced land degradation and patterns of overgrazing during dry months (OCHA 2003).

Similar worries dominate within Issa pastoralist groups in Ethiopia. In terms of Issa settlements, the group have taken control over large territories between Djibouti and Dire Dawa. They have a strong presence on the highway that links Addis Ababa to the Assab/Djibouti ports. Since 1982, the Issa have notably dominated the Gedamaitu region along the highway (Markakis 2003). In terms of a broader pattern, Issa pastoralists have been pressing towards the West to gain access to grazing lands and water resources along the Awash riverbank. During dry months especially, when there is significant strain on the availability of pastures and water points, Issa pastoralists tend to make strides along the Awash riverbank (Piguet 2002). Within the last 70 years, Afar clans have been pushed about 150 km westwards by the Issa from their traditional rainy season pastures (Rettburg 2010). Specific to the Gewama region in Awash valley, Figure 12 illustrates the change in mobility patterns of the Afar limiting them to a small radius in and around their dry season rangelands.

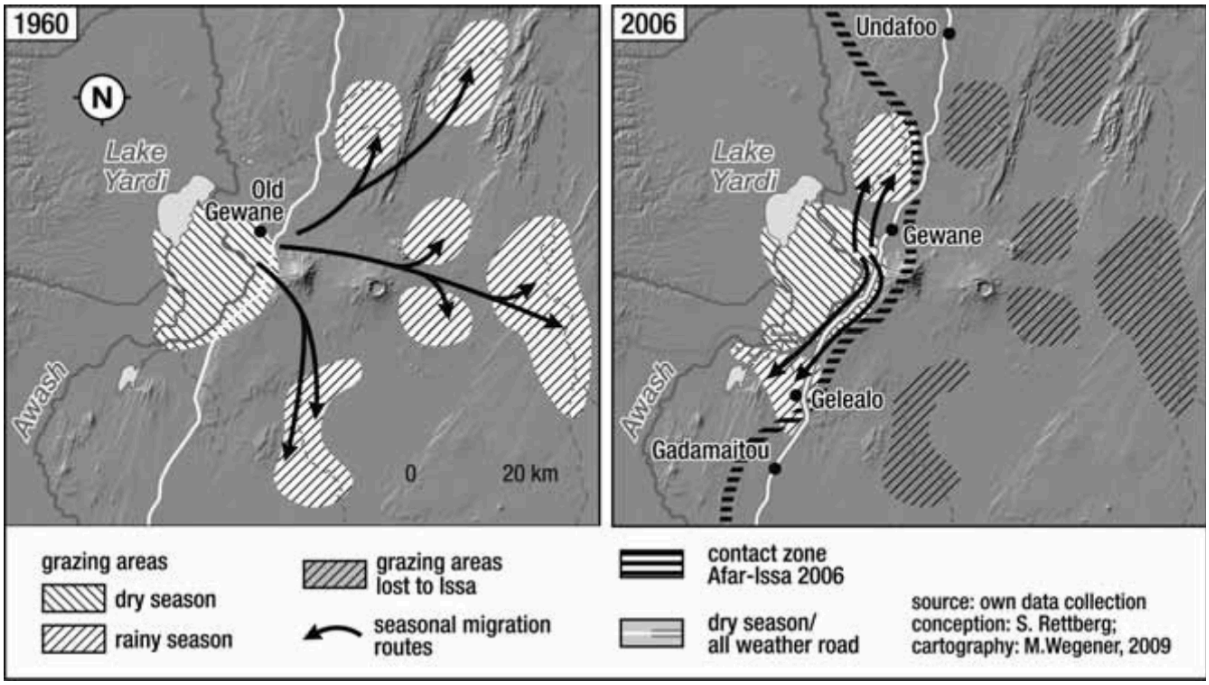


Figure 8:Change in migration pattern due to Issa expansion (Rettburg 2010)

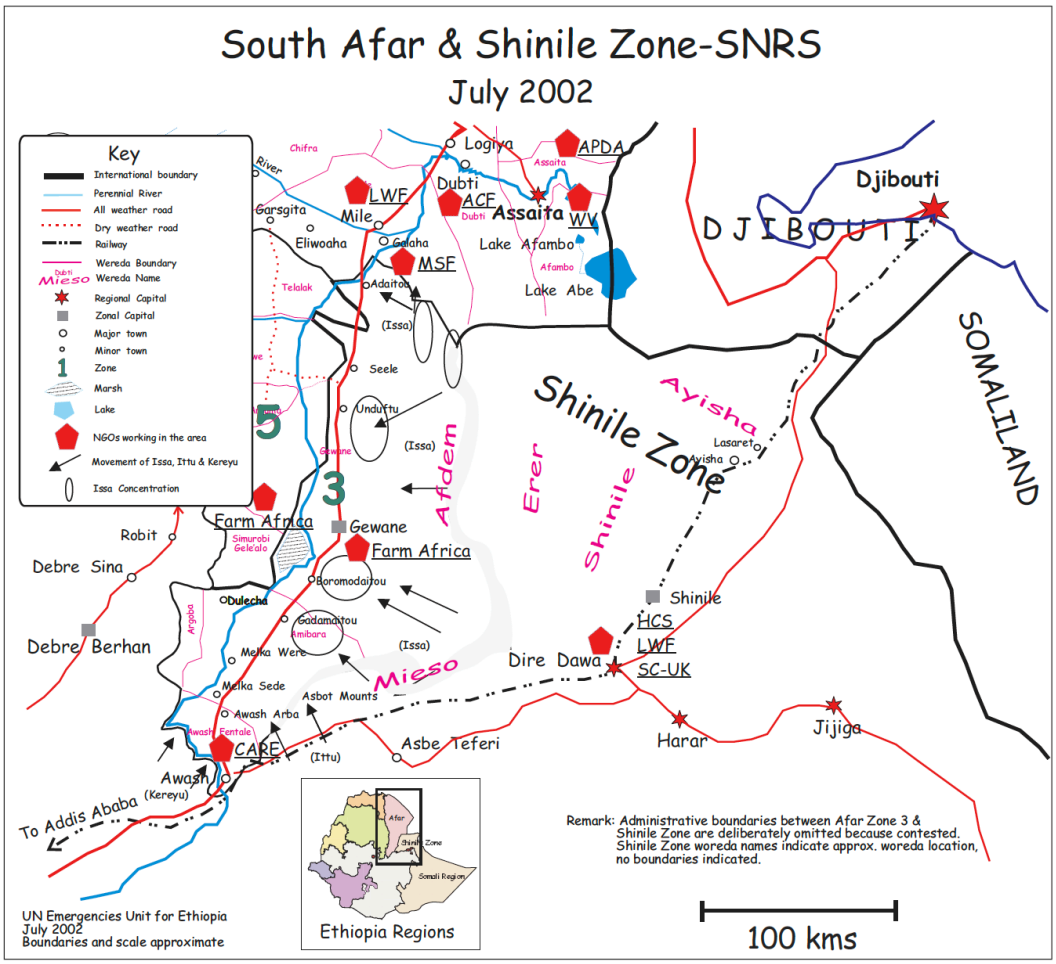
The specified region in Figure 8 has been pressurized by both communities as its water resources and pastures are highly contested for between the Afar and Issa clans leading to frequent clashes.

Key disagreements over access to resources also exist on a conceptual level between the two communities. As mentioned before, Afar society is extremely particular about designating resources with a strong sense of ownership (based on traditional territorial homeland) to many respective lineages and sub-clans, but the Issa community generally regards that, “pasturage is a gift of God to man in general, or rather to Somalis, and is not considered to belong to specific groups" (Lewis 1961). In spite of tribal ownership being the primary organizer of pastoral systems within Somali society, no fellow clan member can deny or exclude another clan tribe member access to water points and rangeland areas for grazing.

5.3.3.2. Clashing Pastoral Movements during the onset of drought in 2002

In 2002, there were several reports of excessive pastoral movement along the Awash riverbank and reports of denied access to water points and pastures in Awash. Situation reports published in the dry months (29 May - 8 Jun) of 2002 confirm that Afar, Kereyu, Ittu and Issa groups faced ethnic clashes and were forced to change their usual migration patterns because of being denied access to traditional water points, wells and grazing areas (Piguet 2002).

Specific woredas of zone 3 such as Gewane, Amibara and Awash fentale witnessed many groups deny other ethnic groups access to pastures. High concentration of pastoral groups also started gathering along the Awash riverbank and the surrounding marshes and lakes (Mardi, Hertale, Ashahan and Lehadu) increasing the pressure on grazing resources in the main Afar pastoral sanctuaries. Even pastoralists from zone 5, who do not normally end up in the above areas started going to rangeland areas along the Awash riverbank in Gewane and Boromodaitou woredas. From zone 5 alone, it is estimated that 15,000 people left to zone 3 to Gewane and Boromodaitou woreda (OCHA(f) 2002).



Map 2: Situation report of South Afar (Zone 3) and Shinile zone (Somali region) in July 2002 (Source: UN Emergencies Unit for Ethiopia 2002)

We can clearly see in Map 2 that areas Boromodaitou, Gadamaitou, Unduftu (adjacent to Gewane), and Adaitou have high concentrations of the Issa clan. Interpreting the black arrows, we can learn that Issa patterns of movement during the peak months of drought were pushing towards the Awash River. During the dry months, Issa movements westward were significant (OCHA(d) 2002). Another outside factor influencing pastoral movement westward

was Saudi Arabia's ban on the animal import from the Horn of Africa following the outbreak of Rift Valley fever in 2000. Since Issa groups are major exports of sheep and goats to the Arabian market, the ban hit them particularly hard. It caused overstocking and overgrazing in the Shinile zone (neighboring area in Somali region with Issa majority) which compelled Issa herders to traverse deeper into areas along the Awash River (Markakis 2003).

Assessments from a situation report from August 2002, confirms that pastoral movements seen in the dry months of 2002 have reached 'unexpected proportions' compared to previous years. Having observed from zone 5, reports inform that unusual movement patterns were witnessed which involved entire families migrating to less environmentally stressed areas. Such movements involving the whole family and all kind of livestock serve as a good indicator of existing pastoralist stress (OCHA(e) 2002).

The prevalence of such stress often manifests into clashes with rival groups. Between the Afar and Issa clans, some of the worst confrontations were witnessed during the dry months of 2002. Several situation reports have confirmed that the nature clashes were inked to lack of access over grazing grounds and water points in the Awash valley. Afar pastoral groups were responsible for denying access to fast-entering Issa pastoral groups to rangeland areas they consider their grazing land. Complains over livestock raiding also surfaced from both sides. Afar pastoralists accuse the Issa of livestock raiding in Simurgobi Geleála woreda (Zone 5) and claimed 4000 animals missing (OCHA(e) 2002). Following the grazing restriction in the Yangudirassa National Park, resource competition between the Issa and Afar has further intensified. Commercial competition in livestock trading centers has added another element that has intensified hostilities. Since March 2002, clashes have been reported in Boromodaitou along the strategic Mille – Gadamaitou highway over the construction of a woreda office that was built on a path used by animals for grazing and watering according to the Issa. Fighting was also experienced near the Adaitou and Unfahoo trading centers.

The next section will systematically provide communal conflict data between the Afar and Issa communities.

5.3.4. Communal Conflict

Interpreting from the previous section, we learn that particularly during the dry months of drought, both Issa and Afar groups clashed in order to secure pastures and water points. During the period of high tensions some areas were major flashpoints, such as the three small towns of Adamytu. Gedamytu and Endofo – all situated on the Addis Ababa-Djibouti highway (Berhe and Adaye 2007). In this section we will first look into a singular conflict event that was retrospectively analyzed in detail by (Markakis 2003) first and then present overall data collected from conflict datasets on Issa – Afar communal conflict in the Afar region in 2002.

Focusing first on the conflict episode at Galalu, in March 2002 there was a major incident of armed violence between Afar and Issa groups – one of the worst in recent years. The site of conflict in Galalu broke out near the streambed – the area's seasonal stream that brings fresh rainwater from the Asebot mountains and supports a well with permanent supply of water. It is the only permanent source of water in the area available to pastoralists and agro-pastoralists throughout the year. The water point on the streambed witnesses intense competition during times dry periods. Issa herdsman from areas in-and-around Gadamaitu also depend majorly on the water source (Markakis 2003).

However, the fighting between Issa and Afar groups that took place was concerning the construction of District administration headquarters at Galalu. The decision to build a Centre at Galalu was taken by the Afar regional administration following pressure from Afar elders from zone 3 who wanted to consolidate and reclaim Afar dominance along the main road to Djibouti. The new site was both adjacent to the road and on the Galalu streambed, in effect blocking access of Issa herdsman to the streambed. This did not go do down well among Issa elders in the region who were renowned for their aversion against Afar elders (Markakis 2003).

Before out-and-out violence broke out, Afar testimony accuses Issa warriors of twice attempting to destroy the building and loot materials from the site. It was during the third attack that a group of 30 Afar warriors were present to repel the attack. The culprits from the Issa side came from the direction of Gadamaitu, an Issa-dominated small town about 25 kilometers south of Galalu. The strength of the Issa group was 50 members at the construction side. Both Issa and Afar groups that engaged in violence carried Kalashnikov automatic rifles. When both groups reached within range, they open fired. The firing lasted for several hours before the Ethiopian army intervened to bring an end to the altercation. Nearly 13 Issa men were killed and 10 wounded in that battle from the Issa side (Markakis 2003).

Following this incident more fatalities mounted over the course of the year. Learning from such anecdotes of clashes between both groups, we can learn that the dynamics of conflict are often interwoven. We realize that compartmentalizing conflict over purely pastoral reasons

without taking into account the role of external contributing factors will allow for a shallow understanding of the conflict situation. Clearly, in this case, reasons behind conflict extended to motives of consolidation of power for both groups with respect to the strategic and economic importance of the highway. The interaction of such factors with the pastoral needs of both groups in the backdrop of drought conditions, allows for brutal conditions wherein conflict violent conflict erupts.

This research also collected overall communal data between the Afar and Issa groups in 2002 using Uppsala Conflict Data Program (UCDP) *Non-state Conflict Dataset (Version 21.1)* and *Non-state Conflict Issues and Actors Dataset (Version 1.0)* respectively. Refer to **Appendix** to see the data and codebook explanations and categorize it as conflict relevant to our operationalization of communal conflict in section (4.2). In the next section, we discuss the role of such non-climatic conflict promoting factors in the outbreak of communal conflict between both groups.

5.3.5. Other conflict-promoting factors

The notion that communal conflict between the Afar and the Issa communities is a purely pastoral confrontation over grass and water is an oversimplification of the cause of the conflict. Amidst the competition for scarce resources, there are certainly elements of socio-cultural and traditional disagreements. Aspects of modern-day conflict between the two communities has now elevated to the fight for territorial expansion and politico-economic hegemony. There are many factors that consistently contribute to the enduring hostilities between the two groups. These are conflict-accelerating factors that are omnipresent to modern day conflict situations between the two groups. The interaction of these factors with pastoralism-related tensions between the two competing groups, facilitates an outcome of a grander-more-intensified form of communal conflict. In this section we discuss what these conflict-promoting factors are and how they apply to the conflict situation between the Issa and Afar communities in Ethiopia.

We begin with the legacy of the medieval past. Narratives of Issa-Afar wars and conflict of the past certainly play a catalyzing role in the dynamics of contemporary Issa-Afar violence. The culmination of hundreds of years of violent confrontation has made lasting impacts on Afar–Issa relations. Early formulations of Issa-Afar violence date all the way back to the 13th Century continuing up until the 16th and 18th Centuries. Periods of successive wars (between

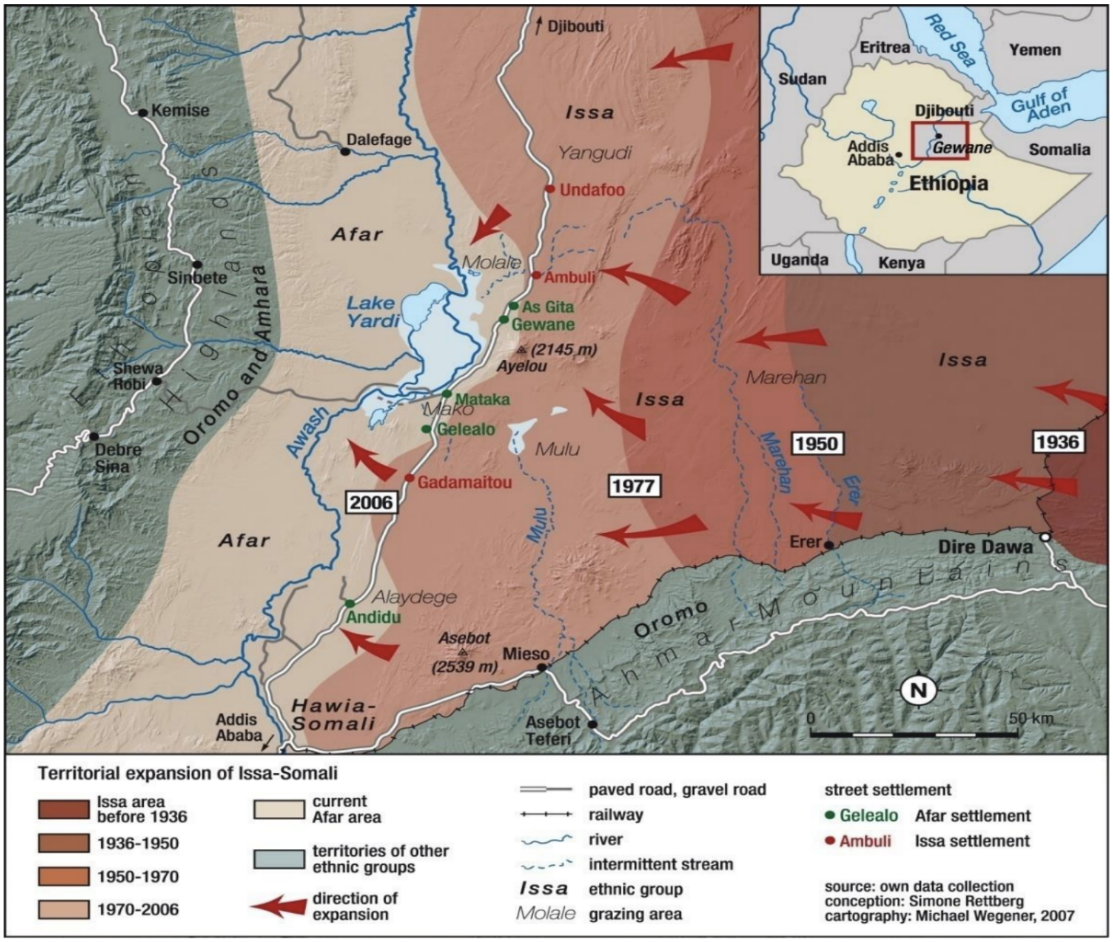
the Adal sultanate and Abyssinian highlanders (Alemu 2018), where both groups fought for Gragn (Ahmad), saw the birth of a massive rivalry between Afar–Issa following the defeat of the Gragn army . Enemy imagery which got shaped since in the six-hundred-year long struggle has played a key part in contributing to present-day bitter animosity. Major wars and population movements (mainly with Afar being pushed northwards) during this time have come to shape present-day Ethiopian state and society. Communal memory of violence and animosity tailors the course of present and future relations between the two groups. In the event of present-day pastoral competition, narratives of historic enmity certainly play a catalysing role in driving conflict behaviour.

Moreover, cultural beliefs and traditions can fuel conflict situations and contribute to a culture of mistrust. Especially cultures wherein children are encouraged to become brave warriors, which is common in both Afar and Issa groups with respect to instilling a warrior ethos, violence can be culturally promoted against the 'enemy'. Both communities possess a culture of promoting heroism through songs, ornaments, trophy killing and offering respect and high status to those who kill their enemy (Alemu 2018). Thus, the persistence of resource scarcities forces competition amongst communities that often takes violent ends. Cattle raids, counter raids and revenge killings are common traditional practices that encourage violent behavior. Moreover, avenging the dead is another traditional clan-based practice involving violent ends where the opportunity cost of failing to avenge is very high in both communities. In Issa clans, individuals that fail to avenge their dead are denied respect and greeted with provocative songs; meanwhile in Afar clans, they erect a stand adjacent to the grave for the dead whose blood is not avenged (Alemu 2018).These cultural elements again play a vital role in promoting conflict between communities.

In addition, the colonial past has also played a crucial role in worsening historic relations. Since the arrival of colonial powers, in the Horn of Africa, the age-old rivalry between the Afar and Issa (Dir) has elevated to a different magnitude of severity. In the imperialist scramble in the late 19th Century, Afar land was divided between Ethiopia (Abyssinia), Italy (Eritrea) and the French (Djibouti) dismantling many loosely grouped together Sultanates except the Sultanate of Aussa (Markakis 2003). In the construction of the Djibouti – Addis Abba railway (completed in 1919), the French largely employed the Issa (Dir) as transporters, workers and guards. This led to the settlement of major proportions of Issa population in the Shinile zone of Somali regional state and greater economic opportunity. Thereafter, in the ‘second Italo-Abyssinian war’ against Ethiopia, Italian colonialists recruited large numbers of locals Somalis, including the Issa who benefit immensely with arms, training

and access to livestock markets (Touval 1963). On the contrary, the Afar (who supported the Centre) suffered both economically and militarily. This tilted the balance of power against the Afar by weakening them politically, militarily and economically. In their period of dominance under the Italians, the Issa gained access into the Allideghi plains (rangelands areas that offer grazing pastures and are located very close to Awash River areas) which the Afar have traditionally claimed as their ancestral lands. Colonial influences have significantly altered the spatial settlement distribution of ethnic groups and even paved the way for the intensification of rivalry over economic interest

A veritable common marked has emerged in the Horn of Africa involving Ethiopia, Djibouti, Somaliland and Somalia where people and goods move freely without checks of passports visas and customs. It involves contraband trade where manufactures goods from many parts of the world pass through the ports of Djibouti, Somaliland (Berbera) and Puntland (Bossaso). Issa groups are aggressively involved in the trade as they can freely move throughout the region inhabited by their kin. They control camel caravan trade in contraband and provide animal services to facilitate the transportation of goods and work as guides, porters and guards. To dominate trade, Issa groups have moved to control the main Addis Ababa–Djibouti highway that crosses traditional Afar territories and runs north parallel to the Awash River. The strategic highway thus also helps Issa pastoral groups get closer to grazing areas and water points. Since the 1970s, the Issa have become more dominant in those areas have settled in hamlet areas of Gadamaitu, Adaitu and Undofo. Transport routes are not traditional resources, nor are they linked to livestock production. Yet, they represent resources essential to pastoralist welfare and the worth fighting over. Contraband trade is increasingly becoming a mainline for Issa groups and this is causing massive expansion of the Issa in Afar territories and eviction of Afar clans northward to the Danakil desert (Markakis 2003). Map 3 provides an insight into the territorial expansion of Issa groups which is predominantly driven by economic interests.



Map 3: Recent expansion of the Issa and Eviction of the Afar from 1936 to 2006 (Source: Rettberg)

In the pursuit of economic interests, Ethiopia has witnessed the Issa maneuver increasingly into the Afar region parallel to the strategic highway and move closer to the Awash river pastures and water points to help both – Issa groups engaged in pastoralism and those engaged in contraband trade. The knock-on effect of this was greater rivalry over territorial expansion which particularly intensified following the implementation of ethnic federalism.

The adoption of ethnic federalism in 1991 divided Ethiopia into nine regions with each region being named after its main ethnic group (aside one) and given the status of a self-ruling state. This feature has aggravated new confrontations premised around intra-state territorial claims (Ottaway 2021). Communities of Afar and Issa/Somali are similarly engaged in the pursuit of territorial expansion based on tracing historical myths that can support their claims. Currently, from pastoralists at the grass roots level to regional government institutions, as well as armed fronts - all are currently engaged in territorial contestation (Yasin 2010). The adoption of ethnic federalism system has added a new dynamic of power distribution which is motivated along ethnic lines, and hence drawing the attention of two historic rival ethnic groups that constantly engaged in pastoralism-related land-use competition.

Lastly, the weakening of local institutions accelerates the process of social fragmentation and contributes to the loss of social resilience (Rettberg 2010). Especially after the dissolution of the Derg military regime, land was no longer perceived as a common pasture resource around the Awash riverbank areas because Afar clans began claiming traditional customary land rights. This intensified tensions with Issa pastoralists who continued to push westwards in the backdrop of increasing ecological degradation. Moreover, to prevent the outbreak of conflict there is no traditional conflict resolution mechanism that binds the two groups (Markakis 2003). There has been a consistent decline of traditional values and dispute settlement mechanisms (Berhe and Adaye 2007). The erosion of faith in local institutions sow the seeds for future structural violence.

6. DISCUSSION

Following the empirical analysis, the next step is to bring everything together into a causal mechanism specific to the Afar – Issa case study examined. Keeping in mind that the empirical analysis followed a sequential order based on the theoretical mechanism of causal pathways (as provided in figure 2), we can piece together the sequence into a causal mechanism based on empirical results.

6.1. Causal Mechanism

From the outset, this research embarked upon unearthing the contentious link between climate change and conflict. Although the nexus remains problematic, contemporary empirical literature has managed to theorize and speculate many causal pathways and pathologies that can effectively link the effects of climate change to violent conflict. In the end, they all concur that climate change ultimately induces conflict by exacerbating existing vulnerabilities.

To test the presence/absence of the theorized logic behind speculated causal pathways, it was important that this study conduct an empirical within-case analysis to target the core logic and structural factors influencing the climate-conflict relationship. A within-case analysis using process tracing methods would explain 'how' climate change can induce conflict and test the relationship.

Having conducted a within-case empirical analysis of Ethiopia following the 2002 drought, we can bring the sequential analysis into one whole under the causal mechanism which can explain how the effects of extreme weather events led to the outbreak of communal conflict. In this section we will construct and illustrate a causal mechanism that can explain how the effects of the meteorological drought in 2002 shaped communal conflict between the Afar and Issa communities in Ethiopia.

Following a through literature review, we identified 'existing conjectures about a plausible mechanism' in the form of specific pathway linking climate change to violent conflict. This research then tested the specific causal pathways of *worsening livelihood conditions* and *increased migration and changing pastoral mobility patterns* in its empirical analysis to learn whether or not the aforementioned description of activities and entities brought about the outcome variable in the case of major drought in Ethiopia. Figure 9 provides a broken own blueprint of the causal mechanism that operated in the case of communal conflict between Issa and Afar communities in 2002.

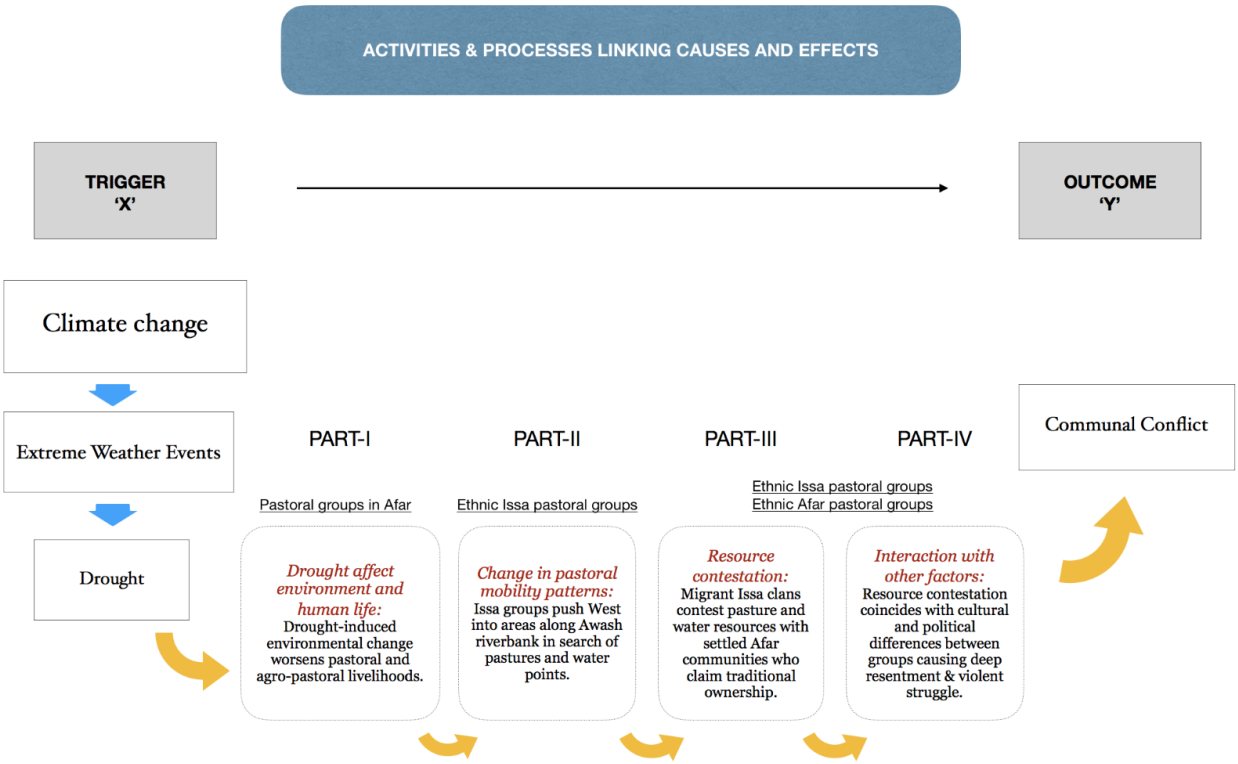


Figure 9: Causal Mechanism linking climate change to communal conflict between Afar-Issa groups in Ethiopia in 2002

Using the theoretical mechanism (figure 2) as the guiding framework behind the conceptualization of the case-study causal mechanism we observe how the effects of drought translated into communal conflict. We go through each part of the mechanism chronologically to discuss how all parts culminated into one single causal mechanism to produce communal conflict.

Trigger: To tangibly manifest anthropogenic climate change, this research selected extreme weather events as the independent variable. The inherent potential in them to cause shocks and affect human life in the form of natural disasters proves to be an excellent source that can help understand the nexus between climate change and conflict. Specific to the case study of Issa-Afar clashes, this research selects 'meteorological drought' of 2002 as the extreme weather phenomena that upends the lives of hundreds of thousands of people. Using data from the European Drought Observatory, we note that the onset of drought which lasted for 7 months in total (under SPI-3), was the trigger extreme weather event (refer to table 3), responsible for churning the wheels of causal forces that eventually cause communal conflict.

Part-I: Following the trigger event, the mechanismic process whereby all causal forces are interlocked begins at the Part-I stage of the causal mechanism. Here we fundamentally see drought affect the environment and human life. Using drought tools and indexes such as SPI, SMA and fAPAR, we discover how the onset of drought has caused considerable environmental stress. In the next section (5.2) we observe how drought-induced environmental stress has affected human livelihoods in the form of dry conditions, low soil moisture levels and poor vegetation productivity - which worsened pastoral and agro-pastoral livelihoods with crop failures and declining pasture and water resources. Using situation reports to judge the impact of drought, we can witness how the vulnerabilities of natural resource-dependent population were exacerbated during the onset of drought.

Part-II: As a direct consequence of worsened livelihood situations that coincided with the shrinking availability of pastures and water points, the ethnic Issa pastoral and agro-pastoral groups began pushing further West along the Awash riverbank in search of grazing pastures and water points (refer to Map 2). Dwindling availability of grazing pastures and water points during the dry months of 2002 forced many Issa pastoralists to change their mobility patterns and make ground into traditional pastoral territories of the Afar especially in areas Gewane and Boromodaitou.

Part-III: With both ethnic Issa and Afar pastoral groups vying for grazing pastures and water points in the same areas, it resulted in a rampant situation of resource contestation between the two groups. Situation reports confirmed that as a consequence of drought-induced changes in pastoral mobility patterns, ethnic Issa and Afar groups were seen denying each other access to grazing areas and water points in the Gewane woreda along with reports of frequent clashes. The Afar claiming ownership clashed with the Issa who hold opposing views with regard to traditional ownership of natural resources.

Part-IV: Additional burdens on existing resource base exacerbated feeling of relative deprivation. Especially when vulnerabilities of pastoral and agro-pastoral livelihoods are high, contestation for grazing pastures and water points breeds tension in communities. The role of other conflict-promoting factors becomes salient. When there are pre-existing differences between contesting actors, these tensions result in the mobilization along ethnic lines to protect their interests against rival groups who carry a mutual feeling of deep resentment.

Outcome: Ultimately, it all boils down to violent clashes between the Issa and Afar groups. We constitute these clashes as communal conflict because the context and circumstances of hostilities meet the criteria for communal conflict laid out by (Krause 2018) in the operationalization of the variable that we follow for this study. The discussion of all

these elements that constitute the outcome as communal conflict will follow in the next section using the theoretical framework of horizontal inequalities. Applying this framework to our research helps us comprehensively understand how Part IV operates to eventuate communal conflict and helps us enable a discussion surrounding the necessary condition under which such a causal mechanism is expected to work.

6.2. Horizontal Inequalities

We look at horizontal inequalities in this section because the dynamic of these persisting inequalities help explain conflict behavior. In order to comprehensively understand conflict situations, the climate – conflict discourse must rely on literature over the persistence of inequalities in shaping conflict behavior, for only then will we be able to understand how the effects climate change factor-in to incite communal conflict. Some scholars have already warned that exclusively focusing research on environmental resources as sources of conflict, misses the pivotal perspective on how persisting inequalities play the broader role in shaping ethnic group interactions and reactions to scarcity or distribution issues (Raleigh 2010). Thus, in the section we look at what the persisting inequalities were for both groups and how these inequalities interacted with the effects of drought to shape the outcome of communal conflict.

In a multi-ethnic and multi-religious world, some contend that conflict will fundamentally be neither ideological, nor purely economic, rather the dominating source of conflict will be cultural (Huntington 1993). Yet, others have shown that despite the strong assumptions, multi-ethnic societies can live peacefully (Fearon and Laitin 2003). This brings us to question under what circumstances do ethnic conflicts actually break out.

One fundamental cause behind the outbreak of conflict in multi-ethnic society is the existence of major horizontal inequalities (HIs). “Horizontal inequalities are inequalities in economic, social or political dimensions or cultural status between culturally defined groups” (Stewart 2008). Hence, according to HI theory, it is no singular factor that determines the outbreak of conflict, rather it is a combination of cultural, political, social and economic differences. This links directly to Ted Gurr’s relative deprivation theory which suggests that a mismatch between the social, economic and political goods generates feelings of grievance and injustice which then inspires violent behavior (Gurr 1970). Similarly, the persistence of

inequalities offers deprived and privileged groups with the opportunity to engage in violent conflict. Deprived groups are motivated to participate in conflict based on grievances, whereas privileged groups can engage in violent conflict to preserve their position of power and access to resources (Stewart 2002). When there are strong existing political and socio-economic inequalities in the form of marginalized treatment, political exclusion, sense of injustice or income inequality, then there are greater chances of mobilization (Stewart 2008). Communal groups organize themselves around shared identity as they draw their strength from cultural and historical bonds. When these deep-seated inequalities cut across social group lines, they instigate groups to mobilize, which is easier for them considering that there is a strong sense of communal spirit making mobilization a likely process. In total, there are three types of incentives among identity groups suffering from existing HIs that prompts mobilization: *resentment about losses suffered in the past, fear for future losses,* and *hopes for relative gain* (Gurr 2007). Common among all three feelings is the sharpening salience of identities that ultimately divides society under the dichotomy of 'us' versus 'them' – the root of conflict between ethnic groups.

To connect these theoretical aspects to the case study in Ethiopia, we begin by first understanding what forms of HIs are ethnic Issa and Afar groups suffering from. Greater focus will be on looking into HIs from the perceptions of both groups instead of objectively studying them, since objective asymmetries are not sufficient to trigger conflicts alone. For groups to engage in conflict, they will need to be aware of the feelings of injustices (Must 2016).

Afar Narratives

The Afar have suffered some of the worst damage in recent history. In this section, we begin discussing the displeasure of the Afar against the state and then against rival Issa groups.

The Afar region has remained one of the most neglected, poorest and most under-developed areas of Ethiopia. Successive governments in the Centre have failed to uplift the lives of majority ethnic Afar population living in the region. The Afar people have fewer hospitals, schools or social services than any other region of Ethiopia and consistency feel politically marginalized from the Government.

The lack of attention to the needs of pastoralists in the region is driving the sense of exclusion. To provide an example, the focus of the government on agriculture in the Awash valley has had a hugely detrimental impact on the communal spirit of the Afar. Since the 1950s, the irrigation potential of the Awash river has been attracting the government to make areas surrounding the Awash-river cultivation lands (Pavanello 2009). This is hugely consequential

for Afar pastoralists because the government is increasingly snatching traditional grazing areas of pastoral Afar communities. The nationalization of large farms under the Land Reform Proclamation in 1975 accentuated the feelings of exclusion among the Afar population as their concerns and demands were being ignored (Gadamu et al 1999). Coupled with environmental degradation and advent of agriculture, pastures and water points in the region have become scarce resources. This has played a major role in the altercations between Afar and Issa pastoralists vying for the resources. The feeling of marginalization from the state intensify for the Afar people following the lack of involvement from the Centre to protect and preserve the traditional pastoral lands used by the Afar people. Following is an excerpt from a field interview undertaken of Afar representation (Berhe and Adaye 2007):

"The forceful occupation of the land of Afar by the Issa community is apparent; the federal government knows that now the sporadic fighting and retaliation have continued. Both federal and regional governments also know the flash points: Adaytu, Ambule, Gedamaytu, and Undufu, which were originally the Afar land, now being claimed by the Issa. No lasting solution has been provided so far…. The question remains whether the federal government is unwilling or unable to settle the dispute"

Clearly, we see a sense of victimhood among the Afar not only against the Issa, but also against the state. Afar pastoralist agenda lacks severe inclusion in national policy-making and other aspects of governance such as capacitating climate-vulnerable pastoralist population with support to withstand climate-induced environmental stress. The feelings of neglect against the state are further intensified after seeing the Ethiopian government failing to take measures against the Issa to restore Afar land or back their claims amid resource competition – especially when the Issa continue to receive external support from Djibouti (Alemu 2018). The trivialization of pastoral concerns and clashes has certainly played an aggravating role in the silent progress of the protracted nature of ethnic conflict between the Issa and Afar (Menbere 2013).

In terms of Afar feelings against Issa groups, Afar collective memory is dominant with a huge sense of injustice with them feeling victims of continued uprooting from their traditional homelands by the encroaching Issa groups. We have observed such patterns of Issa movement already (refer to map 6) which has led to major evictions of Afar groups. Today, no Afar persons reside in Issa-hamlet towns of Gadamaitu, Adaitu and Undofo (Alemu 2018). Considering the fast-rate of hamlet occupation by the Issa, the Afar fear this as a continuation of a long-term strategy of gradually gaining control of the territory (and the natural resources that are part of it) and eventually subject all hamlets to a referendum to allow the option for

them to merge with the federal state of Somali. This is the territorial component that is worrying the Afar and we can see how the introduction of ethnic federalism in this context has intensified conflict considering that it re-enforces opportunities for expansion. On top of this, with the diversification of the Issa to other forms of income, the Afar feel increasingly economically marginalized.

Issa Narratives

Although the Issa are the stronger of the two groups in terms of economic support and backing, the Issa view themselves victims of environmental, economic and political marginalization. Fundamentally, the Issa community view their rivalry with the Afar as matter of survival – of their cattle, children and community. Following is one of the interviewee accounts (Alemu 2018):

"When the only survival is controlled by someone who does not want to share it with you what will you do? Will you wait and see until you die of starvation while you could have survived by taking it"

This links back to the point surrounding perceptions of natural resource. The Afar view natural resources as traditional resources from the times of their ancestors while the Issa view the same resources as being provided by Allah equally to all and that claiming exclusive right is a representation of greed (Gadamu et al 1999). With the Afar till date denying resource access to Issa groups at times of drought and famine, it has accentuated a sense of inequality with one group possessing much greater access to resources. Such strong perceptions complemented with communal memories of overwhelming invasions of indiscriminate killings undertaken by the Afar on Issa villages in the past, accentuates feeling of animosity and deepens divide (Yasin 2010).

From the level of the government, the Issa feel underrepresented and viewed recent regimes of the Derg and government of Haile Selassie being in favor of the Afar who consistently lobby to disarm them (colonial occupation gave Issa group weapons), and block Issa pastoralists mobility and access to grazing land. They believe the Afar indirectly use the hand of oppressive structures to cause damage to Issa groups. In doing so, Issa believe the Afar lie by displaying artificial scarcity, as they are motivated greed, not grievance (Alemu 2018). Meanwhile, though the Issa admit to forceful intrusion and evictions of Afar, they believe it is a byproduct of military superiority and a matter of success in past wars which were fought over accessing resources – something the Afar fail to embrace.

In both sets of narratives, we observe the self-victimization framing of identities. The salience of such framing play a huge role in the contribution to accentuate the communal divide and augments the conflict to intractably. We see that the self-awareness of groups is premised around the 'us' vs. 'them' frame of reference. The process of 'othering' here allows both parties to systematically relate the conflict to an existential struggle considering how major flashpoints have been hinged on competition over resources that sustain the livelihoods of pastoral groups. Once conflicts involving sharp identity divides enter the dynamics of a perceived existential struggle, conciliation becomes harder and deepens the intractable nature of the conflict.

In effect, the persistence of perceived inequalities and strong sense of identities play a critical role in shaping interactions among ethnic groups vis-à-vis their respective experiences of grievances. Such nature of relations, independent of the impacts of climate change highlight preexisting vulnerabilities of communities. The sudden effects of climate change here only trigger mechanisms that then tap into these existing vulnerabilities, exacerbate them and pave the way for complex interactions between rival groups.

Tracing this through the pathways in our case study, we can observe that the effects of climate change, firstly beset livelihood stress among Issa and Afar pastoral groups by affecting the livestock and the availability of natural resources. Then, drought forces competitive interactions between rival group by compelling changes in patterns of pastoral mobility of Issa pastoralists. The Afar, who claim the lands as traditional heritage seek to block access because of the overall acute scarcity of resources during drought periods especially. Owing to preexisting vulnerabilities in the form of both groups feeling marginalized, ridden-by poverty or ethnic tensions with rival groups, Afar and Issa groups end up in a situation characterized by communal conflict. Here, elements of society such as poverty or marginalization affecting both groups play an important role in directly exacerbating the effects of climate change in the form of reducing access to resources or declining the capacities to cope with environmental stress. Considering pastoral groups in Ethiopia are one of the poorest, least-developed and politically excluded populations, Issa and Afar groups presented high vulnerabilities (in the form of existing HIs) which interacted with the causal effects of drought to shape the interaction (which ended up taking violent ends) between the Issa and Afar communities. Thus, we can see how environmental issues can act as catalysts to cause conflict especially among marginalized groups

In the long run, climate change and vulnerabilities of populations enter a vicious circle wherein due to the persistence of existing inequalities, disadvantaged groups (both Issa and Afar for instance) suffer disproportionately from the effects of climate change as they are least

prepared to deal with the affects. As we observed (in section 5.3), these effects worsen the livelihoods of groups most-affected by drought by driving them deeper into poverty which continues their marginalized treatment and thereby accentuates subsequent inequalities – and so on (Islam and Winkel 2017).

7. CONCLUSION

Motivated by the significance of climate change and its effects on peace and security, this study embarked upon attempting to understand the causal relationship between climate change and violent conflict. However, the research frontier on climate – conflict studies is divided on the contentious causal relationship. Most alarmingly, there is an absence of consensus over what theoretical concepts govern causal mechanisms in their hypothesized link. In an effort to address these gaps, contemporary empirical literature provided specific causal pathways that served as explanations behind how climate change and conflict are connected. These causal pathways formulated our overarching theoretical framework.

With the aim of exploring these indirect causal pathways and to gain a better understanding of the hypothesized causal relation, we used the following research question(s) to guide our within-case research: ***How do extreme weather events shape communal conflict? And what are the necessary conditions that translate the effects of climate-related environmental change into communal hostilities?***

In attempting to answer these questions, we saw it fit to use theory-testing process tracing methods to test the presence / absence of specific causal pathways that might have operated in the case of communal conflict between ethnic Afar and Issa groups in Ethiopia. In effect, this would help us approve / disprove a causal relationship in the specific case and help us comprehensively understand the hypothesized causal relationship through the case-based construction of a causal mechanism. To that end, our governing hypothesis was ***ethnic pastoral / agro-pastoral communities suffering from existing HIs will engage in communal conflict if the effects of climate change worsen their livelihood conditions and drive changes in their pastoral mobility patterns.***

After thorough empirical research, we find that our hypothesis was supported by the causal mechanism (figure m) which means that causal pathways of *worsening livelihood conditions* and *increased migration and changes in pastoral mobility patterns* operated the same way as hypothesized in the theoretical mechanism to produce communal conflict. In our case study in fact we observe inter-linked and complementary nature of the causal pathways as they worked as causal forces together to provide agency inside the mechanism. Finally, following our discussion we also observed that the existence of HIs and vulnerabilities of populations was critical for the effects of drought to shape communal conflict. Without these necessary conditions underlying in Ethiopian society, we would not have seen conflict outburst such as the one at Galalu for instance. Hence, we can confirm that the link between

environmental stress to violent conflict is not direct, but contingent on factors such as the existence of horizontal inequalities and vulnerabilities. We could observe how within the mechanism that there are no singular causes and explanations, rather a set of causes together that produce communal conflict under certain conditions.

Despite seeing our causal mechanism hold, we may not be able to make broader conclusions concerning the nature of causal relationship. We can confirm that in the case of communal conflict between Issa and Afar groups in 2002, the onset of a major drought was the causal trigger that ultimately led to communal violence, but for us to conclude causality, this research should have controlled for the role of extraneous variables – variables that the research is not investigating but potentially affect the outcome. Several other factors such as land laws, institutions capacities or role of the elite were completely overlooked in this study which can all play an important role in shaping communal conflict. Not evaluating such factors also indicates a lack of depth of the causal mechanism.

In the end, causal pathways that were tested and were successful in translating the impacts of climate change into communal conflict

7.1. Research Limitations

To begin with, the principal limitation in this research was the lack of availability of conflict data on the local level. Although UCDP provided communal conflict data, the objective nature of the data in a qualitative study was not practical. Even conflict information presented in situation reports was not as elaborate. Thus, there was heavy reliance on anecdotal data of communal conflict in the time period of 2002 in a singular journal article. This limited the depth of analysis. Furthermore, this research suffered from not being able to find enough responses from Issa and Afar groups which would have helped better understand the dynamics of conflict and grasp how intra-group relations are strained particularly during times of drought. Being able to conduct on-the-ground field research would have helped with a more effective analysis and discussion. Lack of contextual data decreased our empirical certainly which means we cannot strongly confirm our hypothesis.

Moving on, although theory-testing process tracing has some degree of external validity considering that it is theory-centric and provides generalizable findings regarding the theory and mechanisms in terms of how they are expected to operate within a population of cases large that one; at the same time, we cannot automatically infer that if a causal mechanism

appears to be present in case A, it will necessarily also be present in the broader population of cases (Beach and Pederson 2011). Therefore, in our research we privilege internal validity over external validity since we rely entirely on within-case analysis.

For our research it was important to consider internal validity since it captures the credibility and trustworthiness of a causal relationship that we aimed to test. Yet, for our study to have high internal validity, our study should have been able to meet the following criteria: *For high internal validity, there should be no confounding or extraneous factors that explain the results of your study* (Bhandari 2020). As identified in the study itself, there were many conflict-promoting factors, (independent of our treatment variable) that could have played a part in the outcome of communal conflict. In our discussion, we already admit the dominant role of existing His in instigating conflict. Given the complexity of topics such as communal conflict, it will be very difficult to identify, measure and control a singular determining factor that can sufficiently explain the nature of outcome. Thus, due to inherent low internal validity, we could albeit confirm our hypothesis, but we could not confidently deduce a causal relationship between climate change and communal conflict based on our research. In addition, the study also failed to counter the threats to internal validity. For instance, adding a comparable control group could have been one way to counter the threats in single-group studies.

7.2. Shortcomings and Recommendations for Future Research

One of the primary reasons why this study was able to confirm the hypothesis, but not the broader causal relationship between climate change and conflict was because of the complex nature of both variables and the mechanic ways in which many complementary forces operate to produce the outcome. This reminds us of the interplay of various causal forces in determining in the outcome variable. To comprehend the conflict risks on society, future research must focus deeply on the social, political and economic circumstances of the conflict. One of the major shortcomings of this research was that it only scratched the surface of non-climatic conflict mechanisms such as horizontal inequalities without being able to discuss or link it with other factors.

Moreover, one of the shortcomings of theory-testing process tracing is that it almost cherry-picks empirical evidence that can document and determine the story of the mechanism.

This limits the scope of research especially in the field of climate – conflict studies (where we have witnessed already in our research), causal pathways can intersect, interlink and combine to produce the outcome variable. Therefore, if a third causal pathway (for instance – *elite exploitation* were operational), we would have might have missed it because the focus of collecting empirical evidence was subjected to *worsening livelihood conditions* and *increased migration and changes in pastoral mobility patterns*. Expanding the scope of research can help grasp other facets that could have applied as well.

Lastly, future theory-testing process tracing research on similar footsteps could benefit from adding a comparable control group in the research design since it could then counter issues surrounding internal validity in single-group studies. Adding control group could further help the research isolate the effect of our independent variable – which means it could also support conclusions on the causality of climate change and conflict – something this study failed to accomplish.

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APPENDICES

Appendix A – Climatic conditions and climate change in East Africa

Appendix B – Meteorological drought in 2002 and environmental stress in Afar

Appendix C – UCDP information on communal conflict between Issa (Dir) and Afar

List of Figures, Tables and Maps (in Appendices)

Appendix A

Overview of Climatic Conditions in East Africa

East Africa, also interchangeably referred to as the Greater Horn of Africa comprises of eleven countries: (Burundi, Djibouti, Eritrea, Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Sudan, Tanzania, and Uganda). The region boasts rich and diverse ecosystems and natural resources. East Africa is a classically dry region located in the equatorial belt otherwise known to experience wet conditions around the globe. The region is particularly prone to various forms of climate anomalies owing to a complex terrain that shelters suitable conditions for vegetation landscapes, biodiversity and human occupations (Camberlin 2018). The region mainly comprises of Sub-Humid, Semi-Arid and Arid conditions (refer to figure 1.0) (Kalisa et al 2019). Parts of the region that are arid can receive rainfall as little as 200mm per annum (Verburg et al 2018).

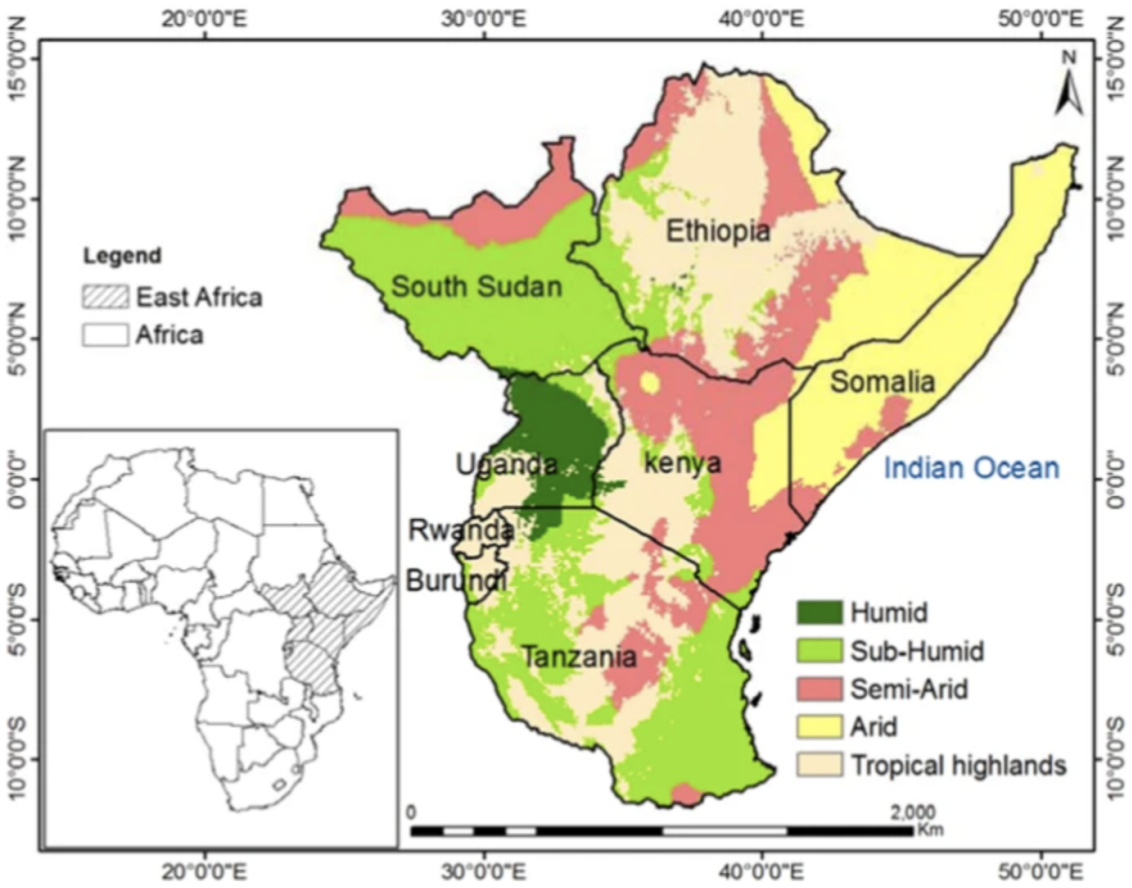


Figure 1: Climate conditions of East Africa: Source: (Kalisa et al 2019)

Observed changes in Temperature: Since the beginning of 1980's, East Africa has experienced significant changes in temperature (Anyah and Qiu 2012). Studies have shown that East African states bordering the Western Indian Ocean have experienced an increase in surface temperatures and warm weather events (IPCC 2014).

Projected changes in Temperature: Studies indicate that the Greater Horn of Africa will warm faster than the global mean. Under global warming limits of 1.5°C and 2°C above pre-industrial levels, mean temperatures in East Africa are predicted to rise above (1°C under global warming limits of 1.5°C) and (1.5°C under global warming limits of 2°C) (Osima et al 2018). Climate variability on the warmer sides under these global warming scenarios will have immense consequences for the population as every additional bit of global warming increases the risk for East Africa in terms of more droughts and heatwaves, and potential crop failures.

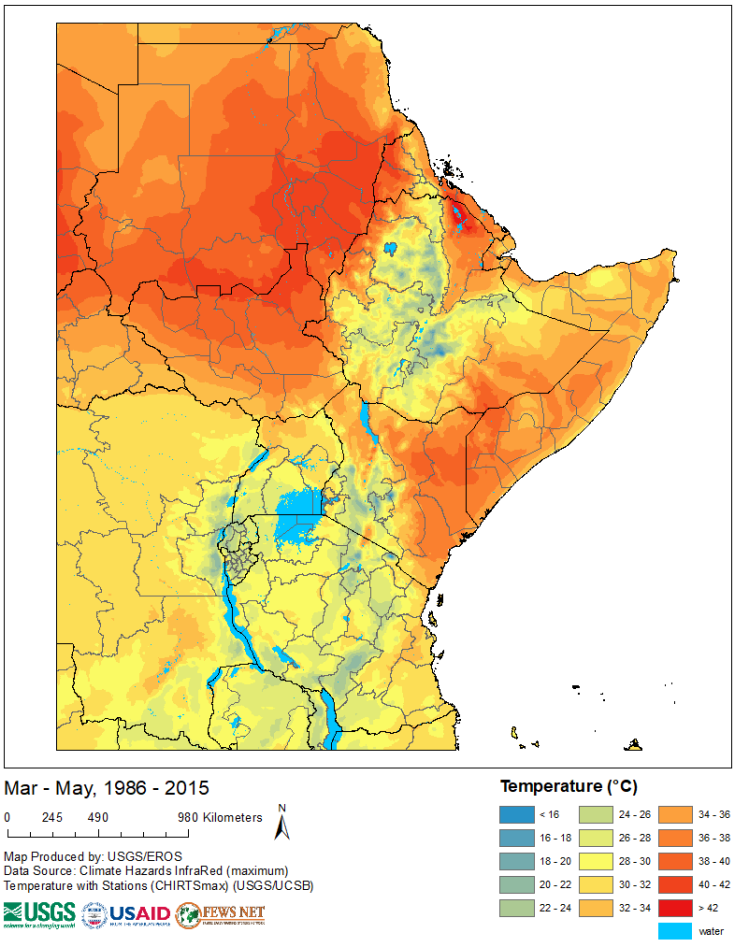


Figure 2: Historical average annual temperature of East Africa from 1986–2015 (Source: USGS FEWS NET Data Portal 2016)

Observed changes in Precipitation: Precipitation trends in East Africa reveal a high degree of temporal and spatial variability. Notable trends represent a seasonal decline summer precipitation. Over the last 30 years, rainfall has decreased in East Africa between specific months of March and May/June; summer monsoonal precipitation has also declined across much of East Africa over the last 60 years (Niang et al 2014).

Projected changes in Precipitation: These portray a reversal of historic trends as studies suggest East Africa is likely to experience more intense wet seasons and less severe droughts (Niang et al 2014). Studies have also projected a significant increase in the number of extreme wet days by mid-21st Century (Vizy and Cook 2012).

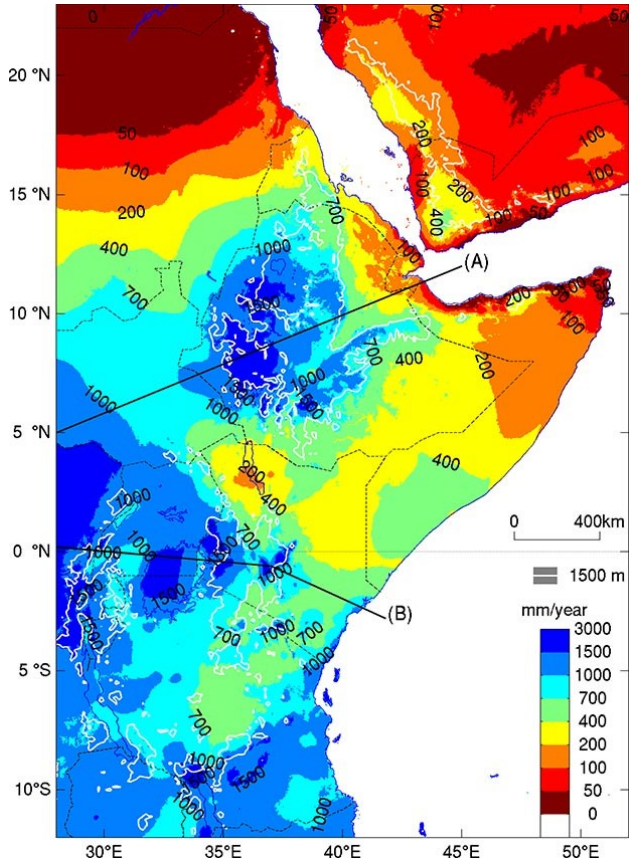


Figure 3: Mean annual precipitation (mm) in East Africa from the Worldclim data base (Source: Camberlin 2018)

Expected increase in Extreme Weather Events: Considerable inter-annual variability, both in temperatures and precipitation levels is key feature of the region. As a result of large-scale climate variability anomalies, East Africa experiences many extreme weather events leading devasting droughts and floods affecting large parts of the population. Several studies have

observed that major climate phenomena's of the past such as El Nĩno Southern Oscillation (ENSO), Indian Ocean Dipole (IOD), and movement of the inter-tropical convergence zone (ITCZ), have caused extreme weather events to occur in East Africa (Kalisa et al 2015). The continued warming of the Indian Ocean will majorly contribute to more frequent and intense meteorological droughts in East Africa with drought areas predicted to increase by 36% and 54% by the end of the century (Haile et al 2020). Countries bordering the Western Indian Ocean are at a greater risk of major climate variability and the onset of extreme weather events (IPCC 2014).

Overview of climatic conditions in Ethiopia

Ethiopia is a land locked country with a population of over 112 million people (Africa's 2nd most populous country). The climate landscape of the country is adequately diverse with desert-like conditions in the Eastern lowlands, while the South and southwest areas bear equatorial rainforests with high rainfall and humidity. Ethiopia's climate is generally divided in three categories: (1) alpine vegetated cool zones (Dega) that are 2600 meters above sea-level with temperatures between 0°C–16°C; (2) temperate Woina Dega zones that 1500–2500 meters above sea level with temperatures between 16°C–30°C; and (3) the hot Qola zone which are low-lying tropical and arid areas with temperatures between 27°C–50°C (CCKP 2022). Majorly, Ethiopia has arid zones that experience high variability in temperature and precipitation.

Observed Temperatures in Ethiopia: Since the 1960s, average temperature in Ethiopia has risen by 1°C at an average rate of 0.25°C per decade. Between 1960–2003, the average number of 'hot days' (hottest 10% of days annually) per year have increased by 20%, while the average number of 'hot' nights' (hottest 10% of nights annually) have risen by 37.5%. (Ministry of Foreign Affairs of the Netherlands 2009). Mean increases in temperature has affected agricultural capacity by increasing evapotranspiration and reduced soil moisture (Ethiopian Ministry of Environment and Forest 2015).

Projected Temperatures in Ethiopia: Under a high emissions scenario, projected changes to Ethiopia's mean monthly temperatures are expected to increase by 1.8°C by 2050 and by nearly 3.7°C by the end of the century. Typically 'hot' days and nights will increase substantially as they will occur between 19-40% of the days by 2060, and 26-69% by 2090. The overall

increase in temperature will significantly affect local agricultural productivity (World Bank Group 2021).

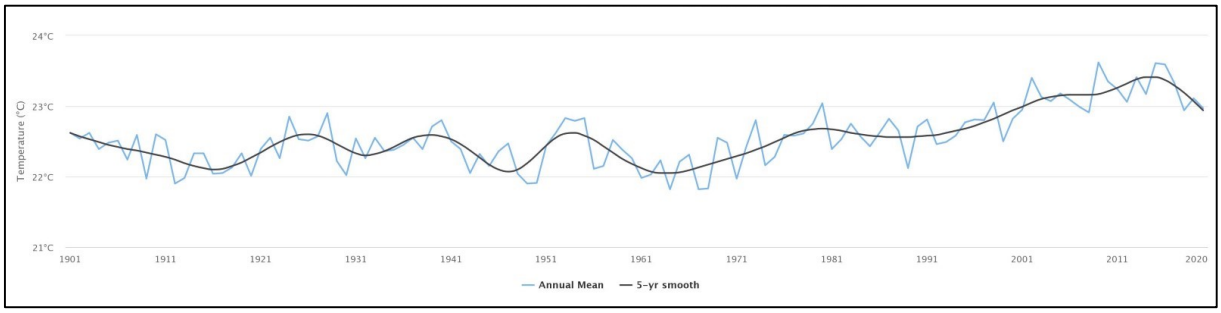


Figure 4: Observed Average Annual Mean-Temperature of Ethiopia (1901–2020) (Source: CCKP 2022)

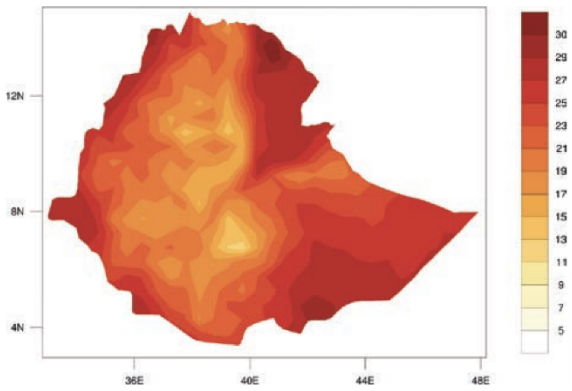


Figure 5

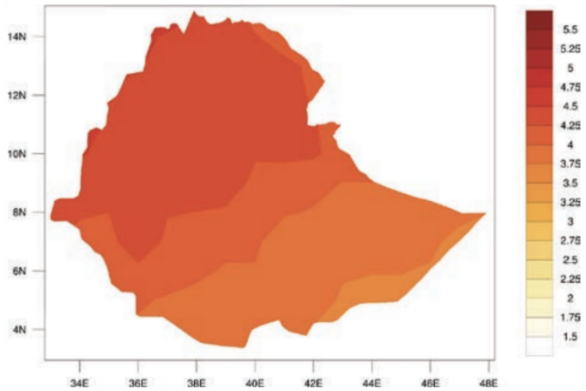


Figure 6

Figure 5: Map of average annual temperature in Ethiopia from 1901–2020 (Source: Climate Risk Profile: Ethiopia (2021)
Figure 6: Projected change in average annual temperature in Ethiopia by 2080–2090 (Source: Climate Risk Profile: Ethiopia (2021))

Observed Precipitation in Ethiopia: Accounting for the last 30–40 years, precipitation levels in Ethiopia have experienced significant year-to-year volatility. This precipitation variability is largely influenced by the rise in sea-surface temperatures of the Indian Ocean and changes in the Intertropical Convergence Zone (ITCZ) (Climate Risk Profile: Ethiopia 2021).

Projected Precipitation in Ethiopia: High degree of inter-annual variability define Ethiopia's future projections. Dissimilar to East Africa overall, Ethiopia is expected to experience a 20% decline in spring and summer precipitation. All northern areas are projected to witness a decrease, while southwest and southeast areas are expected to see an increase (Ethiopian Ministry of Environment and Forest 2015). This is expected to increase water stress in the country and negatively affect biodiversity and hydropower generation

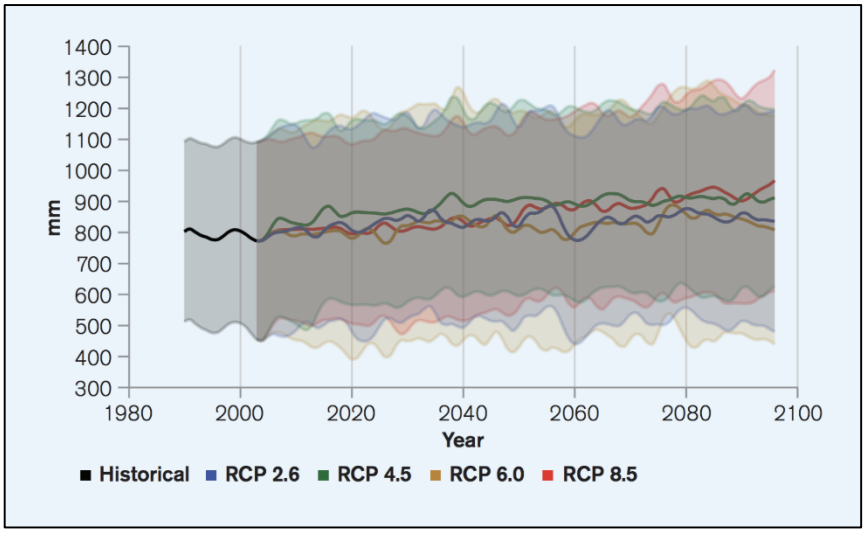


Figure 7: Annual average precipitation in Ethiopia for 1986 to 2099 (Source: Climate Risk Profile: Ethiopia 2021)

Natural Disasters in Ethiopia: Ethiopia faces high risk from hydrometeorological hazards and natural disasters. Owing to a high degree of poverty and considerable dependence of the population on sectors especially vulnerable to the effects of climate change (agriculture, forestry, water), the risks are elevated for Ethiopia. Non-climate stressors such as poor infrastructure and increasing population add to the low-adaptive capacity making Ethiopia a climate-sensitive state. Unequivocally, droughts appear to be the single most destructive climate-related natural hazard in Ethiopia (Table 1) (Climate Risk Profile: Ethiopia 2021).

Table 1: Natural Disasters in Ethiopia 1900-2022 (Source: Climate Risk Profile: Ethiopia 2021)

Natural Hazard 1900–2020	Subtype	Events Count	Total Deaths	Total Affected	Total Damage ('000 USD)
Drought	Drought	16	402,367	77,141,879	1,492,600
Earthquake	Ground Movement	2	24	585	320
Epidemic	Bacterial Disease	16	10,999	134,551	0
	Viral Disease	6	156	4,819	0
	Parasitic Disease	1	157	25,000	0
Flood	Flash Flood	9	863	1,129,358	9,400
	Riverine Flood	32	1,105	1,809,978	8,900
Insect Infestation	Locust	4	0	0	0
Landslide	Landslide	5	93	215	36
Mass Movement (dry)	Landslide	1	13	0	0
Volcanic Activity	Ash Fall	3	69	11,000	0
Wildfire	Forest Fire	1	0	5	0

Referring to table 1, we observe that historically, drought has been responsible for over 400,000 deaths and has affected over 77 million people over the course of 122 years in Ethiopia.

Appendix B

5.2.2. Climate-induced environmental stress

Many scientific studies carried out over the years have concurred that drought is a major source of abiotic stress, limiting agricultural production in many parts of the world. The lack of precipitation that gives rise to conditions of drought, are known to especially alter the physical environmental conditions of land and soil that often leads to crop failure, loss of biodiversity and depletion of natural water resources such as groundwater reservoirs or stream flows. This study will assess three specific indicators of environmental stresses caused by the onset of drought that hold major implications for agricultural and pasture productivity.

(1) *Standardized Precipitation Index (SPI)*: The SPI indicator is used for detecting and characterizing meteorological drought. It measures precipitation anomalies at a given location, based on a comparison of observed total precipitation amounts for an accumulation period of interest (e.g. 1, 3, 12, 48 months), with the long-term historic rainfall record for that period. Researchers use SPI to calculate the severity of the drought as the magnitude of departure from the mean is a probabilistic measure of the severity of a wet or dry event (SPI Factsheet 2020). This section will focus on the occurrence of drought in 2002 in the Afar region using SPI-03.

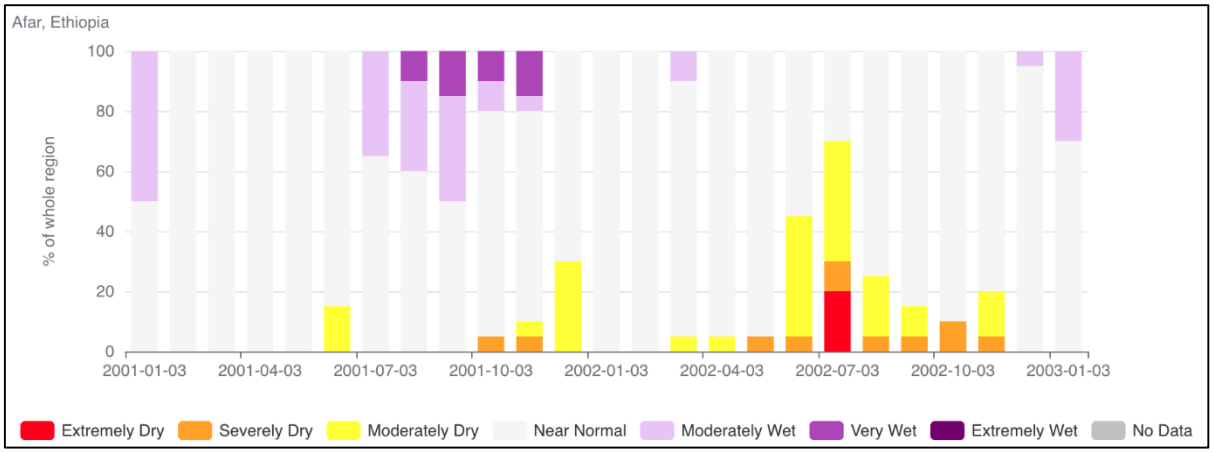
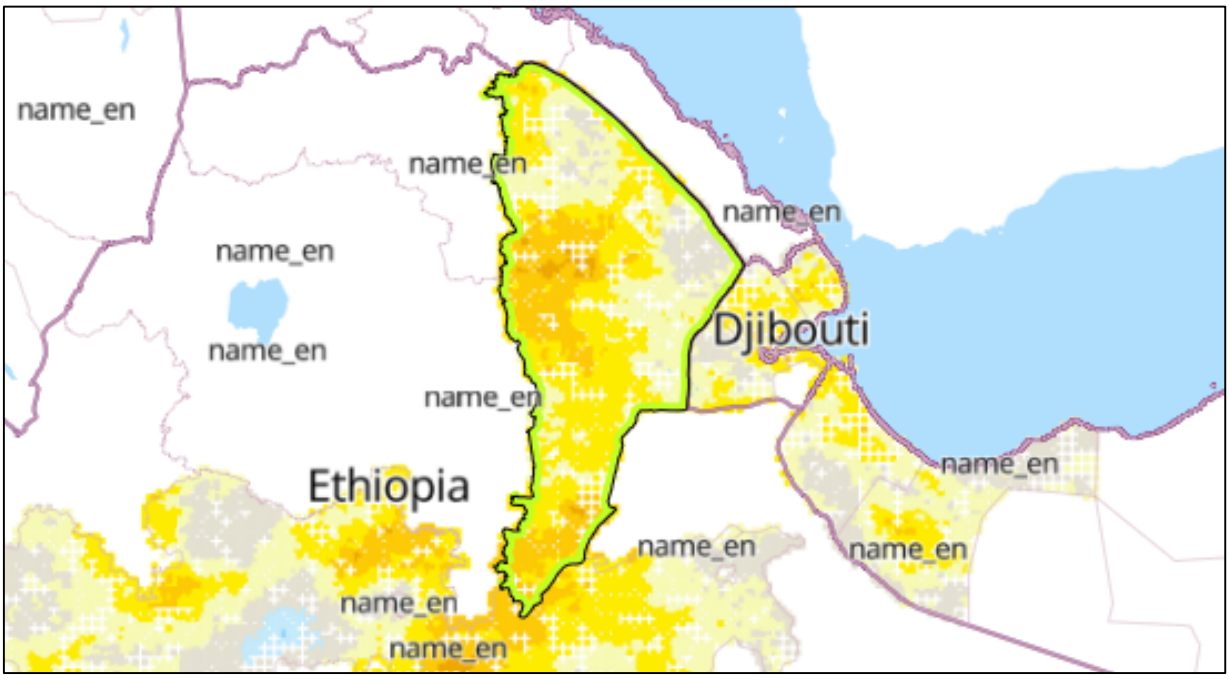


Figure 8: SPI-03 time series in Afar region from March 2001 – March 2003 (Source: East Africa Drought Watch 2022)

In figure 8, we can observe the sheer absence of precipitation in the Afar region starting mainly April 2002 that gave rise to drier than normal conditions. Notably, we can also observe that the peak month of July saw 20% of the whole region suffer from extremely dry conditions, while over 50% of Afar faced moderately dry to severely dry conditions on top.



Map 1: SPI-03 time series in Afar region for July 2002 (Source: East Africa Drought Watch 2022)

Map 1, showcases that majority of the Afar region faced moderately dry conditions. The effects of lack of precipitation were clearly visible and spread almost evenly across the whole region. However, only the southern tip of zone 3 and major parts of zone 4 faced severely dry to extremely dry conditions. Finally, it should be noted that SPI is based only on precipitation, hence it does not address the effects of high temperature on drought conditions.

(2) *Soil Moisture Anomaly (SMA)*: The SMA indicator is used for detecting and monitoring agricultural drought conditions. It is derived from anomalies of estimated daily soil moisture (or soil water) content - represented as standardized soil moisture index (SMI) . This indicator is well known to be effective for drought detection purposes (SMA factsheet 2020).

Detection of conditions using SMA is important because soil moisture parameters are critical indicators of crop health and agricultural output (SMA Factsheet 2020). Considering that soil moisture is an essential component of the hydrological cycle, inferences using SMA indicator can help the understand that Ethiopia was also facing an agricultural drought (when there is reduced crop production due to insufficient soil moisture) which holds important implications for future analysis concerning the climate-conflict nexus.

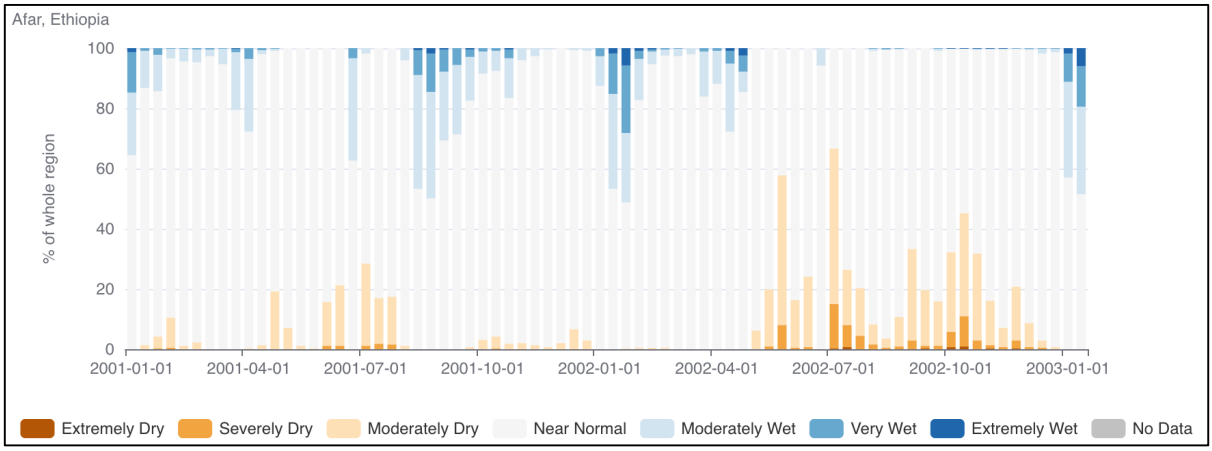
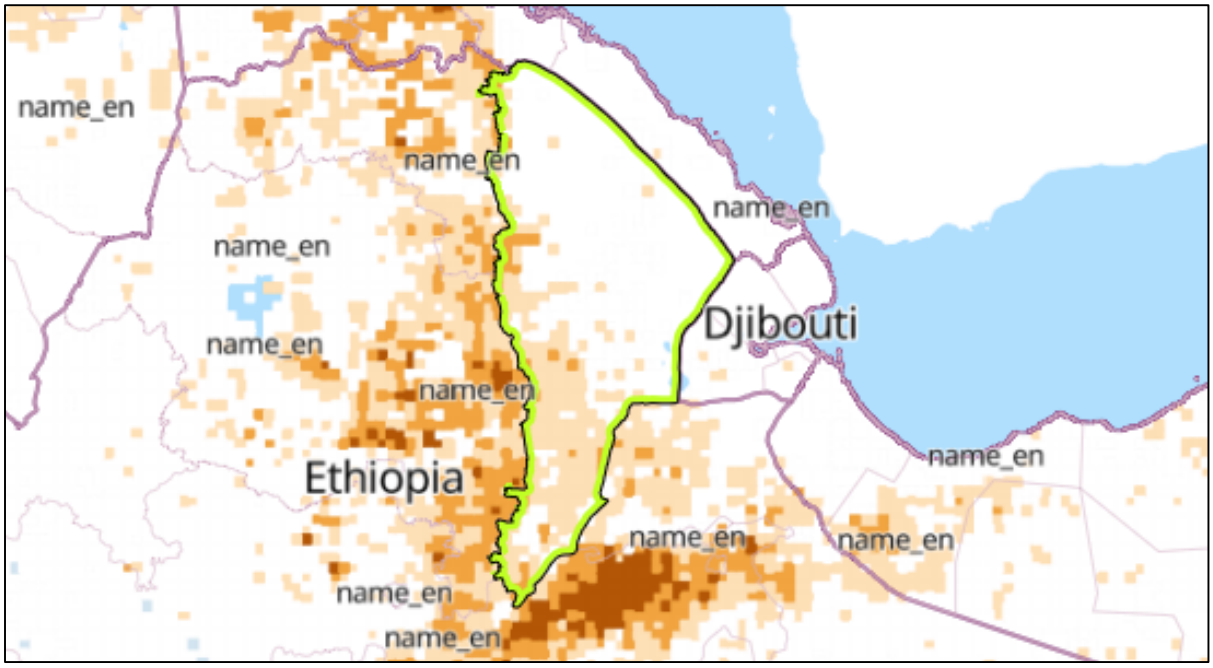


Figure 9: Ten-day Soil Moisture Anomaly time series in Afar region for Jan 2001 – Jan2003 (Source: East Africa Drought Watch 2022)

Looking at figure 9, we can learn that starting April 2002, Ethiopia started experiencing dry soil moisture conditions. For most parts of Afar, conditions were near normal, but many other parts began experiencing moderately dry soil moisture conditions. The months of May and July especially witnessed a major spike in dry conditions. We can also observe the recovery period from the drought at the end of 2002, as wetter conditions for soil moisture began appearing starting the turn of the year.



Map 2: Soil Moisture Anomaly in Afar region for the period 1st - 10th July (Source: East Africa Drought Watch 2022)

Map 2, reveals the geographical distribution of area in the Afar that faced drier than normal soil moisture conditions. These areas were mainly in the southern regions of Afar (zone 3 & 5) that faced agricultural drought. Using this information, we can assume that Afar zones

3 and 5 were experiencing environmental stresses that were adversely affecting crop yield and agricultural production.

(3) *FAPAR Anomaly*: The Fraction of Absorbed Photosynthetically Active Radiation (FAPAR) Anomaly indicator is used to detect and monitor the impacts on vegetation growth and productivity of environmental stress factors, (especially plant water stress due to drought). It computed as deviations of the satellite-measured biophysical variable FAPAR and composited for 10-day intervals, from its long-term mean values. (FAPAR Factsheet 2020).

FAPAR data is well known for capturing the situation of plant water stress caused by drought and how that could affect productivity of agricultural crops and natural vegetation. Thus, figure 10, provides an insight into the patterns of vegetation growth and productivity in the backdrop of drought occurrences in Afar.

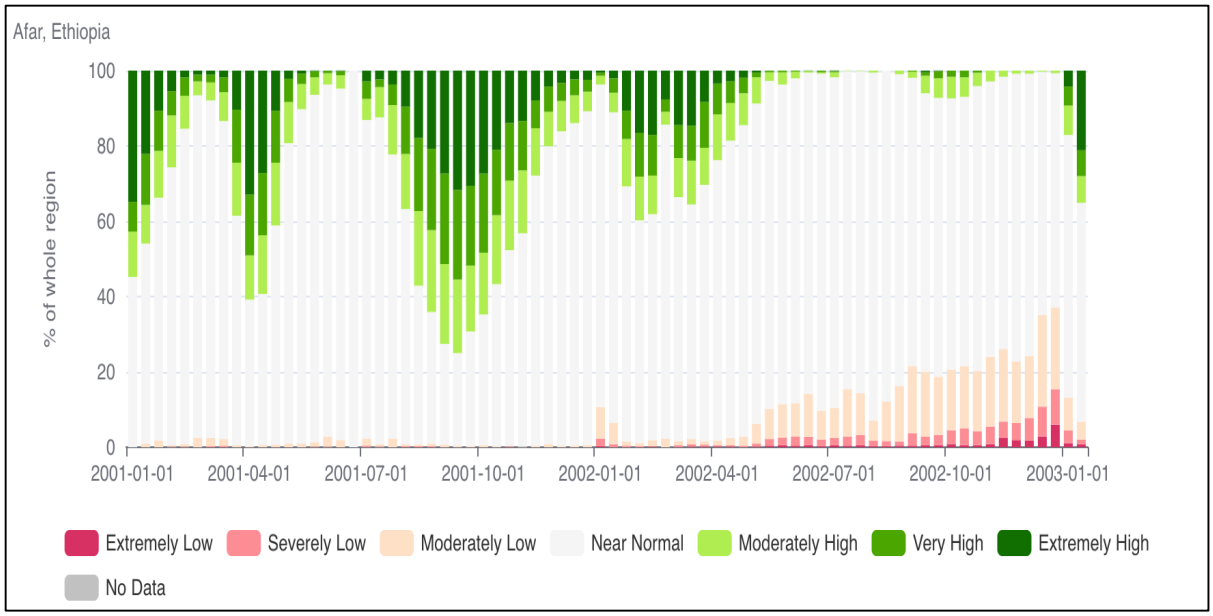
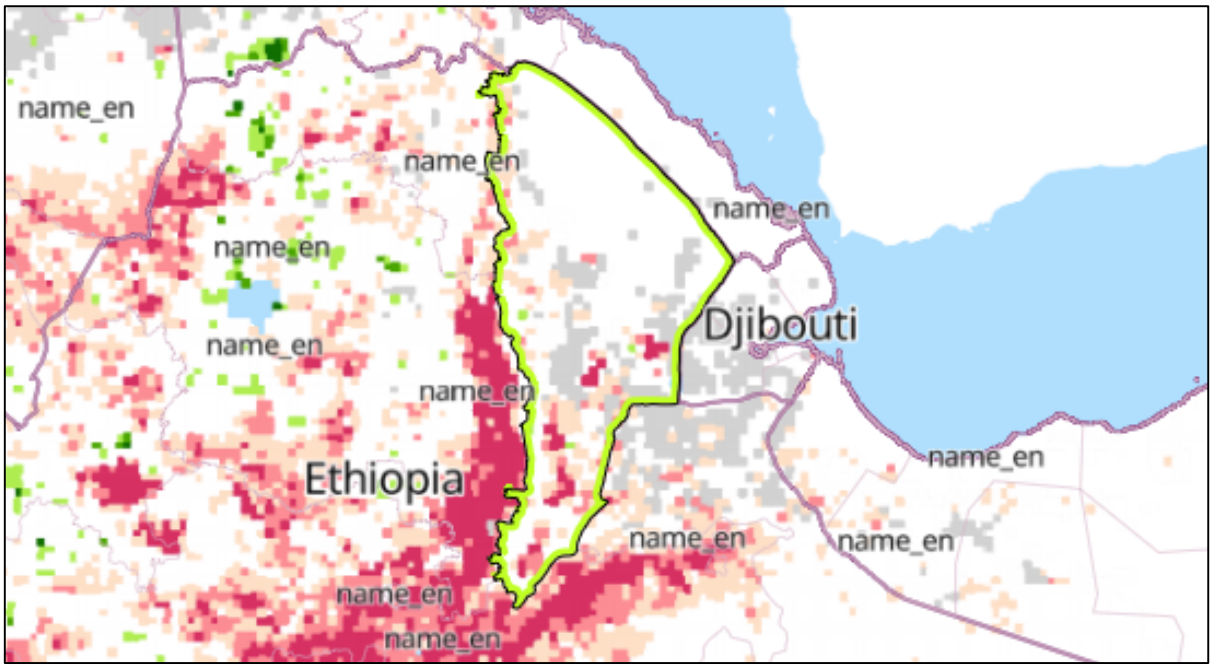


Figure 10: Ten-day fAPAR Anomaly time series in Afar region for Jan 2001 – Jan 2003 (Source: East Africa Drought Watch 2022)

Looking at figure 10, we can interpret that throughout the duration of the drought in Afar in 2002, growth and productivity rates in the Afar region were near normal and moderately low, with some regions even facing severely low and extremely low rates. Figure 10, also provides a clear indication that the drought began in April 2002, judging by the decline in growth and productivity, and ended by the end of 2002, judging by the consequent increase. Figure 10, also shows us that fAPAR anomaly was greatest in the final ten days of 2002. Map 3 will provide a snapshot of the geographical distribution of fAPAR anomalies in the final ten days of 2002.



Map 3: fAPAR Anomaly in Afar region for the period 21st - 31st Dec 2002 (Source: East Africa Drought Watch 2022)

Using satellite imagery, map 3 provides geographical distribution of fAPAR anomaly data in the Afar region. We clearly observe that the southern parts of Afar, namely (Zone-3 & 5) are areas affected by low vegetation growth and productivity. Agricultural and pastoral communities in these regions will be facing the brunt of crop yield and natural vegetation issues.

Appendix C

To collect data on the fatality estimates and nature of communal conflict, this research uses information provided in datasets by the Uppsala Conflict Data Program (UCDP). Table 2 and 3 provide information collected using datasets: *Non-state Conflict Dataset (Version 21.1)* and *Non-state Conflict Issues and Actors Dataset (Version 1.0)* respectively.

The dataset conceptualizes and operationalizes communal conflict under the following criterion (Pettersson 2021):

1. Use of armed force resulting in deaths
2. A minimum of 25 battle-related deaths per year
3. Accommodates formally organized groups and informally organized groups
4. Internationally recognized sovereign government, or internationally unrecognized government controlling specified territory
5. Government: the party controlling the state

Table 2: Information on Conflict data acquired from UCDP *Non-state Conflict Dataset (Version 21.1)*

UCDP dyad-ID	Organization level	Side A	Side B	Start date	End date	Most-accurate fatality estimate	High Fatality estimate
5180	3	Afar	Issa	17-04-2002	10-12-2002	75	248

According to the codebook provided by the UCDP, Organization level 3 corresponds to conflicts between informally organized actors that share a common identification along ethnic, clan, religious, national, or tribal lines. They are never permanently organized, but only sometimes organize themselves along said lines. These conflict episodes are operationalized under as 'communal conflicts' (Pettersson 2021). In addition, the violent engagements here meet another operationalization criteria of a minimum of 25 battle-related deaths. In table 2, we can observe that the most-accurate fatality estimates are 75, while high fatality estimate reports 248 fatalities classifying the dyad under as communal conflict. Finally, from the information provided regarding the duration of conflict, we can confirm that the period of drought in 2002 and the period of communal conflict between the Issa and Afar communities

lasted the same duration from April 2002 to November 2002 (at least with reference to table 3 from the Thesis).

Table 3: Information on Conflict data acquired from UCDP *Non-state Conflict Issues and Actors Dataset (Version 21.1)*

UCDP dyad-ID	Side A	Side B	Side A Livelihood	Side B Livelihood	Territory	Sub-issue (Agriculture land + water)
5180	Afar	Issa	2	2	1	1

Regarding information provided in table 3, it allows a deeper perspective with respect to the purpose of the conflict. Under livelihood descriptions: 2, which is common among both actors corresponds to all pastoralism-based livelihoods which have participated in communal conflict. This confirms that Afar and Issa groups that waged hostilities were all pastoralist groups. Moreover, the next three columns are all dummy variables where description: 1 confirms that association of the Issue in the dynamics of conflict. This means, for the column on 'territory', both groups disagreed over territory (this could be border demarcation or access to grazing land or wells). The next column confirms agricultural lands/pastures and water points were among the bones of contention between ethnic Afar and Issa groups.