ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

INSTITUTE FOR PEACE AND SECURITY STUDIES

CLIMATE CHANGE, HUMAN SECURITY AND VIOLENT CONFLICT: THE CASE OF PASTORAL AND SEMI-PASTORAL COMMUNITIES IN BORENA AREAS

GAROMA NEFABASSA AMENU

DECEMBER 2023

ADDIS ABABA, ETHIOPIA

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A THESIS SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES OF ADDIS ABABA UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASER OF ARTS IN PEACE AND SECURITY STUDIES

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DECEMBER 2023

ADDIS ABABA, ETHIOPIA

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Acknowledgements

This study has been carried out in the Institute for Peace Security Studies (IPSS) of Addis Ababa University. However, it would never have been completed without the support and assistance of many dedicated individuals and some organizations both inside and outside the IPSS, not all of whom can be mentioned here.

First of all, I would like to thank my advisor Dr.Bamlaku Tadesse who has supervised this MA thesis. His valuable advice has been of the utmost significance in the course of my study. I also would like to acknowledge my examiners Dr. Mercy Fekadu and Dr. Ezra Abate, those who their insightful criticism have had considerable contribution to my understanding.

I would like to thank the pastoralists in general, key informants (community elders, community leaders, religious leaders, government officials, both official and anonymous questionnaire respondents, focus group discussants and interviewees) in the study areas. Despite the fact that they make a living under extreme circumstances, where conflict and drought constrain their activities, they welcomed and responded to the questionnaire and shared their information with me. I am forever indebted to all of them. Also, special thanks to my MA colleagues.

And, also, I would like to express my sincere gratitude to my family and friends whose love, unfailing encouragement, understanding, continuing support and prayers have always been a sort of spiritual dynamics propelling me through every difficult moment during my study. It was they who cultivated in me the gifts that have enabled me to bring this work to completion.

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Acronyms and Glossary

Acronyms:

AGW-Anthropogenic Global Warming

FAO UN- Food and Agricultural Organization of the United Nations

FDG-Focus Group Discussion

GDP-Gross Domestic Product

KII-Key Informant Interview

MFoN-Ministry of Foreign Affairs of the Netherlands

NASA-National Aeronautics and Space Administration

UN-United Nations

UN OCHA-United Nations Office for the Coordination of Humanitarian Affairs

UNDRR- United Office for Disaster Risk Reduction

WWF-World Wide Fund for Nature

WMO-World Meteorological Organization

WFP-World Food Program

FEWS NET- Famine Early Warning Systems Network

ICPAC-IGAD's Climate Prediction and Application Centre

KMD-Kenyan Meteorological Department

UNICEF- United Nations International Children's Emergency Fund

UNDP-United Nations Development Program

UN ECA-United Nations Economic Commission for Africa

Glossary:

Semi-pastoralist-Pastoralists who derive less than 50% of their income from livestock and livestock products, and most of remaining income from cultivation

Pastoralist-Individual whose livelihood is derived primarily from his or her herd of animals

Region or Regional National State-Higher level administrative system

Woreda- Lower-level administrative unit

Zone-Middle-level administrative unit

Abstract

The entire pastoral and semi-pastoral communities in the Borena Zone are being further undermined by the growing extent and severity of climate change, which also affects human security. The effects of climate change are severe; the cycle of drought is getting shorter and having a bigger influence on pastoral livelihoods. The prior researches have been limited in scope and focused on events or occurrences, making it impossible to thoroughly examine the connections between violent conflict, human insecurity, and climate change, especially in the study area. Thus, it is crucial to do in-depth research to fully comprehend the causes, effects, and connections between human insecurity, violent conflict, and climate change in order to advance our understanding of this topic. And, the sequential explanatory mixed method design has been employed to study the link between climate change, human security and violent conflict to answer the research questions and draw on broader conclusions of findings. Hence, the findings indicate that there has been an alarming increase in climate change; and drought has had a severe impact on human security. And, competition over resources has sporadically resulted in violent conflict, but this only used to occur indirectly following impacts on human situations. The frequency and intensity of conflict has been increasing between different cultures during migration even within international borders while relatively low between similar cultures both within and beyond international borders of the study area. And, despite the fact that demands have been there for decades, pastoral development is exceedingly low due to poor response to pastoral situations.

Key Words: Climate Change. Human Security. Violent Conflict. Pastoralism.

Chapter One

1.1. Introduction

The entire world is witnessing further devastation as a result of climate change, with catastrophic increases in sea level rise, greenhouse gas emissions, and global temperature. The world average temperature has been 1.15[1.02-1.28] ^{0}C in 2022. This is greater than the average temperature of the year between 1850 and 1900. It has been witnessed that the year 2022 was the 5th or 6th highest temperature record in 173 years. The year 2021 has been the duration of that the main greenhouse gases have been concentrated at higher level. Among the main three greenhouse gases methane, nitrous oxide and Co_2 concentration, methane has been the highest between 2020 and 2021. Empirical sources indicate that the concentration of these three gases has been continued to increase in 2022 as well. Also, the world sea level has been increasing and doubled from the record of 1993 to 2002 which was 2.27 to the record of 2013 to 2022, which has been 4.62mm annually (WMO, 2023).

Climate change most likely occur due to human activities (Oreskes, 2004); that causes severe negative impacts on ecology and humans, involving drought, wildfire, floods, storms, changing patterns of rainfall, decreased soil fertility, etc. (Kinney & Burrows, 2016). For instance, countries which are categorized as small-island developing states, landlocked developing countries and least developed countries, and which are home of over one billion people are vulnerable to or experience sever climate change in the world. These countries"[…] are disproportionately affected by the negative impacts of climate change owing to structural constraints and geographical disadvantages" (Fredu, 2020, p. 2).

This challenge is directly influencing most parts of sub-Saharan Africa as its temperature has increased by 0.5°C for over 50 years, and thus it is identified as the most affected region of the world (Soest, 2020). Although Africa has contributed only 4 per cent of the total greenhouse gas emissions, it is seriously suffered from consequences of climate change as it impacts biodiversity and food production (Gavin, 2022). Sever climate change such as drought and rising temperature impacting those who are relying on rain-fed agriculture and vulnerable communities. In this regard, the Southern Africa, Sahel and East Africa have been experiencing severe climate change challenges. As the consequence of climate change, competition over land, water and pasture is

prevalent; and violent conflict is recurrent in many African countries. For instance, due to competition over scarce resources between farmers and pastoralists, significant number of people has been died in less than a decade (Soest, 2020).

The Horn of Africa's drought frequency is doubled and security risk is seriously exacerbated due to climate extremes; it is also indicated as one of the worst food insecurity area in the world; thus, twenty-two million people have been under food insecurity in Somalia, Kenya and Ethiopia only in August of 2022; even some have been reached at famine situations (Gavin, 2022).

For instance, the effect of climate change, drought in Ethiopia has seriously been impacting entire systems beyond creating shortages of resources. The water sources, vegetative cover or biomass, wet lands and entire ecology are diminishing; and as consequences irrigation activities and electricity productions are impacted; and in turn the economy is affected in its various sectors (Getachew, 2018). In general, as the Horn of Africa largely based on rain-fed agriculture that significantly contributes to GDP exports, labour force and tourism, it is further vulnerable to climate catastrophes (Gavin, 2022).

Pastoralism is one aspect of the Horn of Africa's economic activity where significant number of pastoralists mobilizes their herds including cross border relations and resource sharing. These communities are victims of climate change (Getachew, 2018); and more vulnerable to competition and conflict over access and use of pasture and water. Violent conflict between pastoralists and farmers has been recurrent due to competition over scarce resources; and they experience violence following migration (Gavin, 2022).

However, in some cases climate change may lead to cooperation as it is in some aspects such as culture share and incorporative government policies is possible, particularly, in the case of migration. For example, in Kenya and Ethiopia, dialogue between communities leads to cooperation during drought on scarce resource sharing. This based on established rules that practiced as tradition to manage resources such as access and use of water and pasture. For instance, "Dedha" is one of the traditional rules in northern Kenya; and traditional governance systems of resources are practiced in southern pastoral areas of Ethiopia as well. The rules set how water and pasture accessed and used; and elders are responsible in managing and arbitrating in potential conflicts. Generally, in the Horn of Africa, the declining human situations due to climate change increases the occurrences of migration that triggers violent conflict, though there

is the possibilities of cooperation in some contexts (Soest, 2020).

1.2. Problem Statement

There has been measurably a significant climatic change in the Horn of Africa; and increase in temperature and heat waves are among indicators of climate change effects since early 1980s. Particularly, countries closer to Indian Ocean experienced more frequent temperature increase between 1961 and 2008 (MFoN, 2018). During the last 30-60 years more extreme challenges such as frequent storms and droughts have been experienced. As extreme occurrences, the Horn of Africa has experienced four severe droughts that have affected millions across countries for the last twenty years. The recent drought extreme event connected to the land temperature increase of the region and western Pacific Ocean warming which both are suggested to be caused by anthropogenic climate change that has produced longer drought and food insecurity. The more frequent droughts over the past 30 years have been the effect of the Indian Ocean continuous warming (Ibid). For instance, the recent severe drought occurrence which was from 2010-2011 and mid-2016-mid-2017 across the region has been significantly impacting the entire population (UN OCHA, 2023). During this event the rainfall was erratic and below average, which was less than 60% across the Somali region of Ethiopia, parts of eastern and western Kenya, and central Somalia. In general, significant land areas of Ethiopia and Somalia experienced severe drought years on record with Ethiopia experiencing the worst event in fifty years; while Somalia's drought event cycle becoming narrower (MFoN, 2018). In general, according to Coning, et al., (2022), Ethiopia has experienced severe drought following four failures of consecutive rainy seasons in a decade. When this trend varies across the country, the average temperature is likely increase and the rainfall is expected to be more erratic.

Due to this extreme climate change, pastoralism has been impacted across the Horn of Africa. For instance, pastoral and semi-pastoral communities in southern Ethiopia, Kenya and Somalia are among those who are facing these challenges (FAO UN, 2023). Particularly, pastoral and semi-pastoral community in Ethiopia-Oromia Borena Zone, have been suffering from humanitarian problems such as food insecurity (FAO UN, 2022); and 60% of the pastoral communities in the Borana Zone has been experiencing food shortages. Also, at least 412,000 have been receiving a kind of food assistance out of 1.29 million people. This is due to factors affecting human security in general and animal production which entirely impacting livelihoods sustainability (Duba, 2021).

However, having all these challenges in the study area, there is no as such adequate and in depth research findings or explanation on links between climate change, human insecurity and violent conflict; why climate change, human insecurity and violent conflict have been an increasing threat to pastoral livelihood; or/and factors affecting human security that drive to violent conflict. For instance, some studies focus on either rangeland drought, loss of livestock and poverty; or emphasize drought caused shortage of pasture and water for declining livestock yields, or explore the strength of social capital during climatic crises.

In general, the previous research has relied on events or occurrences and limited in scope; thus unable to investigate in depth and links of climate change, human security and violent conflict particularly in the study area. Thus, investigating to explore the factors, impacts and the links of climate change, human insecurity and violent conflict in-depth is essential in contributing to existing knowledge.

1.3. Study Objective

The overall objective of the study is to assess factors, impacts and links of climate change, human insecurity and violent conflict, and other multiplying factors contributing to human insecurity and violent conflict in pastoralists and semi-pastoralists of Oromia Borena zone. Therefore, the study contributes to the understandings of climate change driven human crises and violent conflict.

The study has the following specific objectives:

-To explore factors of climate change, human insecurity and violent conflict, and how they influence each other in the study area,

-To examine impacts of climate change on the environment, human security and peace in the study area,

-To assess government's climate change mitigation policy implementation, and examine responses to effects of climate extremes,

- To indicate gaps for policy interventions to climate change or drought catastrophes,

1.4. Research Questions

Key research question: What are factors and impacts of climate change, human insecurity and violent conflict and their links in pastoral and semi-pastoral area of Borena?

Specific research questions:

i. Why climate change is occurring?
ii. What are the link between climate change, human insecurity and violent conflict in the study area?
iii. What are the impacts of climate change?
iv. Are there adequate responses to climate change caused catastrophes?
v. Are there prospects to address climate change, human insecurity and violent conflict to improve the catastrophic situations of pastoralists and semi-pastoralists in the study area?

1.5. Study Areas

The pastoralists and semi-pastoralists are situated in arid and semi-arid areas of low lands in Ethiopia. Of the total land of the country pastoral and semi-pastoral areas covers 61%; they are located in south, east and northeast regions of the country. Close to 12 million Ethiopians earn their income from pastoralism and semi-pastoralism activities. This herding activity contributes 20% to the country's Gross Domestic Product (GDP)(Daniel, et al., 2023).

The ecological feature of Borena Zone is desert and semi-desert climate which is very dry and susceptible to water and wind erosion even with little pressure on the vegetation. During normal weather conditions large areas of the Zone have had an average of 200 or 300mm rain in a year. The rain fall seasons in Borena Zone which is March to May and October to December, specifically, an average monthly rain fall estimated about 50mm or above accustomed only in April or May (CDCB, 2023).

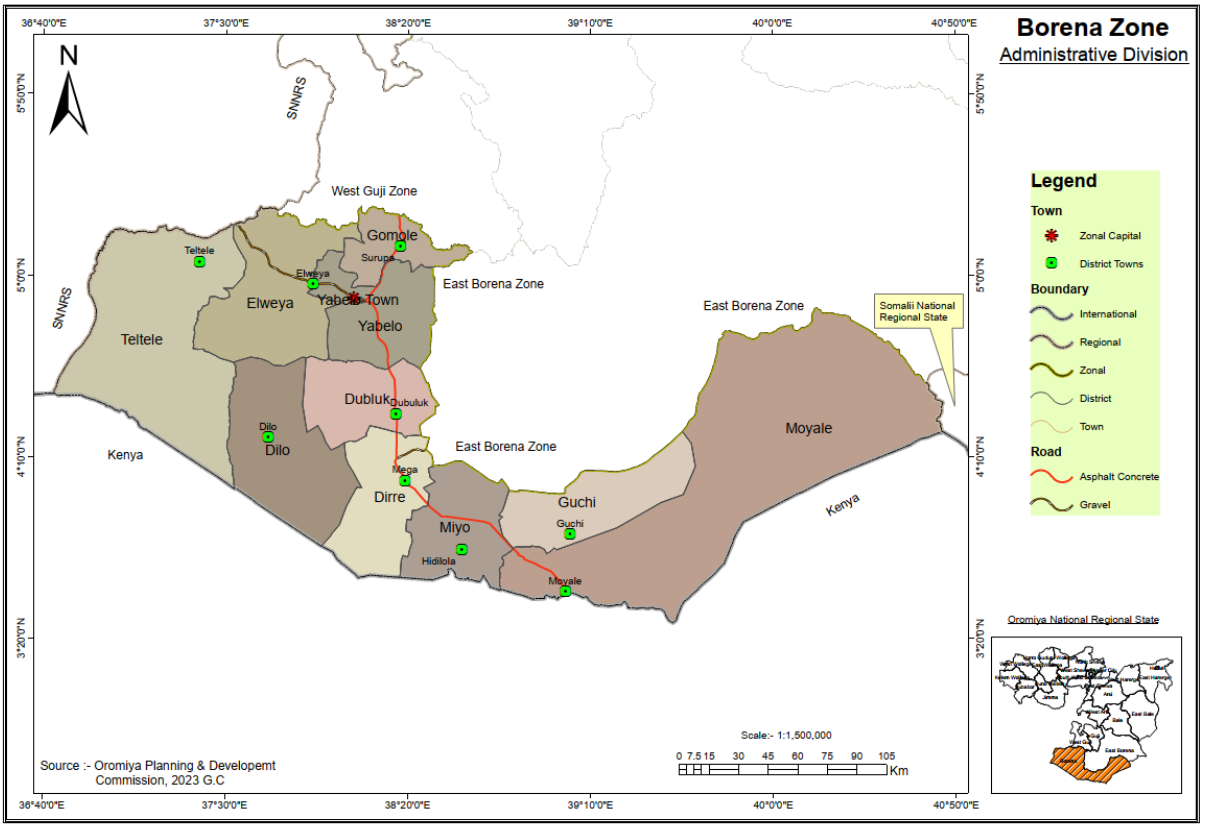
Large majority of Borena people are pastoralist while few are engaged with crop production in some areas of the highlands. Also, milk, meat, and hides and skins are supplied to local markets though not in adequate relative to livestock production. And, in ancient times marketing systems such as barter, which is sometimes a cow for a donkey; 30 sheep for a camel, 15 sheep for a cow or 2 cows, etc is aspects of pastoral livelihoods(Ibid).

The Borena Zone is administered by traditional ways of governance. Resources such as grazing land and watering areas are used communally.

Borena zone covers the total area of 55,711 km^2, which is about 10 % of total land area of Oromia National Regional State. It comprises thirteen rural pastoralist and might be semi-pastoralists Woredas specifically, *Dilo, Dirre, Dubluk, Elweya, Gomole, Guchi, Miyo, Moyale, Teltele, Yabelo* and including a town of *Yabelo w*hich is located 570 km away from the country's capital city Addis Ababa (Oromia Planning & Development Commission, 2023). The Borana Zone population is estimated to 596,645; with one to one male to female ratio; and with the share of 1km^2 between 29 individuals (Borena Zone Planning and Development Office, 2014).

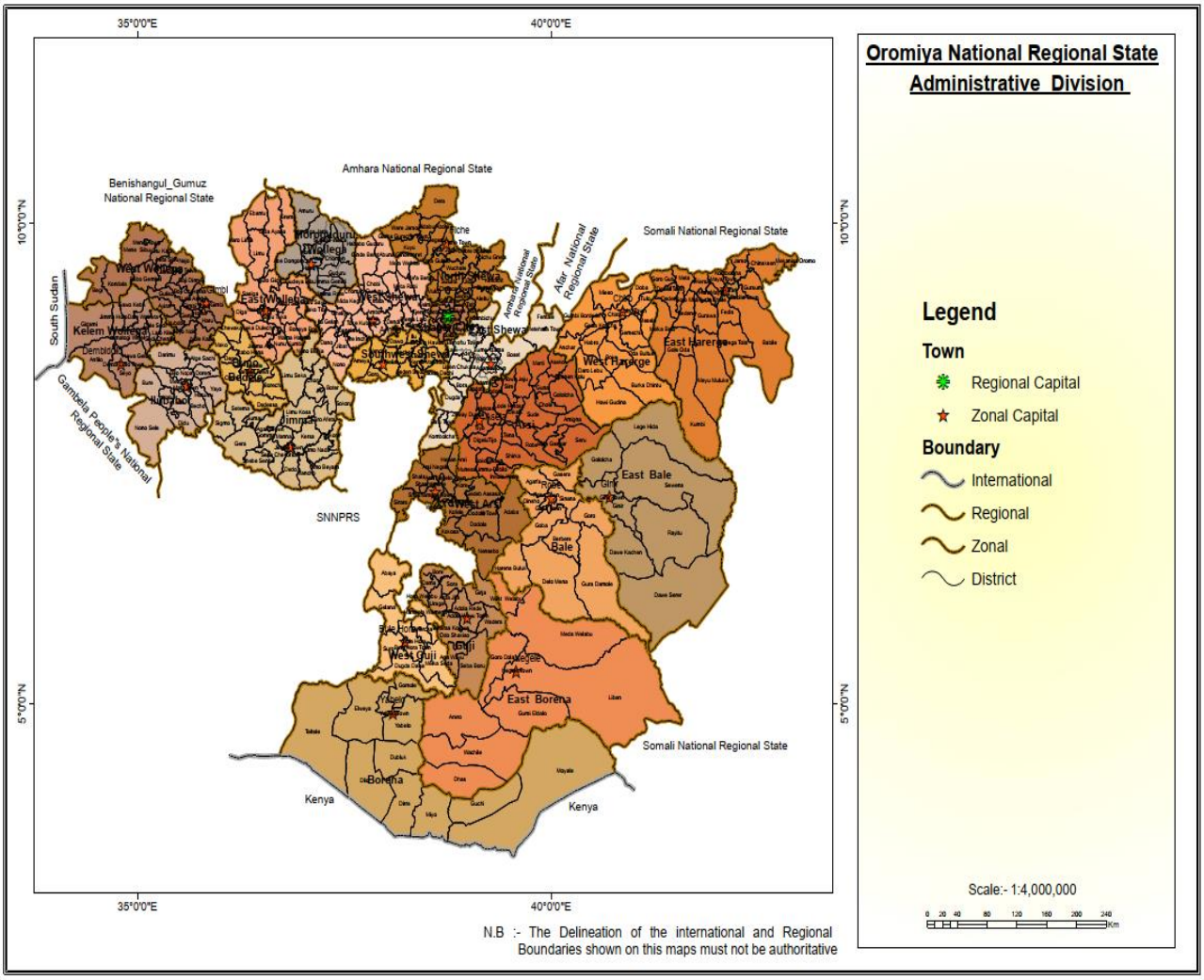
In general, about 90% of the populations are pastoralists and semi-pastoralists experiencing erratic rainfall and frequent drought that consequent to huge loss of cattle almost every year (Yeneayehu[1, 2] & Tihunie[3], 2020).

Fig-1: Map of Borena Zone Administration



Source: Oromia Planning & Development Commission, 2023

Fig-2: Map of Oromia National Regional State Administration



Source: Oromia Planning & Development Commission, 2023

1.6. Significance of the Study

This study has both research and policy significant. In terms of the knowledge, the study enhances our theoretical and empirical understanding of the link between climate change, human insecurity and violent conflict, and how these variables influence each other. Also, in relation to policy it contributes to understanding of factors contributing to climate-induced pastoral human insecurity and violent conflict to influence policy makers, which are basically focus to attain policy modification or changes in pastoral and semi-pastoral areas.

1.7. Scope of the Study

This study primarily deals with the link climate change, human insecurity and violent conflict of pastoralists and semi-pastoralists in Borena areas of Ethiopia in time span of ten years that covers from 2013 to 2023. Along way, it assesses pastoral livelihoods, pastoral community relations, causes of competition over scarce resource, and government policies that influence directly or indirectly the environmental change, human security and violent conflict in the study area.

1.8. Organization of the Study

The study is divided in to five Chapters. Chapter one provides introduction, statement of the problem, objective of the study, research questions, the study areas, methodology and methods, significance of the study, scope, limitation, and organization of the study. Chapter two deals with literature review, conceptual definitions, theoretical and empirical perspectives. Chapter three presents methodology and methods; Chapter four discuss the findings- related to factors, impacts and government responses of climate change human security and violent conflict. Chapter five presents conclusions and recommendations.

Chapter Two

2. Literature Reviews

2.1. Conceptual Definitions, Theoretical and Empirical Perspective

This chapter deals with conceptual definitions, theoretical and empirical frameworks that are relevant to climate change, human insecurity violent conflict at Borena areas. The study employs political ecology approach, sustainable livelihood approach, symbolic interaction theory and social networks & rural livelihoods, as it is pertinent to critically analyse and understand in the context of the study area.

2.1.1. Conceptual Definitions

This section deals with concepts, which are pertinent to the study; and therefore, some definitions of concepts are as follows.

i. Climate Change

Climate change refers to average weather variability over long periods. It is the increase of average temperature and significant change of world weather patterns (United Nations/UN, n.d); (NASA, 2005), which is caused by fossil fuel utilization that contributes to the increase of the level of greenhouse gases which is scientifically termed as Anthropogenic Global Warming/AGW/; which is based on the theory that climate change is occurs as the effect of human activities all over the world. Climate change is measured by different indicators such as precipitation, storms, wind, changes in temperature (Joseph, 2013).

In other words, climate change is about longer term changes in weather patterns and temperature. The change in climate is mainly, as the effect of burning of fossil fuels that consequent to greenhouse gas emission and then increasing temperatures. The major greenhouse gases such as methane and carbon dioxide released from gasoline that is used for driving cars, coal (which are used for heating in the house), and burning forests are sources of greenhouse gases. In sum, agricultural activities, buildings, transport, industry and energy are primarily causes of greenhouse gases that contribute generally to climate change (United Nations, n.d.).

ii. Difference between Environmental Change and Climate Change

Environmental change and Climate change have distinct features though often are used interchangeably. Hence, on one hand, environmental change is about the change in the environments, involving cultural change, biological change, and physical change accustomed by human activities or natural occurrences. Moreover, environmental change consists of wide ranges of occurrences including influencing the planet earth; or local areas ecosystem. It involves temperature changes, biological factors, erosion, tectonics and weathering which are geological forces. On the other, climate change is observable change of average weather conditions as a pattern that includes rainfall, humidity and wind speed on the region of Earth. Moreover, the contemporary understanding of climate change is emphasizing the rising of temperature. As the result of this temperature increase oceans have been warming; glaciers and ice sheets have been melting. Thus, this climate change is the cause of recent frequent and extreme weathers occurrences (Nanda, 2023).

Environmental change and climate have similarities as they both impact life on the Earth; and they are caused by human actions. The next table describes major differences of climate change and environmental change (Ibid).

Table 1- Difference between Climate Change and Environmental Change

Characteristics	**Climate Change**	**Environmental Change**
Nature	Climate change mainly relates to changes in atmospheric conditions.	Environmental change also involves other factors that don't necessarily involve atmospheric processes, such as biological and geological factors.
Categorization	Climate change is a subset of the category of environmental change.	Categories that include climate change.
Containment Level	Climate change is less contained than environmental change in general since human-induced climate change is a relatively new problem.	Environmental change has been a problem for a while.
Human influence	Humans have only been primary drivers of climate change for about the past century.	Humans have been major drivers of environmental change almost since the dawn of behavioral modernity in Homo sapiens.

Source: Nanda, Vineet (2023). Difference between Climate Change and Environmental Change, https://www.tutorialspoint.com/difference-between-climate-change-and-environmental-change

iii. Concept and nature of conflict

Concept of Conflict: The word "conflict" originated from the word "Conflictus" which is the Latin word meaning clash or collision (Abasili, et al., 2023). And based on the root of the meaning, Nicholson (1992) defines "conflict" as antagonism between two or more individuals or groups over divergent objectives, attitudes, or perceptions. It is a process in which perceptions and actions are permanently changing and influencing one another; and it is an inevitable process in human character (Galtung, 1969); (Fisher, et al., 2000). In other words, it is an opposition between parties or disagreement of parties, a way to solve contradictions, and perceived as the natural process in human relations. Also, Coser (1956) defines conflict as contest between parties over scarce resources, power, values or claims.

According to Nicholson (1992), conflict, as in everyday language, it is a vague term and ideas linked to it are confusing. However, he explains conflict as an interaction conducted between and among conscious beings, though not necessarily rational. The conflict involves of human needs, obligations, and wants of parties. These interests may be in one or in other way practical, like, contradiction over property that may be settled with negotiation. Also, wants may be attitudes or beliefs over values that are not merely challenged (Nicholson, 1992). Moreover, Dhanjal (2020) highlighted as conflict evolves over possession of incompatible goals between groups, individuals, organizations or nations. And, he briefly, describes conflict as differences in perception on issue between parties at the same situation in time. It turns to violence when (i) there is no higher authority to balance the case and prevent further tense situation, and (ii) the party take part use physical force to defend the value fight for (Dhanjal, 2020).

iv. Nature of conflict

According to Rummel (1976), understanding the nature of conflict is essential to appreciate and understand human action in real situations. Conflict can be understood as special character of social interaction as two or more parties attempting to own something that they both cannot own. And, conflict can be observed as a structure, or a situation, or as a potentiality, as a process, or as an event, or a manifestation. Thus, conflict is a balancing of powers to produce ends. It is a power collision. However, conflict is not an equilibrium or balance of power. It is about pulling and pushing, taking and giving, in sum, it is the way to find balance in the middle of powers. It is the swaying forth and back in the situation of contradiction. Generally, hence, conflict is strongly

associated to as it is correlative to power. Simply, power is the ability to produce effects; conflict is the relation of powers balancing and meetings. Therefore, as Heracleitus is indicated in Rummel (1976), that conflict as a universal experience; it is understood that conflict lives with generations, and is about learning, others, us, reality, growth, our increasing capacity to form own conducive environment or hell do come through conflict (Rummel, 1976). Thus, this conceptual framework of conflict is essential to explain competition over scarce resource that leads to violent conflict as the consequence of climate extremes in Borena Zone.

v. Human security

Traditional school of thought conceptualizes security as sate security that primarily focuses on military based balance of power; thus, accordingly, it refers to freedom from any situation that affects state's capacity to sustain its identity and power. The new approach of conceptualization of security is the broadening and deepening, that covers wide range of sectors. This school of thought argues that apart state security, environmental, economic, social and political issues are threat to humans and their values including states. Hence, in general, this new school of thought explain security as a mitigated threat to humans, properties or values they own; and more specifically, reduced threat to political, economic and social conditions of entire people (Afolabi, 2015).

The new concept of security encompasses the human security aspects; and according to Alkire, 2003), human security conception is beyond mental or physical violence, as it comprises of provision of services such as health care, education, better governance that help individuals to sustain their livelihoods and progress. These are also contributing factors for poverty alleviation, economic development, environmental protection and peace. Alkire also argues that "[f]reedom from want, freedom from fear and the freedom of future generations to inherit a healthy natural environment" are rudiments of human individual and sate's security as well (Ibid, p.14).

vi. Pastoralism

Pastoralism is controversial concept and, results often to contradictory interpretations, based on whether the emphasis is more on ecological, economic or social aspects. However, Homewood defines as pastoralism is practiced in different ecological contexts in Africa, including in arid and semi-arid climatic zones, and follows extensive production strategies (Homewood, 2008).

Pastoralism is also described as the use of large tracts of land for grazing (which is pasture and

water) (Blench, 2001). According to Nori and Crawford (2005), pastoralism is the connections among and between communities, livestock, and ecology, on rangelands, mainly, in areas of scarce resources and ecologically changing regions, mostly for survival.

vii. Climate change, human security and violent conflict causal links

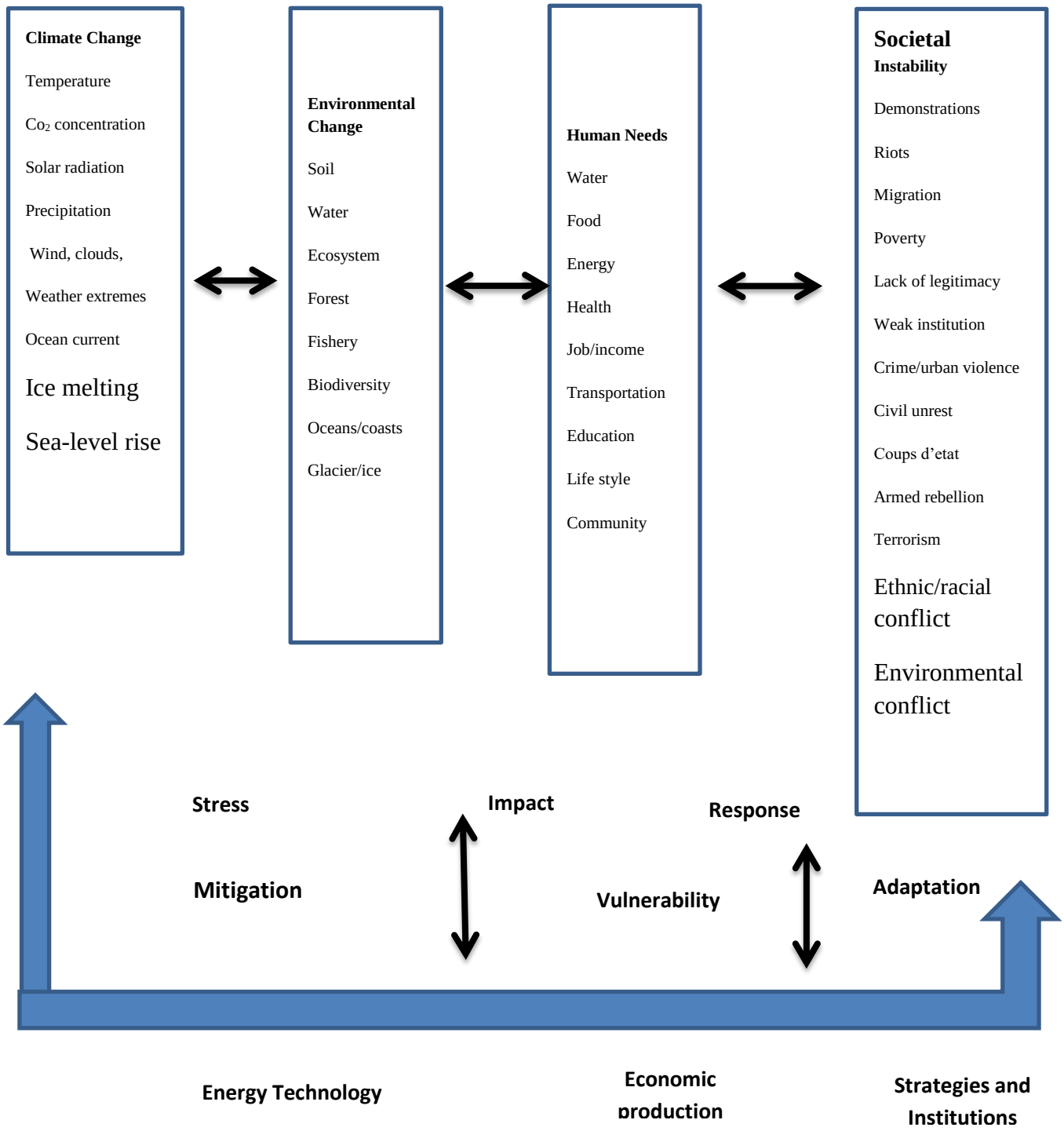
Climate change has an impact on human security and violent conflict. According to some studies climate change causes resource scarcity as environment is degraded , and thus lead to violent conflict in many ways (WBGU, 2008). These involve migration, resource capture, contradiction on the risk distribution and resource exploitation. The causal connection of climate extreme with human insecurity then violent conflict is complex and dynamic that is partially understood. Though the environment-conflict relations concept is not clearly identified (Barnett & Adger, 2007), the climate effects are severely affecting human security and undermine adaptive capacity of societies in several regions of the glob with actual potential violent conflict. These effects of climate change have led to continuous securitization of climate change (Brauch, 2009).

Basically, climate change which is also identified change in precipitation and temperature impacts environment and natural resources such as biodiversity, forest, ecosystem, soil, etc. through chain interactions (Joseph, 2013). Also, change in environment has an impact on human values and needs that stimulate human actions that affect social relations or systems. Based on the vulnerability level, the socio-economic pressure rise as the effect of food insecurity, lack of water, migration, absence of health services, economic debacles, weakening of institutions, and eroding societies (CAN, 2007. These have their own impacts to cause social instability as they are interconnected, and can manifest in communities violent conflicts, and even can be resulted in different forms of violence like insurgencies or riots that in turn contribute to further social chaos (Maas & Tänzler; 2009).

An experience of a situation provides societies ways of adapting to the changing climate and mitigate by developing strategies and systems that employ human, social capital and technology to adjust the economic and social systems to tackle environmental challenges as an effects of climate change (Brauch, 2009). To clearly understand the cause and effect relationships, it is fundamental to identify how variables in different systems are influenced each other by changes in their own systems. An instance is that the climate change is the cause of desertification, and that in turn is consequent to food insecurity, that as a pushing factor leads to migration; or

provoke to respond to the situation violently (Campbell et al., 2007). And, the next model identifies the causal relationship of climate change, human insecurity and violent conflict as a framework of analysis.

Fig 3- Causal relationships between climate change, environmental impacts, human needs, and societal impacts



Source: Causal relationships between climate change, environmental impacts, human needs, and societal impacts (Scheffran, 2010)

The degree of the effect of climate change on society can be observed from the difference between the links of variables in cause and effect process that is to what extent change of variables in different system influence variables in another system, which is called *sensitivity*. *Sensitivity* in climate change context is the level or the degree to that a system is influenced, either negatively or positively by climate extremes. The consequence may be indirect as the increase of frequency of sever climate extremes or direct like change in variability of temperature that cause change in crop yields. The well-known instance of *sensitivity* is, increasing concentration of carbon dioxide in the atmosphere that significantly contributes to the rise of the temperature (IPCC, 2007). As many intermediate variables are included in the system, these sensitivities individually need an estimation to produce the whole sensitivity. This is in the process of cause and effect relation that is from climate extremes to social unrest which can be constructed through a number of sequenced similar variables in which sensitivity is represented between variable. This can be explained as change in the system of climate impacts the natural resource and environment, and human desire and needs are affected by change of environment, and social instability occurrences are triggered ultimately (Ibid).

In other words, according to the Neo-Malthusian arguments climate change or climate extremes potentially threatens security of society as resource scarcity increases; or inability to access natural resources increases frustration that creates grievances and then triggering uprising. This premises based on an idea that when population growth increase and coupled with climate change effects, it severely affect social stability (Bernauer, 2012).

The Neo-Malthusian identifies natural resource scarcity into three categories to underpin how it contributes instability. Hence, they are, (i) from supply view point- that inadequate natural resources availability due to degradation and consumption, (ii) scarcity caused by population growth, (iii) unfair or unequal distribution of resources (Ibid). These three elements are interrelated and influence each other to create *resource capture* and ecological marginalization (Ibid). The *resource capture* is caused by state elites as population pressure and scarcity are sever; and those elites provide reasons that forced them to hold the resource as for people's future benefits. This ultimately, undermines responses of public systems, and cause for inability to handle grievances, and further contributing to factors of violent conflict. Also, the ecological marginalization process takes place due to imbalance of resource sharing and population pressure

as it severely impacts resource availability. In these situations those who face resource scarcity may resettle into areas already environmentally under pressure. Thus, these circumstances contribute to causes of violent conflicts among and between migrants and receiving communities (Bernauer, 2012).

Generally, neo-Malthusians assert that increasing population number is the likely to be a cause for competition over resources; also these do create tension between migrants and receiving communities during climate crises (Kinney & Burrows, 2016). Simon (1996) also argues that scarcity is one of the key factors that can contribute to causes of violent conflict following climate change or environmental degradation. However, as actually sometime occurs, the possibility of cooperation between migrants and receiving communities are there, based on their mutual benefit (Bernauer, 2012) and (Kinney & Burrows, 2016).

viii. Dimensions of climate impact

Change in climate can affect communities/societies, values and natural resources in different ways, directly or indirectly. This occurs through an extreme events related to weather like natural disaster; and indirectly through steady shift of environmental situation. In sum, the consequence of climate change on society, human needs, and natural resources are negative. The degree to which these occur based on the adaptive ability, risk, vulnerability and responses (Smith, 2013). And, these concepts are described more in detail next.

ix. Vulnerability and adaptation

The effects of climate change on communities, social groups, individuals depend on their vulnerability that involves hazard, harm, and damage. According to Blaikie et al. (2003), vulnerability is that the capacity groups or individuals to forecast, cope with, resist and recover from effects of natural disaster. Hence, vulnerability based on the nature of occurrence, individual, and measures taken to tackle the disaster. One group may be vulnerable to similar occurrence than other, while other may never be vulnerable to same event. Occurrences causing vulnerability are prevented by early responses. Also, IPCC (2007) defines vulnerability as the degree to which communities or societies or individuals exposed to or unable to recover from disaster including climate extremes. In this context, vulnerability refers to the degree and frequency to which a system susceptible to climate change; and its sensitivity and adaptive ability. Adaptation is a response to expected or actual climate effects through human or natural

adjustment that minimize challenges or use opportunities for better situation. Adapting is having the ability to act against climate extremes or compensate through establishing beneficial systems (Anemüller, 2006).

Hence, adaptation implementation steps are not without cost, which is compared with the end actually produced. To execute the concept of vulnerability framing indicators is essential to measure the climate change magnitude, its negative effects on different systems, and adaptation methods effectiveness to minimize challenges. In this context, vulnerability could be the ratio between the intensity of climate extreme and net damage that may be reduced through adaptation (Scheffran, 2010).

x. Threats and risks

To determine vulnerability to occurrences in line with expected cost and its probability, a risk analysis may be employed to conditions with different uncertain ends; as usually risks are the result of cost and its probability. Information on the estimated harm and probability of climate change caused occurrences are essential to measure climate change risks. Pathways to impacting societies from climate change, is linked to a risk that is particular to a system or an individual harmed. The climate change risk and threats are not homogeneous and influenced by several factors including social environment, geographical location, and an affected entity (Alcamo et al., 2008).

xi. Security impacts

Climate change can cause fragmentation and cooperation of societies in a given situation and localities. The climate security develops on a wider concept like ecological security which involve environmental challenges as risk of security, human security that protecting and strengthening societies from acute danger, and common security which refers to uniting over common threats. The consequences of climate change become an agenda for local, national and beyond if the effects of climate shift influence to respond to that impact the majority of the society. This may also be lead to climate change securitization (Alcamo & Endejan, 2002).

xii. Human and societal stability

Societies need institutions to ensure social order and cooperation is effective and dependable. The systems of society that cannot be supported by governing systems or citizens become weak and susceptible to various crises. Individual person who face severe problems, even threaten his

identity is more vulnerable to break the already normalized rules, and beyond if serious punishment is not in place. Hence, individual person chaos can be enlarged to societal level involving political issues that probably cause political instability. Citizens or societies that face serious maladministration, particularly, those who lack of law and order, basic services etc. are at risk of instability (Alcamo & Endejan, 2002).

And, the next section provides theoretical perspectives to explain the pastoral and semi pastoral areas of Borena Zone along with climate change, human security and violent conflict circumstances.

2.1.2. Theoretical Perspectives

In this part, approaches and theories such as political ecology approach, sustainable livelihood approach, symbolic interaction theory and social networks & rural livelihoods, which are relevant to the study, have been discussed in detail since their pertinence should be clearly indicated and linked to climate change, human security and violent conflict.

i. Political Ecology Approach

Political ecology scrutinizes social interests and natural resources. It is based on theoretical deconstruction in the realm of politics beyond valuing diversified culture and indigenous community's rights, environmental degradation issues, and etc. (Leff, 2012). Political ecology is an approach which deals with causes and impacts of unequal power relations and access and use of resources and the environment. It provides special emphasis to understanding of conflict within the situations of natural resources and environmental related injustice and power interactions and influences (Knudsen[1], 2023).

According to Leff (2012), political ecology approach largely emanated from cultural ecology and Marxist political economy to explain the importance of unequal power relations and politics within environmental degradation or climate change processes and competition or struggle over resources. Political ecology provides a typical approach to understanding conflicts or tensions over natural resources and environmental or climate change as it is based on historical, empirical, and overall, deals with structural and social dimensions of unequal power relations.

Similarly, Rocheleau (2008) describes that Post-colonial, feminist and Marxist theories of conflict are sources of political ecology perspectives of conflict; particularly, on which conflict

come from which social structures and imaginaries that influence specific responsibilities and access of the environment. The social structures can be racial, gender and class-based. The equal access to environment and share of risks and benefits from environmental resource production and environmental change are mostly rejected by dominating social group; and therefore, become a source of struggle (Robbins, 2012). Political ecology identifies resource access such as property regime, access to and use of environmental goods etc. as centre of its analysis (Turner et al., 2011); political ecology explains those sources of conflicts that affects traditional systems such as imposition of new rules as they impact communal property utilization, and etc. (Ribot and Peluso, 2003).

The cause of conflict is not only inadequate or lack of access to resources in the environment, but also changes in imaginaries on environment and resources. Imaginaries of development and conservation often build subjectivities that can be the cause of conflict between various social groups, in many forms such as resistance and repression that may result to a larger social movement (Wolford, 2004). This can be between social structures, resource user groups and the environment that can also lead to diverse social relations such as consent, collusion and co-optation (Brock and Dunlap, 2018).

Hence, political ecology explores environmental politicization through conflict by analysing environment. It deals with conflicts not only via analysing causes and situations but also focuses on structural and cultural forms of violent conflict; and promotes emancipation and transformation (Watts and Peet, 2004). In other words, as Robbins (2004) explains that political ecology primarily emphasizes on community-level tensions, competitions or conflicts that also involve inter-personal violence forms linked to structural injustice.

More specifically, Political ecology approach- ***first,*** it conceptualizes scarcity, abundance and dependence based on historical analysis from critical perspectives along with power relations and access of resources that reflect effects of competition on social identities. Thus, the likelihood of conflict is considered as historical and socio-natural process. In other words, it demonstrates how violence is not as an event but a process (Tyner and Inwood, 2014). ***Second,*** political ecology analyses time, locations and scales of conflict processes through chronic and different character of resource and environmental conflicts. It also explains structural conflicts and unseen responsibilities; expands the range of connections and systems or actors involved in the process

of conflict rather than capturing events of conflicts. ***Third,*** political ecology analyses a broader range of violence, by analysing relations or connections between forms and process of violence. It also helps to understand what violence consists of, and its cultural and structural dimensions, such as the concept of policy oriented famine- *silent violence*, the danger of pollution- *slow violence*, and of the patriarchal land tenure system-*gendered violence.*(Watts, 1983), (Nixon, 2011), (Lahiri-Dutt, 2015). ***Fourth,*** political ecologists explain that environment and resource are complex socio-material objects with a number of practices and discourses; and thereby these resources and environment are endowed to certain agency (Latour, 2014; Staddon, 2009). The endowment to a certain agency may cause the chance of depoliticization; thus, the emphasis is on removing the risk of depoliticization of environmental determinism that explains why politicizing and reforming the degraded areas changing the communities for better (Castree, 2002).

In sum, political ecology principles explains why and how public policies the cause of vulnerability by describing the marginalized communities' situations as drought or climate change negatively impacting peripheral areas then instigating political conflicts; the marginalized communities exist in undeveloped and more degraded areas in comparison to other areas; and existing inequalities can be exacerbated by unresponsive public systems and domination (Raleigh, et al., 2008).

Along with political ecology perspective, viewing concepts of environmental justice is also essential as it scrutinizes and insists the end of discrimination of environmental risk distribution such as health and economic related impacts that affects communities at grassroots (Hendricks & Zandt, 2021). Environmental justice involves procedural and distributive justice and includes the idea of justice based on participation, recognition, and etc. (Schlosberg, 2007).

Thus, this political ecology approach is appropriate to explain pastoralists and semi-pastoralists situations in relation to environment, society, development and public policies in Borena areas. And, the next explains the Sustainable Livelihood Approach and its relevance to the study.

ii. Sustainable Livelihood Approach

The concept of sustainable livelihood approach is connected to bottom-up development that is an alternative to from general to particular called top-down idea that focus on agents development. The sustainable livelihood approach is based on livelihood, development and environment idea

(Serrat, 2008). Hence, this is primarily focusing on poor communities' livelihood, productivity and sustainability. The sustainable livelihood approach fundamentally starts from people's real situation, their livelihood strategies. It explains what societies have, have not and their needs is the question sustainable livelihood approach pose to begin with, than starting with a grand theory (De Haan, 2012).

The sustainable livelihoods approach principles frames how to understand strategies that individuals and households use during crises. The sustainable livelihood approach classified strategies of livelihood in three major categories: (i) livelihoods diversification- which is engagements of households on different activities, and support from communities for survival, and expansion of income sources. (ii) Intensification of agriculture- this is based on natural resource exploitation that involve cash crop, food crop including livestock production intensification. (iii) Migration- is immediate strategy mainly during crises as house hold members leave and earn some money from somewhere and contribute to family survival (Hussein & Nelson, n.d.) and (Geremew, 2017).

Hence, of identified livelihood strategies (migration and diversification) are suit to analyze how the pastoral communities in Borena Zone adapt during climate change caused crises.

Moreover, the sustainable livelihoods approach emphasizes on the socially caused factors to understand the effects of household strategies in sustain livelihoods. This premise is a long with the pastoralists' conditions as accessing food depends on locally networked systems (Pons, 2008).

The sustainable livelihood approach focuses on an individual household and its properties as a center of community change and progress. This means that focusing on what communities really have is more relevant than what they never experience. It is how to consider in making priorities to mitigate poverty and improve their living standard. This is about favoring people living in poverty (De Haan, 2012 and Serrat, 2008). Finally, the sustainable livelihood approach is explains the importance of adaptability, resilience, and sustainability (Otieno, 2016).

However, the sustainable livelihood approach is broad; hence, it may not be able to fully explain situations in the Borena Zone in the struggle for survival, particularly, in the process of choosing livelihood strategy that based on perceptions and meaning they give to their situations in terms of environment and climate crises[1]. These issues seem to be beyond the scope of the sustainable

[1] Gufu Dubo, an elder, Moyale *Woreda*, Interview, July, 2023

livelihood approach and hence, these points are met to a certain degree by the symbolic interaction theory.

iii. Symbolic Interaction Theory

An adjustment character is linked to livelihood examination that connected to social psychology. It is explained that humans act indirectly through cognitive and perpetual that consist of elements of culture, childhood experiences, current experiences, personalities, etc. than effects of their surroundings. This implies that an adjustment takes place in a social context, which is affected by individual and group values and perceptions, taboos, etc. (Aksana, et al., 2009); and hence, this builds upon theory of symbolic interaction.

The principles of symbolic interaction theory are that the action of human beings is based on the meanings that those things give to them in an interaction. And, those meanings are not static but readjusted in the dynamics of continuous interaction. The profound idea of the theory is that character is purposeful and selective, not random and purposeless' unfamiliar situation need meaning by interaction of individuals to act accordingly (Ibid). The products of his behavior are definitions of the situation (Husin, et al., 2021) and (Aksana, et al., 2009).

Hence, human beings experience social world, biological, physical, and symbolic that help them modify their character. And, based on their experience, people need to redefine the continuous changing conditions for reasonable adjustment (Ibid).

Thus, this symbolic interaction theory is quite relevant to explain situations in Borena Zone. And, in line with this theory, the pastoralists in the study areas adjustment behaviors take place within individual or group context[2]. Therefore, their awareness and interpretation of the changing situation is taken as the basis of their innovative behavior. The situation definition gives individual or group consensus on the basis of possible adjustment choices. Along with this, it is viewed as pastoralists' collective awareness of the economic hardship permits and even legitimizes hunting, farming, taking up paid (wage) employment, etc. These are definitely unusual behaviors, which, under normal pastoral conditions, are not allowed[3].

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[2] Gufu Dubo, an elder, Moyale *Woreda*, Interview, July, 2023
[3] ibid.

Although the symbolic interaction theory expands the analysis of adjustment behavior, it does not capture certain aspects of pastoralists' adjustment strategies, like reciprocity. This aspect is addressed by Social Networks and Rural Livelihoods.

iv. Social Networks and Rural Livelihoods

A social network refers to ties of an actor to a group of others irrespective of whether the central actor is a group like household or an individual, who reciprocate based on areas of origin and kin. This is a relationship founded on family or personal connections directly or indirectly, whether close or distant locations (Dapilah, ett al., 2019). Social network plays a major role in adjusting the rural livelihood and contribute to understand about other agents, benefits of group decisions and actions, and situations at international level. The social network is also applicable to obtain natural capital, which involves water and land; human capital, which comprises of knowledge and labor; economic capital, which includes material and money (Ibid).

In Borena Zone pastoral communities, it was observed that social networks act to distribute risk and enhance coping with crisis for member of households. Elders, community leaders and village-level associations were found to facilitate important non-market transfer of food and labor. Those households with larger support networks define themselves as less vulnerable in contrast to less fortunate households with fewer social support networks. The study pointed out that livelihood adaptation in Borena Zone during drought years and other years of exceptional stress people utilize social networks and informal credit networks to overcome shortages[4].

2.1.3 Empirical Perspective

The empirical evidence on climate change, human insecurity and violent conflict, mainly on factors, impacts and links is essential to critically analyse and reach at conclusive remarks. Thus this study has tried to explain some empirical evidences based on factors and impacts of climate change directly or indirectly at continental Africa, the Horn of Africa and Ethiopia, particularly, in southern Ethiopia, Oromia-Borena Zone.

2.1.3.1. African Climate Extremes Cause and Effects

The climate change situation is becoming more complex in Africa as it impacts socio-economic systems of the population (WMO[a], 2020). The variability of precipitation, increasing temperature, longer dry season, increasing drought severity are glaringly indicating that the threat

[4] ibid.

of climate change to human security, which include endangering food and water supply, social stability, and entire development (UN Climate Change, 2020).

Sea level rise: It has been observed that the rate of increasing sea level along the Indian Ocean and South Atlantic coasts are significantly higher than the global mean rate. But, in Mediterranean coasts, the rising of the sea level is 2.9mm/year, which is lower than the average pace of the global (Bedair et al. 2022; UN ECA, 2021; WMO[b], 2021).

The rising of sea level in coasts of Africa varies based on geographical locations. The rising of sea level in many maritime encircling the African continent has been recorded as 5mm/annually; which is above the global records of 3-4mm annually (UN Climate Change, 2020). The West African coastlines are facing challenges of sea level rising at a rate of 56% and it is also forecasted that the future will be worse (Mafaranga, 2020).

Temperature: As trends of warming in African regions indicate, it has been increasing severely and impacting entire environment. The warming trend from 1961 to 1990 is less than 1991 to 2020; and that is significantly below the 1931 to 1960 records. The Greater Horn, the north western and western equatorial regions of Africa have been experiencing higher and increasing warming situations (Blunden & Boyer, 2021). Many parts of Africa has been in a condition of sever heat waves since 1901; and already 1^0C has been recorded in parts of African regions (UN Climate Change, 2020). The predictions of maximum and minimum temperature indicated that African regions would likely hit by severely increasing temperature than ever history witnessed. Recently, also higher temperature records have been forecasted in sub-Sahara Africa (UNDRR, 2020).

Africa's contribution of greenhouse gas emission is clearly insignificant; however, climate extremes have critically been affecting entire region (Al-Zu'bi et al. 2022). According to Our World in Data (2021), the carbon emission of fossil fuel and industries in Africa is about 1.39 billion tons, which is only 3.93% relative to worldwide in 2021; with some change in 2019 which is about 1.47billion tons without land use changes; when it was 77.32 million tons in 1950.

Main Causes of Climate Change: As many sources have clearly underlined that the cause of climate change has been human actions; and currently, human activities are increasing as well; and the climate also changing significantly than before. Fossil fuels, transportation, burning of

forests, and heating have been main contributors to African and global emissions (Lee & Romero, 2023).

It is estimated that the 2.2 billion hectares of deforested land from 200 to 2010 has been also a cause for an emission in 74 developing countries. And annually, human activities such as timber harvest 53%, wood-fuel consumption 30%, forest fire 17% have been contributing to an emission of 2.1billion tons of co_2. Among these, timber harvest has been estimated to 31% while forest fire has been about 33% in Africa (Pearson, et. al., 2017). Africa has been impacted by wildfires as it has been severely hit as at least 4.23 million square kilometres burned annually (Radford, 2022). And, of fires caused by entire world about 62% has been in sub-Saharan Africa, which has been occurring in savannahs. Of the world damaged land by fire is in tropical savannahs; which annually contributes 62% carbon emission to worldwide; and these tropical savannahs are still in risk of fires which largely caused by human actions under hot or dry situations, low humidity or windy. Thus, as a consequence, terrestrial ecosystems have been declined by fires in tropical regions (Kahiu & Hanan, 2018).

Main Effects of Climate Change in Africa: The effect of climate change has been touching several ranges of people's life in Africa. Hence, diminishing water sources, agricultural yields and species has been effects of climate change due to various human activities across the region. And, the next table shows that the top ten countries that have been affected by climate change from 2002 to 2021.

Table2-Top 10 countries in Africa with droughts and floods, by total number of people affected (2002-2021).

Country	Affected by drought	Country	Affected by floods
Ethiopia	50,605,679	Nigeria	11,419,911
South Africa	30,450,000	Somalia	4,513,098
Kenya	29,250,000	Sudan	4,271,143
Somalia	26,335,624	South Sudan	3,954,591
Niger	21,319,428	Kenya	3,852,904
Malawi	17,049,435	Ethiopia	3,458,324
Zimbabwe	15,135,118	Zambia	3,124,880
Mali	11,925,000	Niger	2,961,489
Mozambique	9,899,500	Malawi	2,624,172
Burkina Faso	9,750,000	Mozambique	2,085,603

Source: Centre for Research on the Epidemiology of Disaster /CRED/(2022). The interplay of drought-flood extreme events in Africa over the last twenty years (2002-2021),Issue No. 69, p.2. December 2022. file:///C:/Users/dell%20vostro%203500/Downloads/CredCrunch69%20(2).pdf

Effect on Water Resources: Changes in hydrological components and run-of are largely connected to climate. Which in other words mean that climate extremes have an influence on water sources recharging and flows; this has significant impact on African where ground water, which majority of the rural people in the continent depend on (Kundzewicz, 2008) and (Giannini et al. 2008).

***Effect on Food Security and Agriculture*:** As a result of climate extremes, agricultural yields and livelihoods have been impacted across Africa. The increasing intensity, severity, shortening cycle of droughts and floods has impacted the food security across Africa (UN ECA, 2013). This also impact entire economy and can increase poverty levels that in turn produce other social crises (Pachauri & Meyer, 2014).

***Effect on Biodiversity and Ecosystem*:** The climate in Sahara desert has been changing for about six thousand years by expanding and contracting, along with vegetation coverage (Schuster et al. 2006). The desertification and warming have been increasing and influencing livelihoods across Africa; this in turn impacting entire African biodiversity and ecosystem **(**Stallwood, 2022). According to United Nations (UN) Sustainable development goals (2023**)** reports, significant number of plants and animal species has been threatening; the rate of species reduction is faster; currently 1 million species are endangered. More, specifically, since 1970, marine life reduced by 83% more than terrestrial animals and plants (WWF, 2022). Accordingly, the risk of African species extinction has been increasing due to climate extremes (Dejene, 2018). For instance, there has been continuous reduction of fresh water fish and mammals between 1970 and 2017 in Africa (WWF, 2022).

2.1.3.2. Climate extremes, Policies and Actions in the Horn of Africa

Ecosystem and communal land rights: Climate change is influencing the entire eco-systems across the Horn of Africa. Changes in precipitation patterns, and increasing warming and desertification have been an experience of the region that has led to extremes, including decreasing of species like *yeheb* plant, that are endemic to Somalia and Ethiopia, which also has economic and nutritional values. It is believed that environmental degradation has been the cause of climate change as the range land and entire environment in the Horn of Africa has been degrading for decades and fuelled the risk of vulnerability. And, overgrazing, inappropriate land

use practices, deforestation, activities of pastoralism, urbanization and competition over resources have been primarily contributing factors to climate challenges (Prieto-Garcia et al., 2022).

Also, migration and intensive exploitation of scarce resources due to severe climate extremes has been another cause of environmental challenges (Terry &Rai, 2023). And, on the other, the conversion of grazing land and forest into various economic activities that involve mining, biofuel production, commercial agriculture has been contributing to environmental degradation and communities' vulnerability in the Horn of Africa (Borras et al., 2011).

In east Africa semi-pastoralist and pastoralists are exposed to land grabbing in the name of various development programs, such as agricultural investment, infrastructural development, and many more (Policy Berief, 2011). For instance, the port development project to connect the three countries-Ethiopia, South Sudan and Kenya through building basic economic services like transport systems, had been under critiques for its impact on environment and affecting communities' land rights across the area (Owino, 2019); and inadequate establishment of systems in respect to land tenure has been considered as the main cause of land right uncertainties (Azadi et al., 2021).

Generally, pastoralists in the Horn of Africa have politically and economically been marginalized as they pushed into unproductive environment that make them disadvantaged; and, as a consequence, during drought seasons the vulnerability has been high. The clear issue in pastoral communities have been absence or inadequate concern for their interests, such as governance, insecurity, land rights, inadequate service delivery and infrastructural development (Pavanello, 2009). In other words, the people in the Horn of Africa, including pastoralists have been facing inadequate basic services like education, health, and other infrastructures. And, hence, droughts in combination with infrastructure problems have been worsening communities' situation in the entire region (Prieto-Garcia et al., 2022 and (Catley, 2017).

Drought occurrences and human security: The longer drought periods which is five consecutive seasons and below average rainfall is counting back as of 1950 (Button, 2023). This stretching drought seasons tested entire coping strategy across the affected region. Thus, it has caused malnutrition and hunger and at the same time it led to occurrences of pandemic. On the other, devastating floods killed and displaced hundreds and thousands of people across the Horn of

Africa. The recent drought has also been the cause of vulnerability, particularly, communal violence (FEWSNET, 2023).

The Horn of Africa has experienced three devastating droughts in the past ten years between 2010 to 2011, 2016 to 2017 and 2020 to 2022. The drought period between 2010 and 2011 was consequent to significant violent conflict and famine in Somalia; and, the drought period between 2016 and 2017 was about to reach at the fringe of famine in the entire region. On the other hand, the Horn Countries were hard-hit by extreme floods in 2019 which was followed by locust that destroyed crops across the region (UN OCHA[a], 2022).

The impact of climate change in East Africa is continued to be alarming; frequent drought occurrences and catastrophic floods has been common in the entire region (Kimutai et al. 2022).The unexpected climate change occurrences has basically been increasing challenges to livelihoods and decreasing the adaptive ability of humans in the East Africa. The 2022 inadequate rainfall or failed rainy season made the worst drought in forty years (WMO, 2023). It has been severely influencing communities' living situations in various aspects; and created the risk of hunger, famine, disease, loss of life, malnutrition, migration and conflict have been the effect of climate change in the East Africa (Terry & Rai, 2023).This has been the cause of inadequate pasture and surface water accessibility, deaths of livestock, migration and conflict across affected areas (WFP, 2022).

For instance, due to severe drought about 83000 have been refugees in less than a year in 2022. Also about 1.1 Somalis and 590000 Ethiopians internally displaced for survival in search of scarce resources (Terry & Rai, 2023). As the consequence of the drought around 180,000 people crossed the borders of Ethiopia and Kenya from South Sudan and Somalia (UN OCHA[a], 2023).

In the Horn of Africa, mainly in Ethiopia, Somalia and Kenya around 13.2 million herds has died as a consequence of drought; which accounts over 6.8 million in Ethiopia, 2.6 million in Kenya and 3.8 in Somalia, which is estimated to $1.5billion in Kenya alone; that likely takes at least five years to rebuild herds as pastoralist (UN OCHA[b], 2023).

As the effect of drought children and women have been acutely malnourished in the Horn of Africa, especially, in Ethiopia, Kenya and Somalia. In the three countries bout 4.9 million

children have been malnourished, of which 1.8 million in Somalia, 884500 in Kenya, and 2.2million in Ethiopia. It has been worse and criticized as 730 children have been lost their lives in nutrition center of Somalia in 2022. Also, about 986000 lactating and pregnant women have been acutely malnourished whom which 184400 in Somalia, 115700 in Kenya and 685900 in Ethiopia (UN OCHA[a], 2022).

Mainly, pastoralists and semi-pastoralists have been severely impacted by droughts as crop yields and herds' health deteriorating (Prieto-Garcia et al., 2022. According to The New Humanitarian (2023) 43000 people lost their life due to severe drought in Somalia, which almost half of them have been, children under five. Also, social groups such as older people have been more vulnerable to climate extremes in the region where severe droughts recurring (Omolo & Mafongoya, 2019).

In east Africa, about 37 million people were threatened to severe food insecurity as the result of drought and related effects as of August 2022 (WMO, 2023). Over 8.5 million people including 4.2 million children have been in water crises due to sever climate change in the Horn of Africa region; and, mainly, in Kenya, Somalia, Djibouti, Ethiopia, and Eritrea, 20 million people including 10million children have been exposed to shortage of water in 2022 (UNICEF, 2022).

Other especial occurrences have been the outbreak of locusts across the region that significantly impacted crop yields since November 2019. It has been seen as the worst in 25 years across Somalia and Ethiopia; and even longer devastating periods in Kenya in 70 years. As dense group of insects or swarm of one kilometre square able to consume as much food consumed by 35000 humans in a day, it has been severely impacting and aggravating the food insecurity of the region (UN OCHA[b], 2022).

Conflict and stability: Conflict and fragility have been the recurrent experience of East African countries. The insecurity of the region has been indirectly affected by climate change while directly caused by political and socio-economic challenges (Owain & Maslin, 2018). Climate variability or drought has also been connected to insecurity as competition over scarce resources such as pasture and water used to occur, particularly in pastoral areas (Meier, et al., 2007; Uexkull, et al., 2016). However, insecurity and violent conflict due to climate variability in the Horn region varies from place to place (Thalheimer, et al., 2021).

Also, as a cause, the increasing refugee flows across the border had an impact on the security situations of countries in the Horn of Africa as significant number of people crossed borders due to volatile security situations that had been exacerbated by conflicts between clans, insurgency and, increasing competition over natural resources in which instability used to stem (Thalheimer & Webersik, 2020). And, intensive rain and recurrent dry seasons, moreover, migration have contributed to the insecurity of the region as tense relation between communities used to occur (Thalheimer, et al., 2023).

Drought management, response and policies: Although drought occurrence mitigation and its impact prevention policies of the Horn of African countries mainly, Ethiopia, Kenya and Somalia are vary, they have had their own endeavours. Accordingly, Kenya has established the National Drought Management Authority (NDMA) that responsible for all duties of drought issues across the country. The NDMA produce drought management policies, outline programs, avail early warning documents or bulletins, and coordinate institutions. The Kenyan National Drought Management Authority (NDMA) has a strategic plan; and is being implemented; however, its mitigation efforts has not been coping with the situations of climate change impacts (NDMA, n.d).

On the other, unorganized management and ill coordination of drought related issues in Somalia used to indicate that conditions of harsh humanitarian demand and inadequate public institutions endeavours. Thus, in 2020, the government approved a national drought plan that targeted to establish a kind of systems that help mitigate impacts of droughts across the country (Grantham Research Institute, 2020). The plan has focused on needs and impact assessment, and linking to Somalia's Recovery and Resilience Framework that established for recovery efforts in different areas (UNDP, n.d.).

Ethiopia had launched a Disaster Management and Food Security Agency in 2013 that aimed at on natural disaster and food insecurity across the country. It was the result of the 2011 drought crises and insufficient response to impacts. Also, the regional states have had their own systems of drought mitigation along the federal systems (Farry, et al., 2022). And they have been focusing on drought impact mitigation across the country. At the very local level integrated risk management programs have been executed in Ethiopia along with international aid organizations

in social groups like, pastoralists, smallholder farmers, refugees, and those who more venerable to climate extremes (WFP, 2021).

Early warning, early action, and response*:* Following the devastating drought an Early Warning system was set up in Kenya in 1989 to provide information impacts of droughts on agricultural production and help reduce the influence of climate extremes. The Early warning system was re-established as IGAD's Climate Prediction and Application Centre (ICPAC) that has been actively delivering climate advisory; though the countries have their own meteorological centres(ICPAC, n,d,). According to Ethiopian National Meteorology Agency (n.d.) and the Kenyan Meteorological Department (n.d.), which are the largest in the region, have been providing adequate data that related to weather and climate. It has been strongly argued that the seasonal weather and climate conditions, rainfall situations were adequately forecasted. Many of failed rainy seasons have been forecasted as it would be below average by ICPAC; warnings were given far before each severe drought occurrences for entire regions (Funk, 2020). However, experts and people who have been witnessing claim that the response to the weather forecast have been significantly slow and disregarded. In other words, although, devastating occurrences of climate extreme or droughts adequately forecasted and early warnings announced, actions have been limited and responses have been significantly slower; and denounced (Ibid).

2.1.3.3. Climate Extremes in the Southern Ethiopia

According to Duba (2021), on the study of factors affecting pastoral sustainable livelihood- the case of southern Ethiopia describes that pastoralists' livelihoods has been impacted by frequent drought, increasing intensity of temperature and erratic rain due to human action such as deforestation. Also, Ahmed (2013) specifically has indicated that the decreasing of forest coverage and forest resources due to human actions that would affect the future pastoralists' sustainability and life style.

As Daniel et. al., (2023), has further showed that how devastating drought severely impacted herds in southern Ethiopia, there has been significant number of animals lost even only in 2021. It seems this recurrent drought has been beyond the coping ability of pastoralist so far that led them to demanding swift emergency aids. In this regard, Duba (2021) also indicated that as traditional social support mechanism, which significantly contributed to live saving efforts has

been weakening and social system disorganized, the severity of drought has had an impact on saving and sustaining human and herd's population.

With regards to public policy implementation, Duba (2021) identified that limiting survival strategy such as mobility and shrinking of the grazing land severely impacted pastoral livelihoods. For instance, the main grazing land has been converted to crop cultivation or expansion of cultivating lands intensified, privatization of communal resources and bush encroachment increased with the intention of sedentary economic activity as the result herds mobility severely mitigated and led to overgrazing, and this used to cause inter-ethnic conflict.

Daniel, et al., (2023) depicted that in spite of the fact that the contribution to the national economy, insignificant attention has given to pastoralists' development by government; rather agriculture and urban development have been prioritized.

2.1.3.4. Climate Extremes in Borena Zone

i. Impact on Human Situation

Although several areas of Ethiopian pastoralists' areas impacted by the effect of climate change such as drought, the Borena pastoral and semi-pastoral communities has been the worst ever experienced in a decade (Mulugeta, et al., 2023). The absence of six consecutive rainfall seasons has been consequent to prolonged severe drought in Borena Zone. The main rainy season of Borena *Ganna* that falling between March and May, and the shorter rainy season *Hagayya* which is between September and November has frequently been missing and resulted to devastating drought effects. This has been contributing to increasing temperature and dryness that consequent to shortage of water and pasture that led to emaciation and massive death of livestock, which are the basic livelihoods of pastoralist. Only in the recent 2022 drought occurrences over 2.3 million of animals have died as the result of climate extremes or drought crises. Also, over 67,000 households completely left without livestock (OCHA, 2023).

On one hand, the devastating impact on the main base of pastoral livelihoods (herds) and failure of crop production as the effect of drought caused the challenge of food shortage and malnutrition in Borena Zone. And, human life has been under serious threat as food insecurity has been increasing and food shortages have been severe across pastoral and semi-pastoral communities in

Borena Zone. Children malnutrition has been massive; health services unable to provide health care to those who have been suffering (Wossen, 2023) and (Mulugeta, et al., 2023). In the early months of the year 2023, over 772,000 people used to demand for immediate food aid; and twenty two thousand children of underage five, twenty three thousand lactating and pregnant women and ten thousand elders have encountered with acute malnutrition. On the other, depletion of water and pasture has been severely affecting the pastoral communities in the study area. In other words, absence of rainfall for longer seasons in Borena pastoral areas resulted to absolute depletion of pasture. Sources of water such as ponds and other water points have been dried up; well water significantly reduced in volume. Due to lack of water and pasture large number of livestock has been lost as the effect of climate change. In sum, the pasture and water have been crucial that needed urgent response from responsible institutions, even over 807,651 people have been in need of drinking water until recently (Galgalo, 2023).

Also the effect of climate extremes has been displacing communities from their home areas. According to Borana zone multi-hazard assessment report, 372,193(68,866 households) sheltered in different localities of Borena Zone, particularly in Elwaye, Dirre, Dubuluk,Yabello, Moyale and Dhas, woredas. Following the displacement, an urgent demand for humanitarian support has been a topical issue (OLLAA, 2023).

And, the school dropout has been one of the challenges of Borena pastoral communities as the effect of climate extremes. According to a recent zonal multi-agency assessment report, large number of students has been out of schools. Significant number of schools has no water facilities; and many schools have no feeding programs. What makes matter worse is internally displaced children have no access to school at all (OCHA, 2023).

Also, crop production in Borena area has totally been failed as the rainy seasons absent for longer seasons. Mainly, the *Hagayya* and *Ganna,* which are short and long rainy season respectively, have been failed and consequent to almost none crop production (Ibid, 2023).

Another intensifying factor of pastoral and semi-pastoral sufferings has been the rising of food prices. The rapid increase of food prices and fall of animal prices have been exacerbating challenges of communities. For instance, the price of maize is increased by over 80% than before. Contrary to the price of food crops in Borena pastoral communities, the price of emaciated

livestock rapidly reduced. During the recent 2022 drought crises one cow could not buy 50kg of maize; to buy 100kg of maize more than three cattle had to be sold (Ibid).

Pastoral communities are also losing self-pride as their livestock have been lost due to climate extremes; they have been migrated to far beyond traditionally experienced localities for survival as water and pasture have been key resources; pastoral communities migration to urban areas also another feature during drought crises that threatened family disintegration; cultural pride of Borena community has been depleting as the community have frequently been under pressure as the result of climate extremes across the traditional grazing land and watering areas (OLLAA, 2023).

Moreover, wild animals have also been sharing this climate change extremes as many wild animals have been dying; and endemic animals such as gazelle, wild deer and gravy zebra emaciated and disappearing of hunger (CDCB, 2023).

Now the intensity, frequency and length of drought has been increasing; and environmental damage and losses of humans and livestock have been doubling. Thus, this shows that low level of attention given to situations of drought and mitigation as per to occurrences. And, this has led to pastoral and semi-pastoral crises (Wossen, 2023).

In general, the magnitude of the recent drought is far beyond what has been reported. And, the pastoral and semi-pastoral communities in Borena Zone have been facing the worst famine in a decade; and pastoralists have been dying and migrating for survival. Thus, the government had to pay attention to save life; and the local and international media would have been the voice for these dying communities (Ibid).

ii. Climate extremes as indirect cause of conflict in Borena Zone

Struggle over resource endowment have been sources of conflict among pastoralist in general and for within Borena and neighbouring communities in particular. Thus, this used to create fierce competition over water resources and grazing land. The challenge has been worsening during drought and famine that cost thousands of livestock and consumed human life (Ahmed, 2002) and (Sisay, 2007).

For instance, in Moyale Woreda of Ethiopia, pastoral conflict over scarce resources has been common for generations. This used to occur within a community or between communities; which has been intensified during drought. Furthermore, lengthy drought seasons have been worsening the effects of conflict across pastoral areas in Borena Zone. In 2016 pastoral communities in Moyale District of Kenya crossed to Moyale Woreda of Ethiopia; then, the journey was not as friendship relationship as it had been; however, it was about scarce resources that made tense and derived them to fierce conflict. Hence, this was resulted to displacement at least 37 km away from their home into Oromia region. Since then over 39500 people has been living in makeshift tents facing weather challenges (Viray, 2023). In sum, there have been many more instances communal conflicts over scarce resources that basically caused by climate extremes in Borena pastoral areas.

2.1.3.5. Climate Change Effect Mitigation Policy and Implementation

The Oromia National Regional State Program of Plan on Adaptation to Climate Change has been directed to tackle the effects of climate extremes in pastoral areas. It has primarily been focusing on adaptation measures and strategies to make cope and survive the intensifying drought effects across pastoral communities including Borena Zone. And, asset diversification has been one of the strategies to help pastoralists cope with climate extremes as it increases the ability of households. Instances of asset diversification from the traditional coping strategies involves livestock diversification (camel, goat and sheep); agricultural diversification such as crops (food and cash) (ONRS, 2011).

As adaptation strategy, also the small scale irrigation scheme has been identified in the pastoral communities including Borena Zone pastoralists' areas. The government's focus is on small scale irrigation diversion of rivers boreholes and ponds to ensure to access water resources and better agricultural production. Moreover, expanding infrastructures, improved coverage of primary health care, decentralization, building human capacity and rehabilitating degraded environment are other most important programs to build human and ecological resilience. In general, improving infrastructural development, developing sustainable conflicts resolution systems, paying special attention to environmental education, build local capacity, strengthening Early Warning Systems (EWS), tree planting and rehabilitation of degraded areas are adaptation and mitigation strategies of the government(Ibid).

However, Daniel, et al., (2023) identifies that the Oromia Regional State's pastoral development policies and infrastructural development on the ground has been poor and lower in comparison with other areas of Oromia. Social services such as education and health services, and economic services like agricultural extension, roads, electricity, communication, credit, and insurance have been lower than other Ethiopian regions. As consequence illiteracy is significantly high; children haven't had education access, etc.

Similarly, Zewdie, et al. (2017), has found out that underdeveloped economic and social services have been severely impacting pastoral livelihoods; moreover, inequitable provision of water sources repeatedly has triggered violent conflict due to fierce competition.

On the other hand, Dirriba & Jema (2015) has identified the pertinence of early warning systems as coping strategy in the Borena Zone; as there have been weak or inactive early warning information systems that had to provide formal information specifically in Borena Zone. This has contributed to devastating climate change effects, while it had to mitigate and increase adaptive capacity. Thus, generally, pastoral communities have been under privileged in Borena Zone.

2.1.3.6. Pastoral Laws, Policies and Implementation

Land administration and use are a little different in pastoral and agrarian areas. The proclamation of 1995 Ethiopian Federal government issued the farming households usufruct rights on their lands by awarding certificates. Then, this was not the case in pastoral communities that used to covers over 60% of the Ethiopia's land mass as pastoral activities were carried on the large tract of land. Hence, regulations, the land tenure and land management systems had to take into consideration that pastoral activities were severely affected by climate extremes and conflict that also used to involve agricultural investment expansion, urbanization and population pressure, etc., as practically human settlement expansion, farming and bush encroachment have been reducing use of range lands. According to an empirical study conducted by Land for Life Initiative (2021), land use and cover change has been impacting entire pastoral livelihoods. For instance, changes from pasture land to private farm investments, opportunistic farming, mining, mechanized crop farms by private, state farms, and individual closure for farming, bush encroachment, hydroelectric dams, and recent wheat initiatives have been significantly impacting pastoral ways of life. These changes have directly been restricting pastoral mobility by taking

away decisive resources and areas such as river banks and relatively wet lands which is dry season land grazing places, etc. Significant land use changes have been observed in some areas, particularly in Oromia regional States. For instance, the Kereyu pastoralists have lost their relatively wet dry season grazing land to sugar cane plantation, which is an input for Wonji Sugar Factory. The Kereyu communities have been traveling long distance for dry season grazing land as their traditional grazing land had been taken away (Boru, et al., 2023). Also, the survey conducted in 2016 on Borena and Guji areas, shows that diminishing pastoral lands used to result to various pastoral crises including violent conflict (USAID, 2016). Recently, Borena pastoral communities have been suffering from accessing dry season land grazing land as many of their pasture lands have been taken away for various investment projects such as losses of pastoral grazing lands to ranching investments; etc. (Land for Life Initiative, 2021). This is against the 2002 Oromia land policy that attempted to address the pastoral issues at regional levels. It was about issuing communal land certification to reduce land individualization and fragmentation; in other words, the policy was made to limit unconsented investment expansion (USAID, 2016).

However, the policy has not been actually implemented as many hectors of pastoral lands taken away for various purposes without original and traditional users' consent.

And, the next chapter discuses methodology and methods of data collection and analysis in detail thus provide an understanding on how data processed and collected from the study area.

Chapter Three

3. Research Methodology

This chapter presents brief description of the study area, and discuses on world view of empirical data seeking means pertinent to the climate change, human insecurity and violent conflict. It also describes design, methods, tools of data collection, and its relevance to the study topic.

3.1. Research Design

As the study investigates to understand factors of climate change, human insecurity and violent conflict in pastoral and semi-pastoral livelihoods, it is important to employ the worldview that helps analyse impacts of climate change on practical pastoral and semi-pastoral livelihoods. A long with the objective the study employs *mixed research design*- quantitative and qualitative approaches; because, a mixed methodology study uses different tools to collect data from various experiences, perceptions and attitudes or angles(Johnson, et al., 2007).

A *sequential explanatory mixed method* design is employed to study the link between climate change, human security and violent conflict, and factors and impacts affecting pastoral and semi-pastoral communities' livelihood in Borena area as it is the best fit to answer the research questions and draw on broader conclusions of findings. According to Creswell & Clark (2011), the sequential explanatory design is commenced with a quantitative phase and followed by a qualitative phase; thus both quantitative and qualitative data have been collected accordingly and analysed separately during the research process and integrated. A long with Kroll &Neri, (2009), suggestions findings from the qualitative phase has been used to explain and provide a more comprehensive contextualization of findings and interpretations drawn from quantitative phase.

3.2. Data Collection Methods/Techniques

Techniques of data collection such as survey: questionnaire, focus group discussion, key informants interview, recording and analysis are discussed next in detail.

Survey, questionnaire and sampling technique: Along with the study objective, a *survey* method is employed to draw objective data as it helps to make inferences of population by analysing a

sample from the population. Unlike a census, which primarily focuses on observation drawn from the population, a survey is the population which a researcher interested in as a group of objects, where objects may involve individuals and groups (Young, 2016). Also a questionnaire has been used in line with the survey method employing a *multi-item scale or psychometric scale* to measure the same and interrelated perceptions, attitudes, etc. using multiple items; and *respondents' self-administration has been* applied.

The study has employed ***non-probability sampling method*** along with *purposive sampling technique* in order to examine the subject in different angles (Ibid).

Key Informant Interviews: Key informants are people perceived to have particular insights or opinions about the topic under study. In terms of status, they may be ordinary people and not necessarily the specialists, the better educated, those in power or the officials (Mikkelsen, 2005).

Thus, key informant interviews have been conducted through semi-structured and unstructured interview techniques with general topics and open-ended questions. Mikkelsen (2005) pointed out that with a semi-structured interview, everything is negotiable and the informants can criticize, correct, or point out that it is sensitive, or answer in any way they wish. During the data collection, the semi-structured and unstructured techniques allow to follow and ask follow-up questions in order to get a deeper understanding of climate change situations and its effects. Questions could be asked according to a flexible checklist or interview guide line.

In-depth interview data collection technique and multiple sources of information has been used to collect qualitative data regarding climate change situations, pastoral human insecurity and factors contributing to human insecurity and violent conflict; and different people have been asked the same questions in different settings. This has reduced the chances of ending up with biased interpretations.

Focus Group Discussion: Focus group discussion is a tool to obtain data from a group who have similar or divergent attitude by presenting the same question or issue at a setting. In the process collision of attitudes help to identify more important information by furthering discussion; or similarity of perception is strengthened by building up ideas through discussion. Therefore, as it is relevant to collect qualitative data to understand perceptions of respondents, focus group

discussion has been employed to seek data from the study area.

Documentary Data: For this study, published such as books, journal articles, etc. and unpublished research and reports on historical, climate, social, economic, cultural, political, ecological, and area-specific issues has been reviewed, and used as background information, and to strengthen presentation of findings and analysis. The main source of secondary data have been traditional and online library and archival or recordings.

Data Recording*:* Collecting and organizing filled questionnaire papers and note taking have been the most frequently used method to record data.

Audio and video recordings – recordings such as interviews, conversations, taking are essential as it help to collect detail data relevant to the study. Hence, the study has used audio and video recording as a method.

Data Analysis: The study has employed quantitative and qualitative analytic tools to organize, summarize, interpret and present research findings in relation to the study objective.

Chapter Four

4. Result and Discussion

4.1. Result

4.1.1. Factors and Impacts of Climate Change, Human Insecurity, Violent Conflict, and Government Response

This chapter presents results and discussion on respondents' background of the study area, factors and impact of climate change, human insecurity and violent conflict from Borena Zone pastoral and semi-pastoralist. It also indicates the government responses during crises.

Respondents' Background

The population for this study consists of pastoralists, semi-pastoralists and knowledgeable elders, officials or professionals from Borena Zone. The total sample size of 150 for Questionnaire, 30 for KII, four FGD (in which each FGD contained 7 members) has been selected through the purposive sampling technique; and the next table provides more details of the respondents' background.

Table 3 - Survey Questionnaire Respondents', FGD and KII Participants' Background of Borena Zone (Yabello, Dubuluk, Dire and MoyaleWoredas):

Participants' occupational category/cluster/	No of Participants by Sex											Age Range	Marital Status (Married) (%)	No of Family	Education Status
	Survey Questionnaire Resp.			FGD			KII			Total Male-Female Participants					
	Freq.			Freq.			Freq.			Freq.					
	Resp.	M	F	Res.	M	F	Res.	M	F	M	F				
Pastoralist	50	44	6	10	7	3	10	7	3	58(82.85%)	12(17.14%)	22-60	97	2-16	0 to grade 8
Semi-pastoralist*(farmer-pastoralist and government professional-pastoralist)*	50	35	15	9	7	2	10	6	4	48(69.56%)	21(30.43%)	30-68	99	3-12	0 to BA
Government Professional or Official	50	29	21	9	5	4	10	5	5	39(56.52%)	30(43.47%)	27-47	95	1-4	BA/MA

Source: Result of Survey Questionnaire Respondents', FGD and KII Participants' Background, June, 2023

Hence, Table-3 reveals that respondents' background of survey questionnaire, FGD and KII of Borena Zone, particularly, in sub-study areas: Yabello, Dubuluk, Dire and Moyale Woredas. The respondents have been categorized occupationally as pastoralist, semi-pastoralist and government

professionals or officials. Thus, among all respondents, 82.85% of pastoralists are male while 17.14% of them are female. And, in case of semi-pastoralist respondents 69.56% and 30.43% are male and female respectively; the government professionals or officials, male-female percentage is 56.52% and 43.47% respectively.

The age range of participants or respondents are categorized occupationally as between pastoralist 22 to 60, semi-pastoralists 30-68 and government or officials' 27 to 47 that 95% to 99% of them are married with family members between 2 to 16 for pastoralists, 3 to 12 for semi-pastoralists and 1 to 4 for government professionals or officials. The educational status of respondents covers none to higher degrees; hence, none to grade 8 for pastoralists, none to BA degree for semi-pastoralist and BA degree to MA for government professionals or officials.

Table 4- Survey Questionnaire Respondents', FGD and KII Participants' Status of Herds Ownership Before and After the 2022 Sever Drought in Borena Zone (Yabello, Dubuluk, Dire and MoyaleWoredas):

Participants' occupational category/cluster/	**Number of Participants' Herds Before and After the Recent 2022 Sever Drought**														
	Survey Questionnaire Resp.				**FGD**				**KII**				**Total Herds Ownership**		
	Freq.				**Freq.**				**Freq.**				**Freq.**		
	Resp.	**Before**	**After**	**(%)**	**Res.**	**Before**	**After**	**%**	**Res.**	**Before**	**After**	**%**	**Before**	**After/ Current Status**	**Current Status (%)**
Pastoralist	50	24095	2913	12.08	10	17368	453	2.60	10	1632	27	1.65	43095	3393	7.87
Semi-pastoralist*(farmer-pastoralist and government professional-pastoralist)*	50	10872	1374	1.26	9	12349	274	2.21	10	1348	25	1.85	24569	1673	6.80
Government Professional or Official	50	-	-	-	9	-	-		10	-	-		-	-	-

Source: Result of Survey Questionnaire Respondents', FGD and KII Participants, on Herds Ownership before and after the Recent 2022 Sever Drought June, 2023

Table-4 shows that survey questionnaire respondents', FGD and KII Participants' status of herds ownership before and after the recent 2022 severe drought in Borena Zone, particularly, in sub-study areas: Yabello, Dubuluk, Dire and Moyale Woredas. The respondents have been categorized occupationally as pastoralist, semi-pastoralist and government professionals or officials. The total herd's ownership of respondents or participants after and before the recent 2022 drought is incomparable. And, of the total respondent or participant pastoralists herd

ownership before the drought is about 43095, however, after the drought 3393(7.87%) which indicates 92.13% loss. Similarly, of the total semi-pastoralist respondents herd ownership before the drought is 24569 but after the severe drought, they left with only 1673(6.80%) which is 93.2% loss of herds. Finally, none of government professionals or officials claims herd's ownership in any situation as survey respondent, FGD, KII or participant.

The next Figure also shows that the recent impact and the degree of climate change in Borena Zone. It seems that the land has lost its capacity to produce a smidgen of pasture for livestock due to climate extremes. And, livestock have been emaciated, and the large majority have died; as the consequence pastoralists have been displaced and sheltered for survival at different locations in the Zone.

Fig-3: Pictures taken on spot from different areas of Borena Zone by various sources in 2022and 2023.

The implication of loss of livestock in Borena Zone is that the weakening of survival strategy and adaptation mechanisms as these pastoral and semi-pastoral communities have been entirely lost the capacity that make them sustain their livelihoods.

4.1.1.1. Factors of Climate Change, Human Insecurity and Violent Conflict

Factors of climate change, human insecurity and violent conflict have been closely linked and influence one another as cause and effect relationship in different contexts with different

intensity; and as some believe that climate change has been a cause of devastating chaos; in turn the cause for climate change was severe exploitation of natural resources in the Borena Zone.

According to FGD and KII participants, unlimited exploitation of natural resources, particularly, excessive exploitation of forest has been the cause of increasing environmental change that in turn contributes to climate extremes. For instance, deforestation or cutting trees for various purposes such as for furniture or utensils, charcoal, firewood has been continuous practice in the study area. Moreover, charcoal production has been intensive and massive during severe drought as people around lost options and struggling for survival has been inevitable. As an effect, for instance, significant areas covered by vegetation have been removed in two years periods in Moyale Woreda and beyond, including Moyale District of Kenya borders.[5] The range land has been completely changed to dry-land where it seemed that as life never would be exist on again. This severe environmental deterioration has influenced human situations and used to create fierce competition among communities who share common resources as scarcity has been alarming due to harsh climate situations. It has been intensified as the influx of people increasing to where resource was scarce and communities unable to manage tense circumstances of crises. The violence following competition over scarce resources has been inevitable if not cultural ties and traditional governance has been strong in the study areas of Borena Zone.[6] And the next Table, presents in detail on factors of climate change, human insecurity and violent conflict.

Table-5: Responses on factors of Climate Change/Drought, Human Insecurity and Violent Conflict in Pastoral and Semi-Pastoral Areas of Borena Zone

Items	No. Resp.	Responses in Percentage and Frequency									
		Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree	
		F	%	F	%	F	%	F	%	F	%
Climate change is occurring due to human activities and absence of mitigation endeavours.	50	25	50	17	34	4	8	3	6	1	2
Pastoralists' human insecurity continues to be alarming or topical as the result of limited survival strategy (such as mobility and social capital).	50	27	54	21	42	2	4	0	0	0	0
Survival strategy significantly mitigated as the result of policies or weakening of traditional governance.	50	30	60	17	34	3	6	0	0	0	0
Violent conflict occurs because of scarce resources and migration.	50	50	100	0	0	0	0	0	0	0	0

Source: Survey Result of Respondents' June, 2023

[5] Wajale Boru, Moyale Woreda, an Interview, July 07, 2023
[6] SoraMalichaGalgalo, Borena Zone Finance Office Head, an Interview, June 02, 2023

Table-5 shows factors of climate change/drought, human insecurity and violent conflict in the study area. Of all respondents 84% either strongly agree or agree that climate change occurs due to human actions and absence of mitigation efforts when 8% neutral and, the rest 8% either disagree or strongly disagree. Likewise, FGD and KII participants further strengthening that the climate change or drought occurrences have been the effect of human activities and lack of preventive measures accordingly. In other words, for example, large areas of bushes and trees have been cut of following the recent 2022 severe drought. It has been intensive and massive that would contribute to cycle of droughts. This new and recent trend is against traditional trees or forest protection rules and range land management of Borena that have been undermined by public imposition of new public rules and climate change pressures for decades, thus, customary range land governance has been ineffective though elders and Aba Gadas still have been insisting on that the traditional range land protection and management has to be given special attention either the matter becoming worsening. Thus, discussants believe that the weakening of traditional rules has been considered as factors of drought at least indirectly. This goes with the idea that the impact of drought can undermine social cohesion as communities migrate in groups or individually and loss their connections during struggle for survival; hence, in such circumstances, their traditional practices might not be active.

In sum, the entire increase of desertification in general and gradual deforestation process in Borena Zone has been causes of recurrent drought. However, efforts of mitigating desertification and preventing deforestation are almost none. According, FGD and KII although government officials and development agents argue that policy formulation and implementation has been continuous efforts, apart media advocacy for environmental rehabilitation, actual implementation and improvement on the ground is almost none. Even the idea of afforestation has been there but not yet realized; also related to this the environmental protection authorities and agricultural agents primarily focusing on sedentary farmers at least to pass information related to climate change; hence, there has been little awareness on how to tackle challenges looming to pastoralists. [7] Even the range land rehabilitation efforts by local and international non-governmental organizations have been very limited to specific area and insignificant in relation to actual environmental damage.

[7]BoruWariyo, Borena Zone Education Office Deputy Head, an Interview, June, 02, 2023

Mobility on large tract of land has been one of pastoral activities in Borena areas including crossing borders down to the northern province of Kenya-Marsabit. The migration or mobility had been common even more peacefully where cultures are shared; and also used to be accepted with expectation of reciprocity with different cultures as well. This mobility had served as survival strategy during severe drought for generations.[8]

However, in recent decades mobility has hugely mitigated by public policies that allocates communal lands for sedentary farming and other development programs. In other words, FGD and KII have believed that the government perception of pastoralism and action have been highly negatively impacting mobility and one of the factors contributing to pastoralists' challenges. And this as the result has been limiting the mobility and threatening human security across pastoral activities mainly during severe drought occurrences. And, on the other, weakening of social capital as a survival strategy has been contributing factors to human insecurity in the study area.[9,10] Also, 84% of respondents strongly agree or agree that further contributing factors of human insecurity in Borena Zone has been the continuing mitigation of mobility and weakening of traditional support during chaos; while only 4% remained neutral in favouring the case. More specifically, 94% of respondents either strongly emphasise or emphasise that survival strategy has been diminished as the result of policies and weakening of traditional rules; and other 6% of respondents remain neutral on contribution of policies in limiting the survival strategy.

And, with regards to factors of violent conflict all (100%) respondents strongly agree that scarce resources and migration have been causes for each occurrence across the study area. Further discussants and interviewees put forward that migration between similar cultures has been less violent even beyond international borders while more violent between different cultures even within international borders.[11,12]

[8]Huka Elemo, Elder Pastoralist,Moyale Woreda, an Interview, July 25, 2023
[9]Molu Sara, pastoralist, DbulukWoreda, an Interview, June 07,2023
[10]GalmaHalake, Pastoralist, MoyaleWoreda, an Interview, June 05, 2023
[11]Warite Molu, Pastoralist, Moyale Woreda, an Interview, June 06, 2023
[12]Sora Huqa, Pastoralist, Moyale Woreda, an Interview, June 06, 2023

4.1.1.2. Impacts of Climate Change, Human Insecurity and Violent Conflict

The climate change impact has been ever increasing as human situations have been continuously deteriorating across the study area. According to FGD and KII participants, generally drought severely impacted entire environment that communities around based on for livelihoods. Thus, the next Table, FGD and KII presentations detail further arguments.

Table-6: Responses on Impacts of Climate Change/Drought, Human Insecurity and Violent Conflict in Pastoral and Semi-Pastoral Areas of Borena Zone

Items	No. Resp.	Responses in Percentage and Frequency									
		Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree	
		F	%	F	%	F	%	F	%	F	%
Climate change and violent conflict directly influence each other in Borena.	50	5	10	7	14	0	0	26	52	12	24
Impact of violent conflict has created further social crises and damage to social cohesion.	50	50	100	0	0	0	0	0	0	0	0
Almost every year climate change catastrophes have been occurred for the last ten years in Borena Zone.	50	50	100	0	0	0	0	0	0	0	0
Drought and flash floods have been frequent.	50	47	94	3	6	0	0	0	0	0	0
Drought and flash floods have been devastating in Borena zone..	50	45	90	2	4	3	6	0	0	0	0
Due to climate change the entire environment has been deteriorating.	50	49	98	1	2	0	0	0	0	0	0

Source: Survey Result of Respondents' June, 2023

Table 6, shows 76% of respondents from the study areas either disagree or strongly disagree on direct influence of climate change and violent conflict. However, of the respondents 24% either agree or strongly agree on direct relationship of climate change and violent conflict. However, 100% of respondents strongly agree that impact of violent conflict has created further social crises and damage to social cohesion whenever used to occur.

In similar manner, according to FGD and KII, climate change and violent conflict have no direct relationship because there haven't been immediate and direct violence occurrences have happened even after severe and devastating drought and flash floods. Rather they strongly believe that the existence of indirect influence of climate change on violent conflict. And they argue that as pastoralists impacted by climate change severely, resource is limited, competition over resources higher; thus fierce competition occurs then violence follows. More generally, participants have disagreed on the direct influence of drought on conflict, however, they clearly

have underpinned that drought in Borena Zone has had an impact to drive conflict indirectly.[13] For instance, increasing heat wave, decreasing rainy season, decreasing average annual precipitation and humidity or increasing drier air; ever diminishing and loosing small lakes, ponds, diminishing the amount of water in the river and ever drying rivers, extinction of plant and animal species can be considered as indirect connection to violent conflict.[14,15,16] However, resource scarcity, hunger, famine, migration, etc. are linked to violent conflict directly.[17,18]

Also, FGD and KII argue that killings, cattle rustling, increasing illegal arms trades including cross border arms dealings, decreasing traditional resources governance, weakening social capital, in general, dismantling social cohesion and social instability have been frequent as per to drought occurrences across the study area. However, this conflictual situations more sever between different cultures while less violent between similar cultures. [19,20,21,22]

The cycle of drought occurrences more threatening as concluded by respondents; which100% of respondents strongly agrees that almost every year climate change catastrophes have been occurred for the last ten years. Discussions with Focus Group and Key Informants interviews also build on the idea that the increasing scope and intensity of climate change or drought in Borena Zone has been impacting residents severely.[23] And, 100% of respondents either strongly agree or agree that drought and flash floods have been frequent. In similar vein, participants of FGD and KII have explained that pastoralists and semi-pastoralists in the study area have been experienced severe drought and flash floods every year. They believe that in the past ten years the frequency of drought occurrences has ever increasing than a decade before, more severe and lengthy that consumed large number of herds; which is also memorized as *"oolaa loon owwaalan"*, meaning- a full day of dead animal burial. As the result the availability of resources has been contracting that directly impacting human situation in the study area.[24]

[13] Ibid
[14]NuraAdem, Gov. Employee, MoyaleWoreda, an Interview, June 05,2023
[15] Abdu Dhenge, Gov. Employee, MoyaleWoreda, an Interview, June06, 2023
[16] Marima Abdi, Semi-pastoralist, Moyale Woreda. An Interview, June 06, 2023
[17]Goromti Racho, Dire Woreda, Gov., Employee, an Interview, June 11, 2023
[18]GalmaHalake, Pastoralist, MoyaleWoreda, an Interview, June 05, 2023
[19]HalakeTano Jilo, Pastoralist, YabeloWoreda, an Interview, June 01, 2023
[20]GolichaGalme, Pastoralist, YabeloWoreda, an Interview, June 01, 2023
[21]Wariyo Boru Roba, Pastoralist, Moyale Woreda,an Interview, June 05, 2023
[22] Elema Birbirsa, Pastoralist, Moyale Woreda, an Interview, June 05, 2023
[23]Barite Godana Pastoralist, MoyaleWoreda, an Interview, June 04, 2023,
[24]DikaGalgalo, Pastoralist, MoyaleWoreda, an Interview, June 05, 2023

Respondents confirm that drought and flash floods have been the major challenges in pastoralist and semi-pastoralist areas of Borena Zone; and hence, 94% of respondents either strongly agree or agree that drought and flash floods have been devastating in Borena zone; while 6% neutral.

Also, participants of FGD and KII argue that drought and flash floods in the study area has been eroding entire pastoral and semi-pastoral livelihoods. For instance, after the 2022 recent drought heavy floods have eroded a number of shelters and some herds. In total, pastoralists have been impacted by hunger, famine, child malnutrition, disease, loss of human and livestock, losing family and community cohesion.[25] In other words, 100% of respondents either strongly agree or agree that the entire environment has been deteriorating as a consequence of climate change in the study area.

In general, according to KII and FGD in the study area, the crises has been a consequential process; climate extreme resulted to inadequate rainfall, the decreasing rainfall led to the diminished vegetation that consequent to shortage of herds feeds, then loss of herds.[26]

4.1.1.3. Government Response to Climate Change, Human Insecurity and Violent Conflict

The climate change, human insecurity and violent conflict mitigation require strong commitment as challenges have been increasing and impacting the entire environment. Particularly, policy formulation and implementation is essential in curbing drought effects, human security challenges and violence.[27] Hence, the next discussion identifies the participants' ideas on the government responses to Borena Zone drought crises for the last ten years.

Table-7: Responses on Government Actions As an Exacerbating Factor of Climate Change/Drought, Human Insecurity and Violent Conflict in Pastoral and Semi-Pastoral Areas of Borena Zone

Items	No. Resp.	Responses in Percentage and Frequency									
		Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree	
		F	%	F	%	F	%	F	%	F	%
The Government's support during climate extremes such drought and flash floods have been extremely low.	50	46	92	2	4	1	2	1	2	0	0
Climate change mitigation endeavours is insignificant.	50	44	88	3	6	2	4	1	2	0	0
Climate change or drought effect prevention policy and implementation are insignificant.	50	48	96	1	2	1	2	0	0	0	0
There are possibilities to address human insecurity and associated issues in Borena Zone.	50	26	52	11	22	5	10	3	6	5	10

Source: Survey Results of Respondents, June 2023

[25]Edin Godaanaa Pastoralist, MoyaleWoreda, an Interview, June 05, 2023

[26] Ibid

[27]GolichaGalme Gov. Employee, YabeloWoreda,an Interview, May 29. 2023

Table-7 depicts that government's low level actions in responding to drought or climate effects in Borena Zone. According to respondents from the study area, which as quantified as 96%, either strongly agree or agree on low level of government's response or support to drought effects. However, of respondents 2% has been neutral while another 2% disagree. Similarly, FGD and KII participants have argued that following drought occurrences, attempts made by government has been far below what has been expected. Food aid, water and pastor supply has been late at least to save some who have been struggling between life and death. For example, in Moyale and Dubuluk Woredas, people have been asking for humanitarian help for at least six months; the international humanitarian organizations were announcing that governments and aid agencies had to respond timely. And, on its part, the mainstream international media also has been broadcasting repeatedly that the 2022 drought was more severe and threat to people in the Horn of Africa including Borena Zone. However, the humanitarian response to effects of drought significantly low and even was covered by Ethiopian mainstream media lately.[28,29]

It is also fundamental to wittiness that low level of mitigating climate change as government's actual activities has been inconsiderable. Focusing on the matter 94% of respondents either strongly agree or agree that mitigating climate change has not been taken seriously. And among respondents 4% has been neutral while 2% disagree on the issue of climate change mitigation. Furthermore, FGD and KII participants have explained that the climate change or drought mitigation efforts made by public bodies have been almost none. Awareness creation on the relevance and how to reduce the climate change has been not worth mentioning. Forest protection and afforestation program which has been rarely raised by development agents, has not seriously taken as part of development and as future plan to sustain livelihoods. Thus, an effort of mitigating climate change in Borena Zone has been inconsequent. Rather, agricultural and environmental agents, primarily insisting on sedentary farming to resettle pastoralists as environmental degradation has largely been caused by pastoral activities. Climate change mitigation activities have not been dealt with as the effect hugely influencing the entire livelihoods[30,31]

[28]Molu Sara, Gov. Employee, DbulukWoreda, an Interview, June 07, 2023
[29] Galgale Bagajo, Pastoralist, Moyale Woreda, an Interview, June 09, 2023
[30]Koban Konchora, Semi-pastoralist, DubulukWoreda, an Interview, June 08, 2023
[31]Doyo Jatani, Semi-pastoralist, DubulukWoreda, an Interview, June 08, 2023

In other words, climate change or drought effect prevention policy and implementation have not been at level of improving the conditions of pastoralist and semi-pastoralist in Borena Zone. Discussions with Focus Groups and Key Informants interviews shows that the issue used to set by public officials was intending to pooling political support during conflict and election in the name of climate change mitigation programs. Other than advocating policy and its implementation for special purpose that directed to mass support, it has not been actually involve improving the conditions of the people on the ground those who have been suffering from climate change effects. Also 98% of respondents from the same area underpinned that climate change policy and its implementation has not been contributed to shifting severe situations of pastoralist and semi-pastoralists by revealing their attitudes strength indicating strongly agree or agree. However, 2% of the respondents have been neutral on the matter.[32,33]

Of all respondents 74% have concluded that by emphasizing on either strongly agree or agree on the possibility of reducing the human insecurity and associated challenges in Borena Zone when 10% neutral; 6% disagree, and 10% strongly disagree. The discussants and interviewees more further argue that weak policy implementation in protecting forest and preventing damage against environment, late and inadequate response to human challenges, absence of actual pastoral livelihood improvement or transformation, lack of early warning systems and inadequate concern and effort to prevent drought impacts and violence have been major challenges of Borena Pastoralist and semi-pastoralist communities.[34,35,36,37]

And, the next sub-section discuses implications of pastoral communities' situations and link of climate change, human security and violent conflict in the study area.

4.2. Discussion

The study has attempted to find out the link between climate change, human security and violent conflict, and dependability of factors and impacts of each variable on one another. The findings from empirical and literature review indicate that human activities have been contributing to

[32]Guyo Bagajo, pastoralist, moyale, an Interview, June 04, 2023
[33]Argane Ayalew, pastoralist, Dire Woreda,an Interview, June 13, 2023
[34]WariyoBagajoHuka, pastoralist, Dire Woreda, an Interview, June 13, 2023
[35] Abdu Dhenge Gov. Employee, MoyaleWoreda,an Interview, June 05 2023
[36]DeraraBayisa, Gov. Employee, MoyaleWoreda, an Interview, June 06 2023
[37]NuraAdem, Gov. Employee, MoyaleWoreda, an Interview, June 05 2023

climate that has been manifested to environmental change. In the pastoral areas of Borena Zone, cutting trees or clearing forests for various purposes such as charcoals, etc have an impact on environment. This is a long with Anthropogenic Global Warming/AGW/ theory that explains human activities as the main cause of climate change globally (Joseph, 2013).

In Borena pastoral communities, climate change has been intensifying as a cause of human activities as actually implicated on the environmental degradation. The range land has been losing its capacity to provide the natural resources that pastoralists primarily depend on for livelihood. This is witnessed by many studies including Regional Pastoral Development Institution reports and also as it is threatening the entire communities' security. And, this shows that there has been clear understanding with elites that of climate change and its effects have been highly impacting the range land productivity. Moreover, there are also laws and policies that intended to mitigate accordingly. However, the topical issue is why policies have not been realized adequately, why priorities absent to rehabilitate the environment to the extent that be able to deliver minimum range land resources. The findings from the field study shows that the government tends to avoid issues of pastoralists deliberately while earning from livestock exports. But some views are as tackling the climate change effects beyond the government capacity though endeavours have been there to mitigate environmental change.

These seems either an intentional priority issue or deliberate inaction to mitigate climate change that manifested in environmental degradation, which is also associated to the political ecology approach's assertion of political marginalization that explains the marginalized communities are abandoned in environmental degraded and unproductive areas; and those who severely experience climate change effects (Raleigh, et al., 2008). Thus, this explains conditions of pastoralists in Borena Zone who have been suffering from climate extremes. And, it can be inferred, as Borena pastoral communities are partially politically marginalized as policy implementation and climate effect response are almost none.

In the case of climate change and violent conflict linkage, some empirical studies describe scenarios, like, as desertification intensifies and drought is frequent, competition over scarce resources and migration is inevitable if cooperation based on reciprocity unlikely. Particularly, during severe drought the probability of violent conflict is higher. This is also an experience of Borena pastoral communities as livelihood has been deteriorated and faced instability frequently.

Such conditions can be linked to the idea of Scheffran (2010) model, in which climate change is explained as a source of violent conflict, indirectly; and neo-Malthusian theory that argues as the resource scarcity occurs by number of factors including climate change may induce violence.

The cause of violent conflict can also be associated to government policies mainly mitigating mobility by reducing pasture land for various purposes. This is a long with the US AID (2016) and Land for Life Initiative (2021) findings that identify excessive investments on pasture lands such as ranching and others in Borena Zone, the case on which contradiction sporadically occurs. Hence, when mobility is limited, overgrazing is higher; competition is the likely to occur, then the inevitability of violence is situated. In other words, abandoning pastoralists in the name of development from their traditional grazing lands without creating conducive environment that help sustain their livelihood is that the effect of their weak position they hold in political arena. Also, the institutions such as Oromia Pastoral Development that had to promote the interests of pastoralists' on behalf are sometimes seen weaker than pastoralists themselves; while it had to raise the issue of pastoralists to draw attention of the general population of the nation and influence the government systems. Thus, the pastoral agenda has been far from the political or policy matters. This is asserted by political ecology approach that the marginalized communities' issues have to been taken to the centre of politics for better attention to change situations on the ground while de-politicization has to be removed as it undermines interests of these communities (Castree, 2002). In sum, the government policy and its implementation without considering the pastoral livelihoods can also be sources of instability that ultimately dragging to violence as well.

With regard to conflict and traditional resolution, traditionally conflicts had been prevented or resolved by customary institutions; for instance, contradiction over range land management used to be handled by elders and resolved according to rules established by communities. However, these institutions have been weakened and unable to prevent or resolve instabilities arising among communities and between individuals during conflicts in Borena Zone. This is partially emanated from government intentions to replace the traditional governance practices as necessary, particularly, on pasture land, though the Oromia Regional State issued the communal land certification (USAID, 2016) that implicitly allows traditional range land management. Thus, these conditions have been remained as one of the factors of violent conflict in the study area.

The study has also identified the link between climate change and violent conflict as the interaction between the two variables builds up on the theoretical framework that connects them after impacts on people or immediate needs of people as livelihoods. This leads to infer as climate change affects normal human situations, in turn the negatively influenced human conditions shift to unstable conditions or violence. Thus, this may be due to many factors of human conditions that cannot be limited in specific situations and locations though the structural cause of climate change is primarily identified, circumstances that transform to violence or remain as potential are rudimental. This is better explained by political ecology approach as it analyses forms and process of violent conflict, its cultural and structural dimensions, such as the concept of policy oriented famine- *silent violence*, the danger of pollution- *slow violence.*(Watts, 1983), (Nixon, 2011), (Lahiri-Dutt, 2015). These all potential conditions are there in pastoral areas of Borena Zone waiting for triggering or provoking circumstances to be transformed to violent conflict. Hence, the climate change and violent conflict in Borena Zone is never direct rather the other way round. Also, many theoretical and empirical studies suggest that climate change and violent never been directly associated, thus, the arguments that assert the indirect link between them is much more convincing.

The issue responding to the climate change effects is topical as usual. The study findings indicate that the government response to climate effects such as drought and flash floods has been low. This is supported by various studies; for instance, Wossen (2023) summarizes as responses to climate change effects such as environmental rehabilitation, early warning services, and drought impact prevention efforts have been insignificant. This is implied to the problem of policy implementation priorities.

Concerning policy or program of action to tackle the challenges of climate change and its effects, the Oromia Regional State adopted the Oromia National Regional State Program of Plan on Adaptation to Climate Change in 2011 that focuses on mitigating climate change by rehabilitating the range land through afforestation and protecting vegetation and forests. However, views from various sources tend to criticize its implementation. It is argued as, if the plan of action and adaptation could be implemented, the actual environmental conditions and range land that provide adequate resources for pastoralists would have been in a better situation. In other words, the plan has been there but its implementation is actually not significant. In sum,

the range land in Borena pastoral area is worrisome and threatening; that needs special attention of policy implementation; and drought effect prevention and humanitarian relief responses require effective response on spots, starting from early warning services, as well.

The worrisome is that while the government policy implementation has been failed to support the needy, the traditional support network has been weakening at least to deliver for survival. This traditional social network, as findings from the study, has lost its strength by public systems interferences. If it could be in place as it had been a decade ago, many pastoralists in Borena zone would have been survived the recent drought crises. This traditional survival network is explained by the theory of social network, in which social exchange and reciprocity between individuals or among groups including pastoralists is priceless during catastrophes. It purports the social network as survival strategy when better options are unavailable in traditional economic activities, like pastoralism. However, to underpin, this traditional social capital has been weakened as the effect of government imposition of modern rules and deliberate act of public systems that differentiate between communities in the name of modernizing governance in Borena Zone. The weakening of the customary rules in communal property use and replacing new systems instead is identified by political ecology approach as creating another source of violence (Ribot and Peluso, 2003).

Moreover, the livelihood sustenance are possible and nurtured if strategies are diversified based on actual societal situations. This is better explained by the sustainable livelihood approach, which is an alternative to top-down development scheme as development from below. The sustainable livelihood approach focuses on three kinds of strategies for those in situations of natural disaster such as climate change calamities. The first one is diversification of livelihood, which involves engagement in different economic activities to create additional source of income outside traditional earning systems such as livestock breeding as pastoralist. The second strategy described by sustainable livelihood approach is intensification of agriculture, which is dependent largely on natural resource exploitation. The final, third is migration, which is used as temporarily escaping means from disaster (Hussein & Nelson, n.d.) and (Geremew, 2017).

Thus, the Oromia National Regional State Program of Plan on Adaptation to Climate Change is a long with the sustainable livelihood approach principles as it is primarily focusing on diversification and agricultural intensification in pastoral areas including Borena Zone though

actual implementation of the plan is significantly low. However, migration or mobility is not considered as a survival strategy of pastoralism in Oromia Regional State as it is not mentioned in the plan. Even it seems it is about to limit and eventually resettle at different locations. But the study highlight that, currently, the most effective traditional survival strategy is migration within the Borena Zone, neighboring communities and beyond including crossing international borders than other strategies before and during drought crises, based on the meaning given to situations and receiving communities symbolic meaning. Traditional pastoral migration can be linked to symbolic interaction theory that describes how communities interpret their situations and receiving communities to migrate (Husin, et al., 2021) and (Aksana, et al., 2009). Thus, the Borena communities interpret its situations astronomically, environmentally and culturally to decide when, where and how to migrate. This has been practiced as long as pastoralism and unlimited mobility over large tract of land existed with the communities for centuries and so. Now, this is limited, challenges from climate change are severe and human security is under threat, and more violence is the likely. In sum, the findings highlight that the increasing severity of climate change contribute to increasing violent conflict though indirect, following human crises. Hence, the issue needs much more attention than pervious situations as the challenges coming from climate are threatening entire communities' livelihoods.

The next chapter concludes and recommends on the climate change, human security and violent conflict links and related findings.

Chapter Five

5. Conclusion and Recommendation

5.1.Conclusion

The study has investigated factors and impacts of climate change, and connections of climate change, human insecurity and violent conflict in pastoral and semi-pastoral communities of Borena Zone. And it has found important findings that add to existing knowledge. Thus, this chapter briefly reviews earlier chapters, identify the relevance of the topic and provide suggestions for future researchers.

The first part of this study describes how climate change scope and intensity has been increasing as the result of human actions. This challenge is directly influencing most parts of sub-Saharan Africa as its temperature has increased by 0.5°C for over 50 years, and hence, it is identified as the most affected region of the world (Soest, 2020); and also as a consequence pastoralists and pastoralism have been under severe challenges. Particularly, the Horn of Africa countries have been facing severe climate change challenges as the frequency of drought doubled and its intensity increasing alarmingly. For instance, as an impact, only in August of 2022 twenty-two million people have been under food insecurity in Somalia, Kenya and Ethiopia; even some have been reached at famine situations (Gavin, 2022). This unpredictable, recurrent and increasing intensity of drought and floods in the Horn of Africa is more severe in the southern part of Ethiopia and northern part of Kenya where the study partially covers. And, limiting mobility policies and weakening of customary institutions have been affecting pastoralists and semi-pastoralists during drought crises. Thus, as the consequence of the problem actually occurs, studying Borena Zone pastoralists and semi-pastoralists' situations in line with climate impact add on existing knowledge.

And, one of the theoretical frameworks employed for this study is political ecology approach that analyses the environment and communities impacted by changes of environment or climate and public polices across their land areas. It explains the impact of climate change on communities and how they suffer even from public policies by investigating historical situations, existing challenges and future conditions.

Also, the Sustainable Livelihood Approach is used as the political ecology approach cannot fully explain situations in the study area; and the Sustainable Livelihood Approach primary focuses on the environment, sustainability, productivity and poor people's livelihoods. And, it looks at where people are and situated what they have and what their needs and interests resonate (Serrat, 2008) and (De Haan, 2012).

The Symbolic Interaction Theory is also employed to explain Borena's pastoralists' situations as adaptation has been used as a survival strategy; a long with this, symbolic interaction theory explains how communities give meanings to their situations and others to take actions in the process of escaping from climate crises or other catastrophic situations (Aksana, et al., 2009).

Moreover, Social Networks and Rural Livelihoods framework is relevant to explain the network built on between individuals and social groups for generations; and describe how communities in the study area survive using social network in their actual conditions, as it frames how kin, places of origin and other kinds of connections play a role in reciprocity that serves as a survival strategy (Dapilah, ett al., 2019).

The empirical evidence on climate change, human insecurity and violent conflict, mainly on factors, impacts and links is limited and varies according to local contexts. Thus this study has tried to explain some empirical evidences based on factors and impacts of climate change directly or indirectly in Africa, the Horn of Africa and Ethiopia, Oromia-Borena Zone situations. Duba (2021), on the study of factors affecting pastoral sustainable livelihood- the case of Borena, southern Ethiopia describes that pastoralists' livelihoods has been impacted by frequent drought, increasing intensity of temperature and erratic rain due to human action such as deforestation. Also, Ahmed (2013) specifically has indicated that the decreasing of forest coverage and forest resources due to human actions that would affect the future pastoralists' sustainability and life style.

And, Duba (2021) identified that limiting survival strategy such as mobility and shrinking of the grazing land severely impacted pastoral livelihoods. For instance, the main grazing land has been converted to crop cultivation or expansion of cultivating lands intensified, privatization of communal resources and bush encroachment increased with the intention of sedentary economic activity as the result herds mobility severely mitigated and led to overgrazing, and this used to cause inter-ethnic conflict.

Daniel, et al., (2023) depicted that in spite of the fact that the contribution to the national economy, insignificant attention has given to pastoralists' development by government in terms of infrastructural development. Social services such as education and health services and economic services like agricultural extension, roads, electricity, communication, credit, and insurance services have been lower when compared to other regions in Ethiopia.

The study employed mixed approach with a sequential explanatory design, commenced with a quantitative phase and has been followed by a qualitative phase. Both quantitative and qualitative data have been collected, analysed separately during the research process then integrated. Then, the two phases have been integrated, and this enabled interpretation of the combined findings. Results from the qualitative phase have been used to explain and provide a more comprehensive contextualization of findings and interpretations drawn from quantitative phase.

The tools of data collection like survey - questionnaire, which has been used in line with the *multi-item scale or psychometric scale* to measure the same and interrelated perceptions and attitudes using multiple items in valid and reliable manner. And, *respondents' self-administration* is employed. Also Focus Group Discussion, Key Informant Interview, documentary data collection, recording and analysis has been used as tools to collect data from the study area. The non-probability sampling method along with purposive sampling technique has been employed as well.

The study has identified that factors and impacts of climate change, human insecurity and violent conflict, and the level of public institutions response to causes and effects of climate change in the study area. The factors of climate change has been human actions as it goes with global premises, human insecurity has been caused as an effect when violent conflict consequence of human catastrophes. This is elaborated as follows.

The study has found that climate change, human insecurity and violent conflict have been challenges of pastoralist and semi-pastoralist of the Borena Zone. Climate change, human insecurity and violent conflict have been linked either directly or indirectly, or depends on each other as cause and effect relationship directly or, and indirectly. Climate change or drought has been the major factors of human insecurity which has direct impact on social stability while violent conflict has been occurred indirectly after human crises. The study also has found that as

the result of drought impacts violent conflict has been rarely experienced because people has been cooperating during crises instead of competition. This originates from traditional values existed for generations in Borena communities as social capital that also has used as means of survival strategy. However, pastoral migration between different cultures has more been conflictual even within the international borders while migration beyond international borders to similar cultures has been less and rarely occurred.

Overall, climate change occurs as the result of entire global human actions; as specific to the study area, human activities such as deforestation has been a major contributing factor; to the effect of entire climate change or desertification that in turn consequent to increasing the intensity of warming and heat waves, severe and shorter drought cycle.

Human security has been under severe challenge as far as drought occurrences unpredictable and recurrent across the study area. Pastoralists and semi-pastoralist have been suffering from hunger, child malnutrition and disease. Migration also another feature of human chaos in Borena Zone as consequence of drought that may or may not resulted to competition or cooperation due to either weakening or existence of traditional values or customary institutions. Another aspect of pastoral and semi-pastoral human security is the existence and the sustainability of herd's production as their livelihoods based on and their psychological attachment is strong that as to live by herds is secured from evil dreams. However, as the study has found out climate change or drought severely impacted the number and health conditions of herds. Even in recent 2022 drought cycle significant number of herds has been lost. And, many others have been in difficult health conditions. Thus, due to climate impacts human security has been affected significantly in Borena Zone.

The government policy formulation and implementation is a cornerstone for changing or improving social situations, particularly, in climate change affected areas like Borena's pastoral and semi-pastoral areas. However, the empirical studies and respondents from the study area clearly indicate that climate change mitigation, drought impact and violent conflict prevention activities, emergency aids have been far below the demand on the ground. Even in recent 2022 drought occurrence, using International drought early warning information as an opportunity has not been preferred by existing public systems. Rather, silence and late response has been the fact and witnessed phenomenon.

In general, the study has found out that climate change has been ever increasing alarmingly, drought severely impacting human security; due to competition over resources violent conflict has been experienced indirectly but rarely due to traditional resource management institutions and social capital between similar cultures even beyond international borders, while pastoral migration is more conflictual between different cultures even within the international borders. And, swift responses of drought crises insignificant; pastoral development is extremely low though demands have been sustained for decades.

5.2.Recommendation

Climate change mitigation policy implementation should be given more attention; prioritizing environmental re-greening of the degraded or deforested areas of Borena Zone to restore to the level of healthy ecological state, ought to be emphasized. And, developing and implementing afforestation programs have to be taken into consideration along with prevention of damage against environment including deforestation, protection of existing forest resources, etc. This should be involving the mass mobilization in recovering, protecting the afforested and recovered land as it requires large labour.

On the other, human insecurity can be minimized by adopting short term emergency plan, medium term prevention strategy and long term pastoral livelihoods transformation. Specially, the prevention of drought effect strategy should be given prior attention next to emergency; and need to be based on scientific assessment and thus help to forecast more accurately and prevent crises in advance accordingly. This lies on establishing drought early warning systems, and in advance preparation of life saving mechanisms, which also involve communities at grass roots to capture the immediate and future interests. The bottom-up prevention strategy development much contributes even during implementation as communities' involvement create sense of ownership.

Moreover, pastoralist resettlement program have to be adopted and implemented by government in the long term plan. This is not only to escape from severe drought but also due to unviability of traditional pastoral economic activities in the study area. This needs gradual process as pastoralist attitudes shifts towards modernization by continuous awareness creation processes.

The issue heating is the reluctant public systems to respond, late and inadequate response to drought effects that need basic shift to sense of urgency in addressing challenges of communities who face severe social crises. Early preparation to respond accordingly is essential to deliver emergency aids to victims of climate change disaster.

In sum, increasing scope and intensity of climate change or drought is inevitable unless climate change mitigation program seriously implemented; continuity of its impacts is also inescapable unless prevention strategy is adopted. This is intended to be improving the pastoral and semi-pastoral situation which is meant availing food for humans and pasture and water for herds; gradually changing ways of herd's production and style of living by transforming livelihoods.

And, having all these findings, questions are proposed for future researches. Hence, given ever increasing crises, why have public institutions not as such concerned about drought effect prevention and climate change mitigation? Having ever increasing crises, why do pastoralists reluctant in shifting style of economic activity?

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Annex:

I. A Survey Questionnaire to Collect Data On Climate Change, Human Insecurity and Violent Conflict Links and Their Effects in the Study Area (Borana Zone) Using Multi-item Scale or Psychometric Scale:-

Dear honoured respondents; this is a questionnaire for the purpose of collecting data on Borana Zone climate change and its effects or droughts crises to contribute the understandings of the larger climate impacts of the entire Horn of Africa; and to emphasize the necessity of mitigation and preventive policy making and implementation. Thus, you are kindly requested to either ***fill*** or ***mark"X"*** in the each provided space for background information and responses of items in the table accordingly. Please, consider time span of ten years that covers 2013-2023 climate change or drought and floods occurrences. Thank you for your valuable support!

Date of Survey ……..

Respondent's Background Information:-

Name (Optional) ……..

Place of Residence *(Woreda):* …… Occupation……..

Sex: Male …… Female…… Age……..

Educational Background: PhD …… MA/MSC …..... BA/BSc …..... Diploma ……. Certificate …. Grade 8^{th} to 10^{th} ..... Below Grade 8^{th} ... Informal/Adult Education …...Never has been at school ……

Marital status: Married …… Single…… Number of family member ……..

Animal Ownership Status *(only for pastoralists or semi-pastoralists):* Current number of herds …… Number of herds before recent drought crises ……

A Questionnaire to collect data using Multi-item Scale or Psychometric Scale:-						
No	**Items**	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
1	Climate change is occurring due to human activities and absence of mitigation endeavors.					

2	Pastoralists' human insecurity continues to be alarming or topical as the result of limited survival strategy (such as mobility and social capital).					
3	Survival strategy significantly mitigated as the result of policies or weakening of traditional governance.					
4	Climate change and violent conflict influence each other directly in Borana.					
5	Impact of violent conflict has created further social crises and damage to social cohesion.					
6	Violent conflict occurs because of scarce resources and migration.					
7	Almost every year climate change catastrophes have been occurred for the last ten years in Borana Zone.					
8	Drought and flash floods have been frequent.					
9	Drought and flash floods have been devastating in Borana zone.					
10	Due to climate change the environment has been deteriorating.					
11	The government responses to drought or climate change are insignificant.					
12	Climate change mitigation endeavors is insignificant.					
13	Climate change or drought effect prevention policy and implementation is insignificant.					
14	There are possibilities to address human insecurity and associated issues in Borana Zone.					

II. Interview Questions for Key Informants to Collect Data On Climate Change, Human Insecurity and Violent Conflict Links and Their Effects in the Study Area (Borana Zone):-

The interview will be conducted focusing on time span of ten years that covers 2013-2023 climate change or drought and floods occurrences.

Date ……Place ……

Full Name: …….

Background Information:-

Place of Residence *(Woreda):*…… Occupation ……

Sex: Male ……Female……Age……..

Educational Background: PhD ……MA/MSC……BA/BSc …..Diploma…..Certificate……Grade 8th to 10th……. Below Grade8th…. Informal/Adult Education……Never been at school…….

Marital status: Married……. Single……Number of family member ……..

Animal Ownership Status *(only for pastoralists or semi-pastoralists):* Current number of herds …… Number of herds before recent drought crises ……

Questions for Key Informants' Interview:-

General Question - What are the relations between climate change, human insecurity and violent conflict in pastoral and semi-pastoral area of Borana? What are factors and impacts of Climate change or drought?

KII questions:

Specific questions:

1. Why climate change is occurring? What are factors and impacts of climate change?
2. Why does pastoralists' human insecurity continue to be alarming or topical? Is there mitigation of survival strategy (such as mobility and social capital) in the Borana Zone?
3. What is the factors and extent of human insecurity?
4. Are there specific patterns of human insecurity in the area; if so, what role does scarcity play in initiating human insecurity?
5. Have labor or distress migration patterns increased due to variation in climate patterns?
6. How do climate change and violent conflict influence each other? What are impacts of violent conflict? Is violent conflict occurs because of scarce resources and migration?
7. How many climate change catastrophes have been occurred for the last ten years?
8. How do drought and flash floods frequent?
9. How drought and flash floods sever?

10. Has the climate change been impact the entire environment in the study area?
11. What are government responses to drought or climate change crises?
12. How government has been working to tackle climate change and its impacts in the Borana zone?
13. Are there prospects to address human insecurity and associated issues in the study area?

III. Questions for Focus Group Discussion(FGD) to Collect Data On Climate Change, Human Insecurity and Violent Conflict Links and Their Effects in the Study Area (Borana Zone):-

The discussion will be conducted focusing on time span of ten years that covers 2013-2023 climate change or drought and floods occurrences.

Date ……Place ……

Background Information:-

Place of Residence *(Woreda):*…… Occupation/pastoralist, semi-pastoralist, civil servant and government official/ ……

Sex category/number of participants/: Male ……Female……Age category/age range/ ……

Educational Background/number of participants/: PhD ……MA/MSC……BA/BSc …..Diploma…..Certificate……Grade 8^{th} to 10^{th}……. Below Grade8^{th}…. Informal/Adult Education……Never been at school…….

Marital status/number of participants/: Married……. Single……

Questions for FGD:-

General Question - What are the relations between climate change, human insecurity and violent conflict in pastoral and semi-pastoral area of Borana? What are factors and impacts of Climate change or drought?

FGD questions:

Specific questions:

1. Why climate change is occurring? What are factors and impacts of climate change?
2. Why does pastoralists' human insecurity continue to be alarming or topical? Is there mitigation of survival strategy (such as mobility and social capital) in the Borana Zone?
3. What is the factors and extent of human insecurity?
4. Are there specific patterns of human insecurity in the area; if so, what role does scarcity play in initiating human insecurity?
5. Have labor or distress migration patterns increased due to variation in climate patterns?
6. How do climate change and violent conflict influence each other? What are impacts of violent

conflict? Is violent conflict occurs because of scarce resources and migration?

7. How many climate change catastrophes have been occurred for the last ten years?
8. How do drought and flash floods frequent?
9. How drought and flash floods sever?
10. Has the climate change been impact the entire environment in the study area?
11. What are government responses to drought or climate change crises?
12. How government has been working to tackle climate change and its impacts in the Borana zone?
13. Are there prospects to address human insecurity and associated issues in the study area?

DECLARATION

This thesis is my original work and has not been presented for a degree in any other University, and that all sources of material used for the thesis have been duly acknowledged.

Garoma Nefabassa Amenu _____

Signature Date

A Signature of Confirmation by the Supervisor

Bamlaku Tadesse (PhD) _____

Signature Date