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Monographic issue

The Disaster Profile of Ethiopia

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Letter from the editor

The Emergency and Disaster Reports is a journal edited by the Unit for Research in Emergency and Disaster of the Department of Medicine of the University of Oviedo aimed to introduce research papers, monographic reviews and technical reports related to the fields of Medicine and Public Health in the contexts of emergency and disaster. Both situations are events that can deeply affect the health, the economy, the environment and the development of the affected populations.

The topics covered by the journal include a wide range of issues related to the different dimensions of the phenomena of emergency and disaster, ranging from the study of the risk factors, patterns of frequency and distribution, characteristics, impacts, prevention, preparedness, mitigation, response, humanitarian aid, standards of intervention, operative research, recovery, rehabilitation, resilience and policies, strategies and actions to address these phenomena from a risk reduction approach. In the last thirty years has been substantial progress in the above-mentioned areas in part thanks to a better scientific knowledge of the subject. The aim of the journal is to contribute to this progress facilitating the dissemination of the results of research in this field.

This monographic issue explores the features of the disaster profile of Ethiopia.

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ORIGINAL RESEARCH

The Disaster Profile of Ethiopia

Samuel Befekadu Getu

ABSTRACT

Disasters hit every part of the globe (developing and developed), causing deaths and destructions. Hurricanes, fires, earthquakes, tsunamis, floods, droughts, volcanic eruptions, landslides, cyclones, wars, oil spills, acts of terrorism, just to name a few, arethe natural and man-made disaster events that resulted in untold suffering to the millions of people worldwide. Apparently, most of the developing countries bear the brunt of natural disaster losses. Because of the considerably low coping capacity, physical, social, and economic vulnerability developing countries are suffering more from disasters than developed ones. (1)

Disasters have always been a result of human interaction with nature, technology, and other living entities. Sometimes unpredictable and sudden, sometimes slow, and lingering, various types of disasters continually affect the way in which we live our daily lives. Human beings as innovative creatures have sought new ways in which to curb the devastating effects of disasters. However, for years human conduct regarding disasters has been reactive in nature. (2)

The increasing frequency and scale of disasters resulting from natural hazards pose mounting challenges to human well-being and security. Natural disasters have a disproportionate impact on the poor in developing countries, and the risks are strongly associated with poverty. (3)

This is a review of the existing literature, journal, articles, reports and Emergency Database (EM-DAT) of the Centre for Research on the Epidemiology of Disasters (CRED) combined with in-depth, comparative textual analysis of main disasters which have been affecting the country. This profile outline disaster of drought, Flood, Landslide, Earthquake, and Volcano. Moreover, it includes historical review of epidemic and recent phenomena of internal displacement in the Country.

Information on Ethiopia disaster risk profile will contribute to a stronger understanding of a country's past and current disaster situations and its impact, disaster risk factors, its policy and methods and sheds light on the advance of the disaster risk reduction and management policy and programs.

1 BACKGROUND

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This descriptive report will outline the major disasters of the country and its impact on health, environmental, economy and development of populations affected. It will focus on the main disasters that has happened in the last 50 years. The report will also outline the national policy and strategies on disaster risk management and growth and transformation plan (GTP II) targets of the National Disaster Risk Management Commission (NDRMC). Review of wereda (district) disaster risk profiling structure and logical frameworks are included in this review from national disaster risk management commission.

2 THE STUDY AREA

The study covered all National Regional states and administrative states of the Federal Democratic Republic of Ethiopia (Figure1).

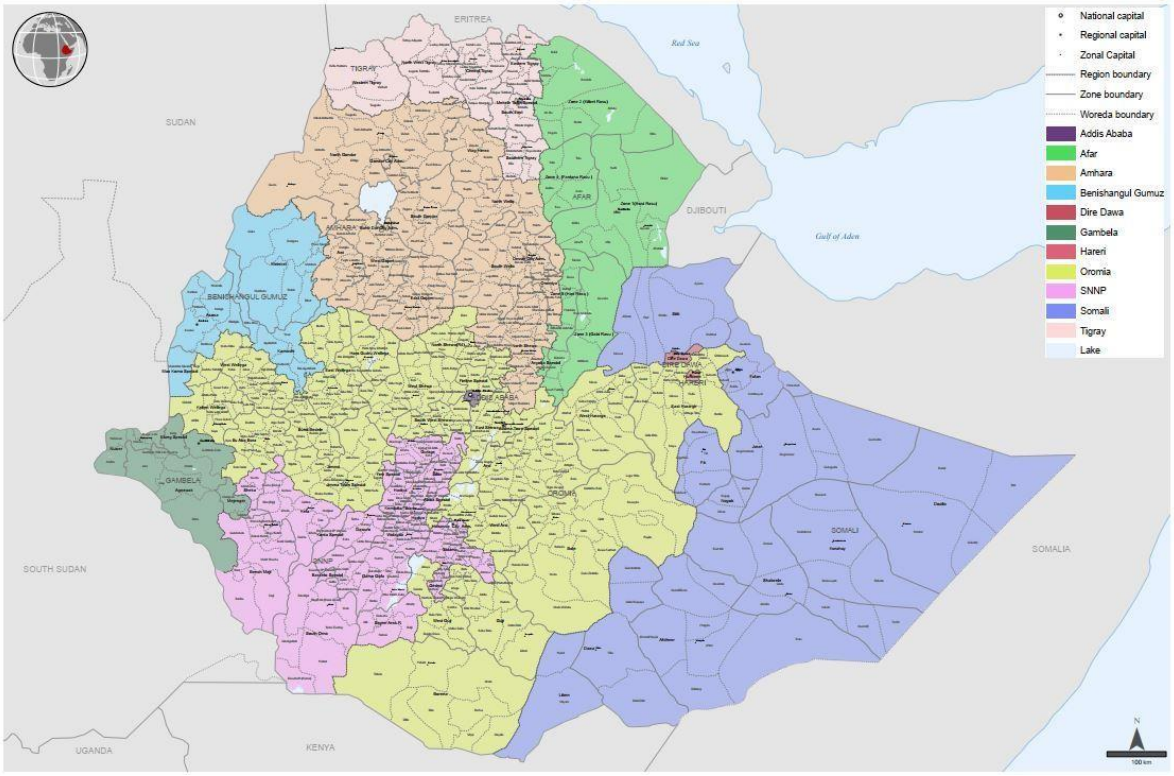

Figure:1 Administrative map of Ethiopia (Source: OCHA 2018)

With about 109 million people (2018 est), of which 80% are in rural areas. Ethiopia is the second most populous nation in Africa after Nigeria, and the fastest growing economy in the region. However, it is also one of the poorest, with a per capita income of $790. Ethiopia aims to reach lower-middle-income status by 2025. (4)

The country is composed of nine regional states and two administrative states representing substantial ethnic and religious diversity. More than 85 ethnic groups and most major world religions are represented, and more than 80 languages are spoken in the country. Ethiopia has a bicameral parliamentary system and a constitutionally independent judiciary. (5)

3 INTRODUCTION

Ethiopia is amongst the developing countries most vulnerable to natural and man-made disasters. Among others, drought induced famine, flood, landslide, crop-pests, infrequent earthquake and wars are the major triggering events that, over the past many years, have been causing suffering to communities and millions of dollar worth of property destructions. Drought induced famine has for many years been the worst disaster event from which millions of Ethiopians, mostly rural residents, experienced immense anguish and it remains a national policy agenda and problem. Over the last three decades, Ethiopia learned the hardest way to transform its disaster management from a mere apparatus of response and recovery to preparedness, mitigation and development. Resources and technical (technological) capacities aside, Ethiopia now possesses a wealth of (drought) disaster management experiences. (6)

Ethiopia unveiled the GTP which sets the vision for the country as a middle income, democratic and developmental state and a carbon neutral climate resilient economy by 2025. As aggressive goals of broad-based economic growth and social development are envisioned for the country in the coming five years, a comprehensive Disaster Risk Management (DRM) system is called for to reduce disaster risk and the impacts of disasters, and to protect development gains.

The urgency behind this approach is conveyed by a host of national policy documents such as the GTP, the Agricultural Sector Program and Investment Framework and the Policy on Disaster Risk Management. At the international level, the Sendai Framework for Disaster Risk Reduction and the Africa Regional Strategy for Disaster Risk Reduction give further guidance and thrust.

Disasters triggered by various types of hazards are not uncommon in Ethiopia. The impacts of disasters on the lives of people and on the country's social, economic, and political development have been significant. Disasters impose serious impediments to development, destroy years of effort, squander vast resource investments, and perpetuate poverty. They damage infrastructure and the natural environment, impoverish communities, and divert national priorities and development resources to emergency management operations.

A wide range of natural and human-induced hazards are associated with the country's diverse geo-climatic and socioeconomic conditions. Disasters arising from some of the hazards have caused widespread damage and loss, while others remain potential threats.

Natural hazards in Ethiopia include, among others, drought, flood, human and livestock diseases, crop pests, and seismic and volcanic activities. Historically, severe droughts and famines have been particularly important causes of loss of lives and livelihoods and of political instability.

Human-induced hazards include, among others, conflicts as a result of resource computation and other factors, war, transport accident, fire, and other factors. These hazards are assuming greater importance over time. (7)

Ethiopia also has a long history of natural disasters with recurrent droughts and flooding. Moreover, insect infestations and epidemics, such as acute watery diarrhea (AWD), are common and the country is ranked among the eleven most risk prone countries globally in 2019, according to the index for Risk Management (INFORM) index. Aggravated by climate change, droughts have in recent years become more frequent and intense, especially in the northern and south-eastern parts of the country. Ethiopian agriculture is largely rainfed and more erratic, hence unpredictable rains will have significant impact on livelihoods and food security for farmer and pastoralist communities. Intensive deforestation has further increased the risks for soil erosion, land degradation, desertification and flooding, putting pressure on already limited resources. Climate change coupled with population growth is likely to further increase the competition for land and natural resources, with risks of further conflicts and displacements. (8)

Recurring droughts and floods have the most severe impact on Ethiopia's population. The country has a long history of recurring droughts, which have increased in magnitude, frequency, and impact since the 1970s. The 2011 Horn of Africa drought left more than 4.5 million people in need of food assistance. These food shortages were caused in part by the widespread death of livestock in the south and southeastern parts of the country following pasture and water shortage. (9)

4 COUNTRY PROFILE

4.1 GEOGRAPHY

Ethiopia, with a total area of 1.1 million km^2, lies in the northeastern part of the Horn of Africa. The country is landlocked, sharing frontiers with Eritrea to the north and northeast, Djibouti to the east, Somalia to the east and southeast, Kenya to the south, and South Sudan and Sudan to the west. Ethiopia's topographical diversity encompasses high mountains and flat-topped plateau, surrounded by lowlands, and dissected by deep gorges with rivers and rolling plains with altitudes ranging from 110m below sea level at the Denakil Depression in the northeast to over 4600m above sea level in the Simien Mountains in the north. The Great East African Rift Valley divides the country. (10)

4.2 CLIMATE

Ethiopia's climate is highly variable and is projected to become more variable due to climate change, with the potential for increased frequency of extreme weather events including floods and droughts. Rural areas are very vulnerable to climate variability. The most vulnerable sectors to climate variability are agriculture, water, health, and

energy. Smallholder dependent on rain-fed crop production and pastoralists in drought-prone areas are the most vulnerable rural livelihood systems. (11)

Ethiopia has three rainy seasons: June–September (Kiremt), October–January (Bega), and February–May (Belg). Kiremt, which is the main rainy season for most part of Ethiopia, accounts for 50–80 percent of the total annual rainfall over the regions having high agricultural productivity and major water reservoirs. (12)

Ethiopia has a tropical monsoon climate with wide topographic-induced variation. Three climatic zones can be distinguished: a cool zone consisting of the central parts of the western and eastern section of the high plateaus, a temperate zone between 1 500 m and 2 400 m above sea level, and the hot lowlands below 1 500 m. Mean annual temperature varies from less than 7-12ºC in the cool zone to over 25ºC in the hot lowlands. Mean annual potential evapotranspiration varies between 1 700-2 600 mm in arid and semi-arid areas and 1 600-2 100 mm in dry sub-humid areas. Average annual rainfall for the country is 848 mm due to its proximity to the equator and high altitude, varying from about 2 000 mm in some pocket areas in southwest Ethiopia to less than 100 mm in the Afar Lowlands in the northeast. (13)

4.3 ECONOMY

Ethiopia's economy experienced strong, broad-based growth averaging 9.9% a year from 2007/08 to 2017/18, compared to a regional average of 5.4%. Ethiopia's real gross domestic product (GDP) growth decelerated to 7.7% in 2017/18. Industry, mainly construction, and services accounted for most of the growth. Agriculture and manufacturing made lower contribution to growth in 207/18 compared to the previous year. Private consumption and public investment explain demand-side growth, the latter assuming an increasingly important role.

Higher economic growth brought with its positive trends in poverty reduction in both urban and rural areas. The share of the population living below the national poverty line decreased from 30% in 2011 to 24% in 2016. The government is implementing the second phase GTP II which will run to 2019/20. GTP II aims to continue expanding physical infrastructure through public investments and to transform the country into a manufacturing hub. GTP II targets an average of 11% GDP growth annually, and in line with the manufacturing strategy, the industrial sector is set to expand by 20% on average, creating more jobs. (14)

4.4 POLITICAL CONTEXT

Ethiopia is undergoing a potential transition, set off by the 2018 appointment of Prime Minister Abiy Ahmed Ali following sustained antigovernment protests. Abiy has pledged to reform Ethiopia's authoritarian state, ruled by the Ethiopian People's Revolutionary Democratic Front (EPRDF) since 1991, and rewrite the country's repressive electoral, terrorism, and media laws. However, Ethiopia remains beset by political factionalism and intercommunal violence, abuses by security forces and

violations of due process are still common, and many restrictive laws remain in force. (15)

Table 1: Summary of selected basic indicators and Demographic Characteristics (16)

Indicators	Value
Population	109,224,559
Life expectancy (2017)	66
Maternal mortality ratio (national estimate, per 100,000 live birth)	676
Infant mortality rate (per 1000 live births)	39
GDP (current US $ in Billion)	84.35
Fertility rate, total (births Per woman) 2017	4.3
Prevalence of HIV, total (% of population ages 15-49)	1.0
Literacy rate, adult total (% of people ages 15 and above) 2017	52
Death rate, crude (per 1000 people)2017	7
Poverty gap at national poverty lines (%) 2010	7
Unemployment, total (% of total labor force) (modeled ILO estimate 2019	1.8

5 NATURAL HAZARD PROFILE OF ETHIOPIA

Ethiopia is exposed to a wide range of hazards associated with the country's diverse geo-climatic and socio-economic conditions. Drought and floods represent major challenges, but several other hazards affect communities and livelihoods. Climate change is predicted to further increase exposure to climate-related and hydrological hazard. Ethiopia is vulnerable to these types of hazards given the importance of agriculture for the overall economy and the livelihoods of poor households, and the scarce diffusion of irrigation and water-shed management practices.

	value	rank	trend (3 years)
INFORM risk	6.8	11	→
Hazard & Exposure	7.2	16	→
Vulnerability	6.6	13	↓
Lack of coping capacity	6.6	31	→

Table 2: Overall risk of the country in 2019(17)

Much has been done in the last 30 years in the way of managing disaster risks. Large scale programs have been designed for prevention and mitigation, incorporating a focus on vulnerabilities, household asset building, and public works for environmental rehabilitation and generation of livelihoods.

Preparedness has been enhanced through the early warning system, the strategic grain reserve, and the development of standard guidelines for assessment and intervention. Humanitarian response can currently count on an established risk financing mechanism, better coordination, and improved resource management and prioritization. (18)

Ethiopia is one of the 11 countries which has a risk of humanitarian crisis and disasters in 2019. The country has the highest overall risk which is made up of three dimensions - hazards and exposure, vulnerability and lack of coping capacity as shown in table 2.

5.1 DROUGHT

Drought is the most significant and recurrent climate-related hazard affecting the country. Ethiopia has mainly dry sub-humid, semi-arid and arid regions, all of which are prone to desertification and drought. Ethiopia has a long history of recurring drought; however, since the 1970s, the magnitude, frequency, and impacts of droughts have become more severe. Moreover, due to climate change and human-induced factors, the areas affected by drought and desertification are expanding in Ethiopia. (11)

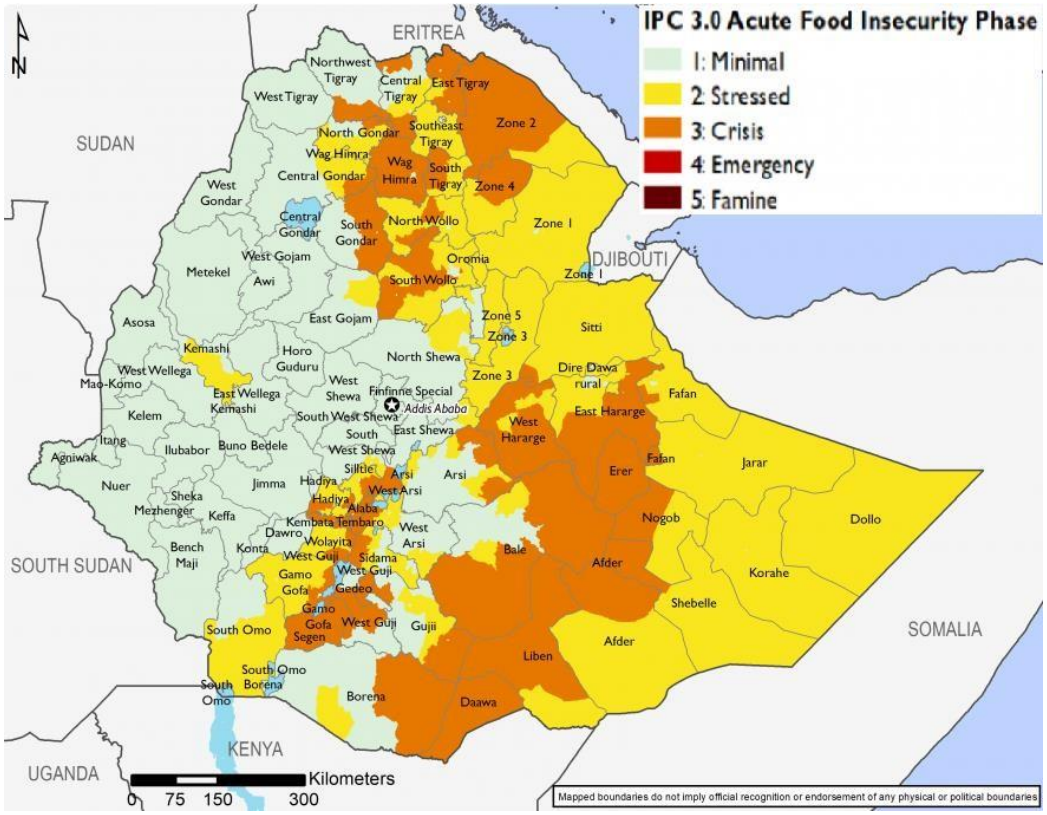

Figure:2 Map of drought prone and affected areas (February - May 2020) (Source: https://fews.net)

Rainfall in Ethiopia is highly erratic, resulting in a very high risk of intra-seasonal dry spells and annual droughts, of which the 1973-74, 1983-84, 1987-88, 1990-91, 1993-94 and 2015-16 are the major ones in the last decades. (13)

There have been many national and localized droughts in the past and communities managed most of them through their own coping mechanisms. Between the Great Famine and the 1970s at least 20 major drought years were noted affecting most parts of the country, particularly in Tigray and Wollo.

The increasing trend of drought-induced disaster, associated with other hazards, is reflected in the increasing number of people needing food assistance in Ethiopia. Between 1990 and 2005, on average, each year 6.3 million people required food assistance amounting to over 654,000 tons annually. These number has now increased to closer to 10 million during the past 10 years. These are people who need food assistance during normal years by being included into the government's productive safety net program. During the drought years, apart from those in the safety net program, the number of people affected is especially significant in Tigray where an annual average of more than 1.2 million people is affected in districts labeled as hotspot. The proportion of the population affected is also high in Amhara and Somali regional states. The number of people affected by drought in 2003 alone was more than 13 million. (19)

5.1.1 IMPACT OF DROUGHT IN ETHIOPIA

Millions of Ethiopians have been affected by drought and flood in the last decade. The number of people who suffered from drought peaked at 14 million in 2003 and, in the period between 2000 and 2007, was never below 1.5 million persons. (20)

Based on past experiences, drought affected nearly all sectors in Ethiopia; agriculture (loss of crops and livestock), water resources (increase in evaporation and decline in availability of fresh water which results in water stress), inadequate water for industry, reduced electricity production (from hydropower), etc. Although it has not been assessed and documented properly, the impact on ecosystems is significant (loss of wetlands and lakes, loss of forest and soil cover, increased soil erosion and land degradation, etc.). The social and economic impacts (increased human and livestock diseases, migration, and conflict over water, and the decline in the National Gross Domestic Product (GDP)) are hugely important.

Impact on crops and livestock

The farmers' perception of drought in Ethiopia is based on the failure of the seasonal rainfall (June to September) and consequently the loss of crops and livestock (elsewhere it is recognized as agricultural drought). The loss of crops and livestock often results in severe household food shortages and psychological stress and insecurity among the affected people. The seasonal rainfall failure (meteorological drought) is largely due to climate variability and its impact results in widespread failure

of seasonal crops, pasture and forage and massive death of livestock in pastoralist areas, and widespread hunger among the affected population. The recent drought of 2015 caused hunger for a population of about 10 million people (10%) (estimate based on the number of people requiring food aid). The impact on agriculture always brings heavy human and livestock loss in Ethiopia. The 1984, 2002 droughts were the most devastating and historic in creating huge food shortage for a large proportion of the population that relied heavily and predominantly on subsistent-rain-fed agriculture and pastoral livelihood. The drought in 1984 resulted in famine as the drought prolonged a year and severe water and food shortage occurred, and widespread hunger and diseases destroyed the livelihood of millions of people covering large part of the country.

Impact on water resources and its environment

Over the last two decades, Ethiopia has been building massive infrastructure to harvest water for generating electricity and developing irrigation to produce food and fiber crops for domestic consumption and support local industries. Presently several dams are built and as a result the country has increased its water security. Industrialization which requires electric power is also growing to diversify the country's economy. The recent droughts are impacting the country more seriously; far beyond creating shortage of food. The water resources in both manmade and natural water bodies are shrinking severely affecting the availability of water for irrigation and electricity production and in return affects the economy. (21)

Impact on the economy

The economic impacts of drought (economic drought) in Ethiopia have been significant. Drought has been seriously affecting the meager economy as power shortages occur from low flows of the rivers in the country. As a result, rationing electricity was a common practice. According to a report by UNDP (2012), the cost of drought is estimated to absorb 25% of the GDP (the economy of the country) which relied heavily on rain - fed agriculture. This is resulting from low agricultural production, decline in electricity production from hydropower, water shortage for domestic and irrigation use, migration of productive manpower and political instability (social impact). (21)

Economic impacts are those impacts of drought that cost people or money. Some examples of economic impacts include, farmers may lose money if a drought destroys their crops, if a farmer's water supply is too low the farmer may have to spend more money on irrigation or to drill new wells, ranchers may have to spend more money on feed and water for their animals, businesses that depend on farming, like companies that make tractors and food may lose business when drought damages crops or livestock, people who work in the timber industry may be affected when wildfires destroy stands of timber, power companies that normally rely on hydroelectric power (electricity that's created from the energy of running water) may have to spend more

money on other fuel sources, and if drought dries up too much of the water supply. The power companies' customers would also have to pay more. (22)

Social Impacts

Social impacts of drought are ways that drought affects people's health and safety. Social impacts include public safety, health, conflicts between people when there isn't enough water to go around, and changes in lifestyle. Examples of social impacts include: Anxiety or depression about economic losses caused by drought, health problems related to low water flows and poor water quality, health problems related to dust, loss of human life, threat to public safety from an increased number of forest and range fires, reduced incomes, people may have to move from farms into cities, or from one city to another, and also fewer recreational activities become common.

Oxfam estimates that drought alone costs Ethiopia US$1.1 billion per year. Oxfam further states that this loss 'almost eclipses the US$1.3 billion per year that Ethiopia received in international assistance to tackle poverty and emergencies over the same period'. (23)

5.1.2 DROUGHT VULNERABILITY

According to Tagel and other authors, the high dependency of the peasant farmers on rainfall associated with the shortfall and erratic nature of the rainfall during the last three decades have resulted in widespread drought and famine. Moreover, the rising population pressure and clearing of forests to satisfy its basic demands such as food and energy made the soil susceptible to wind and water erosion which in turn bring drought. Ethiopia has a long history of drought, which greatly contributed to land degradation. There is growing concern that much of Sub-Saharan Africa's natural resource base and ecological environment are deteriorating mainly due to high loss of vegetative cover resulting from deforestation and conversion of savanna to cropland. Among the contributory factors in the deterioration of the environmental conditions in the African continent, Drought is one of the utmost important disasters associated with climate variability, which cause instability in food production. Some of the reasons for the fragility of Ethiopian agriculture were climate change and her dependence on rain-fed agriculture. The drought years were associated with a very low food grain production. Crop failure due to the severe drought the warming temperatures and rainfall changes could diminish the availability of water for crops and shorten the growing season. The warming of a few degrees decreases in rainfall and increase in frequency of extreme weathers, drought, will have an immediate and direct effect on the agricultural sector. (22)

Table: 3 Drought, its impact and response at different period (21)

El niño induced drought	Seasonal event	Regions/areas & populations affected	Key impacts/effects of the drought	Responses
1972/73	-Receive 70% of the country's normal rainfall - Main season rainfall delayed by 15–30 days - Rainfall shortfalls	- Tigray and Wollo - North and southeastern areas of the country - Pastoralist area	Agricultural production reduced by 20% - In 1972–4.3 million people affected - In 1973–3 million people affected - Widespread shortage of water availability - Widespread damage of crops by insects and pests - 200,000 people died - 30% of the livestock perished	Emergency food aid and other humanitarian assistance by the government and international aid agencies
1975/76	Western and Southwestern parts of the country receive less rainfall	Easter & southern Tigray and Amhara. Southern Oromia and SNNP Regions, Afar and Somali lowlands	In 1975–4 million people affected - In 1976–5 million people affected - Dam and reservoir water levels dropped significantly - Water shortage occurred	Emergency food aid and other humanitarian assistance by the government and international aid agencies
1978/79	- Receive 70% of the country's normal rainfall - Main season rainfall delayed by 15–30 days - Rainfall shortfalls	Southern Ethiopia Easter & southern Tigray and eastern Amhara. Lowlands of southern Oromia and SNNP Regions, and Afar and Somali regions	- In 1978–7 million people affected - In 1979–3 million people affected - Dam and reservoir water level dropped significantly - Shortage of water availability - 1.4 million People affected	Emergency food aid and other humanitarian assistance by the government and international aid agencies
1982		Northern Ethiopia; Eritrea, Tigray & Wollo including northern Shewa	Two million people affected	
1983/84	Drought occurs during theshort and main seasons - Receive 70% of the country's normal rainfall - Main season rainfall delayed by 15–30 days - Rainfall shortfall	Historic drought covering all regions of the country, and intensely. Most affected of the drought prone areas; Eastern and southern Tigray, north Wollo and north Shewa	Eight million people affected and one million people dead, - 2.3 million people severely food insecure, drought extended by a year and famine occurred and cause the death of 250,000 people, - GDP fall by up to 25% (WB, 2006), - Water levels in dams and reservoirs dropped markedly creating shortage in	Massive emergency food assistance to the affected population Emergency health services to severely affected population, Development and rehabilitation work for resilience and

			water availability and power production (Electricity rationing) - Damage and loss of the rangeland in pastoralist areas due to rainfall failure during the short and long seasons - Livestock decimated in pastoralist areas due to water and forage shortage and after effect diseases - After effect: Outbreak of both human and livestock disease	stability of the environment. This involves interventions on the bio-physical environment. Development of strategic water facilities i.e. ponds, earth dams, boreholes, shallow wells and spring protection.
1987/88	Drought during the short season	- All regions, North Shewa, wollo, central eastern and southern Tigray most affected	Seven million people affected - Widespread shortage on water availability	Emergency food aid
1991/92	Rainfall failure during the long season	Most parts of the country, Tigray, Afar, Amhara, Somali, Oromia and SNNP Four million people affected	- Water, food and food shortages, - Large number of livestock decimated - Power production declined significantly - Water supply and Electricity rationed for cities and towns	Food aid by the government with assistance from Aid Agencies
1993/94	Tigray and Wollo	?	7.6 million people	?
1999/2000	Short season rainfall failure	All regions but Somali Region was most affected. About 10.5 million people	- About 10 million people affected - Measles case reported in many parts in Somali Region	Famine averted by rapid emergency response (FAO report)
2002/03	Rainfall failure in both season	All regions (many parts of thecountry) mainly affected are Tigray, Amhara, Afar and Somali Regions.	- About 14 million people affected - Most of the pastoralist areas were affected and lost a large part of their livestock	About 14 million people were reported as needy population for food aid, Food aid by the government with assistance from Aid Agencies
2006	Rainfall failure in both seasons0	Low land and pastoralist areas, Tigray, Amhara, Afar and Somali Regio	- Environmental health problems caused by widespread littering of the landscape with bodies of dead animals - OXFAM/UK mobilized communities to collect dead animals, and burn and buried in Afar Region	7.6 million people affected

2011	Short season rainfall failure	The driest period in the Horn of Africa since 1995, Borena was most affected	• 4.5 million people affected • Water shortage for livestock • Rangeland deteriorated and created feed shortage	60% of the cattle decimated (OCHA, 2011)
2015	El Nino induced drought	Nearly all the nine regions	• 10 million people needing food aid in nine Regions	Emergency food aid
2016	Continuation of 2015 El Nino episode. Rainfall failure in both seasons in Somali Region (*Gu – April to June), and (Deyr – November to December)*	Nearly all the nine regions were reported as affected by the drought most affected were Somali, Afar and Tigray Regions. The strength of the drought reported as the worst in 50 years (USGS, 2016)	Loss of livestock estimated at no less than US$200nmillion worth (James Geffrey report on Daily Monitor) • Emergency water trucking was used in rural areas of Somali and Afar Regions when seasonal rain fully failed, and reservoirs were dried up due to the extreme drought condition. OXFAM alone budgeted about USD 50 million • Economy growth declined by 2.5% (PM Speech) - About 50% of the livestock population in Somali Region decimated - 5259 Acute watery diarrhea cases reported in Somali - 84,610 acutely malnourished under five children	A more comprehensive approach to saving lives. Government purchase food worth US$ 700 million. Humanitarian requirement estimated at US $ 948 million to 8.6 million affected populations in Eastern and Southern eastern parts of the country. Organized Emergency heath team and dispatched to the region to stop diarrheal diseases and saved liv
2017	Spring season rainfall failed. The main rainfall season received heavy torrential rainfall and flooding covering many parts of the country	Districts needing lifesaving food aid increased from 192 to 228 in June 2017. At least a total of about 461 districts were categorized as being in at least some kind of difficulty.	- Widespread diarrheal outbreaks in Somali Region due to prolonged drought. Other regions are also affected - The number of people needing food aid increased to 7.8 million due to poor performance of the spring rain - Widespread insect pest and damage to the crops - AWD continued in other regions; Amhara and Tigray	7.8 million people requiring food aid (Daily monitor, July 19, 2017)

5.2 FLOOD

Flood is one of the major natural hazards worldwide including Ethiopia and it causes casualties, infrastructure, and environmental damage. Ethiopia is exposed to frequent flood events that occur at irregular intervals and vary in magnitude, duration, and affected area. Flooding is likely to aggravate because of different driving factors suchas land use change and climate change. Nowadays, the occurrence and causes of flood risks are increasing from time to time because of new developments and human settlements on flood-prone areas. Peak water flows and associated floods are extreme hydrological incidents triggered by torrential rainfall modified by various catchment processes and anthropogenic activities. (23)

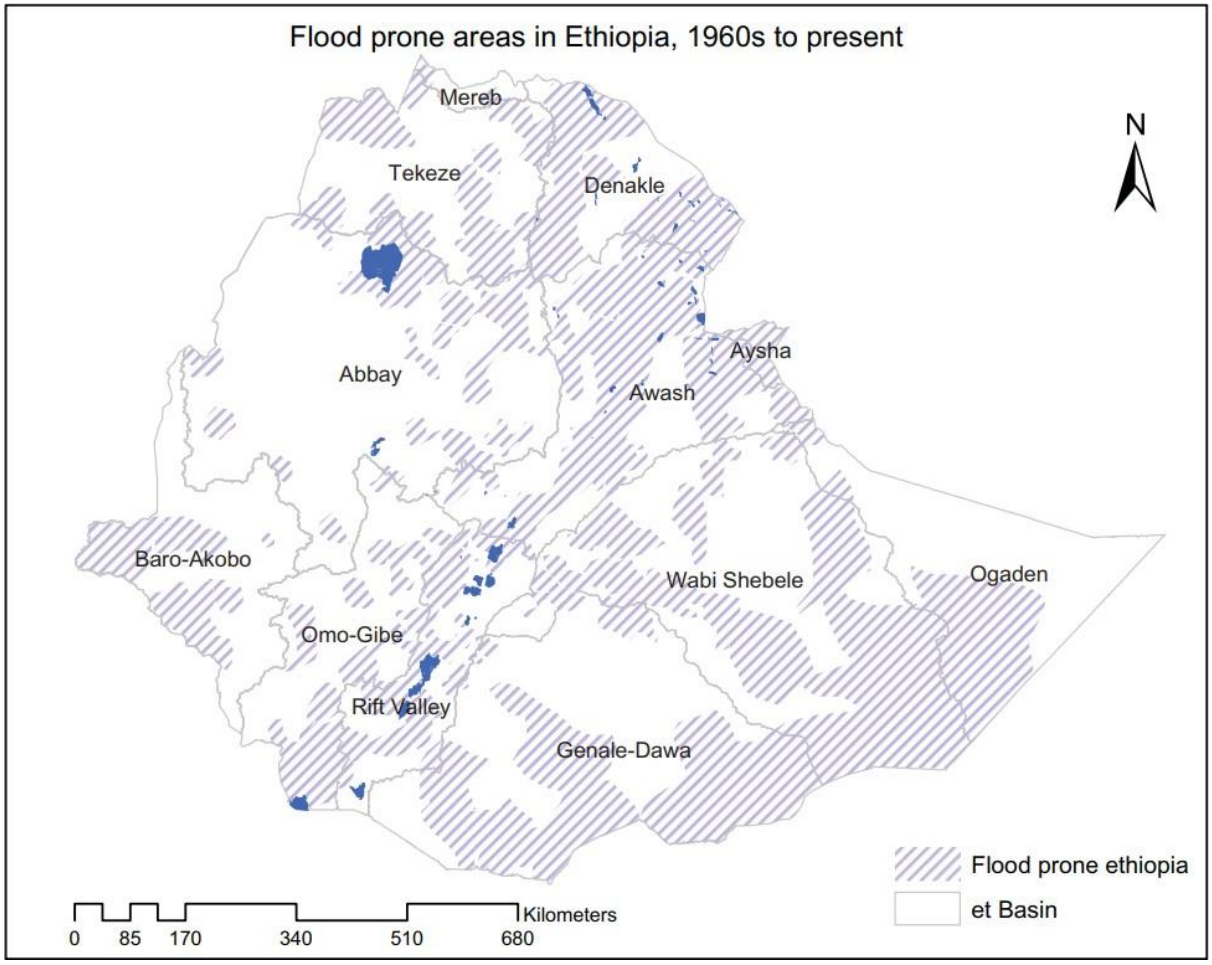

Figure:3 Basin map of Ethiopia with flood-prone extents (24)

Ethiopia has 12 river basins of which the Blue Nile, draining Lake Tana and the western highlands, flowing through Oromia and Amhara, is the largest and accounts for over 40% of the annual total runoff in Ethiopia. Two other basins of similar size cover the eastern parts of Oromia and southern Somali, but they account for much

less runoff (7% between them). Here, the flood potential of the Shebelle, Gestro and Ganale Rivers can be seen in the main map. Four river basins drain the Rift Valley, and the system includes a series of lakes. The Awash River drain the areas around Addis Ababa, flowing north to Djibouti. (25)

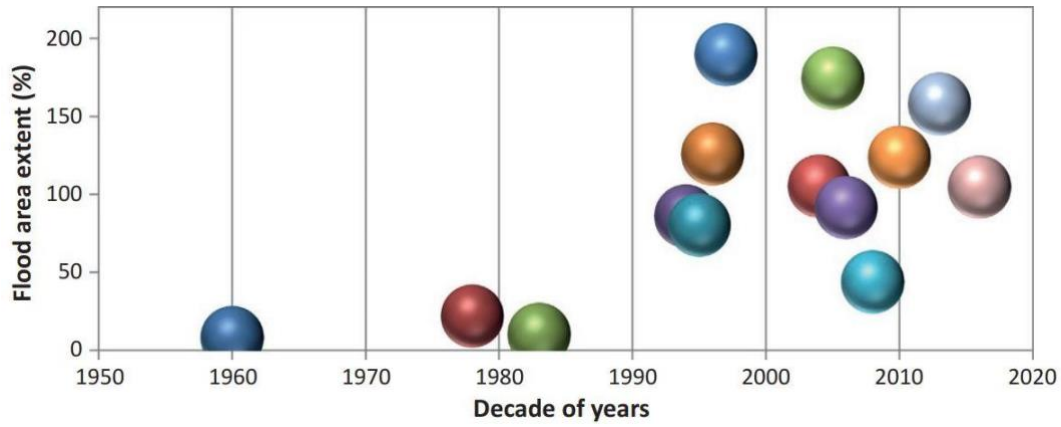

Figure:4 The occurrences and extents of flood for the last six decades. (24)

As shown in the above figure the occurrence and extent of flood are characterized with spatial and temporal variation. The recurrence of the flood events in the nation increased from decade to decade

5.2.1 VULNERABILITY FACTORS

In Ethiopia, the greatest flood potential occurs during and following the most intense and sustained rainfalls in the June, July and August rainy season.

Floods are occurring with greater frequency and intensity across the country due to vulnerabilities imposed by high rates of deforestation, land degradation, increasing climate variability, and settlement patterns. Large scale floods occur mostly in the lowland areas, while flash floods resulting from intense rainfall events destroy settlements in the Highlands (including in the Awash River Basin and in the Rift Valley). (25)

5.2.2 IMPACT OF FLOOD IN ETHIOPIA

Flooding caused by rivers overflowing their banks has regularly affected people and their properties, especially in the lowland areas of Somali, Afar, Gambella, Oromia and Amhara regional states. Flash floods affect all regions. Some floods, such as those in 1996 and 2006, triggered disasters which claimed the lives of hundreds of people, displaced hundreds of thousands and destroyed physical, natural, and economic assets. Ethiopia is mountainous with rugged topography and steep slopes: the highlands are extensively deforested; rains are sometimes heavy and torrential; water converges in river basins and causes swelling of rivers. The watersheds of the major rivers are highly degraded with negligible vegetation cover, reducing infiltration into the ground and increasing runoff. For instance, in the year 2006, unprecedented

flash and river flood disaster occurred between August and November with a devastating impact, particularly in Dire Dawa, South Omo, Amhara and Somali regions. According to DPPA (2006), in Dire Dawa alone the livelihood and homes of 10,000 people were completely damaged, and more than 250 lives were lost and productive asset worth of birr 70 million was damaged. Moreover, during the same year, in South Omo, the flooding due to riverbank overflow has claimed the lives of 360 people and damaged the productive assess and livelihood of more than 20,000 people in Dasanach and Ngangatom districts. (19)

Floods also damage crops and inundate farmland. This results in food shortages that may lead to malnutrition. For instance, the 2006 flood in the Gambella region damaged 1,650 hectares of maize crops. According to local reports, production was reduced by 20% mainly due to water logging on the farmlands. Most people affected by this flood were fell highly vulnerable to food insecurity. Without much doubt, one can state that a shortage in food can exacerbate the existing malnutrition in the country. (26)

Between 2010 and 2018, at least 361 woredas (more than half of the woredas in the country) were affected by flooding, mostly those along major riverbanks. Floods usually lead to displacement, service disruption, damaged houses, damaged infrastructures including schools and health facilities, damaged latrines, inundated croplands, and lack of safe drinking water. People often get cut-off and require urgent search and rescue interventions and lifesaving humanitarian assistance. (27)

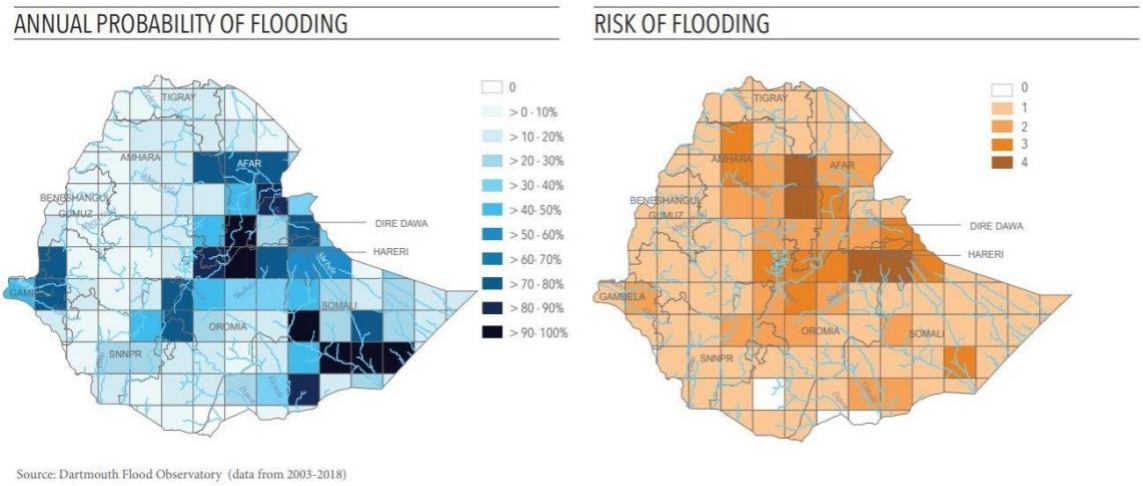

Figure: 5 Annual probability and risk flooding map of Ethiopia

5.3 LANDSLIDE

The northern Omo River basin, the lower Wabe-Shebele River valley, the Wendo Genet slope, the Blue Nile Gorge, the town of Dessie, the Wudmen area in Weldiya, the Gilgel Gibe River, the Uba Dema village in Sawla, and parts of Tigray are some of the areas where imposing landslide events have been reported in the last decade. (28)

The hilly and mountainous terrains of the highlands of Ethiopia which are characterized by variable topographical, geological, hydrological (surface and groundwater) and land-use conditions, are frequently affected by rainfall-triggered slope failures. Earthquake triggered landslides are little reported in Ethiopia.

In Ethiopia, landslide-generated hazards are becoming serious concerns to the general public and to the planners and decision-makers at various levels of the government. However, so far, little efforts have been made to reduce losses from such hazards. With the on-going infrastructural development, urbanization, rural development, and with the present land management system, it is foreseeable that the frequency and magnitude of landslides and losses due to such hazards would continue to increase unless appropriate actions are taken in Ethiopia. (29)

5.3.1 VULNERABILITY FACTORS TO LANDSLIDES

The role played by human impact within the context of the country's socio-economic development is being of increasing importance in causing slope instability.

The study shows clear examples of human vulnerability to landslide processes in different parts of the Ethiopian highlands. The increase in population is posing an ever-growing demand for new land for settlement, infrastructure, and agriculture. This and the need for power supply as well as construction materials are largely satisfied at the expense of the environment. Besides the natural vulnerability of these areas to landslides, owing to their geological and hydrological conditions, human interference has played an important role in accelerating land degradation.

In the case of Dessie, for example, its location on colluvial and alluvial deposits at the foot of the Tosa and Azwa Gedel ridges makes the urban settlement highly vulnerable to landslides. In addition to the destabilizing effect of spring water and seasonal rainfall, uncontrolled building, carried out on the slopes without proper site investigation and using diverse material type and quality, has aggravated the situation.

The increasing impact of human activities, such as intensive agriculture, quarrying, road construction, urbanization, land use changes, etc., is also responsible for slope instability and landslide hazard. The leakage of water into the ground from aqueducts and pipelines may also trigger mass movements. (28)

5.3.2 IMPACTS OF LANDSLIDES

5.3.2.1 EFFECTS OF LANDSLIDES IN THE HIGHLANDS OF ETHIOPIA

All the studies on landslides carried out in the highlands of Ethiopia indicated that such hazards have economic, social, and environmental significance. To mention some:

According to Ayalew (1999), from 1993 to 1998, landslides or landslide-generated problems have claimed about 300 lives, damaged over 100 km asphalt road, demolished more than 200 dwelling houses and devastated in excess of 500 ha of land in Ethiopia.

Woldearegay (2005) compiled different landslide reports from Ethiopian press headlines (WIC, 2000, 2002, 2003a, 2003b, 2003c, 2003d). According to this author, in the years 1998 to 2003, 135 human lives have been lost, about 3500 people were displaced and an estimated 1.5Million US Dollar worth property has been damaged in the highlands of Ethiopia. Ayenew and Barbieri (2005) indicated that landslides in Dessie town have been affecting roads, buildings, pipelines, and other infrastructures in the town. Various authors (Woldeaegay, 2008; Atsbeha, 2008; Schmeider et al., 2008) mentioned that as a result of a single large-scale landslide in the Tarmaber area: more than 3000 people were displaced; 1250 dwelling houses were demolished; 4 Churches, 4 Mills, and one elementary school were destroyed; over 1500 hectare of farmland was devastated. As a result of landslides, Ayalew (1999) and Woldearegay (2005) mentioned the spread of malaria in different parts of the highlands of Ethiopia due to ponding of water in low altitude areas. (29)

There was a devastating garbage landslide in Addis Ababa, Ethiopia, in the area of Koshe garbage land fill on 11 March 2017. The catastrophic slope collapse killed more than 113 people who were living around the landfill and injured several others. The debris stood from a height of 20 m beyond the actual toe line of the landfill, destroying a minimum of 50 houses. The landslide left a negative sequel on the victims' socioeconomic and psychological conditions, for example, in terms of housing, job and loss of family members. (30)

5.4 VOLCANO

Fifty-nine Holocene volcanoes are known in Ethiopia. These form two distinct lines of volcanoes which can be seen within the East African rift. The first is the Main Ethiopian Rift, a northeast trending line that bisects the middle of the country, stretching from the Korath Range in the southwest to the Djibouti border in the northeast. The second line is oriented north northwest nearer the border with Eritrea and consists of a series of smaller lines of volcanoes in the area of the Afar Depression.

Like other countries in the East African Rift, Ethiopia has a high ratio of effusive to explosive volcano types, with thirty-one of the former and thirty-four of the latter. Lava flows are common, occurring at fifty-six of the volcanoes. The great prevalence of lava flows compared to other hazardous flows in Ethiopia reduces the relative hazard extent and impacts although the high incidence of volcanic gases and aerosols being released from such effusive eruptions adds a further hazardous element. (31)

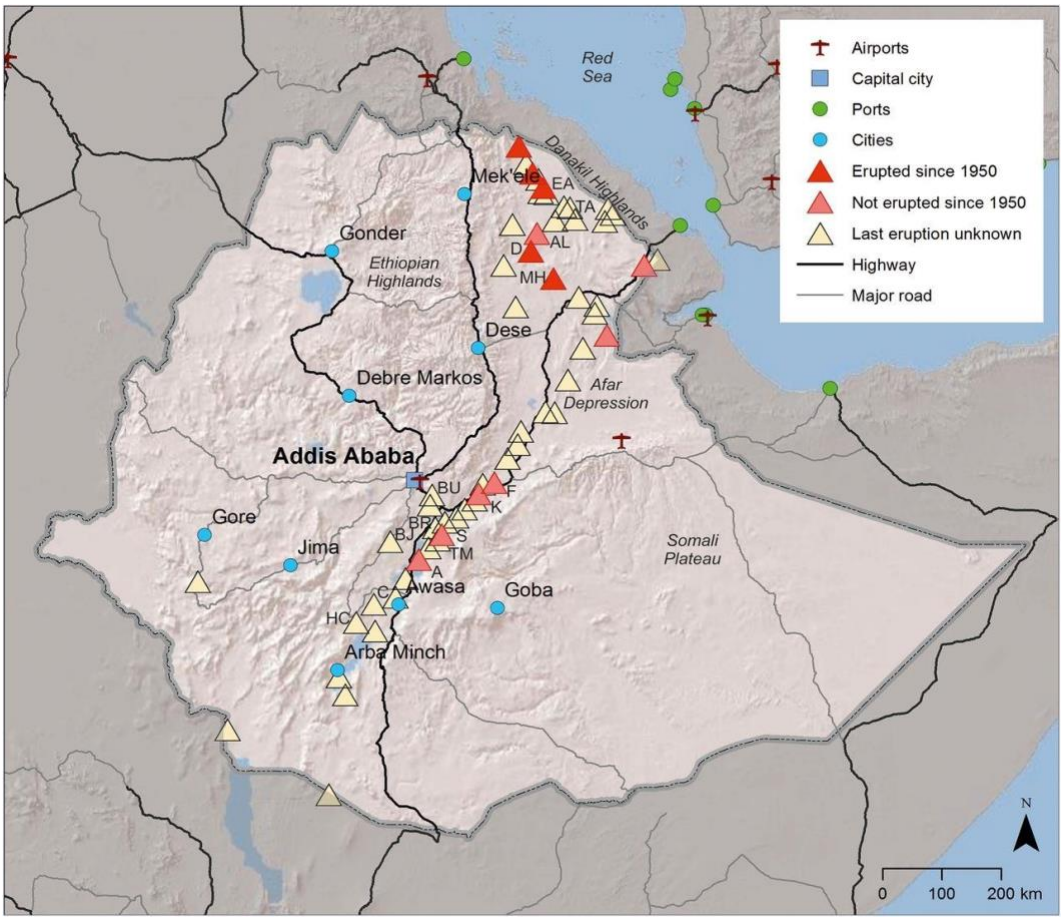

Figure 6: Location of volcanoes in Ethiopia (32)

5.4.1 VULNERABILITY FACTORS

Seven of the country's ten most populous cities are more than 30 km from their nearest volcano. Ethiopia's numerous rural communities mean that twenty-five volcanoes have over 100,000 people living with a 30 km radius of their summit and 46.5% of the total population of Ethiopia lives within 100km of a volcano. Rapid population growth and increasing investment in geothermal energy in the Main Ethiopian Rift mean that the exposure to volcanic hazards is rapidly increasing in Ethiopia and similar eruptions in the densely populated Main Ethiopian Rift will have considerable humanitarian and economic costs. (31)

A significant amount of building stock is exposed to ashfall from the three volcanoes analyzed $86 million exposed to Fentale, $375 million to Aluto, and $1.6 billion to Corbetti. The population potentially exposed to ashfall is 190,000 (Fentale), 150,000 (Aluto), and 530,000 (Corbett) Additionally, several hundred education and health facilities, are exposed at each of these volcanoes.

The Butajira and Bishoftu volcanic fields cover large areas so exposure to flow hazards is significant, although in an eruption it is expected that only a small part of the whole volcanic field would be affected by flows. (33)

5.4.2 IMPACT OF VOLCANO IN ETHIOPIA

The distance of the country's main population centers from volcanoes and frequency of lava flows compared to other hazardous flows is reflected in the historic fatalities record; just three eruptions have records as reporting loss of life, with a combined total of 163 casualties. The greatest fatalities occurred in response to the Dubbi eruption from Eritrea in 1861. (31)

In 2011, Nabro volcano near Ethiopia's northern border in Eritrea erupted, depositing ash over several towns in the Afar region. Erte-Ale, located in Afar, is the most active volcano in Ethiopia, having been in an ongoing eruptive state since 1967. However, this volcano produces lava that feeds a permanent lava lake and is not considered likely to produce other hazards of concern at large distances from the volcano. The remote and sparsely populated area of the Ethiopian border near Nabro volcano still resulted in 32 fatalities and displacement of over 5000 people from the area. (33)

5.5 EARTHQUAKE

Ethiopia lies within a tectonically active region. The Ethiopian Rift Valley runs northeast to southwest across the country from the Afar Triangle, where three tectonic plates meet; the highest earthquake hazard in Ethiopia occurs in Afar (see figure 7).

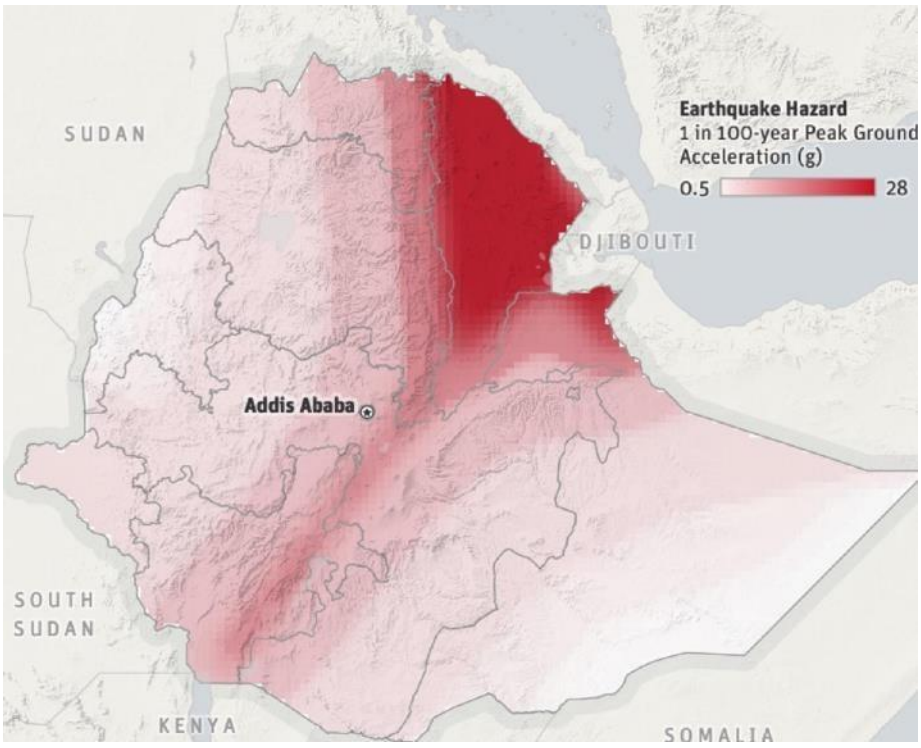

Figure 7: Earthquake hazard map of Ethiopia (33)

Several major cities and towns, including the capital city Addis Ababa, are situated along the Rift Valley in areas with moderate earthquake hazard. Earthquakes could

cause moderate ground shaking in Addis Ababa and along the Rift Valley, and strong shaking in Mar, at least once in a person's lifetime. Buildings of poor and moderate quality construction could sustain damage, but extent of damage would be strongly dependent on local seismic and construction factors. Away from the Rift Valley, the hazard is much lower. (33)

5.5.1 VULNERABILITY FACTORS

Earthquakes pose the threat of building damage and collapse, particularly where seismic-resistant design of buildings is not generally applied, as in Ethiopia. They can also cause damage and disruption to transport networks and essential services due to ground motion displacing roads, rails, bridges, and other essential services. (33)

Notwithstanding, earthquakes disaster occurs in Ethiopia is very rarely however it can be strong and cause heavy damages since the government and the responsible committee gives less attention to such type of disaster instead, they focus mostly on drought disaster and to make the city more urbanization. Measured against the size of the country, the earthquake active on the seismic zone and main Rift Valley Ethiopia tells as to how it is dangerous for the country urbanization**.** (34)

In terms of vulnerability, data suggests that: 46 per cent of the population has a "medium" exposure to seismic hazard, 20 per cent of the population has a "low" exposure, and 26 per cent has a "very low" exposure. No people are identified as facing a "high" or "very high" exposure.

Urban areas are also identified as facing seismic vulnerability. The capital Addis Ababa is located close to the western edge of the Ethiopian Rift Valley. Despite only facing moderate seismicity, the urban public there are more vulnerable to disasters due to weak infrastructure and lack of preparedness. (35)

5.5.2 IMPACT OF EARTHQUAKE IN ETHIOPIA

The Ethiopian rift system which is part of east Africa rift system passes through the middle of the country making it one of the most seismically active regions in the world. Thus, significant and damaging earthquakes have been reported and recorded in the past in this region. Of this, the 1906 Langano earthquake with magnitude 6.8(mb), the 1961 Kara Kore earthquake magnitude 6.4(mb) which caused damage to manmade structures (destroyed the town of Majete) and alterations in the landscape and the 1969 Sedero earthquake 6.5(mb) are significant ones. (36)

Table:4 Summary of the earthquake in the regions and impact from 1979-2011(34)

location	Intensity	Year	Structural Damage
Akaki 8.85N 38.7E	Magnitude 4.1 Intensity VII near the epicenter	28 Jul 1979	No damage to the then Aba Samuel HEP station a few kilometersaway. Cracks in poorly built masonry structures.
8.9N 39.9E	5.1	7 Feb 1981	Cracks in masonry buildings in Awara Melka town, north of the Fentale volcanic center.
7.03N 38.6E	5.1	1983	Rockslides and damage and destruction of masonry buildings in Wendogenet, east of Lake Awassa. Well-built single-story building cracked at the Forestry Institute. Large boulders dislodged, plaster fell off walls, electric poles thrown down.
Awassa	5.3	1983	Damage to steel frames in Awassa. Damage to Western Abo Church in Wondo Genet (1983 earthquake, masonry building with irregular vertical and horizontal stiffness. Damage seems to occur where there is stiffness discontinuity).
11.37N 38.7E Near Lake Hayk.		10Apr,1984	High-rise buildings shook. Mortgage Bank Building in Kazanchis.
8.95N 39.95E		1984	Concrete building in Piazza shaken
8.3N 38.52E Oitu Bay (Langano)	5.1	1985	Strongly felt in Lake Langano camp, central MER. Cracks in buildings in resort area hotels.
9.47N 39.61E Langano	4.8 105 Km away	Oct 1985	Panic in high-rise buildings in Addis Ababa.
	5.6	Oct 1987	Rockslides, many buildings cracked, a tree uprooted, general panic in Arba Minch. Widespread Panic, inhabitants fled home, the wall moved strongly in Jimma. Felt in Dodola 330 Kms away.
	5.4	Oct 28, 1987	Already weakened blocked building collapsed, strongly felt – Arba Minch. Panic – No damage in Jimma. Students knocked against one another in the classroom, the poorly built house collapsed in Sawla.
Hamer and Gofa	5.3 – 6.2	Oct 7 – 28, 1987	Details are given separately for Awassa, Jima, and Arba Minch.
	5.3	Oct 7, 1987	Light-sleepers is woken. No structural damage in Awassa. Poorly built structures cracked, many wake up, birds shaken-off trees.
8.9N 40E	4.9	1989	Cracks in buildings in the town of Metehara, northern MER. Felt like passing truck by many, shaking beds.
Dobi Graben [Afar]		1989	Several bridges damaged.
Mekelle	5.3	Apr13, 1989	Felt by many causing some panic.
Dichotto	5.8	Aug 20, 1989	Dining people thrown-off table, masonry house collapsed, landslides killed 4 people and 300 cattle; 6 bridges destroyed in Dichotto.
Soddo 6.84N 37.88E	5.0	1989 June 8, 1989	Widespread Panic, broken windows and some injured in Soddo.

5.6 EPIDEMICS IN ETHIOPIA

Ethiopia remained vulnerable to disease outbreaks in 2019 with cholera, measles, chikungunya, dengue fever and circulating vaccine-derived poliovirus (cVDPV2) reported in different parts of the country. The drivers and risk factors for these outbreaks remained largely unaddressed. Mass population displacement due to conflict and other triggers continued with about 3 million IDP reported. The IDP return exercise left returnees with huge humanitarian needs. (37)

The drought years 1977, 1981-1983, 1988-1989 coincided with recorded widespread meningitis outbreaks. Similarly, malaria outbreaks and their incidence appear to coincide with the first rains after dry periods. Though there is no recorded history about malaria epidemics, malaria would appear as of 1958 to be a major public health threat in Ethiopia. Measles is a major threat to children (specifically as the immunization coverage in Ethiopia is as low as 3%) and has been identified in association with drought, refugee, and major population displacement crises in Ethiopia and elsewhere. The latest public health threat with historical roots to the 1980s is the HIV/AIDS epidemic.(38)

Different epidemic occurrence is another disaster causing mortality and morbidity in the country. Among the epidemics include measles, dysentery, meningococcal meningitis, anthrax, influenza A and B, relapsing fever and yellow fever are the major, as commonly reported by the government. Some of these epidemics are associated with natural disasters such as drought and floods. As stated above, during drought malnutrition has been common and the fact that malnutrition has immuno-compromising effect on an individual, in most instances it is associated with measles, dysentery and other communicable diseases. Though few studies have been carried out in Ethiopia following flooding events, post flood communicable disease outbreaks such as dysentery and malaria are also quite common. (39)

5.6.1 HEALTH OVERVIEW OF THE COUNTRY

Ethiopian Burden of diseases dominated by acute upper respiratory tract infection, followed by acute febrile illness, pneumonia, diarrhea, and malaria. Pneumonia, Diarrhea, Acute Upper Respiratory Tract Infection, Acute Febrile Illness and Malaria accounts for 64% under five morbidity. (40)

The most common diseases in Ethiopia are communicable and nutrition deficiency diseases. Outbreaks of some communicable disease have caused morbidity, mortality and disability in many people. In recent years outbreaks of diseases have been observed in areas where they were not reported before. Some of the reasons attributed to the epidemic situation in the country at present are movement of large numbers of people, poorly planned settlements and irrigation schemes, poor control of disease transmitting vectors, overcrowding, poor personal and environmental hygiene, deforestation, displacement because of social, political and economic problems. Increase in health service coverage (though slow) has been suggested as one reason for

the appearance of endemic and epidemic diseases in areas where such diseases were not reported before. (41)

What causes the most deaths in Ethiopia?

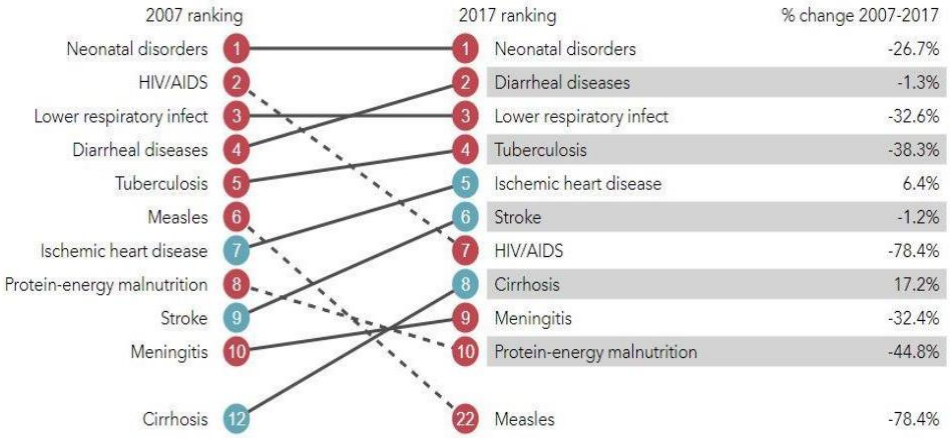

Figure:8 Top 10 causes of death in 2017 and percent change, 2007-2017, all ages, number (42)

In this DRP I am going to outline some of the epidemics which have a big economic, social and political impact on the country. Malaria, HIV/AIDS, Meningitis, diarrheal disease, measles, and tuberculosis bacillus are highlighted.

5.6.2 MALARIA

Malaria is a major public health problem in Ethiopia despite relatively low malaria prevalence compared to most other malaria-endemic countries in Africa. Unstable malaria transmission patterns make Ethiopia prone to focal and multifocal epidemics that have on occasion caused catastrophic public health emergencies. Malaria is seasonal in most parts of Ethiopia, with variable transmission and prevalence patterns affected by the large diversity in altitude, rainfall, and population movement

Though its prevalence in Ethiopia is relatively low compared to other African nations, malaria remains the leading cause of outpatient morbidity and is among the leading causes of inpatient morbidity. Nearly 60 percent of the population lives in areas at risk of malaria, generally at elevations below 2,000 meters above sea level. Recently, many densely populated highland areas, including the city of Addis Ababa, were classified as malaria-free.

Because peak transmission coincides with the planting and harvesting season, malaria places a heavy economic burden on the country. Sixty percent of malaria infections are due to Plasmodium falciparum parasite though the Plasmodium vivax parasite is also present. Insecticide resistance among vectors and antimalarial drug resistance have been documented in the country. (43)

5.6.3 HIV/AIDS

Ethiopia has observed remarkable progress over the past two decades in reducing HIV prevalence rate from 3.3 percent in 2000 to 1.0 percent in 2018, and AIDS-related deaths from 83,000 deaths to 15,600 in 2017. Despite this fact, there is still an alarming discrepancy in the HIV burden among regions and urban cities, like Gambella and Addis Ababa, where the prevalence is as high as 5% and 3.4% respectively. The gains made so far seem to be challenged by complacency regarding primary HIV prevention. The Ethiopian Federal HIV AIDS Prevention and Control Office has recently (late 2018) launched National Prevention Roadmap with the plan to accelerate the efforts to meet the global and national targets in 2020.

Regarding the three 90's, Ethiopia, as a country with more than 690,000 people living with HIV, has made 79% of the people know their status, 65% of people are on treatment, Data about viral load suppression are lacking. (44)

There is also growing concern about the potential for a "second wave" of the epidemic, driven by the emergence of drug-resistant strains of HIV and a renewed increase in transmission rates. In 2015, the annual number of new HIV infections increased for the first time in more than 20 years and Ethiopia currently experiences an estimated 16,000 new HIV infections annually, compared to 14,000 in 2014 as UNAIDS reported in 2018. (45)

IMPACT OF HIV/AIDS IN ETHIOPIA

The HIV/AIDS epidemic in Ethiopia presents an obstacle to the development across nearly all sectors of society. It is documented that HIV poses a threat to all types of assets including human, financial, physical, social, natural and capital. This virulent disease is incapacitating the most economically productive age group (20-49), severely limiting gains from agricultural programs and jeopardizing food security. It is clearly more than a health issue as the economic consequences of the epidemic can seriously undermine the development achievements of the existing policies and programs. HIV/AIDS is a growing threat to efforts made for economic growth and poverty reduction. (46)

It is estimated that there are 4.2 million orphans in Ethiopia, of which 18 percent were orphaned due to HIV/AIDS. Orphans and vulnerable children are at increased risk for neglect, abuse, malnutrition, poverty, illness and discrimination, and as they get older, they are more vulnerable to HIV infection. (47)

VULNERABILITY FACTORS TO HIV/AIDS

Chronic and widespread poverty makes it especially difficult for Ethiopians to cope with HIV. Poor people have less access to information, prevention tools, care, support,

and treatment. They are also more likely to be involved in transactional sexual behavior.

Among 18- to 24-year-olds in Ethiopia, more women are infected with HIV than men. This is due, in part, to the numerous cultural and gender norms placing women at higher risk of infection. Stigma and discrimination in relation to HIV/AIDS is widespread. (48)

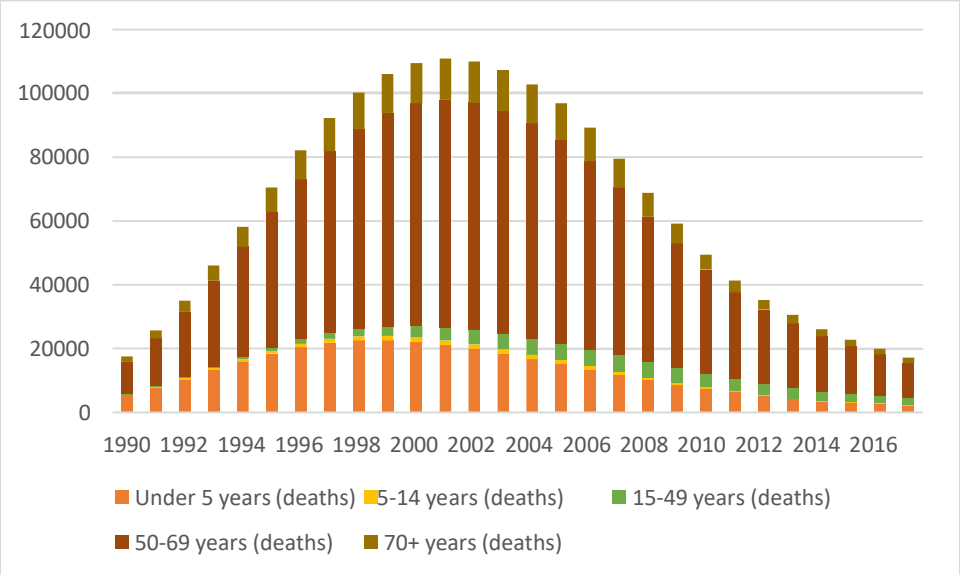

Figure 9: Deaths from HIV/AIDS, by age, Ethiopia (1990-2017)

Source: IHME, Global Burden of Disease (GBD)

5.6.4 MENINGITIS

Ethiopia is in the African meningitis belt and is regularly affected by both the endemic and epidemic forms of meningococcal disease. During 2001, a serious outbreak threatened 8 million people.

In 2002, Ethiopia reported a total of 1 332 cases of meningococcal disease including 185 deaths mainly in Southern Nations, Nationalities and Peoples Region (SNNPR) since the onset of the outbreak in September 2001. (49)

In Ethiopia, meningitis outbreaks have been described in written reports since 1901. Outbreaks were reported in 1935, 1940, 1950, 1964, 1981 and 1989.The 1981 and 1989 outbreaks were the largest ever recorded in Ethiopia with 50,000 and 45,806 cases, and 990 and 1686 deaths respectively. The 1981 outbreak affected the northern and western part of Ethiopia. The 1988-1989 meningococcal meningitis outbreaks affected all regions. Since these major outbreaks several smaller outbreaks have occurred in the country most notably outbreaks in Amhara, Tigray and Gambella Regions in February 2000. Between March and August 2000 there was an outbreak in

Addis Ababa with 850 cases and 33 deaths. During 2001 major epidemic was recorded with 6964 cases and 330 deaths followed by another epidemic during 2003-2004 epidemic seasons which recorded a total of 3326 cases and 160 deaths from all regions and was not limited to the traditional meningitis belt areas of North West and South Western part of the country.

In the epidemic season 2005 a total of 1061 cases with 46 deaths were reported from four regions while epidemic in the year 2006 affected all Regions with a report of close to 3000 cases. Out of these cases 1300 cases (45%) with 43 deaths were reported from three regions, namely Oromiya, SNNPR and Tigray.

Between the year 2005 and 2010 foci of epidemics occurred in few areas which were managed timely and contained at a local level. During 2010, the country reported 1611 cases with 21 deaths from 23 woredas in Oromia, SNNPR, Amhara and Tigray while close to 1200 cases with 30 deaths (2.5%) from Oromia, SNNPR, Amhara and Gambella were recorded during the year 2011 and major epidemic was reported in 2013 from all zones of SNNP and central and south parts of Oromia region with report of 1466 cases with 40 deaths (CFR- 2.7%). (50)

5.6.5 DIARRHEAL DISEASE

The incidence of illnesses contributing to avoidable deaths diarrhea is higher in Ethiopia compared to other sub-Saharan African countries partly due to different factors. In Ethiopia, diarrheal disease is a major public health problem, and it is one of the top 15 countries in which nearly three-fourths of child deaths occur due to diarrhea. In Ethiopia, morbidity reports and community-based studies indicate that diarrheal diseases are a major public health problem that causes excess morbidity and mortality among children.

Ethiopia has a low sanitation coverage and has been frequently affected by Acute Watery Diarrhea and Cholera outbreaks. In Ethiopia, the general population have poor access to safe water and sanitation facilities, and the situation is worse for those in rural areas. The national sanitation coverage in Ethiopia is only 57% which translates to more than 45 million people without access to improved sanitation facilities. Health services records and community-based surveys indicate that diarrheal diseases are major causes of morbidity and mortality in Ethiopia because of low access to safe water and adequate sanitation. (51)

Since 1970, parts of Ethiopia have been frequently affected by cholera, acting as sources of infection for the dissemination of the 1985–1986 large-scale epidemic in the Horn of Africa. From 1993 to 1999, they were again systematically involved as active focuses in the recurrent spreading of the disease in the region. Despite the critical role of Ethiopia in the epidemic transmission of cholera, no scientific investigations have been carried out. (52)

According to the Reuters in 2009 alone Cholera and other diarrheal diseases have infected 18,000 people in Ethiopia in many parts of the country, including the capital Addis Ababa. Ethiopia's Health Ministry told the Reuters 34 people had died from AWD, but it had not yet confirmed any cholera cases till the reported dated. (53)

In Ethiopia, highly populated market town Moyale and surrounding kebeles on the Ethio-Kenyan border have been affected with AWD since 7 November 2015. AWD continues to be major public health concern in Ethiopia: since January 2017, 48,592 AWD cases were reported across the country, according to Government records. Although the AWD outbreak is showing a downward trend. (54)

The associated press reported more than 680 people have died in a suspected cholera outbreak in Ethiopia that has also affected neighboring countries. Some 60,000 people have been infected, but the country's Health Ministry resisted pressure to declare an emergency despite a U.N. warned that the disease is an epidemic. (55)

Getachew Tolera, Deputy Director of the Ethiopian Public Health Institute (EPHI), told reporters in 2019 that Ethiopia has identified a sum of 871 AWD cases in Oromia, Amhara, Tigray, Somali, Afar regional states, Dire Dawa city and the capital Addis Ababa alone had "alarmingly" recorded a total of 125 cholera cases. EPHI Reports, a total of 350 cholera cases with 15 deaths occurred from late December through mid-January. Most of the cholera cases and deaths were in SNNPR, followed by Oromia and Somali Regions. (56,57)

5.6.6 MEASLES

Measles is endemic in Ethiopia with outbreaks reported annually. Improved outbreak preparedness and response efforts from the Government, as well as measles supplementary immunization activities (SIAs) the most recent of which was in 2017, have helped to significantly reduce measles cases over the years. Despite the reduced incidence, outbreaks at the sub-national level continue to occur.

Measles incidence in Ethiopia is still high above 50 cases/1,000,000 population per year, which is above the national set targets for measles accelerated control by 2012 (<5 cases/1,000,000 population per year) and measles elimination by 2020 (<1 cases/1,000,000 population per year. (58)

According to WHO and UNICEF national immunization coverage estimate, Ethiopia is the fifth country in the world with large number of unimmunized children. In 2018, 872,828 children were not immunized for the third dose of pentavalent vaccine and 1,215,724 children were not immunized with first dose of measles vaccines.

Though vaccination coverages for the first and third dose of DTP containing vaccine (pentavalent) in Ethiopia has increased from 77 per cent in 2010 to 85 per cent in 2018, measles vaccination coverage has shown a negligible decrease, from 64 per cent in 2010 to 61 percent in 2018. And 467,586 children have never been vaccinated at all. (59)

Measles outbreak is ongoing in Oromia, Amhara and Somali regions. Vaccination campaign is being planned to target 6.7 million children aged 6 months to 14 years. Targeted populations are internally displaced populations and host communities. (60)

5.6.7 TUBERCULOSIS BACILLUS

The 2017 Global TB (Tuberculosis bacillus) Report of the World Health Organization lists Ethiopia as one of the 30 high-burden TB, TB/HIV, and multi-drug resistant TB (MDR-TB) countries, with an estimated incidence of 182,000 in 2016. The rate of MDR-TB was estimated to be 2.7% of new TB cases and 14% of previously treated TB cases. (61)

5.7 INTERNAL DISPLACEMENT

The confluence of rapid urban expansion, ongoing conflict over land and resources and high levels of vulnerability to ongoing drought and seasonal floods continue to generate numerous new displacements every year.

About 2.9 million new displacements associated with conflict were recorded in 2018, the highest figure recorded worldwide. Despite many important and positive political changes that took place in the country in 2018, old conflicts became more entrenched and new conflicts escalated along various state borders. Disasters also triggered 296,000 new displacements, most of them associated with flooding and drought in the Somali region.

In the first half of 2019, about 755,000 new displacements were recorded, 522,000 associated with conflict and 233,000 associated with disasters. (62)

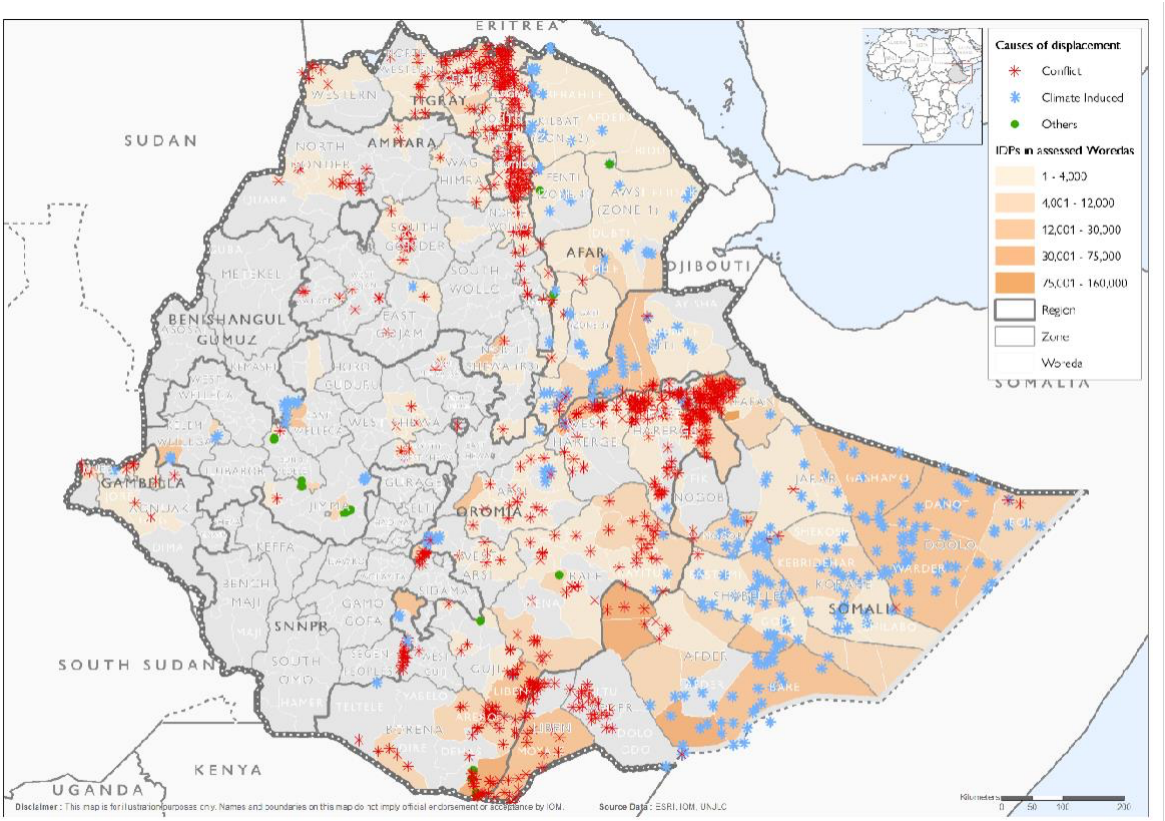

Figure: 10 The displacement caseload in Ethiopia in 2019 (63)

5.7.1 POST CONFLICT DISPLACEMENT IN ETHIOPIA

During the past four decades Ethiopia has been ravaged by large-scale civil war and famine. Many people suffered traumatic experiences by being involved in the civil war, while very often losing home, friends and relatives. According to estimates of the Ethiopian Disaster Prevention and Preparedness Commission (DPPC), by the end of the civil war in 1991, about one million Ethiopians were displaced as a result of famine and war.

The war, which many had thought, was over with the fall of the military junta and the cessation of Eritrea has unfortunately caused too much suffer to hundreds of thousands of Ethiopians and Eritreans alike. The border clash that broke out in May 1998 developed into full blown war and left over eighty thousand people dead and displaced hundreds of thousands on both sides. (64)

5.7.2 FACTORS CONTRIBUTING INTERNAL DISPLACEMENT

Like global trends, the causes of internal displacement in Ethiopia are multifarious. According to Mehari, three principal factors contribute to the causes and consequences of internal displacement in Ethiopia: the ethnic federal structure, the persistent threat of famine, and ethnic conflicts. Both famine and ethnic federalism (as the outcome and

aggravating factors of ethnic conflicts) often result in population displacement. Another cause of internal displacement in Ethiopia has been planned resettlement programmes and relocations due to government-backed development projects.

Internal displacement and freedom of movement exhibit special causes, dynamics, and consequences in the Ethiopian federal system. Ethiopia has been governed, since 1991, under an ethnic federal constitution, which also addressed the main causes of long-standing unrest and civil war in Ethiopia. (64,65)

5.7.3 CAUSES OF INTERNAL DISPLACEMENT IN ETHIOPIA

Natural Disaster-induced Displacement (NDID)

In 2015, "Ethiopia suffered one of its worst meteorological droughts in 50 years". The El Nino weather phenomenon triggered the displacement of 280,000 Ethiopians. Within six months of the drought, beginning in August 2016, 146,000 citizens faced severe food insecurity. In addition to that catastrophe, 67,800 people were displaced fleeing communal conflict.

Compared to the worldwide disaster-related displacement of 19.2 million people and considering the population size of Ethiopia and the impact of the drought on its people, Ethiopia's 146,000 internal displacement persons (IDPs) were relatively small. Another driving factor for internal displacement from rural to urban centers in Ethiopia is environmental degradation and climate changes in areas of origin that have made earning a livelihood almost impossible for IDPs.

Conflict-induced Displacement (CID)

While the political transformation brought with the establishment of the federal system in 1991, inter-ethnic conflicts have increased at local level. in ethnic federalism, power is shared in direct proportion to the population of ethno-cultural communities. The relative numerical superiority of ethno-cultural communities would result in more power for the largest ethnic group. Therefore, in ethnic federalism, migration (forced or spontaneous) could easily affect the demographic balance and power relationships between ethnic communities. CID may also occur as a result of the following major conflicts:

1. Ethnic identity and federalism:
2. Religious conflicts:
3. Weak implementation of the constitutional protection of minority rights and ethnic security

Pastoralism and Internal Displacement

Some researchers estimate that 15 percent of the total population is pastoralist. In Ethiopia, at least two regional states – Somali and Afar – are largely pastoralist. Moreover, a significant portion of the populations of Gambella, Oromia, and SNNP regional states are pastoralist or agro-pastoralist. From time to time, pastoral

communities are in conflict over grazing land and water wells which displace people. Pastoral communities also face serious challenges when their geographical space is limited or reduced by large scale commercial farms or national parks.

Development-induced Displacement (DID)

Infrastructural and Development Projects

In an agrarian society such as Ethiopia, DID is closely intertwined with land governance, which in turn overlaps with federalism and the identity of inhabitants living in a specific territory. Given the economic transformation in Ethiopia, DID may take various forms, including resettlement programmes, relocation, and eviction DID may manifest itself in development projects, displacement, and livelihoods due to the following infrastructural development projects:

a. road and rail transportation.
b. hydroelectric and irrigation dams.
c. urbanization projects (urban renewals, integrated urban master plans, and the relocations of persons).
d. industrial parks.
e. national parks.
f. commercial agricultural farms and processing industries.
g. state sponsored resettlement programmes

Urban Renewal Programme

Development of the slum areas in the inner city of Addis Ababa has resulted in massive relocations of many households. According to the available data from the Agency, in 2015/2016, a total of 17,127 households were relocated. Nine thousand, one hundred and eighty households were relocated from the inner city to a housing project on the outskirts of Addis Ababa. The most affected areas were Lideta (3477), Kirkos (1330), Arada (2558), and Addis Ketema (1851). Similarly, 7,947 farmers were displaced due to the expansion of the boundaries of Addis Ababa City. These were mainly displaced residents of the Nefassilk Sub City (568), Kolfe keranio (82), Bole (3062), and Akaki (4235). Most of these households subsequently moved in with relatives in the city. As a coping strategy, many opted to stay in rented houses during the transition period.

In Bahir Dar, the construction of Bahir Dar *Hulegeb* Stadium has relocated 352 households. These households were relocated to the Kotatina resettlement area, which is on the periphery of Bahir Dar City. The Kotatina resettlement area was initially used by farmers but was subsequently made available for displaced people.

Dam Construction

Ethiopia's Gibe III dam is a 243-meter-high hydroelectric plant located on the Omo River. This dam started hydroelectric production in 2015. According to Rahmato, the construction of Gibe III has displaced and affected between 200,000 and 500,000 people in the Omo Valley.

Large Commercial Farms

Massive land investment programs are also taking place in many parts of Ethiopia, following the attractive 2010 investment policy for foreign companies**.** Although leasing land for investors is taking place in Benshangul-Gumuz, SNNP, Gambella and the Afar regions, the main targets for large land investments are in Gambella and Benshagul-Gumuz According to the World Bank's 2011 report, Ethiopia has granted 1.2 million hectares (almost 3 million acres) of land to 406 investors. These investment processes have displaced many households and negatively affected their livelihoods.

Resettlement Programmes

Spontaneous moves and resettlement programmes to fertile lowland destinations and to commercial/ development projects/ plants since the dawn of the twentieth century have also become the new drivers of IDPs in Ethiopia. Intended to address economic development concerns, state-sponsored resettlement programmes began in the 1960s and continued under the Derg Regime until recent years.

Man-made Disaster-induced Displacement (MDID)

Data on MDID are not available, despite several reports of arson and fire accidents affecting small industries and markets in the country. (66)

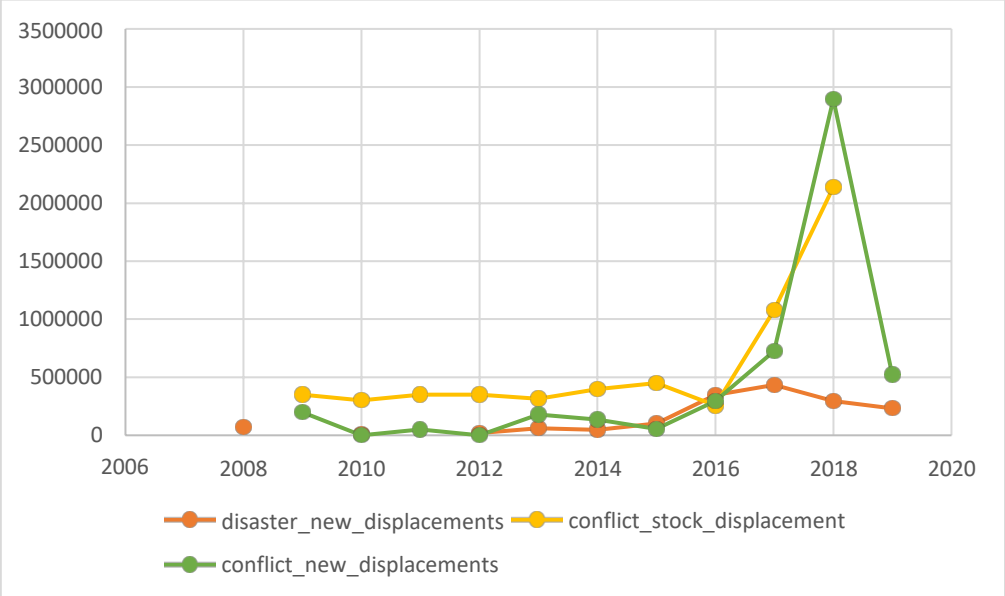

Figure:11 Number of conflict and natural disaster induced IDPs in Ethiopia (2008-2019) (67)

5.7.4 IMPACT OF DISPLACEMENT

Forced displacement and population mobility drives people into poor congested living conditions, WASH facilities services, and practices, hence predisposing them to increased transmission of communicable diseases, with higher risks of disease outbreaks like measles, scabies and AWD. Population mobility poses additional risks for these outbreaks. Last year, random periodic sanitary risk testing of water samples conducted in AWD-affected woredas showed that 10 out of 72 samples had very high-risk levels, and 34 had high risk levels. (68)

IDPs' most pressing needs are access to livelihoods, improved access to food and safe water and sanitation and restoration of an adequate standard of living. After consecutive droughts that have deprived many pastoralists and sedentary farmers of their livestock and traditional livelihoods, there is an overwhelming need for income-generating opportunities among IDPs and host communities.

Water and food shortages have also caused widespread malnutrition, and many IDPs are vulnerable to the spread of diseases. Few, however, have access to nutrition services or physical or mental healthcare. Many displaced children's education has also been disrupted. (69)

Manmade/technological disasters in Ethiopia

The man-made disaster is neglected in Ethiopia though it has a significant impact on the health of the people and the country's economy. A road traffic accident is the most common and devastating man-made disaster in the country.

Despite the growing burden of RTAs, road safety remains a neglected issue in many developing countries and the health sector has been slow to recognize it as a priority public health problem. Like many African countries Ethiopia is facing enormous road safety crisis. Each year thousands of road users are killed and many of them are economically active population. (70)

In the table below I have collected and summarized the major Technological/Manmade Disasters in Ethiopia since 1985.

Table:5 Major Technological/Manmade Disasters in Ethiopia in the Recent Past

Date	Disaster type	Disaster description	Cause	impact
2000	Wildfire	Oromia (Bale and Borana zones), Benishangul Gumuz Gambella and SNNPR Region	traditional use of fires for agricultural production	US$ 39 million More than 100,000 ha was affected
2001		Awash National Park	The causes of the fires remain unknown	5 ha and 6 ha of forest and grassland burned
2019		Wildfire in Semien Mountains National Park	Cause still unknown	342.9 hectares of grassland
1985	Train crash	Ethiopian train falls off bridge	excessive speed at the curve	Mortality case-392 people and injuring 370
1988	Air crash	Ethiopian Airlines 737	struck a flock of pigeons after take-off in Bahir Dar	Mortality case-31
1996		Ethiopian Airlines Flight ET961, a Boeing 767-200 ER	Hijacked, ditched in the Indian Ocean at Comoros Islands	Mortality case-125 passengers and staff members from the flight
2009		Ethiopian Airlines 737-800 (ET-ANB); Flight 409; near Beirut, Lebanon:	the plane exploded, either in a lightning strike or shooting down (Ethiopian Airlines officials)	Mortality case-82 passengers and eight crew members on board, all of whom were killed
2019		Ethiopian Airlines Flight 302, Boeing 737 Max 8 jet	faulty sensor that erroneously activated an automated system on the Boeing 737 Max (Black box data)	Mortality case-killed all 157 passengers and crew
2007/08-2017/18	Road Traffic accident (RTA)	RTA (prevalence of road traffic fatality in Ethiopia was 25.3 per 100,000 population and the rate is among the highest in the world (WHO))	Human error, road environment and vehicle factors (traffic police of Ethiopia)	291,577 Road traffic accident 1.3 billion $ loss,
2019	Gondar 'Timiket' stand collapse	The stand was inside the Emperor Fasilides Bath where thousands were commemorating the baptism of Jesus for the Timket festival in Gondar.	Overloaded of the stand and poor construction	247 injuries Mortality case-10

Source: personal completion from different source

6 INSTITUTIONAL FRAMEWORK -NATIONAL DISASTER MANAGEMENT SYSTEM

6.1 BACKGROUND TO DISASTER RISK MANAGEMENT IN ETHIOPIA

Ethiopia unveiled the Growth and Transformational Plan (GTP) which sets the vision for the country as a middle income, democratic and developmental state and a carbon neutral climate resilient economy by 2025. As aggressive goals of broad-based economic growth and social development are envisioned for the country in the coming five years, a comprehensive Disaster Risk Management (DRM) system is called for to reduce disaster risk and the impacts of disasters, and to protect development gains. The urgency behind this approach is conveyed by a host of national policy documents such as the GTP, the Agricultural Sector Programme and Investment Framework and the Policy on Disaster Risk Management. At the international level, the Sendai Framework for Disaster Risk Reduction and the Africa Regional Strategy for Disaster Risk Reduction give further guidance and thrust.

6.2 DISASTER RISK MANAGEMENT POLICY

The Government of Ethiopia has endorsed a comprehensive DRM policy, based on lessons learned from previous experience. These include the necessity of a multi-hazard approach grounded in a deep understanding of specific disaster risk, and its link to development and vulnerability; emphasis on prevention, mitigation, preparedness and post-disaster modalities and capacities; de-centralization of resources and structures; a clear determination of DRM responsibilities, supported by the capacity for legal enforcement and a high degree of accountability.

The new DRM policy provides the direction for the kind of DRM system envisaged for Ethiopia in the future. Such system is based on an enabling policy environment and strategy. It relies on organizational structures with appropriate and harmonized roles and responsibilities at federal, regional and woreda levels. Horizontal and vertical coordination among decision-making bodies and effective DRM systems, processes and procedures are ensured.

6.2.1 NATIONAL POLICY AND STRATEGY ON DISASTER RISK MANAGEMENT

The new 2013 policy provides for a comprehensive framework of disaster risk management (DRM) measures and is an amendment of the 1993 National policy on disaster prevention and management. It includes general directions and major implementation strategies, including on a decentralized DRM system, early warning and risk assessment, information management, capacity building, and on integration of disaster risk reduction into development plans. The main objective of the Policy is to reduce disaster risks and potential damage caused by a disaster through establishing a comprehensive and coordinated disaster risk management system in the context of sustainable development

6.2.2 LINKAGES TO OTHER POLICES AND STRATEGIES

PASDEP (2005 -2009) and GTP (2010 – 2015)

Recent Government development strategies (PASDEP and GTP) have emphasized the importance of DRM.

The GTP emphasizes the importance of strengthening the Early Warning System and the capacity to respond to disasters. Ensuring a timely response to disasters will be included as part of agricultural support and economic development strategies and programs. Preparedness will be improved by increasing food and nonfood reserves. The SPIF will ensure proper complementarity of DRM to the overall growth agenda so that development gains will be protected from the wide range of risks associated with disasters.

The Agriculture Sector Policy and Investment Framework (PIF)

The PIF stresses that improving the capacity to manage risk with an emphasis on climate change is critical in overcoming poverty and food insecurity. While the need to increase the rate of graduation of the chronically food insecure is a key issue, the government must ensure that vulnerable households and communities do not lose their productive assets due to external shocks, and that other risk management initiatives are maintained such as early warning systems, strategic food reserves and emergency response capacity. The DRM-SPIF contributes to further detailing DRM interventions to fully support the PIF and ultimately the GTP agenda.

Climate Resilient Green Economy (CRGE)

In November 2011 the 'vision' to build a CRGE by 2025 was launched. This economy would be middle-income, resilient to the negative impacts of climate change and would be achieved with no net increase in emissions relative to today. The vision is supported by two strategy documents: The Green Economy Strategy and the Climate Resilience Strategy.

There is evidence that climate variability leads to extreme events and causes hazards. Within Ethiopia extreme climate events are common, particularly droughts and floods. Alongside the evidence of a changing climate, evidence suggests the incidence of droughts and floods have increased in the last 10 years relative to the decade before. Therefore, the CRGE vision as well as the accompanying Ethiopia Programme of Adaptation to Climate Change (EPA-CC) acknowledge the role of disaster risk management policies, strategies, programs and interventions' in enhancing their goals.

The implementation of CRGE vision and DRM SPIF would ideally rely on common assessments and related data and information on climate-related hazards, risks and vulnerabilities (such as the Wereda Disaster Risk Profile).

Social Protection Policy (2012)

The new Social Protection policy is under the auspices of the Ministry of Labor and Social Affairs (MOLSA) and addresses similar issues. It introduces a shift from the social welfare approach of the developmental social welfare policy to a more comprehensive framework leading to coordinated actions to protect citizens from economic and social deprivation through emergency interventions and targeted cash transfers, preventive actions designed to avert deprivation or to mitigate the impact of adverse shocks including health and unemployment insurance, promotive actions that aim to enhance assets and human capital and income earning capacity, and transformative actions including legal and judicial reforms, budget analysis and policy evaluations to help the nation better manage social protection

In other policies and strategies, the government of Ethiopia has pointed out the need to concentrate on reducing, in the long and medium term, vulnerability of regions to drought and other natural calamities.

International Commitments on DRM

The Stockholm Accord of 2007 stated that disasters and climate change are serious risks to economic growth and poverty reduction. The agreed priority actions are:
1. Disaster Risk Reduction and climate change adaptation cannot be dealt with in isolation. It requires common strategies for integrating DRR, climate change adaptation and poverty reduction strategies.
2. Disaster and climate change risk analysis must be integrated into national planning processes including the national poverty reduction strategy
3. DRR and climate change adaptation are not sectors but need to be factored into all sectors
4. DRR is an urgent national agenda to reduce poverty and adapt to climate change
There are also several international institutions that are relevant to the present framework.
Ethiopia is a member of IGAD, the Intergovernmental Authority on Development. Initially established in 1986 as a body uniting six Horn of Africa governments involved in drought response and management, it has since then expanded its focus to promote intergovernmental cooperation in the areas of food security and environmental protection, promotion and maintenance of peace, security and humanitarian affairs, an economic cooperation and integration.

Ethiopia is also a priority country for the Global Facility for Disaster Reduction and Recovery (GFDRR), an international partnership initiative to help developing countries reduce their vulnerability to natural hazards and adapt to climate change. The GFDRR aims to mainstream DRR measures in development and help countries achieve financial resilience to disasters. Finally, Ethiopia participates actively in DRM related African Union initiatives, such as the AU summits and the AU Technical Committee on DRR.

Alignment with Sendai framework and Africa Strategy for DRR

The 1993 National Policy on Disaster Prevention and Management was reviewed and revised leading to the National Policy and Strategy on Disaster Risk Management that currently serves the basis for the new DRM approach by government. (71)

This policy also includes general directions and major implementation strategies which incorporated within the main themes of the Sendai framework. which considers that it is urgent and critical to anticipate, plan for and reduce disaster risk in order to more effectively protect persons, communities and countries, their livelihoods, health, cultural heritage socioeconomic assets and ecosystems, and thus strengthen their resilience.

As in the national DRM policy in the Sendai Framework, it has been said that the realization of this outcome requires the strong commitment and involvement of political leadership in every country at all levels in the implementation and follow-up of the Framework and in the creation of the necessary conducive and enabling environment. It has also been said that to attain the expected outcome, the goal of Preventing new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience must be attained.(72)

The restructuring allowed the GoE to undergo a major shift in its approach from what was a traditional, reactive, ex-post emergency and relief work to a proactive, ex-ante preparedness and disaster risk reduction approach.

With respect to the Africa Regional Strategy for DRR, for each of the six strategic areas of interventions, Ethiopia has operationalized the major activities articulated in the programme of action of the Africa Regional Strategy for DRR.

The DRM-SPIF addresses the facilitation of the GoE's engagement with the partners at regional and global levels. Reporting on the progress in the promotion and adoption of DRM approaches to the international community through the AU and NEPAD is not only being highlighted in the DRM-SPIF but the engagement with a wider DRM network and the use of south-south cooperation to share experience, knowledge, and resource to further the application of DRM in the country.

Disaster Risk Management Strategic Programme and Investment Framework

The DRM strategic programme and investment framework emanates from the BPR exercise and is based on the objectives, targets, and development goals of the GTP. It is also consistent with the revised DRM Policy and the priorities enshrined in the HFA

6.3 DISASTER RISK MANAGEMENT FRAMEWORK

The DRM SPIF is based on the DRM policy which provides the direction for the DRM system envisaged for Ethiopia in the future. It relies on organizational structures with appropriate and harmonized roles and responsibilities at federal, regional and wereda levels. The SPIF builds on the DRM policy commitment for strong horizontal andvertical coordination among decision-making bodies and effective DRM systems, processes and procedures.

The SPIF is based on an understanding of disaster risks; on effective and targeted information flows for decision making and for community DRM; on resources preparedness, ensuring appropriate and timely availability of key resources; on effective implementation capacity, including resource delivery; and on mechanisms for learning lessons and feeding into planning and decision-making.

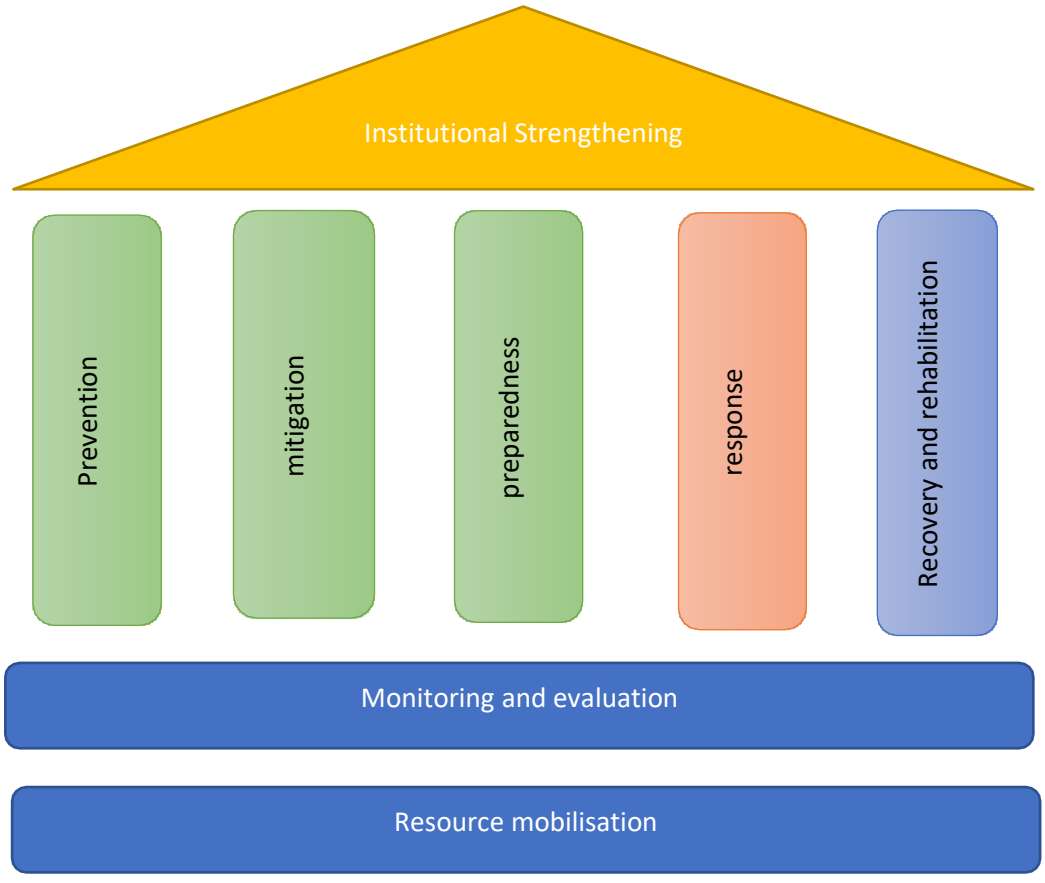

Figure:12 Ethiopia's Disaster Risk Management Framework

Ethiopia's DRM system goes further in contextualizing the framework to the conditions in the country. The DRM system of Ethiopia is divided along seven pillars. Two pillars – prevention and mitigation and preparedness –constitute the core of disaster risk

reduction and are essential to ensuring an early and effective response. This in turn mitigates the overall impact of the disaster and speeds recovery and rehabilitation. Institutional strengthening is the pillar which supports an enabling environment for the integration of *these* various components along the different phases of DRM. Providing the foundation for the DRM pillars is monitoring and evaluation and resource mobilization.

The seven pillars of the DRM Framework interact within a continuous process that guides a transparent and integrated system through three major phases: pre-disaster, during disaster, and post-disaster. (71)

6.3.1 WEREDA DISASTER RISK PROFILING PROGRAMME

Wereda (District) Disaster Risk Profile (WDRP) is a comprehensive disaster risk assessment programme led by the Government of Ethiopia with technical and financial support by development partners. In all 11 Regional governments and city administrations, there are about 825 Weredas. As of today, 338 Weredas have been covered by the WDRP study.

Hence, WDRP information not only allows you to investigate the hazard, vulnerability, and coping capacity of communities, but also helps planning and programming various developmental interventions, conduct research studies using WDRP information as a baseline, access more advanced analytical information, etc.

Uses of the Wereda Disaster Risk Profile

Currently, Wereda Disaster Risk Profile Information is being used for Wereda Disaster Risk Reduction Planning. The two types of Wereda Disaster Risk Reduction planning are briefly described hereunder:

Wereda Disaster Risk Mitigation / Climate Change Adaptation Planning

Deals with identification of risk mitigation / adaptation strategies and mainstreaming them into annual development plans. In this way, disasters affecting the community will be minimized by identifying and implementing strategic development activities or helping the community to adapt to those disasters.

Wereda Contingency Planning

Deals with preparedness for the imminent disasters affecting the community and how to coordinate various sectoral offices in the emergency response operation, providing a clear responsibility for each sector. In this way, every response activity will be effective and efficient in resource allocation and utilization. Lessons learnt in the response operation, including any vulnerable characteristics of the community will be used to identify strategies and activities in the next Wereda annual development plans.

Integration of the Wereda Disaster Risk Profile with other government programmes

Integration of Wereda Disaster Risk Mitigation / Climate Change Adaptation Planning and Wereda Contingency Planning with the following Government Programmes is being considered with the aim of designing strategies and activities for the Wereda annual development plans, hence enhancing development efforts: Climate Resilient and Green Economy Strategy/Programmes and Productive Safety Nets Programme. (73)

Figure 13: Wereda Disaster Risk profiling cycle

(source: Adapted from NDRMC)

6.4 NATIONAL PROGRESS REPORT ON THE IMPLEMENTATION OF THE HFA

Strategics outcomes

Strategic Outcome for Goal 1

The Productive Safety Net Programme is being reviewed to further reduce underlying disaster risk factors in chronically food insecure weredas/ districts in the country. Almost 300 weredas of the country have collected data for the Wereda Disaster Risk Profile. Out of them, 200 have the profile developed and available in the DRMFSS

Information Management System. The Livelihoods, Early Assessment and Protection project (LEAP) system, developed by the Government in collaboration with partners has started to be utilized. LEAP is an early warning – early action tool that prompts the timely scaling-up of response linking early warning to contingency planning. The LEAP software uses agrometeorological monitoring data to estimate future crop yields and rangeland production, converted to estimates of people likely to need assistance due to anticipated production reductions. The 2010-2015 GTP that leads the development of the country has introduces risk mitigation objectives; The resilience approach has facilitated enhanced coordination between development and humanitarian partners.

Strategic Outcome for Goal 2

The new revised Disaster Risk Management Policy has been endorsed by the Council of Ministers and shared with all stakeholders. This policy and its respective strategy (DRM – Strategic Programme and Investment Framework) states that "DRM shall be mainstreamed into development plans of Government institutions and private sector organizations". The strategies approved in this aspect are:

1. A mechanism shall be established for ensuring the mainstreaming of disaster risk management into government development policies, strategies, plans and programmes.
2.A proper structure shall be put in place in every designated lead sector government institution to facilitate the implementation of sector specific disaster risk management activities.
3. Disaster risk management shall be integrated into school curricula of learning institutions from primary to higher level as well as into plans of research institutions.
4. It shall be ensured that disaster risk management is mainstreamed into operational plan of the private sector.
Also, Lead sector institutions shall be assigned for every hazard at Federal, Regional, Zonal, Woreda as well as at Addis Ababa and Dire Dawa City Administration levels and they will be responsible for undertaking activities ranging from monitoring to response. There shall be a dedicated structure in those lead institutions to be assigned for performing such tasks.

One of the major achievements in this regard is the establishment of the multi-sector and multi-agency national platform in the country having membership from relevant government agencies and development partners. This platform, entitled as the DRM Technical Working Group, is also supported by a series of sector task forces like agriculture, WASH, health, nutrition, education, etc. besides the working group on gender. The national platform has been decentralized to sub-national level, which has already been accomplished for different regional states in the country.

DRM strategies are also being developed by the respective sector in-ministries in line with the DRM policy. As part of implementing a multi-hazard approach effort have

commenced on enhancing urban DRM with the development of indicators and modification of existing rural based risk analysis tools to adapt to urban areas

Strategic Outcome for Goal 3

In 2014, the Government and its partners endorsed a shift to an annual humanitarian requirement document (HRD) – a shift from a six month needs identification to annual. The annual HRD is in line with the DRM policy with more focus on baseline information, monitoring tools, and preparedness utilizing regular Early Warning, monitoring and satellite imagery analysis. The Government is working with sector actor to shift to sustainable interventions. More efforts are being placed towards linking emergency lifesaving interventions to long term development interventions to address root causes of vulnerability to shocks. The government is improving the Food Management System of the country. The country has different Early Warning System tools that are also being developed and are improving the response capacity. An Early Recovery network, led by the Government, has been established to better support mainstreaming of early recovery in sector planning and response. (74)

7 DISCUSSION AND CONCLUSION

Disasters impact the growth of the country significantly. With each disaster the impact on various development sectors such as agriculture, health, and infrastructure is significant. This leads to a significant social and economic setback in developing countries ' growth and reducing poverty goals, which poses a threat to achieving the Sustainable Development Goals.

Most recently disaster management in Ethiopia had been mostly focused on food aid and response in the aftermath though the nonfood aid response in emergencies is also crucial. In 2013 the Ethiopian government endorsed a new policy taking the lesson learned from the previous drought focused response policy into account which provides a comprehensive framework of disaster risk management. Despite the new policy has shown a slow paradigm shift in disaster management, the national policy and strategy on disaster risk management underlined that disaster management is a multisectoral responsibility and coordinated effort of different stakeholders.

The GoE showed a political commitment and its readiness for DRM in introducing and integrating DRR into developmental plans, different policies and strategies: PASDEP and GTP, PIF, CRGE, EPA-CC, Social Protection Policy (2012), CCA, FSS. The WDRP risk assessment program which is used to investigate the hazard, vulnerability, and coping capacity of communities is the great achievement of NDRMC by far though only less than 50 percent of 825 weredas covered.

However, there is a lot to be done in the future in the research and academics at the institutional level. There are only a few studies conducted regarding disaster management and there is limited information about risk and vulnerability of the

country to landslide, earthquake, and volcano which would impact the life of the people and economy of the country.

Moreover, Ethiopia has not introduced a comprehensive policy or legal framework to protect IDPs, nor has it created an independent authority with a mandate to do so. Accordingly, the adequacy of general legal protection applicable to all persons under Ethiopian law in overcoming the challenges facing IDPs in the country needs to be examined. The country's 2018 internal displacement which was the highest number of IDPs in the world showed us the necessity of adopting a legal framework and introducing an independent institution to manage such a crisis in the future, a taskforce of different organizations couldn't handle it alone.

Simien National Park bushfire response can be a good example of how there is a weak and lack of coordinated emergency response on the part of the government. There is a need for strong commitment in the implementation of the DRM policy and coordination and collaboration among development and disaster management stakeholders at the international level, national level, and local level. Without integration and collaboration of stakeholders at all levels, it is hardly possible to deal with natural and man-made disasters as climate change may increase weather volatility, and inevitably there will be a severe disaster in Ethiopia at some point.

The increasing vulnerability of the growing rural populations means that even minor droughts can affect a much larger number of people than ever before. Thus, communication to the public for farmers and pastoralists in particular as they are more prone to disaster is critical in reducing the burden of disasters on the community risk communication programs need to be established and the existing early warning system must improve as an essential component of all plans at all levels.

NDRMC have to conduct a natural disaster simulation exercise to improve response to emergencies at wereda, regional and national level periodically. Such exercises would be used to check and improve NDRMC's capacity to deploy an emergency operations center to coordinate communications and logistics in real time during disaster response. Moreover, collaboration and coordination are essential to strengthen the flood alert which has been started recently.

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ACRONYMS

EM-DAT	Emergency Events Database
CRED	Centre for Research on the Epidemiology of Disasters
GTP	Growth and transformation plan
DRM	Disaster Risk Management
AWD	Acute watery diarrhea
INFORM	Index for risk management
GDP	Gross domestic product
EPRDF	Ethiopian People's Revolutionary Democratic Front
HIV	Human immunodeficiency virus
ILO	International labor organization
USAID	The United States Agency for International Development
DPPA	Disaster Prevention and Preparedness Agency
UNDP	United nation development program
UNECA	United nations economic commission for Africa
SNNP	Southern nations nationalities and people
FAO	Food and agriculture organization of the United Nations
OCHA	The United Nations Office for the Coordination of Humanitarian Affairs
USGS	United States Geological Survey
HIV/AIDS	Human immunodeficiency virus/Acquired immunodeficiency syndrome
WASH	Water, sanitation, and hygiene
WHO	World health organization
TB	Tuberculosis
DPPC	Disaster prevention and preparedness commission
IDPs	Internal displacement persons
CID	Conflict-induced Displacement
DID	Development-induced Displacement
MDID	Man-made Disaster-induced
DRM	Disaster risk management
MoARD	Ministry of Agriculture and Rural Development
DRMFSS	Disaster Risk Management and Food Security Sector
PASDEP	Plan for Accelerated and Sustained Development to End Poverty
SPIF	Strategic Programme and Investment Framework
PIF	Policy and Investment Framework
CRGE	Climate Resilient Green Economy
EPA	Ethiopia Programme of Adaptation
GoE	Government of Ethiopia
HFA	Hyogo framework for action
NEPAD	New Partnership for Africa's Development
GFDRR	Global Facility for Disaster Reduction and Recovery
WDRP	Wereda disaster risk profile
LEAP	Livelihoods, Early Assessment and Protection project