

Hunger and Famine in The Horn of Africa: A Vulnerability Approach *

Erdal BAYAR**

ABSTRACT

The lack of precipitation in the 2020-2022 rainy season has resulted in a food crisis in the Horn of Africa. Attributing the famine exclusively to rising global temperatures, climate change, prolonged dry periods, or flooding overlooks the underlying social and economic factors contributing to this crisis. The analysis method provided by the Vulnerability Approach, encompassing economic, social, political, and environmental factors, was selected for its comprehensive perspective. Famine exacerbates existing socioeconomic issues, intensifies social conflicts, and leads to various problems, including migration. There are various scientific perspectives on the causes of famine, such as underdevelopment, colonialism, environmental problems, climate change, rapid population growth, lack of democracy, inequality, and poverty. This study will examine the circumstances of vulnerable social groups regarding hunger, malnutrition, and famine, emphasizing social factors over physical or meteorological causes of famine. As a result, hunger and famine are not just meteorological events but rather social phenomena, and the effects of these phenomena are uneven throughout society. Vulnerable groups experience more severe consequences than other groups, and one of the most vulnerable groups, children aged 0-5, being affected by hunger and famine, poses significant threats to the future of societies.

Keywords: Child Mortality, Disaster, Drought, Famine, Hunger, Horn of Africa.

Received / Accepted: 31 January 2025 / 29 March 2025

Citation: Bayar, E. (2025). Hunger and Famine in The Horn of Africa: A Vulnerability Approach, *İmgelem*, 16, 297-320.

Afrika Boynuzunda Açlık ve Kıtık: Zarar Görebilirlik Yaklaşımı

ÖZ

2020-2022 yağışlı mevsiminde yağış eksikliği, Afrika Boynuzu'nda bir gıda krizine yol açtı. Kıtılığı yalnızca artan küresel sıcaklıklara, iklim değişikliğine, uzun süreli kuraklık dönemlerine veya sellere bağlamak, bu krize katkıda bulunan altta yatan sosyal ve ekonomik faktörleri göz ardı eder. Ekonomik, sosyal, politik ve çevresel faktörleri kapsayan Zarar Görebilirlik Yaklaşımı tarafından sağlanan analiz yöntemi, kapsamlı bakış açısı için seçildi. Kıtık, mevcut sosyoekonomik sorunları daha da kötüleştirir, sosyal çatışmaları yoğunlaştırır ve göç de dahil olmak üzere çeşitli sorunlara yol açar. Azgelişmişlik, sömürgecilik, çevre sorunları, iklim değişikliği, hızlı nüfus artışı, demokrasi eksikliği, eşitsizlik ve yoksulluk gibi kıtlığın nedenleri hakkında çeşitli bilimsel bakış açıları vardır. Bu çalışma, kıtlığın fiziksel veya meteorolojik nedenlerinden çok sosyal faktörleri vurgulayarak, savunmasız sosyal grupların açlık, yetersiz beslenme ve kıtlık konusundaki koşullarını inceleyecektir. Sonuç olarak, açlık ve kıtlık sadece meteorolojik olaylar değil, aynı zamanda sosyal olgulardır ve bu olguların etkileri toplum genelinde eşitsizdir. Açlık ve kıtlığın etkileri, kırılgan kesimlerin diğer kesimlere göre daha ağır sonuçlarla karşılaşmasına neden olurken, en kırılgan kesimlerden biri olan 0-5 yaş grubu çocukların açlık ve kıtlıktan etkilenmesi, toplumların geleceği açısından önemli tehditler oluşturmaktadır.

** Assist. Prof., Van Yüzüncü Yıl University, Erciş Faculty Of Business Administration, Political Science and International Relations, Van/Türkiye. E-mail: erdalbayar@yyu.edu.tr, ORCID Number: [0000-0002-1726-7989](https://orcid.org/0000-0002-1726-7989), ROR ID: <https://ror.org/041jyzp61>



Anahtar Kelimeler: Afet, Açlık, Afrika Boynuzu, Bebek Ölümleri, Kıtılık, Kuraklık.

Başvuru / Kabul: 31 Ocak 2025 / 29 Mart 2025

Atıf: Bayar, E. (2025). Afrika Boynuzunda Açlık ve Kıtılık: Zarar Görebilirlik Yaklaşımı, *İmgelem*, 16, 297-320.

INTRODUCTION

Today, we are rapidly approaching many critical risk limits. People's actions are behind these risks caused by rapid and radical changes on Earth. The indiscriminate and excessive use of water resources, the destruction of biodiversity, and the pollution of both Earth and space lead to new dangers and the increase in the severity of existing old dangers. Because the risk factors mentioned above weaken the tools and solution alternatives for managing disaster risk (United Nations University Institute for Environment and Human Security 2023). This situation has brought humanity to the edge of a cliff, and although some groups are disadvantaged, the risk threatens not only a specific segment but all of humanity. Indeed, it is natural for individuals living in a network of systems interacting with each other to be more or less affected by a faraway disaster. On the one hand, the complex web of relationships formed by many systems, such as transportation systems, supply chains, communication networks, water and food systems, ecosystems, and information systems, offers important opportunities and possibilities for global cooperation.

On the other hand, when human actions damage the system, it opens it up to more significant risks and unpleasant surprises (United Nations University Institute for Environment and Human Security 2023). Problems that arise in structures necessary for the continuation of life, such as water and food systems, can potentially lead to irreversible and devastating effects for humanity and the planet rather than a simple and predictable process. In this context, the report prepared by the United Nations University Institute for Environment and Human Security identified six interrelated tipping points between systems. These tipping points are: Acceleration of extinctions (a chain reaction in ecosystem collapse), depletion of groundwater, melting of mountain glaciers, space debris (pollution and risk from idle satellites), unbearable heat, uninsurable future (insurance becoming unattainable due to increasing risks) (United Nations University Institute for Environment and Human Security 2023). In this study, we will focus on the degradation of the above-interrelated systems, especially the water and food systems, since the phenomenon of scarcity is directly related to these systems.

Human beings, who have to feed to sustain their physical existence, have struggled with hunger since the early days of their existence. People cannot quickly meet these most basic needs at all times and in all geographies. The problem of food inadequacy has existed

continuously since the early periods of history, in a broad spectrum from individual hunger to severe famines. Famine problems have occurred in different parts of the world at different times and for various reasons. In some examples, such as Babylon and Rome, human-induced factors (such as rebellions, civil unrest, conflicts, and intervention by external forces) have come to the fore in the emergence of famine. In some famine cases, as seen in Southeastern China and the Mayan civilization, natural causes (such as earthquakes, floods, storms, drought, locust infestation, and fires) have been more effective (Dijkman & Leeuwen 2020: 17).

Although it has been more common in some geographies throughout history, the famine phenomenon, which humanity has frequently encountered, has become less common in recent historical periods due to the lessons learned about combating famine. However, famine is not specific to ancient times or pre-industrial societies. It remains an important problem, especially with the famine cases experienced in the last century and the effects of the recent climate crisis. Famine, which was rarely seen, especially in developed countries after the modern period, poses a serious threat to poor and underdeveloped countries today. Although hunger continues to exist at different levels in almost every country, the phenomenon we call famine is encountered more frequently in Sub-Saharan Africa and South Asia than in other regions (Bayar 2022: 502).

The United Nations (UN) determined the Sustainable Development Goals in 2015 to solve humanity's fundamental problems and supported countries to achieve and reach these goals by 2030. One of the goals in the 2030 agenda is to eliminate hunger all over the world (zero hunger) and to ensure food security for all people (The United Nations in Turkey n.d.). Acting with the motto of “Leaving no one behind” the UN has ensured that hunger has decreased to a certain extent worldwide with the incentives and support it has provided (Global Hunger Index 2023: Food Systems Transformation and Local Governance 2024), but due to the impact of the COVID-19 pandemic, this improvement has remained limited, and even in some regions, there has been a decline in the fight against hunger (World Food Programme 2023). The problems experienced in international supply chains due to the pandemic have increased food prices and made it difficult for people experiencing poverty to access food.

As of 2020, approximately 10% of the world's population (around 800 million) struggled with hunger. The hunger problem, exacerbated by climate change, pandemics, and civil conflicts, has posed a vital threat to large masses of people in Sub-Saharan Africa and South Asia. The 2023 Ecological Threat Report prepared by the Institute for Economics and Peace predicts that the population of Sub-Saharan Africa will reach 2.2 billion by 2050 and that approximately 1.4 billion of this population will face severe hunger (Ecological Threat Report

2023). According to UN data, a significant portion (approximately 60%) of the masses forced to struggle with severe hunger are women and girls (Njuki & Kraft 2024). Approximately one-fourth of these 800 million people are children aged 0-5. Children in this age group face physical and mental development problems due to malnutrition and hunger. Thus, the problem of hunger also threatens the young generations and the future of society. In addition, considering that almost half of the child deaths in Africa (45%) occur due to malnutrition or hunger, it is seen that nutritional problems have become an existential problem in underdeveloped countries (World Vision 2023). Indeed, the developmental problems that children between the ages of 0-5, who are the most affected by malnutrition and hunger and the most vulnerable group in the event of famine, may experience, when combined with chronic problems in underdeveloped countries, can lead to the countries in question reaching a kind of impasse. Because in underdeveloped and low-income countries with a very young population structure, it is tough to combat this problem without foreign aid if a famine problem occurs.

In this study, first of all, a conceptual framework regarding the concepts of hunger, malnutrition, and famine will be presented. The situation of children, among the most vulnerable groups, will be examined about these phenomena. We will focus on the social dimensions of famine, which encompasses various aspects. In this framework, the situation of children, one of the vulnerable groups in the face of these phenomena, and the social dimensions of the famine phenomenon, which have very different dimensions, were examined. The concept of famine, which has recently become a research object of social sciences, is analyzed more regarding resource insufficiency and/or movements in food prices (Timmer 2015; Barret & Maxwell 2005; Ziegler 2011).

On the other hand, there are fewer studies (such as (Sen 1981; Dreze & Sen 1991; Waal 1997; Devereux 2000) on the social dimensions of the phenomenon. This study will draw attention to the social/societal dimension of famine.

Conceptual and Theoretical Framework

The Horn of Africa definition used in this study covers the areas of Djibouti, Eritrea, Ethiopia, and Somalia, which are in the east of Africa. Broader definitions by making broad geographical definitions, such as Kenya, South Sudan, and Uganda, located in the Horn of Africa region (The Editors of Encyclopaedia Britannica 2024), and the data related to the countries in question remain out of the scope of the study. However, according to both the UN and expert

international organizations, the eastern regions of Kenya are also within the Horn of Africa, so data and statistics belonging to Kenya are also included in the analysis.

It is easy to associate disasters with nature since we know how natural events occur, which we now define as disasters. However, studies in the 1970s that questioned the naturalness of natural disasters emphasized the role of population vulnerability in transforming natural events into catastrophes. One of the pioneering works on the concept of vulnerability is the work of Phil O'Keefe, Ken Westgate, and Ben Wisner (1976), which argues that vulnerability, which arises from socioeconomic conditions, is the real cause of the disaster. An ordinary meaning of the term vulnerability refers to being susceptible to damage or injury. This approach does not deny that a disaster requires an initial hazard, but it emphasizes that people must already be vulnerable to hazards before a disaster occurs. When the social aspect of disasters is highlighted, two critical concerns emerge: Who experiences suffering from disasters, and why does society establish these unstable situations that induce suffering? (Van Bavel et al. 2020). Researchers who conducted detailed studies to find answers to such questions have added depth to the concept of vulnerability. From the 1970s to the 1990s, the concept of vulnerability has been a popular topic of discussion in researching the social dimension of disasters.

According to Chambers (1989), vulnerability denotes susceptibility to uncertainties, stressors, and challenges in managing them. Vulnerability has two dimensions: an external dimension characterized by dangers, shocks, and stressors faced by an individual or household, and an internal dimension defined by defenselessness, indicating an absence of resources to manage without incurring significant loss. Loss can manifest in various forms, including bodily weakness, economic deprivation, social dependency, humiliation, or psychic damage. Watts and Bohle (1993) identified three dimensions of vulnerability: exposure, capacity, and potentiality. The prescriptive and normative response to vulnerability involves reducing exposure, enhancing coping capability, strengthening recovery potential, and mitigating damage through private and governmental measures.

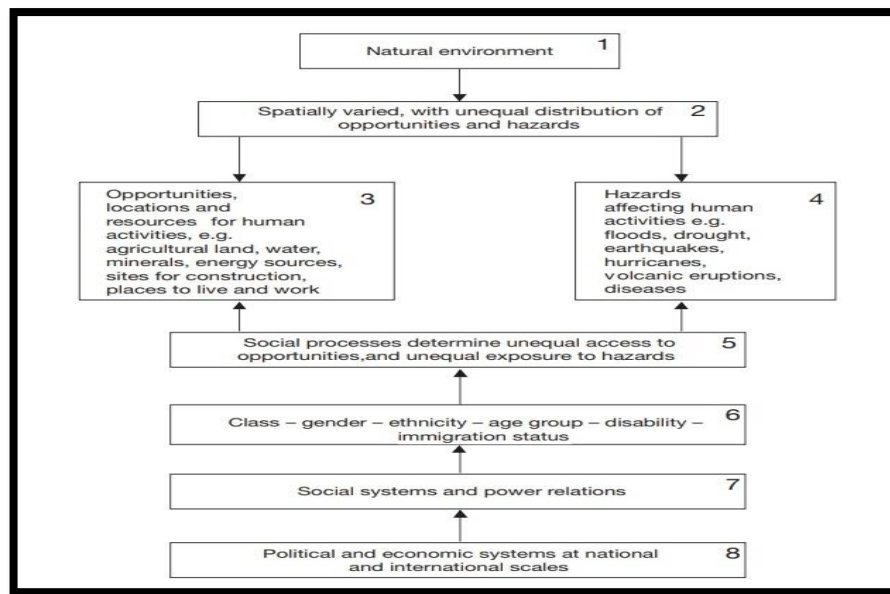
One of the most frequently cited definitions, Blaike et al. (2005) define natural hazards; this ordinary meaning refers to the characteristics of a person or group and their situation that influence their capacity to anticipate, cope with, resist, and recover from the impact of a natural hazard. Natural disasters affect social groups unequally. The source of this inequality is the social structure and power relations created by political and economic systems (See Figure 1).

In this study, the concept of 'vulnerability' or 'fragility,' as used in the literature, refers to the factors that increase the sensitivity/susceptibility of individuals, societies, or systems to the effects of hazards. These factors generally fall into four different dimensions: physical factors, social factors, economic factors, and environmental factors (Varol & Buluş Kırıkkaya 2017: 2). Since the effect of political factors on vulnerability will also have an important place in this study, political factors in the Horn of Africa countries will also be included in the examination

Although Varol and Buluş Kırıkkaya (2017) claim that there has been a recent trend towards a resilience approach rather than a vulnerability approach in the disaster sociology literature, it does not seem possible to use concepts such as prevention and mitigation at this stage since the critical situation in the region in question requires urgent intervention. Because the current situation has reached a humanitarian crisis stage, focusing on the intervention stage would be much more beneficial, at least in the short and medium term. Since touching upon various discussions and different nomenclatures on the concept of vulnerability may lead to a shift in the focus of the study, the definition briefly expressed above will be preferred throughout the study unless otherwise stated.

Disaster studies scholars have shifted from focusing on vulnerability to resilience in the 21st century. However, recent work suggests a return to vulnerability in disaster analysis, focusing on social elements that may be overlooked in instrumentalist or technocratic approaches. This approach illuminates long-term vulnerabilities and provides valuable insights into disaster dimensions, allowing for a more nuanced understanding of individuals, groups, and communities over time (Van Bavel et al. 2020: 35). W. N. Adger defines resilience as “the capacity of communities to endure external shocks to their social infrastructure” and identifies a strong correlation between ‘ecological’ and ‘social’ resilience, especially in civilizations that rely heavily on a singular resource or ecosystem (Van Bavel et al. 2020: 35).

Figure 1: The social causation of disasters



Source: (Blaikie et al. 2005: 11)

Before moving on to the definition of *hüngür*, one of the important concepts included in the study, it will be necessary to briefly touch on malnutrition, which is often confused with hunger. Undernourishment refers to the inconsistency between the amount of calories a person needs to take in to live a healthy life and the amount of calories they currently consume. The criterion of adequate nutrition, which varies according to a person's age, gender, weight, and activity level, can be easily calculated individually. However, mathematical methods are used to calculate malnutrition at a social level to calculate the probability that a person will take in fewer calories than they should take in cumulatively (Ritchie & Roser 2024).

According to the Food and Agriculture Organization (FAO), a person must consume a minimum amount of calories (energy) to continue their daily activities. Hunger means consuming less than this minimum level or less food than they should. If the physical pain caused by not being able to get enough food continues regularly, a problem called chronic hunger occurs. The World Food Organization has developed the Undernourishment Prevalence Indicators and the Food Insecurity Experience Scale to estimate the extent of hunger in the world (Hunger and Food Insecurity, n.d.). Accordingly, people experiencing moderate food insecurity do not have enough money or other resources to buy food, and they must reduce the variety, quality, and quantity of food they consume. Moderate food insecurity increases the risk of stunting in children and micronutrient deficiencies or obesity in adults (Hunger and Food

Insecurity, n.d.). Severe food insecurity refers to people experiencing hunger for extended periods and being unable to find food all day.

Just as there are differences of opinion among scientists regarding the causes of famine, it is evident that the definitions of famine also display similar variations. Stephen Devereux divides the definitions of famine into five groups: a) Definitions found in dictionaries, b) Definitions based on decreases in food supply, c) Definitions based on deficiencies in food consumption, d) Behavioral definitions, e) Definitions reflecting the perspective of people who are victims of famine (Devereux 1993: 10). According to the dictionary definition, famine is a situation in which a large part of the population in a country or region faces starvation, acute food shortage, and death (Basu 2024).

Behavioral definitions that evaluate the phenomenon of famine through the social and economic disruptions that occur with famine point to a kind of social crisis. According to Stephen Devereux, famine consists of three different developmental stages: 1) A decrease in food supply due to various reasons, 2) People deviating from their routine behavior patterns in order to survive due to problems in accessing food, 3) A recovery period in which people return to their routine behavior patterns after the factors that caused the food crisis improve (Devereux 1993: 15). If the transition to recovery takes longer, regions affected by famine will disperse, and/or communities will migrate.

While Western observers associate famine with hunger and death, people exposed to famine evaluate this situation differently and generally do not associate hunger with death. There is no image of dying of hunger in the minds of the people in East Africa and Bangladesh. In many African languages, the verb “eat” is not limited to meeting physical needs but includes economic and social relations. The expressions “hunger” and “eating” refer to social positions in many third-world countries. While the intense, rich, and predatory individuals “eat,” the poor, weak, and powerless individuals are “hungry” even if they have food (De Waal 2005: 12). In short, unlike observations made from the outside, from the perspective of famine victims, famine is not associated with death but rather with inequality, prosperity, power, weakness, and poverty.

There are various metrics to assess food insecurity. The two most common classifications that grade the severity of hunger and determine its stages are Integrated Food Security Phase Classification (IPC) and Cadre Harmonisé. Of these two tools, which both adopt similar analytical approaches, Cadre Harmonisé is a tool used for the consensus-based analysis

of nutrition problems and acute food insecurity in the Sahel Region and West Africa (Cadre Harmonisé for Identifying Risk Areas and Vulnerable Populations in Food and Nutritional Insecurity in the Sahel and West Africa: Ghana - Results of the Current (March to May 2023) and Projected (June to August 2023) Acute Food Security Analysis - Ghana, 2023), while the Integrated Food Security Phase Classification-IPC is used to combat food security and nutrition problems collaboratively in many Asian, African and Latin American countries (IPC - Integrated Food Security Phase Classification n.d.). The primary purpose of both approaches, which offer similar analysis frameworks, is to develop cooperation with regional countries and international organizations and to achieve a common understanding in the fight against acute food insecurity. The IPC, which is the most common measure used to measure acute food insecurity today, basically divides Acute Food Insecurity into 5 phases: Phase 1: Minimal phase, Phase 2: Stress phase, Phase 3: Food Crisis phase, Phase 4: Emergency phase, Phase 5: Famine (IPC - Integrated Food Security Phase Classification, n.d.)

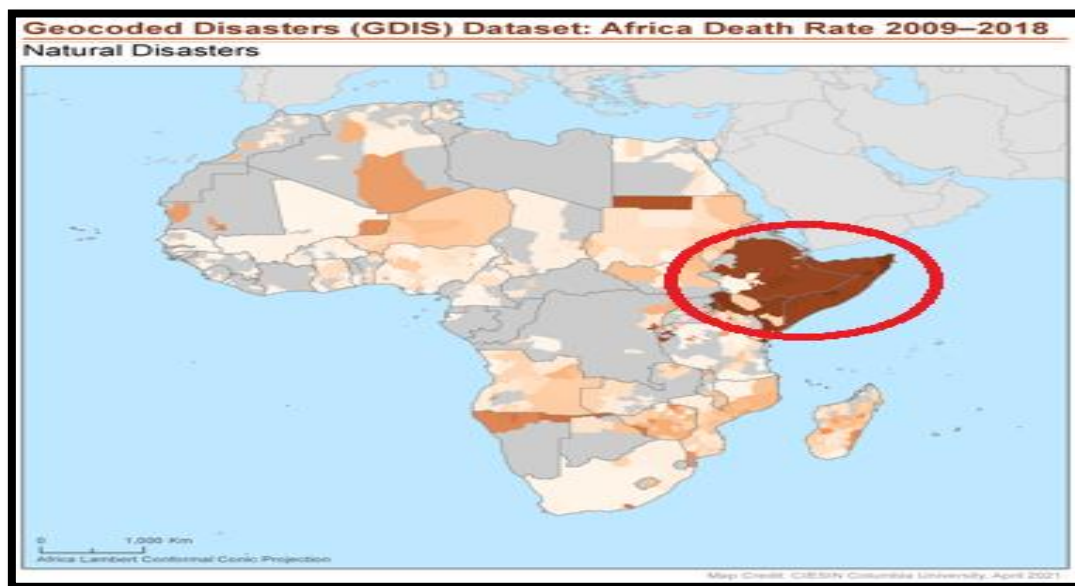
In the minimal stage, more than 80% of the household does not have serious nutritional problems, and the expectation of acute food insecurity is below 5%. It refers to the stage where people can meet their basic needs without significantly changing their daily eating habits. The second stage, the stress stage, refers to the situation where people have to make significant changes in their daily lives while meeting their minimum daily nutritional needs. Suppose at least 20% of the household population in a region is in stage two, or the expectation of acute food insecurity is between 5% and 10%. In that case, it is considered that the region in question has entered stage two. The third stage is critical because the third stage and the stages above (fourth and fifth) require intervention. People cannot consume enough food at this stage but struggle with high food inadequacy levels. Suppose at least 20% of the household population is in stage three or higher, or the expectation of acute food insecurity is between 10% and 15%. In that case, it is now possible to talk about the existence of a food crisis. In the fourth stage, the 'Emergency' stage, severe food insufficiency and deaths due to hunger begin to increase rapidly, and 1-2 out of every 10,000 people trying to combat hunger begin to die. An emergency occurs when at least 20% of the population in the region is in stage four or above or when the expectation of acute food insecurity is between 15% and 30%. In the fifth and final stage, the stage defined as 'famine' is reached. The famine is the stage where individuals have almost no access to food to meet their basic needs despite all their efforts, and hunger, death, poverty, and extreme malnutrition become evident. The fifth stage is marked by the transition to the 'famine' stage, when at least 20 percent of the population is experiencing it, and at least 30 percent of

children face acute malnutrition problems. At least 2 out of 10,000 people die daily (Integrated Food Security Phase Classification (IPC) Explainer | Food Assistance | U.S. Agency for International Development, n.d.). In this study, the terms acute food insecurity or food crisis refer to IPC stage three and above unless otherwise stated.

Drought and Famine in The Horn of Africa

According to the Geocoded Disasters (GDIS) Dataset, the region in Africa that experienced the highest number of human deaths due to 'natural' disasters between 2009 and 2018 was the Horn of Africa (See Figure 2) (EarthData Login, n.d.). As can be seen in the figure, it is seen that many more people died in the Horn of Africa due to natural disasters than in other parts of Africa. This situation shows that the region in question is in a dire situation regarding vulnerability and is extremely sensitive to hazards.

Figure: 2. Mortality Rates Due to Natural Disasters in Africa 2009-2018 (SEDAC 2024)



Source: NASA's Socioeconomic Data and Applications Center (SEDAC), 2024.

It is helpful to briefly review why the region is much more vulnerable to disasters than other regions because a holistic perspective that includes the elements of hunger and drought that the study will focus on will contribute to a better understanding of the issue and a broader perspective. In this context, the factors that affect the vulnerability of the region will be presented under four subheadings: Economic factors, Social factors, Political factors, and Environmental factors. Although each of these factors has many sub-elements, since our study focuses on food insecurity and hunger, the factors mentioned will be examined more from the perspective of food insecurity.

Economic Factors

In order to understand the hunger phenomenon experienced by the countries of the Horn of Africa more holistically, it is necessary to determine how and to what extent economic conditions affect the ability of individuals and communities to access the amount of food they need to obtain to be nourished adequately. In this context, the impact of economic vulnerability on food security should be emphasized first. The fact that the countries of the Horn of Africa are poor and underdeveloped and that poverty is widespread in these countries increases the economic vulnerability of individuals and communities. According to estimates from 2017-2018, approximately 70% of Somalia's population has an income below the general poverty line of \$1.90 per day (Nunez-Chaim & Pape 2024). Large, poor populations are much more affected by disasters and terrorist attacks than the top 20% of the consumption distribution because they do not have savings or other sources of income that can soften the impact of the resulting economic shock (Nunez-Chaim & Pape 2024). Difficulty in accessing food and the resulting increase in food prices increase the economic vulnerability of people experiencing poverty, making them more vulnerable to food insecurity and hunger. However, relative improvement has been achieved in Ethiopia; as of 2016, approximately one-quarter of the population lived below the poverty line (Ethiopia-Overview 2024). This rate was approximately 36% for Kenya during the same period (CIA the World Factbook n.d.).

In this region, where the primary source of income is agriculture and animal husbandry, there are profound decreases in the amount of agricultural production based on water due to drought, while at the same time, the animals of millions of people trying to make a living from animal husbandry are also perishing. For example, in 2021, the crop in the Tigray region of Ethiopia decreased by 70% due to drought. In Somalia, animal husbandry, which is the source of income for 60% of the population, was seriously damaged due to the consecutive dry seasons in 2016-2017, and approximately 3 million head of animals died (Food and Agriculture Organization in Somalia 2018).

Some vulnerable groups have less economic opportunities than others. For example, Women in Kenya face significant inequality in land ownership and management due to the ingrained patriarchal structure present in many communities. Despite recent gains, statistics reveal a decline in women's land ownership. In 2014, 61.3% of women aged 15 to 49 did not possess land ownership. In 2022, the proportion of land ownership held by women declined to 75.0% for agricultural land and 93.3% for non-agricultural land. The 2018 study by the Kenya Land Alliance (KLA) reveals that only 10% of the 3 million title documents issued by the

government between 2013 and 2017 were assigned to women. This information may clarify the increasing gap of women without land ownership in Kenya from 2014 to 2022 (Kenya Institute for Public Policy Research and Analysis-KIPPRA 2024).

Another factor that increases the economic vulnerability of people experiencing poverty, especially regarding access to food, is access to markets/markets. Since the increase in transportation/shipping costs is reflected in food prices, it becomes more difficult for people experiencing poverty to access food. Food inflation significantly affects these groups facing food insecurity and hunger. One of the most striking examples of food inflation's effect on famine is the famine in Bengal in 1943. In that event, the cause of the famine was not a severe decrease in food supply but food inflation caused by high demand due to the expectation of famine (Backhouse 2024). In the food crisis in the Horn of Africa, the increase in food prices significantly increased the vulnerability of the people in the region. The Food and Agriculture Organization (FAO) described the people living in the region as the 'most vulnerable groups in the world' in the 2022 food crisis. It announced that this group had to pay more for less food and had no more resilience in the face of high food prices (UN News 2022).

Social Factors

While social vulnerability focuses more on the impact that individuals or communities are exposed to due to their characteristics, such as ethnicity, age, and gender, this section of the study will look at social vulnerability again through food insecurity and hunger. In this context, not all social groups are in the same position in the fight against hunger. For example, it is seen that internally displaced people face food insecurity due to the difficulties they experience in accessing resources. Since displaced families are also deprived of their livelihoods, they are in need of humanitarian assistance. This situation puts them in a very sensitive position in terms of vulnerability. Since the need for assistance necessitates the provision of basic needs such as food and shelter, it is seen that displaced people are susceptible to food insecurity and hunger. According to the United Nations High Commissioner for Refugees data, 2.9 million people have been displaced in Somalia due to drought, floods, conflicts, and insecurity (Camp Coordination and Camp Management-CCCM Somalia Overview 2022). In Ethiopia, which is home to many different ethnic groups, there are unequal relations between minority groups and indigenous people in many aspects, especially in terms of access to health and education services (Werkeshe 2022). The problems experienced by marginalized ethnic groups in accessing services can also be experienced in terms of access to resources and food.

According to the World Food Organization data, over 40% of the population in the Horn of Africa, one of the regions where hunger is most severe, is undernourished. In comparison, this rate increases to 70% in Eritrea and Somalia. In the four countries where food insecurity is most intense, Eritrea, Ethiopia, Somalia, and Kenya, people have access to less than the minimum amount of food they need. This situation can have devastating effects, especially on young children who have to struggle with the devastating effects of hunger both physically and cognitively throughout their lives. In Ethiopia, two-thirds of children are stunted due to undernourishment, while in Somalia, one-fifth of children die before reaching the age of five. It is seen that women also do not have sufficient opportunities to feed themselves and have to face the alarming problem of undernourishment (FAO 2024). Although relative improvement has occurred in the region's countries in recent years, food security is still a long way to go.

In terms of education and awareness, the countries in the region need to make progress and raise a generation knowledgeable about health practices and nutrition to ensure food security. However, a large portion of women of reproductive age cannot benefit from education services. In Ethiopia, the proportion of women who have completed primary education is very low (only about 20%) (Melesse 2021), which is one of the factors that increase social vulnerability. Climate change disproportionately impacts women in Kenya, especially in rural areas. Women, as principal caregivers and suppliers of sustenance, are responsible for collecting water and fuelwood and overseeing family resources. The climate-induced scarcity amplifies the time and effort necessary to fulfill these responsibilities, constraining women's capacity to engage in employment or education. Moreover, women's limited property ownership and access to financial services hinder their capacity to implement adaptation strategies in response to climate change, hence intensifying gender inequality. In drought, women, especially in rural areas, allocate more time to procuring water and fuel. The Kenya Time Use Survey Report indicates that women and girls aged fifteen and older dedicate an average of three hours daily to unpaid domestic and caregiving tasks. On a national scale, women dedicate approximately five hours daily to unpaid domestic and caregiving responsibilities, while men allocate roughly one hour daily. Women in Marsabit County dedicate the most time (7 hours daily) to unpaid domestic and caregiving tasks, over double the national average. Men in Marsabit County allocate one hour daily to unpaid caregiving and domestic responsibilities, aligning with the national average (UN Women 2023).

Women's time dedicated to family care and necessities is not transformed into productive labor or income-generating endeavors, hence heightening their susceptibility to

environmental catastrophes. This problem may limit their ability to invest in climate-resilient agricultural methods or secure loans for recovery after climate-related losses. In summary, gender disparity in land ownership, resource availability, and involvement in decision-making exacerbates women's susceptibility to environmental hazards.

Political Factors

Numerous challenges emerged in the state-building processes of various African nations throughout the postcolonial era. A stable and prosperous framework was not established in nations where military regimes routinely usurped authority. Hasell and Roser (2017) showed that famines occur more frequently in non-democratic regimes and result in more lethal outcomes. The latest famine incidents in Ethiopia and Somalia are linked to the political framework. Political systems classified as failed nations are improbable in fulfilling even the fundamental requirements of the populace.

When political vulnerability increases due to conflicts, instability, and governance problems, it is evaluated within the framework of food security and hunger, and it emerges as one of the important causes of food insecurity. People displaced by conflict environments become consumers rather than producers, and agricultural activities are disrupted, making access to food difficult. With the addition of millions of people displaced due to conflicts, as well as the effects of the drought between 2020 and 2023 and the severe flood disaster at the end of 2023, more than 6.9 million people in Somalia have become in need of humanitarian assistance as of the beginning of 2024. The number of people displaced within the country for various reasons, especially conflicts, reached 3.4 million as of February 2024. In addition, approximately 3.4 million people have had to struggle with acute food insecurity. Children under the age of five, who make up nearly half of this number (1.7 million), face serious health problems due to malnutrition (USAID 2024). The conflict in the Tigray region of Ethiopia has also caused the displacement of millions of people and reduced agricultural production. Although the conflicts seem to have stopped today, the deep security problems created by the conflict remain. The presence of terrorist organizations operating in the region poses serious obstacles to access to food and agricultural development.

The deficiencies and weaknesses in governance in the countries in the region make it difficult to effectively and efficiently fight against hunger. The failure of the countries in the region, where corruption is widespread and political institutions are weak, to act quickly enough in food distribution and the political turmoil have caused the hunger crisis to worsen. Somalia,

which ranks last in the Corruption Perception Index as of 2023 (180th place) (Transparency International 2024), has significant political vulnerability. The prevention of humanitarian aid reaching people in need and the fact that millions of people are deprived of food aid while struggling with hunger are causing the current hunger crisis to be felt more intensely and the vulnerable groups to be exposed to devastating effects.

Environmental Factors

Due to the drought in the Horn of Africa, which lasted for years and was the most severe in the last 40 years (2020-2022), more than 35 million people living in the region were exposed to the effects of this drought, while approximately 21 million people struggled with severe food insecurity. More than 16 million people who had to struggle with water insecurity, as well as food insecurity, had problems accessing sufficient clean water. In this drought period, in which nearly 9 million animals died, the economic vulnerability of the poor people also increased (UN Office for the Coordination of Humanitarian Affairs-OCHA 2022). The decline in agricultural production and livestock caused by the drought and the problems in accessing clean and sufficient water have increased the vulnerability of the rural areas and led to the internal displacement of millions of people in the region's countries. However, the problems created by the internal displacement and the difficulties encountered in sharing the already insufficient resources and distributing aid also increase the tension within the country.

Another important environmental factor affecting the Horn of Africa is climate change. The variable weather conditions caused by climate change cause longer dry periods and more intense rainfall periods, thus increasing the risk of drought on the one hand and increasing the risk of floods on the other. It is thought that variable weather conditions make the weather unpredictable. In addition, in regions where sea level rises, freshwater resources are affected by salt, agricultural lands are damaged, the vulnerability of coastal areas in Somalia is increasing, and coastal areas are left vulnerable (USAID 2023).

Heat waves caused by rising temperatures can also be considered an environmental factor. The faster evaporation of water and the increased frequency of heat waves due to rising temperatures put more pressure on water and food resources. Therefore, the pressure on resources also negatively impacts the vulnerability of people who depend on these resources.

It is challenging to ensure that people living in a region with limited resources use these resources prudently. Indeed, in the Horn of Africa, the people in the region are becoming more vulnerable to environmental factors due to excessive consumption or misuse of natural

resources. While lands whose soil structure is deteriorated and agricultural productivity decreases due to overgrazing and deforestation become less productive due to erosion, the vulnerability of the people in the region to erosion increases. A similar situation is also the case in the management of water resources. Improper management of critically important water resources can lead to irreversible damage. As a result of the depletion or pollution of water resources, agricultural production decreases in many regions, and the region's livability also disappears because life is not possible in a place without clean water resources.

Children in the Face of Hunger and Famine

Children between the ages of 0-5, one of the most vulnerable groups in the face of problems caused by famine, are seriously affected by prolonged hunger and famine. If malnutrition, which negatively affects both the physical and mental development of children, is prolonged and a famine occurs, it can result in the death of children. The weakened bodies of children due to hunger and malnutrition make them vulnerable to other diseases. The physical and mental development of babies who cannot receive adequate and healthy nutrition during their developmental period is restricted, and this also causes these children to become prone to diseases. In addition to their illnesses, children with learning difficulties also have their educational lives disrupted.

The effects of malnutrition and hunger on young children can begin during pregnancy. Because if mothers do not receive adequate nutrition, various problems may arise in the development of children. Nutritional problems experienced during this period, when children's physical and mental development is at its fastest, can cause short- and long-term damage. Healthy nutrition is important in supporting babies' brain development, especially early. If the baby's physical development is also supported by healthy nutrition, the possible risks that may arise in the baby's development remain at a minimum level. Adequate and good nutrition for babies during this period is crucial for their healthy growth and smooth development. A baby's brain is susceptible to environmental factors, especially between 0-3. During this period, babies are very sensitive both socially and emotionally, cognitively and physically. In addition, the period between 0-3 is critical in babies' language development. In this sensitive period, adequate and good nutrition is essential for babies' smooth development and healthy growth. It is also critical for babies to receive good care in order for them to realize their potential in terms of development. If babies are not fed enough for healthy development, their physical and mental development will not be complete. In addition, the risk of death and lifelong disease increases in undernourished babies (Centers for Disease Control and Prevention 2023).

The Global Hunger Index, designed to measure and monitor hunger comprehensively, is based on four fundamental indicators: 1.) Undernourishment, 2) Stunting, 3) Wasting, and 4) Mortality Rates. These indicators focus on children between the ages of 0-5. The data obtained from the calculations form five categories: (low, moderate, serious, alarming, and extremely alarming) (Global Hunger Index Methodology 2023). Since 2000, there has been a decline in the effects of malnutrition, hunger, and unhealthy diets (wasting, obesity, stunting, and death) in children aged 0-5 years. While approximately one-third of children between 0-5 (203.6 million) were stunted in 2000, this rate decreased to 22% (149.2 million) in 2020. The obesity problem among children has increased slightly in the same period, and while it was 5.4% (33.3 million) in 2000, it became 5.7% (38.9 million) in 2020. According to 2020 data, 45.4 million children (approximately 6.7%) are underweight for their age (World Health Organization 2021).

It is not the first time Africa and the Horn of Africa have experienced a food crisis. The continent has had many bitter experiences with hunger and famine. Nevertheless, the food crisis in 2022 has been more severe than many previous famines. Without urgent intervention, millions of people are expected to face a fatal risk. This risk is a highly deadly threat for young children between the ages of 0-5, as children are more vulnerable than adults. In addition, since they are in critical periods of development, the risk of harm to children, both physically and mentally, is higher for their entire lives. For this reason, UN humanitarian aid workers have stated that there is a risk of an 'explosion in child deaths' if urgent intervention is not made in the food crisis in 2022 (UN News 2022). As of June 2022, a UNICEF official drew attention to the seriousness of the situation by stating that more than 1.7 million children in Ethiopia, Kenya, and Somalia required urgent treatment (UN News 2022).

As a result of the combination of the factors mentioned above, families and their children who have to live in harsh conditions to survive have partially overcome the 2022 crisis with the beginning of the rainy season. However, the return of rain will not immediately eliminate the effects of a long-term major food crisis. It will probably take years to overcome a crisis of this magnitude, as it will take a certain amount of time for agricultural lands to return to production, for animal herds to expand, and for displaced people in the region to join production. If there is insufficient time to recover from the drought and the subsequent flood cycle, the first crisis can be extremely devastating, especially for the most vulnerable groups. Having economic opportunities remains critical for vulnerable displaced children and their families in Ethiopia, Somalia, and Kenya (UNICEF 2023).

DISCUSSION AND CONCLUSION

Famine is a complex phenomenon affected by meteorological factors but cannot be explained entirely by these factors. In addition, it is seen that famine does not always arise from food insufficiency in terms of the reasons for its emergence. However, in most cases, it arises from inequalities in food distribution and income status. The socio-economic structures of societies cause this phenomenon not to affect the whole society equally. Famine, which has much more devastating consequences for vulnerable groups and poor segments, also has the characteristic of deepening social inequalities and conflicts. It is possible to see the reflection of this situation in the approaches of those exposed to famine; indeed, while external observers often equate famine with death, in most African countries and languages, the concepts of hunger and famine point to social inequalities and dilemmas such as rich-poor and strong-weak.

The hunger crisis in the Horn of Africa results from a multidimensional fragility created by many economic, social, political, and environmental factors. Due to the urgency and seriousness of the situation, it may be seen as a priority to assist as soon as possible. However, the abovementioned issues can also contribute to the long-term resilient structure that needs to be built. Strengthening social protection systems and supporting the most vulnerable groups, promoting sustainable environmental policies and practices, increasing economic opportunities, establishing stable political structures, and ensuring effective governance are just a few of the things that need to be done in this context. If the closely interconnected vulnerability factors can be addressed collaboratively, the Horn of Africa can progress in food security and become more resilient to future food crises.

The Horn of Africa, being highly susceptible to climate change impacts, necessitates the implementation of policies by regional governments to enhance long-term resilience and mitigate vulnerability. Governments need to formulate new policies aimed at the sustainable management of water resources. Developing water collection, storage, and distribution systems and implementing policies to safeguard groundwater resources is essential. The Grand Ethiopian Renaissance Dam (GERD) project represents a significant advancement in water management for Ethiopia; however, it is essential to foster regional cooperation to guarantee equitable distribution of water resources. Expansion of small-scale irrigation projects is feasible in Eritrea and Djibouti, and there is potential for increased technological integration in agriculture. Regional governments enhance collaboration with organizations like the African Union (AU) and the Intergovernmental Authority on Development (IGAD), and the formulation of standard policies will bolster efforts to address transboundary issues. National disaster

management institutions require enhancement to improve their responsiveness and effectiveness in addressing regional disasters. In this context, capacity should be enhanced in collaboration with local governments. Enhancing the resources allocated to institutional structures like Ethiopia's Disaster Risk Management Commission (NDRMC) would improve disaster management capacity. It is essential to develop community-based resilience strategies and enhance the disaster response capabilities of local populations. Education programs focused on disaster risk reduction require expansion. In Somalia, collaboration with local communities is essential for reducing disaster risk and enhancing the early response capacity of these communities. These policies serve as recommendations for governments in the Horn of Africa to enhance their effectiveness in managing natural disasters.

Establishing early warning systems is essential for mitigating the effects of disasters. Enhanced meteorological monitoring and alert systems augment the early reaction capabilities of rural communities. Nonetheless, the establishment of these systems in undeveloped nations necessitates the transfer of resources and technology. A thorough transformation is essential to mitigate the susceptibility of social groups, not just in the Horn of Africa but also in all geographical areas where natural disasters have catastrophic effects. This transition cannot happen in the short or medium term in regions with persistent problems. Consequently, policies that consistently include economic, social, and political components must be implemented.

Subsequent academic research might examine the impacts of climate change on susceptible populations via the lenses of environmental justice and vulnerability frameworks. It is possible to compare and contrast local populations' strategies in Asia and Africa to lessen their susceptibility to environmental disasters.

REFERENCES

- Backhouse, F. (2024, May 22). Bengal famine of 1943 | Cause, Effects, Death Toll, & Description. Encyclopedia Britannica. <https://www.britannica.com/topic/Bengal-famine-of-1943> (Accessed: 12.12.2024).
- Basu, K. (2024, May 1). Famine | Definition, Causes, & Facts. Encyclopedia Britannica. <https://www.britannica.com/science/famine> (Accessed: 15.11.2024).
- Bayar, E. (2022). Afganistan'da Gıda Krizi ve Açlık Döngüsü Riski, *Uluslararası Kriz ve Siyaset Araştırmaları Dergisi*, 6(2), 487-525.
- Camp Coordination and Camp Management Cluster in Somalia. (2022, 31 January). Situation CCCM Somalia overview. https://data.unhcr.org/en/situations/cccm_somalia (Accessed: 29.12.2024).
- Centers for Disease Control and Prevention-CDC Nutrition. (2023, 10 March). <https://www.cdc.gov/nutrition/> (Accessed: 14.12.2024).
- Central Intelligence Agency (n.d.). The World Factbook. <https://www.cia.gov/the-world-factbook/countries/kenya/#economy> (Accessed: 14.12.2024).
- Chambers, R. (1989). Editorial Introduction: Vulnerability, Coping and Policy, *IDS Bulletin*, 20(2), 1-7. Doi: <https://doi.org/10.1111/j.1759-5436.1989.mp20002001.x>
- De Waal, A. (2005). *Famine that Kills: Darfur, Sudan*, Oxford: Oxford University Press.
- Devereux, S. (1993). *Theories of Famine: From Malthus to Sen*, New York: Harvester Wheatsheaf.
- Dijkman, J., Leeuwen, B. V. (Eds.). (2020). *An Economic History of Famine Resilience*, London: Routledge.
- EarthData Login. (2024, 28 April). <https://sedac.ciesin.columbia.edu/downloads/maps/pend/pend-gdis-1960-2018/pend-gdis-1960-2018-death-rate-africa-2009-2018.png> (Accessed: 14.12.2024).
- Food and Agricultural Organization-FAO. (2024). The Elimination of food insecurity in the Horn of Africa- Summary. <https://www.fao.org/4/x8530e/x8530e02.htm> (Accessed: 23.12.2024).
- Food and Agriculture Organization in Somalia. (2018, 21 March). In Somalia massive livestock losses have severely impacted livelihoods and food security. <https://reliefweb.int/report/somalia/somalia-massive-livestock-losses-have-severely-impacted-livelihoods-and-food-security> (Accessed: 18.11.2024).
- Food and Agriculture Organization of the United Nations Hunger and food insecurity. <https://www.fao.org/hunger/en/> (Accessed: 09.11.2024).
- Global Hunger Index 2023: Food Systems Transformation and Local Governance. (2024, April 17). <https://www.globalhungerindex.org/> (Accessed: 03.11.2024).
- Global Hunger Index Methodology. (2023, November 13). Global Hunger Index (GHI). <https://www.globalhungerindex.org/methodology.html> (Accessed: 03.11.2024).
- Hasell, J., Roser, M. (2017, December 7). Famines. Our World in Data. <https://ourworldindata.org/famines> (Accessed: 09.11.2024).

- Institute for Economics & Peace. (2023). Ecological Threat Report 2023: Analysing Ecological Threats. <https://www.economicsandpeace.org/wp-content/uploads/2023/12/ETR-2023-web.pdf> (Accessed: 14.12.2024).
- Integrated Food Security Phase Classification-IPC. (2024). <https://www.ipcinfo.org/> (Accessed: 10.12.2024).
- Kenya Institute for Public Policy Research and Analysis. (2024, 8 January). Promoting Land Ownership among Women in Kenya. <https://kippra.or.ke/promoting-land-ownership-among-women-in-kenya/> (Accessed: 05.12.2024).
- Melesse, M. B. (2021). The Effect of Women's Nutrition Knowledge and Empowerment on Child Nutrition Outcomes in Rural Ethiopia, *Agricultural Economics*, 52(6), 883-899.
- Njuki, J., Kraft, C. (2024, March 22). How conflict drives hunger for women and girls. <https://sdg-action.org/how-conflict-drives-hunger-for-women-and-girls/> (Accessed: 28.12.2024).
- Nunez-Chaim, G., Pape, U. (2024, March 16). Relationship between poverty and violence against civilians. Evidence from Somalia. World Bank Blogs. <https://blogs.worldbank.org/en/developmenttalk/relationship-between-poverty-and-violence-against-civilians-evidence-somalia> (Accessed: 28.11.2024).
- O'Keefe, P., Westgate, K. & Wisner, B. (1976). Taking the naturalness out of natural disasters, *Nature*, 260(5552), 566-567. Doi: <https://doi.org/10.1038/260566a0>
- Permanent Interstate Committee for Drought Control in the Sahel. (2023). Cadre Harmonisé for identifying risk areas and vulnerable populations in Food and Nutritional Insecurity in the Sahel and West Africa: Ghana - Results of the Current (March to May 2023) and Projected (June to August 2023) Acute Food Security Analysis - Ghana. ReliefWeb. <https://reliefweb.int/report/ghana/cadre-harmonise-identifying-risk-areas-and-vulnerable-populations-food-and-nutritional-insecurity-sahel-and-west-africa-ghana-results-current-march-may-2023-and-projected-june-august-2023-acute-food-security-analysis> (Accessed: 14.11.2024).
- Ritchie, H., Roser, M. (2024, March 3). What is undernourishment and how is it measured? Our World in Data. <https://ourworldindata.org/undernourishment-definition> (Accessed: 12.12.2024).
- The Editors of Encyclopaedia Britannica. (2024, June 11). Horn of Africa | Countries, Map, & Facts. Encyclopedia Britannica. <https://www.britannica.com/place/Horn-of-Africa> (Accessed: 29.11.2024).
- The United Nations in Türkiye. (n.d.). Sustainable Development Goal 2: Zero Hunger <https://turkiye.un.org/en/sdgs/2> (Accessed: 29.12.2024).
- Transparency International. (2024, February 20). 2023 Corruption Perceptions Index: Explore the results. <https://www.transparency.org/en/cpi/2023> (Accessed: 01.12.2024).
- UNICEF Eastern and Southern Africa. (2023, 5 June). Vulnerable children in the Horn of Africa have been living through insecurity for years. <https://www.unicef.org/esa/stories/crisis-horn-of-africa> (Accessed: 27.11.2024).
- United Nations News. (2022, 13 June). World's most vulnerable now paying even more, for less food: FAO. <https://news.un.org/en/story/2022/06/1120012> (Accessed: 01.12.2024).

- United Nations News. (2022, June 10). Hunger in the Horn of Africa: Gut-wrenching scenes of desperation and loss. <https://news.un.org/en/story/2022/06/1119862> (Accessed: 15.11.2024).
- United Nations Office for the Coordination of Humanitarian Affairs-OCHA. (Revised 2022, 21 September) Horn of Africa Drought: Regional Humanitarian Overview & Call to Action - Ethiopia. ReliefWeb. <https://reliefweb.int/report/ethiopia/horn-africa-drought-regional-humanitarian-overview-call-action-revised-21-september-2022> (Accessed: 01.11.2024).
- United Nations University Institute for Environment and Human Security (UNU-EHS). (2023). Executive Summary- Interconnected Disaster Risks. <https://interconnectedrisks.org/summaries/2023-executive-summary> (Accessed: 05.12.2024).
- United Nations Women Africa. (2023,18 October). Women's contribution to Kenya's Socio-Economic achievements Under-Reported. <https://africa.unwomen.org/en/stories/press-release/2023/10/womens-contribution-to-kenyas-socio-economic-achievements-under-reported> (Accessed: 14.12.2024).
- United States Agency for International Development (2023). Integrated Food Security Phase Classification (IPC) Explainer Food Assistance. <https://www.usaid.gov/food-assistance/integrated-food-security-phase-classification-ipc-explainer> (Accessed: 18.12.2024).
- United States Agency for International Development-USAID. (2023). Environmental Compliance Services (ECOS). Climate Risk to Resilience & Food Security in Bureau for Humanitarian Assistance Geographies Somalia. https://www.usaid.gov/sites/default/files/2024-01/Final_Draft_BHA_RFSA_Somalia_Climate_Risk_Profile_2023-11-30.pdf (Accessed: 12.12.2024).
- United States Agency for International Development-USAID. (2024, 1 April). Complex Emergency. https://www.usaid.gov/sites/default/files/2024-04/2024-04-01_USG_Somalia_Complex_Emergency_Fact_Sheet_2.pdf (Accessed: 23.11.2024).
- Varol, N., Buluş Kırıkkaya, E. (2017). Afetler Karşısında Toplum Dirençliliği. Resilience, 1(1), 1-9. Doi: <https://doi.org/10.32569/resilience.344784>
- Werkeshe, G. (2022, January). Access to education and health among minorities and indigenous peoples in Ethiopia. <https://minorityrights.org/app/uploads/2023/12/mrg-brief-ethiopia-jan22-online.pdf> (Accessed: 14.12.2024).
- World Bank. (2024, 9 April). Ethiopia-Overview. <https://www.worldbank.org/en/country/ethiopia/overview> (Accessed: 13.12.2024).
- World Food Programme. (2023, July 12). The State of Food Security and Nutrition in the World (SOFI) Report 2023. <https://www.wfp.org/publications/state-food-security-and-nutrition-world-sofi-report-2023> (Accessed: 25.12.2024).
- World Health Organization. (2021). Levels and trends in child malnutrition: UNICEF/WHO/The World Bank Group joint child malnutrition estimates: key findings of the 2021 edition. <https://www.who.int/publications-detail-redirect/9789240025257> (Accessed: 05.12.2024).
- World Vision. (2023, 1 September). Millions of children in Africa stand at the brink of starvation and hunger as climate change wrecks havoc on children and their families.

Hunger and Famine in The Horn of Africa: A Vulnerability Approach

<https://www.wvi.org/newsroom/global-hunger-crisis/millions-children-africa-stand-brink-starvation-and-hunger-climate> (Accessed: 27.11.2024).

Makale Bilgileri/Article Information

Etik Beyan:	Bu çalışmanın hazırlanma sürecinde bilimsel ve etik ilkelere uyulduğu ve yararlanılan tüm çalışmaların kaynakçada belirtildiği beyan edilir.	Ethical Statement:	It is declared that scientific and ethical principles have been followed while carrying out and writing this study and that all the sources used have been properly cited.
Çıkar Çatışması:	Çalışmada kişiler veya kurumlar arası çıkar çatışması bulunmamaktadır.	Conflict of Interest:	The authors declare that declare no conflict of interest.
Yazar Katkı Beyanı:	Çalışmanın tamamı yazar tarafından oluşturulmuştur.	Author Contribution Declaration:	The entire study was created by the author.
Mali Destek:	Çalışma için herhangi bir kurum veya projeden mali destek alınmamıştır.	Financial Support:	The study received no financial support from any institution or project.
Yapay Zekâ Kullanımı:	Bu çalışmada herhangi bir yapay zekâ tabanlı araç veya uygulama kullanılmamıştır.	Use of Artificial Intelligence:	This study did not utilize any artificial intelligence-based tools or applications.
İntihal:	Bu makalede intihal taraması yapılmış ve intihal içermediği teyit edilmiştir. – İntihal.Net	Plagiarism:	This article has been scanned for plagiarism and it has been confirmed that it does not contain plagiarism. – İntihal.Net

