



Corso di Laurea in International Relations

Unveiling The Gendered Dimensions of Climate-Induced Migration in Sub-Saharan Africa

Exploring Roles, Inequalities, And Implications

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Anno Accademico 2022/2023

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Introduction

Based on the findings of the Internal Displacement Monitoring Centre, during the period from 2008 to 2016, an average of around 25.3 million of forced displacements per year occurred due to abrupt onset weather-related disasters (IDMC, 2017). A significant number of displaced individuals are from sub-Saharan Africa, which is one of the most affected regions by high temperatures and widespread water and food insecurity (Rigaud et al., 2018; Kaczan and Orgill-Meyer, 2019). Women, who frequently rely on agriculture and natural resources as sources of income, experience the most impact from these displacements. Droughts and desertification result in the depletion of arable land and grazing pastures, hence causing a decline in both economic resources and food accessibility for women and their families, forcing them to move. The presence of displacement and congestion within refugee camps amplifies women's susceptibility to a range of violent acts, encompassing domestic abuse, sexual assault, and exploitation. Limited access to essential amenities, such as healthcare and sanitary facilities in these sites, further exacerbate these risks.

Moreover, historically, women have been conventionally assigned the role of providing care within domestic settings. The phenomenon of climate migration frequently leads to the disintegration of social institutions and support networks, imposing an augmented caregiving responsibility on women as they grapple with the demands of their families and the wider community. The displacement poses significant challenges to the educational prospects of women and girls. The issue of limited economic opportunities and the perpetuation of gender inequality arises as a result of the struggle to access adequate education. The limited access to education and lack of empowerment exacerbates the constraints faced by individuals in effectively addressing the difficulties associated with climate-induced migration.

The health of women is also disproportionately affected by climate change impacts, including but not limited to extreme weather events and shifting disease patterns. These hazards

are further aggravated by the limited availability of healthcare services and the lack of sufficient reproductive health facilities. The phenomenon of climate-induced migration in East Africa especially, which comprehends drought and conflict-ridden countries such as Ethiopia, Sudan and Somalia, presents significant ramifications for women, including several adverse outcomes such as forced displacement, deprivation of economic opportunities, heightened susceptibility to violence, increased caregiving responsibilities, restricted educational and empowerment prospects, as well as compromised health conditions. In order to effectively tackle these difficulties, it is imperative to develop comprehensive plans that place a high priority on addressing the interests and rights of women within climate adaptation and migration policies. Promoting gender equality, facilitating economic diversification, ensuring access to education and healthcare, and empowering women to engage in decision-making processes concerning climate change and migration actively are of paramount importance.

This study extensively explores East Africa and its vulnerability to climate change, specifically focusing on the potential impact on local communities and the consequential decision-making processes, such as migration. The idea for this thesis was widely inspired by my internship experiences at the Office for East Africa, the Horn of Africa and the African Union at the Italian Ministry of Foreign Affairs and at the United Nations Regional Information Centre (UNRIC) based in Brussels. Through my work at the Ministry, I was able to analyse and report on the disastrous effects of droughts and climate change adverse events that are increasingly affecting sub-Saharan Africa. Instead, my internship at UNRIC allowed me to be informed and study the different projects and initiatives implemented in the region by international organizations to delve into this particular issue. The primary objective of this research is to examine the relationship between climate change and population displacement within the East African region, along with this correlation's impact on the female population. This study will explore both internal and cross-border movements, taking into account the various vulnerability factors that affect women in this area. This argument posits that climate change, gender and migration are inherently interconnected

and carry substantial consequences for both individuals and groups within the African region. The objective of this dissertation is to examine the intricate correlation between climate change, migratory patterns, and gender dynamics, elucidating the diverse ways in which they interact and mutually impact each other. The significance and pertinence of this subject matter are vital, given its extensive ramifications. Indeed, climate change has been identified as one of the most pressing global challenges of our time, with Sub-Saharan Africa being particularly vulnerable to its effects. Moreover, this research can help to fill a significant gap in the literature on migration and gender in the context of climate change. While there is a growing body of research on environmental migration and climate change, gender has often been overlooked as a critical factor in shaping migration patterns and experiences (Brody et al., 2008). By bringing a gender perspective to this issue, this research can contribute to a more comprehensive understanding of the social and environmental processes driving migration, and inform policy and practice aimed at addressing the needs of the most vulnerable populations affected by climate-induced migration. It emphasises the importance of adopting a complete and inclusive approach to developing methods for adapting to and mitigating the effects of this overarching issue.

The first chapter will focus on a thorough examination of the extensive scholarly body of work pertaining to climate migration and the current discourse surrounding the categorisation of individuals impacted by this phenomenon as “climate refugees”. This section aims to examine the intricate nature of migration resulting from climate change and explore the diverse theoretical frameworks, analytical approaches, and obstacles involved in categorising those affected by environmental consequences as refugees. It will analyse the dynamic interpretations of climate refugees, the associated legal and ethical concerns, and the significance of comprehensively grasping the characteristics and origins of climate-induced migration. The analysis will focus on the examination of established international legal instruments, including the 1951 UN Convention pertaining to the Status of Refugees, and their application in addressing the complexities arising from the phenomenon of climate change. It will try to enhance comprehension of the intricacies

of climate migration by challenging existing assumptions and emphasising the significance of employing an evidence-based and culturally attuned strategy in tackling this multifaceted and dynamic matter.

The second chapter will comprehensively examine the connections between climate change and population movements in sub-Saharan Africa while considering the diverse vulnerability factors that define the region. The examination will encompass not only meteorological and environmental circumstances but also demographic and socio-economic dynamics, emphasising their interrelationships. A comprehensive understanding of this subject matter is crucial in order to evaluate the significance of migration for local communities thoroughly and to formulate efficacious policies on both domestic and global scales, thereby circumventing superficial methodologies and approaches. An analysis will be conducted regarding the challenging prospects for East Africa. Subsequently, various intervention options will be developed with the aim of fostering enduring, inclusive, and sustainable rural development. Significant attention will be directed towards rural development, given that agriculture serves as the primary foundation of the region's economy and is particularly susceptible to the impacts of climate change. This chapter aims to examine the correlation between the empowerment of rural communities and the enhancement of their resilience in the face of persistent changes.

In the final chapter, the role and status of women engaged in or affected by climate-induced migration will be examined. This study aims to analyse the distinct effects of climate change on female migrants, taking into account the exceptional difficulties they encounter throughout their forced relocation. It will centre its attention on various pertinent matters, including the susceptibility of women to involuntary displacement, the involvement of women as leaders within communities impacted by climate change, and the disparities in gender-based access to resources and services in areas of relocation. Furthermore, this study aims to investigate the relationship between conflict, gender, and climate change in the countries of Somalia, Ethiopia, and Sudan. These nations, recognised for their susceptibility to internal clashes and climate change, will serve

as a case study to enhance comprehension of the impact on women resulting from the interplay of these phenomena. This study aims to investigate the potential correlation between climate change and regional conflicts, as well as the specific impacts experienced by women within these situations. This chapter will provide an in-depth examination of the intricate dynamics surrounding women in climate migration, emphasising the necessity of policies and interventions that safeguard their rights and foster their active engagement in decision-making processes pertaining to migration and climate change adaptation. This analysis will elucidate the substantial effects of global policies on both West African nations and international migrants originating from this region.

Ultimately, the present work offers a thorough evaluation of global policies and the various issues that must be confronted in order to alleviate the consequences of climate change on the region effectively. The primary objective of this dissertation is to advocate for a comprehensive and empirically grounded methodology to tackle the intricate obstacles encountered by this particular geographical area in order to avert a potentially catastrophic worsening of its circumstances.

Chapter 1: Climate-Induced Migration in Sub-Saharan Africa

This chapter aims to explore the phenomenon of climate-induced migration in Sub-Saharan Africa. It examines the existing literature on contemporary migration scholarship, provides an overview of climate-induced migration, and specifically focuses on the context of Sub-Saharan Africa. The argument presented in this chapter exposes the complex relationship between climate change and migration in order to establish a crucial part of the overall argument: that climate-induced migration is a significant consequence of environmental changes. This understanding will later be built upon in subsequent chapters to explore the policy implications and potential solutions.

The first section will highlight the various theories that study the factors influencing migration patterns, while the second will examine the literature review on the link between migration and climate change. These two sections will establish a foundation for the analysis in the section three, which will delve deeper into the specific challenges and opportunities posed by climate-induced migration in Sub-Saharan Africa. By examining the unique context of the region, this chapter contributes to a comprehensive understanding of the broader migration discourse.

1.1 Contemporary Migration Scholarship

Mobility, which has characterised human history for centuries, assuming new forms and unwinding through the events that accompanied industrial, economic and social revolutions, has over the years been the subject of investigations that have analysed its origins and development from different perspectives and with a variety of approaches. While American sociology has been responsible for the interest in migration as a factor of change within urban realities, human geography, demography, anthropology, the so-called Migration Studies has broadened the perspective with multidisciplinary approaches to a phenomenon in continuous evolution and transformation. In the following part, the main relevant migration theories for the comprehension of this dissertation will be outlined.

1.1.1 Georg Ravenstein's Laws of Migration and Their Legacy on Contemporary Migration Scholarship

Contemporary migration scholarship in the western tradition is rooted in the pioneering work of Georg Ravenstein, whose series of publications from 1885 to 1889, known as "The Laws of Migration", laid the foundation for theoretical and methodological approaches in this field. Ravenstein based his findings on British census data and outlined several general characteristics of migration. According to Georg Ravenstein's laws of migration (1889), migration patterns can be mainly outlined in four main observations. The first one is that migration streams. This means that migration occur in flows or streams forming channels and corridors between origin and destination areas. Migration often follows established routes or networks, influenced by factors such as transportation infrastructure, social connections, and economic opportunities. The second one affirms that migrants are more likely to settle in an intermediate location that offers favourable conditions, rather than continuing to a final destination. The presence of job prospects, better living conditions, or supportive social networks in an intermediate area can act as an attractive opportunity that diverts migrants from their original intended destination. The third point that can be drawn from his laws suggests that migration tends to be influenced by the distance between origin and destination. Generally, shorter distances are associated with higher migration flows, as proximity facilitates mobility and reduces costs and obstacles. However, the influence of distance can be mitigated by factors such as transportation advancements, communication technologies, and cultural or historical ties. Finally, the fourth observation is based on gravity's law and posits that migration is influenced by both the population size and distance between two locations. Larger populations and shorter distances between origin and destination areas create a stronger attraction for migration. The gravity model provides a quantitative approach to understanding migration patterns and predicting migration flows (McLeman and Gemenne, 2018).

Although Georg Ravenstein's laws of migration are not universally accurate and have been criticized as oversimplifications, his work remains influential in migration scholarship, including

research on Environmental Migration and Displacement (EMD). Firstly, Ravenstein's systematic approach to developing explanations of migration patterns based on empirical evidence set the foundation for the grounded theory approach widely used in social sciences today. His use of census and statistical data also established a practice in demographic and migration research, including EMD research (Fussell et. 2014).

Secondly, while there are exceptions to Ravenstein's laws, many of his statements still hold true in migration research. Migration predominantly flows from rural areas to urban centers, internal migration within countries is more common than international migration, and gender plays a significant role in migration patterns (McLeman and Gemenne, 2018). Despite their validity, these observations are often overlooked in contemporary discussions on global migration patterns, which tend to focus disproportionately on specific regions. Indeed, despite the attention given to migration towards Europe and the US in recent media reports and political debates, the reality is that only a fraction of the world's refugees and impoverished people actually make their way to these Western countries. While there are indeed hundreds of millions of migrants globally (UNDESA, 2022) and an estimated 108.4 million forcibly displaced individuals accounted for by the end of 2022 (UNHCR, 2022), the majority do not seek refuge in the West. For instance, during the European migration crisis of 2015-2016, the annual asylum claims in EU countries amounted to 1.2 million people (Eurostat, 2017), whereas countries like Uganda, Iran, Lebanon, Turkey, and Kenya host significantly larger populations of refugees and displaced persons. Indeed, low and middle-income countries represent the 76 per cent of the total hosting people in need of international protection (UNHCR, 2022). This highlights the need for a more nuanced understanding of global migration patterns and challenges the perception that Western countries are the primary destinations for those seeking refuge.

Thirdly, Ravenstein recognized that migration is driven by a combination of factors, both external, the so-called push factors, and internal, the pull factors, some of which are beyond the control of migrants. He emphasized the economic influences on migration decisions, a perspective that remained influential until the 1970s and continues to be relevant today.

In summary, while Ravenstein's laws are not without limitations, his contributions to migration scholarship have laid the groundwork for empirical research, highlighted key migration patterns, and emphasized the role of economic factors in migration decision-making.

1.1.2 Neoclassical And New Economics of Labour Migration Perspectives In Migration Studies

However, when talking about migration, there are different sets of theories that have developed over the years, which space from a neoclassical to the New Economic of Labour Migration (NELM) theory. Neoclassical theories in migration studies involve the rationale that when people leave their own homes, they consider the costs and benefits, mainly wages are considered as a prominent factor, of the location of departure and that one of arrival (Castles et al. 2014). Therefore, according to this logic, migration will continue as long as the economy is in equilibrium and the marginal productivities of labour are being kept at the same level. One of the relevant theories of the neoclassical approach is the push-pull theory, which consists in incorporating also other factors beyond wage. Some characteristics that are taken into account by this theory comprehend institutional and social factors, but also climate ones. Another relevant neoclassical theory is the historical-structural theory which frames migration as part of social and cultural change (Kaczan and Orgill-Meyer, 2019).

On the other hand, NELM theory widens the range of microeconomic factors taken into account as migration drivers in order to not merge the institutional and historical perspectives with those considering the importance of individual agencies and structural societal imbalances. Rather than the individual, NELM's decision-making entity is the household. This household-based model is based on the main argument that decisions on whether to migrate or not are mainly motivated by the level of risk aversion of the family or of the individual. This theory may better be suited for analysing climate-related migration.

In fact, a factor that may be taken into account when considering the reasoning behind migratory movements is the household's capability and vulnerability. Capability may be defined as

“what households (and/or individuals) are able to do and their capacity to choose and live a life they value” (Kaczan and Orgill-Meyer, 2019: 285). In this case, weather shocks are negatively affecting this households’ ability as they exhaust their labour or capital. While vulnerability can be simply described as “an expression of a household’s exposure to weather shocks and the sensitivity of the household to such shocks” (Kaczan and Orgill-Meyer, 2019: 285). The main consequences of weather shocks are directly correlated to natural capitals, such as land quality and rainfed agriculture, hence making it difficult for a household depending on it to avoid a state of poverty (Calvo and Dercon, 2013). Hence, capability refers to what households or individuals are capable of doing and their capacity to choose and lead a fulfilling life. Weather shocks negatively impact household capabilities, depleting their labour or capital resources. Vulnerability, on the other hand, reflects a household's exposure to weather shocks and their sensitivity to such shocks. Weather shocks can have significant consequences on natural capital, such as land quality and rainfed agriculture, making it challenging for households dependent on these resources to avoid poverty. While high-capability households are less likely to be affected by environmental shocks, capability itself does not eliminate vulnerability. The level of vulnerability is highly dependent on social and institutional contexts, or the type of livelihoods pursued. As capability and vulnerability are not directly correlated, households are more inclined to consider migration when one of these factors comes into play, even if the other factor does not necessarily align with migration decisions and households are more prone to migration even when just one of them comes into play (Adger 2006).

In conclusion, neoclassical theories in migration studies revolve around the idea that individuals weigh the costs and benefits, particularly wages, associated with their departure and arrival locations when deciding to migrate. According to this logic, migration will continue as long as the economy is in equilibrium and the marginal productivities of labour remain constant. The push-pull theory, an important neoclassical approach, considers factors beyond wages, including institutional, social, and even climate factors. Another relevant neoclassical theory is the historical-structural theory, which views migration as part of broader social and cultural changes. On the other

hand, the NELM theory expands the range of microeconomic factors considered as drivers of migration. As already stated, unlike neoclassical theories, NELM emphasizes the household as the decision-making entity. According to this household-based model, migration decisions are primarily motivated by the level of risk aversion within the family or individual. Therefore, when examining the reasons behind migratory movements, it is important to consider the household's capability and vulnerability.

1.1.3 Unravelling The Dynamics of Climate-Induced Migration: A Gendered Perspective on Household Decision-Making and Vulnerability in Sub-Saharan Africa

In this thesis, the framework employed to investigate the intricate dynamics of climate-induced migration centers around the main NELM theory's supposition that migration is a risk-sharing mechanism employed by households or families. It also acknowledges that households often face imperfect credit and risk markets, particularly in developing countries where access to these markets is challenging for non-elite groups. Migration, particularly through international remittances, becomes a household strategy to overcome these market constraints by enabling investments in productive activities and improving welfare. Remittances, which are crucially emphasized within this framework, are regarded as one of the primary motives for migration. By harnessing the power of this theoretical lens, this study aims to unravel the intricate fabric of household decision-making processes, wherein climate change is intricately interwoven with considerations of each household's vulnerability and capability. Recognizing women as an indubitably vulnerable segment within society, owing to their lived experiences of discrimination, marginalization, and systemic inequalities, this thesis contends that the impact of climate-induced migration is likely to bear a disproportionate weight upon their shoulders, exacerbating their already precarious position and necessitating a deeper examination of their experiences in this context (Boyles, 2015).

Women often face multifaceted challenges and obstacles that intersect with various forms of discrimination, such as gender-based violence, limited access to resources and decision-making

power, restricted mobility, and societal norms that perpetuate their marginalization (Nasreen 2012). These factors significantly contribute to their vulnerability within the context of climate-induced migration. By acknowledging and highlighting the specific vulnerabilities faced by women in sub-Saharan Africa, especially in the Horn of Africa region, this research aims to shed light on the disproportionate impact that climate-induced migration has on their well-being and livelihoods. Examining the gendered dimensions of climate-induced migration is crucial for developing targeted interventions and policies that address the unique challenges faced by women and promote gender equality and empowerment within the broader context of migration.

1.2 Overview of climate-induced migration

Environmental change has become in recent years a focal point of discussion among academics and the media as it has gotten more attention and relevance in public discourse. Indeed, the effects of climate change are so vast that it is difficult to even perceive what is caused by it and what is not. One thing that has been theorized in the field of migration studies is the fact that climate change is one of the main contributors to major population's movements, if not the main driver. Nevertheless, there has been some controversy on the matter, as some academics believe that there is not enough evidence to support such a statement and research on topic remains varied and debated (Borderon et al., 2019). In the following section this debate will be exposed thoroughly.

1.2.1 The Debate on Climate Refugees: Exploring Legal Protection and Rights for Climate-Displaced Individuals

The effect of climate change on human mobility is a topic which has been raised by many policymakers and scholars and which has been recognized through various institutions. For example, the issue has been presented in the 2016 Summit for Refugees and Migrants of the United Nations or in the Global Compact for Migration. Desertification, flood, droughts and other extreme-weather

events are predicted to cause millions of climate migrants in the near future (Kaczan and Orgill-Meyer, 2019). According to Biermann and Boas (2010), climate refugees by 2050 could amount to a total number of over 200 million. They arrived at this conclusion through regionally specific estimates, even though the term “climate refugee” is not universally defined and changes depending on who discusses the topic.

According to Docherty and Giannini (2009), the term climate refugee is represented by an individual who has been forced to migrate, temporarily or permanently, across national borders because of a sudden or gradual environmental disruption consistent with climate change. More so, if this kind of disruption is due to a “more likely than not” (Docherty and Giannini, 2009: 361) human contribution. Originally, the term “climate refugees” posed a challenge for UNHCR as it blurred the distinction between refugees defined under the 1951 Refugee Geneva Convention and popular conceptions of refugees. In June 2019, Dina Ionesco, Head of the Migration Environment and Climate Change (MECC) Division at the IOM, expressed reservations about granting refugee status to climate migrants. Her concern was that doing so could undermine the integrity of the 1951 Refugee Convention and also exclude climate-displaced individuals who lacked sufficient evidence to prove that their forced displacement was solely due to climate-related factors, thus depriving them of aid and support.

Regarding the question of whether climate refugees should be addressed through a new treaty or convention, UNHCR argues that individuals displaced by environmental changes could, in theory, still rely on the protection of their national governments, unlike traditional refugees whose home countries often persecute them. This reliance on national protection is a key requirement under Article 1A (2) of the 1951 Refugee Convention. The article in question states that

“As a result of events occurring before 1 January 1951 and owing to well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of

his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it.” (Convention relating to the Status of Refugees, 1951)

However, in practice, certain regions frequently affected by climate disasters, primarily in the global South where migration movements are most prevalent, struggle to recover from these events due to pre-existing structural challenges. This disruption hampers the reconstruction efforts and impedes the return of displaced individuals to their homes.

Therefore, to some scholars such as Docherty and Giannini (2009), it is worth considering the endorsement of a new binding convention that aims to provide legal protection and support for climate-displaced individuals. This convention would address the unique challenges faced by those forced to migrate due to climate-related factors and ensure their rights are safeguarded in a comprehensive manner.

1.2.2 The Multidimensionality of Climate-Induced Migration: Moving Beyond Oversimplification

According to recent estimates drawn from the most recent Groundswell report (2021), rapid-onset climate events will forcibly displace more than 216 million people across borders by 2050. Nevertheless, it may be noted that climate change induced migration is not based solely based on climate factors but also on socio-economic and political elements as well. The multidimensionality of this type of migration is what leads many academics and studies on the matter not to discuss it without presenting the overall framework of the other macro- and micro-factors influencing and adding to these migratory movements (Black et al., 2011). Migration implies a variety of different factors that depend on economic and social context, which in turn are perceived and have a different effect depending on the adaptability of that population or area.

By oversimplifying the migration-climate nexus, researchers and policymakers risk overlooking the intricate interplay of economic, social, and environmental factors that contribute to migration decisions. Migration is rarely solely driven by climate change alone. Rather, it is influenced

by a range of interconnected factors, including socioeconomic disparities, political instability, conflict, resource availability, and livelihood opportunities (Ionesco et al. 2017). These factors interact with climate change in complex ways, shaping the motivations and adaptive responses of individuals and communities. Moreover, the adaptability of populations and areas plays a crucial role in understanding migration dynamics. Different populations and areas possess varying levels of resilience, resources, and capacities to adapt to climate change impacts. Factors such as access to education, healthcare, social support networks, and infrastructure can significantly affect the ability of communities to cope with environmental changes and determine their migration choices. Oversimplifying the migration-climate nexus fails to capture the nuances of local contexts and the specific vulnerabilities and capacities of different populations, leading to inadequate policy responses and solutions. In sum, the oversimplification of the migration-climate nexus in academic research and policy-making processes may be more hindering than helpful in solving the problem (Kaczan and Orgill-Meyer, 2019). To effectively address the challenges posed by climate-induced migration, it is crucial to move beyond simplistic narratives and adopt a multidimensional and context-specific approach. This requires in-depth research that considers the complex interplay of economic, social, and environmental factors in migration decision-making processes. Policy interventions should be tailored to the specific needs and vulnerabilities of affected communities, accounting for the diversity of experiences and adapting to local contexts (Ionesco et al., 2017).

By recognizing the complexity of the migration-climate nexus and avoiding oversimplification, researchers and policymakers can develop more nuanced strategies and interventions that address the root causes and impacts of climate-induced migration. This approach will contribute to more effective solutions, ensuring the well-being and resilience of populations affected by climate change while fostering sustainable development and social justice. However, climate-related factors play an increasingly relevant role in changing the habitability of entire global areas. It is accounted for that more than 19 million people were forced to move because of natural disasters, such as droughts, desertification, floods and similar devastating events (Piguet et al., 2015).

These factors push people that find themselves suddenly migrating to be victimized and weaponized by smuggling and criminal networks that profit from these injustices worsening these humanitarian crises. The knowledge on the migration-environment nexus is developing and growing more over time, promoting environmentally friendly policies and public opinion's awareness on the subject. However, the data available remains locally focused and unbalanced depending on the region studied. Most research is indeed focused on the Global South, with the African continent and the Asian-Pacific countries representing the most researched areas (Piguet et al., 2015). Often, migration is seen as an adaptation strategy when people are living in extreme weather conditions in the rural hinterlands where people's livelihood depend on activities related to the health of the land or other natural resources which are hindered by the hostile climate (Thorn et al., 2023).

Earlier research on climate and migration primarily focused on international migration due to data availability constraints. However, recent studies reviewed in this context examine not only domestic migration but also provide comparisons between international and various types of domestic migration (Laczko and Aghazarm 2009). It is expected that the impact of a weather shock on the capability of individuals will influence all forms of migration. Conversely, the vulnerability induced by a weather shock will have a disproportionate effect on local migration deemed as necessary, such as migration for employment purposes rather than marriage or education. The influence of vulnerability on international migration is comparatively lower, as such a move represents a larger and riskier investment. The general literature suggests that younger, wealthier, landholding, and better-educated individuals are more likely to engage in international migration compared to their older, poorer, and less-educated counterparts (Kaczan and Orgill-Meyer, 2019).

In specific cases, studies have found that drought triggers out-of-district migration in comparison to local migration. For instance, in Ethiopia, this type of migration is predominantly observed among men and is driven by employment opportunities in districts or urban areas that are not affected by the drought (Gray and Mueller 2012). In Burkina Faso, men are more inclined to engage in domestic migration during drought conditions, while international migration rates decrease

(Henry et al. 2004). Women, on the other hand, are less likely to migrate both internationally and domestically. Men are more affected by the intermediate category, whereas the local migration effect is strongest for women. These findings support the distinction between changes in employment-related migration due to increased vulnerability and changes in international and discretionary migration resulting from reduced capability (Kaczan and Orgill-Meyer, 2019).

1.3 Climate-Induced Migration in Sub-Saharan Africa: Trends, Challenges, and Impacts

According to a report of the European Commission redacted by Migali and Natale (2021) on population exposure and migrations linked to climate change in Africa, some of the African regions are the most impacted by climate change. At the same time, every region is impacted on a different degree as the tropical and subtropical regions, such as Western Africa, are the one expected to have the most severe effects than other more temperate areas (Migali & Natale, 2021). East Africa is a case in point, as it is one of the climate sensitive regions in the continent and most of its economy is based on agricultural, pastoral and livestock production. East Africa is also predicted to have an increasing rate of human mobility both nationally and internationally. Nevertheless, this movement of people is not based solely on climatic conditions. Indeed, East African countries are characterized by an array of other political, social, and economic issues which drive migration in the first place (Rigaud et al., 2018).

As it has been reported in the aforementioned Groundswell report (2021), predictions of climate migration in East Africa indicate that this kind of migrants will amount around 10.1 million by 2050 if we take into consideration the most pessimistic climate scenario, while around 6.9 million in the same year if we take into consideration the more moderate prediction. Nonetheless, it is a matter of fact that East Africa's population is projected to grow to 675 million or under 786 million depending on the development pathway (Rigaud et al., 2018). Given this exponential growth of

population and other factors that make Africa one of the most vulnerable regions to climate variability. One of these factors is that it represents one of the continents with the most semiarid areas while being heavily dependent on rain-fed agriculture and with a low degree of adaptability (FAO 2016). Another one is dependency on fish resources in coastal areas, which are highly impacted by the ocean acidification, thus affecting the livelihoods of the population. The desertification of land is also a topical issue which forces nomadic populations in sub-Saharan countries, such as in East Africa, to alter their customary migration paths (IOM, 2019). Therefore, the growing demographic variable coupled with these environmental factors could potentially lead to a growing influx of migration in neighbouring regions and countries (Omobawale et al., 2019). In section, the various mentioned factors influencing climate migration will be further outlined and analysed.

1.3.1 Drivers of climate-induced migration in the region

Climate change is renowned to be a global problem. Nevertheless, it is clear that some region of the world will suffer, if they are not already suffering, more than others. In fact, it can be stated that the risks and consequences of climate variations are also unbalanced and unequal as some states are more well equipped to adapt to these temperature and weather changes. These same states are the first contributors to the growth of greenhouse gas emissions (GHG), which are the prime cause of increasing climate disasters and global temperatures. Nevertheless, one of the areas that will face the greatest risk is sub-Saharan Africa. These same inequalities of risk are also portrayed at the local level where those more exposed to climate change is the vulnerable part of the population. Impoverished groups in sub-Saharan Africa are the ones that rely the most on agriculture and livelihoods dependant on weather and climate, such as fishing and seasonal jobs. Even inside impoverished groups disparities persist as in the case between men and women (Eastin, 2018).

The main differentiation between climate-related events is between sudden- and slow-onset events. The former ones, such as floods or storms, are contributing the most as being a push factor for migration. The latter, being more gradual and easier to adapt to, could be even considered to

decrease the possibility of migration. In these cases, individuals are more prone to adjusting to adverse climate conditions, as they acknowledge the cost and uncertainty linked to migration and prefer to adopt other adaptation measures. Even though this may change from region to region especially in the African continent (Borderon et al., 2019). For instance, in the case of droughts in northern Ethiopia, as reported by Meze-Hausken (2000) poorer household recur to migration as an adaptation strategy at the beginning of slower-onset events. As the event lasts longer in time, migration becomes a strategy used by everybody. Nawrotzki and DeWaard (2016) also found that slow-onset climate shocks may allow for the collection of the required resources needed for migration as people have more time to do so. When considering climate change migration in most databases, such as in the Global Internal Displacement Database, from which some data will be examined in the following pages, slow-onset disasters are still not taken fully into consideration. This is also a direct consequence of the lack of data and clear definition of climate-induced displacement.

Cattaneo and Peri conducted a study in 2016 about the emigration rates of countries not members of the Organisation for Economic Co-operation and Development (OECD) during the 1960-2000 period. The study showed that even if emigration from the more middle-income areas is due to the high temperatures-induced agricultural losses, in the poorest regions this does not result in a displacement of people and even prevents them from moving due to the additional financial difficulties (Foresight, 2011). This effect is directly correlated to the fact that wealthier populations have better access to services such as education and information, facilitating labour movement, as well as better communication and transport infrastructure facilitating mobility. At the same time, poorer individuals are also unable to leave their first source of subsistence such as agriculture. As illustrated in the Table 1 below and the recent data from the World Development Indicators, the upper middle-income share of the population is almost twice more likely to move as a consequence of natural disasters compared to the low-income fraction.

Table 1**Internally displaced persons, new displacement associated with disasters (number of cases)**

	2018	2019	2020
Upper middle income	4,252,273.0	4,729,669.0	6,782,589.0
Low income	2,070,600.0	3,021,028.0	3,762,800.0
Lower middle income	9,316,340.0	15,696,068.0	18,020,886.0
High income	1,505,741.0	1,357,323.0	2,119,534.0

Source: Data elaborated from the Internal Displacement Monitoring Centre retrieved at <https://data.worldbank.org/indicator/VC.IDP.NWDS>

In fact, the most fragile individuals will be inclined to migrate less as migration is very selective. Usually, the middle class is the one that can afford to invest in a family member who can leave and send money back home. This also involves a gender effect for which women migrate less for reasons of security and opportunity. Additionally, almost half of the population in sub-Saharan Africa fall below the poverty line. Hence, the possibility of leaving one's territory is not even conceived for them until climate change-related shocks happen and oblige them to move. It could therefore be argued that it would be more correct to speak of “forced population movements” or “refugees” rather than the term “climate migrants”.

At the same time, those that pertain to the social classes with better education, who therefore obtain less environment-dependent jobs, are less likely to migrate purely because of climate factors (Van der Land & Hummel, 2013). Even though, even those classes highly dependent on weather-dependent livelihoods may mitigate their climatic vulnerabilities not only with migration, but also through other strategies as well. Different strategies are considered depending on the risks and expected net returns, along with cultural norms and values, social relationships, and common understandings (Adger et al., 2009).

1.3.2 Age and Gender Factors in Climate-Induced Migration in Africa: Challenging Biases and Data Deficiencies

Another factor which is determinant whether individuals would move away from their household because of extreme climate events is age. The demographic most propense to migrate in this instance are the young and the middle-age part of the population (Ezra & Kiros, 2006; Black et al., 2011). Apart from age, gender plays a differentiating variable in case of climate migration. Women often experience specific vulnerabilities and challenges during migration due to gender norms and inequalities. They may face discrimination, limited access to resources, and reduced decision-making power, which can exacerbate their vulnerability in the face of climate change impacts. The subsequent chapters of this work will inquire deeper into the gendered dimensions of climate-induced migration, exploring the unique experiences and implications for women.

All this attention given to the African continent must be analysed under the perspective of the rise in Western countries' attention towards this continent. Indeed, because of events such as the migratory crisis of 2015 along the European shores, the Global North considers the African continent as being riddled by mass displacement and migration mostly due by violent conflicts and poverty. This vision may be considered as inherently based on stereotypes because when the data available is investigated, one may find other drivers moving migration in the continent other than the formerly mentioned factors.

Media representation of Africa is still rooted on the images of poverty and warfare. Moreover, the migratory movements from the continent to Europe has been framed over time as a security threat and directly linked to raising terrorism, international crime and trafficking (Castles, De Haas, & Miller, 2014). Scholars are not exempted from this theory as they feed into the narrative of "South-North" migration as the symbol of development failures in these regions of the world. Nevertheless, the lack of data, especially at the macro level, and its high variability among the different sources and because it is mainly focused on migration towards Europe furthers biases on this topic (Flahaux & De Haas 2016). African populations have always been highly mobile in their history, from nomadic

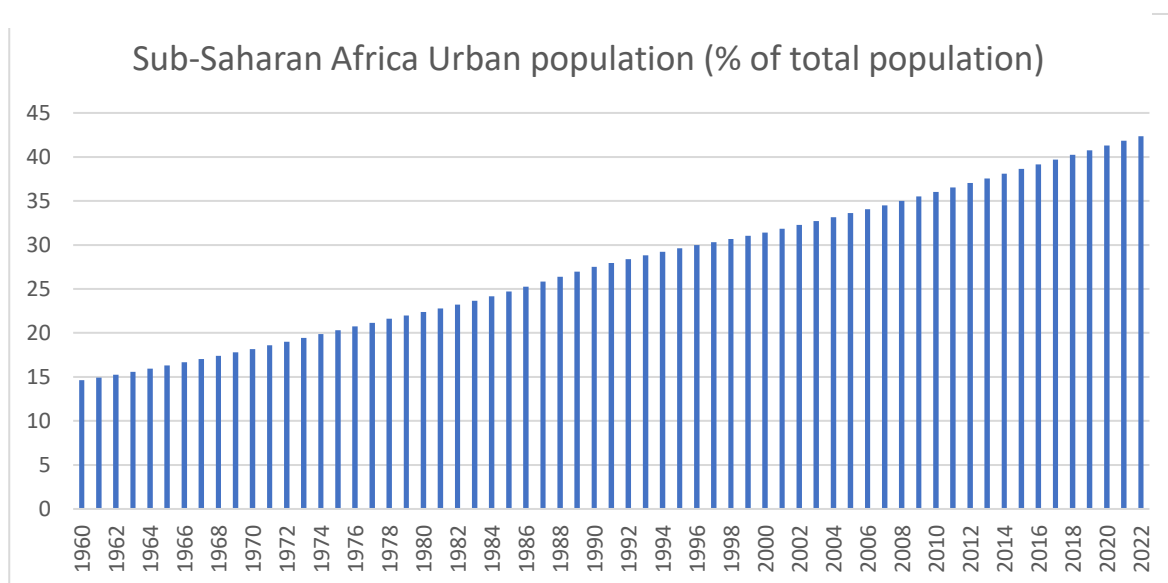
pastoralists to pilgrims, whose aspects of mobility are difficult to track and collect data on. As already mentioned, the problem of the data is still true to this day in African countries, hence they are mostly based on estimates which are based on partial information and projections. Such sources are represented by administrative sources, border statistics, and direct inquiries to people (De Brujin, Van Dijk & Foeken 2001).

1.3.3 Migration patterns and trends in the region

Human mobility has reached unprecedented levels in our days. This is also the direct consequence of the overall global population growth reaching more than 8 billion in total.

Africa, including sub-Saharan countries, is currently experiencing rapid urbanization and economic and population growth, as shown in Figure 1, resulting in an increased exposure of people to hazards.

Figure 1



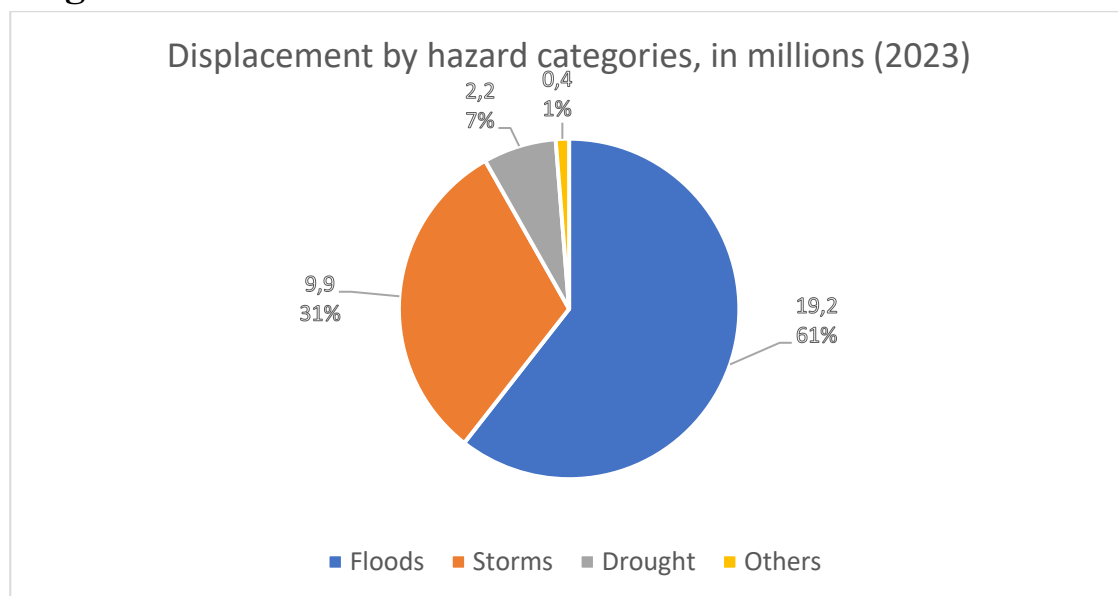
Source: Data elaborated from the United Nations Population Division, World Urbanization Prospects, 2018 retrieved at <https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS?locations=ZG>

The combination of unregulated urban expansion, inadequate waste management and drainage systems, poverty in both rural and urban areas, and the effects of climate change amplifies the vulnerability of communities to hazards and raises the risk of disasters and displacement (Satterthwaite, 2017). Climate change contributes to more intense and unpredictable natural hazards, such as prolonged droughts, increased rainfall, and more powerful storms. While the impacts vary

across countries, smaller to medium-sized disasters are typically the triggers for displacement, affecting predominantly poor and marginalized communities with limited capacities to prevent and respond to these challenges (IPCC, 2014). Displacement caused by disasters in Africa receives less attention compared to conflict-related displacement, but it is significant, with 2.6 million new displacements in 2018 and over 21.2 million between 2009 and 2018. This accounts for 9.3 percent of global disaster displacement over the decade, with floods and storms being the main triggers of displacement (IDMC, 2019).

According to the Internal Displacement Monitoring Centre, there were 1.6 million new displacements associated with drought between 2009 and 2018. However, this figure is likely an underestimate as data disaggregated by this specific hazard type has only been available for a limited number of countries since 2017. Nevertheless, even with the limited data, it is evident that drought-induced displacement is a significant phenomenon, accounting for eight percent of all new disaster displacements over the decade (see Figure 2).

Figure 2



Source: data elaborated from the Internal Displacement Monitoring Centre, 2023 retrieved from <https://www.internal-displacement.org/database/displacement-data>

In the Horn of Africa, specifically in Somalia and Ethiopia, the Internal Displacement Monitoring Centre has estimated that drought has resulted in approximately 1.1 million and 500,000 new displacements respectively since 2017. These figures highlight the significant challenge posed

by droughts in the region. In addition to droughts, severe floods have also occurred in both countries, leading to the displacement of hundreds of thousands of people and exacerbating their vulnerability and livelihood challenges. Other countries in the region such as Angola, Botswana, Burkina Faso, Chad, Namibia, and Niger have also experienced drought, but the lack of systematic monitoring hinders the compilation of displacement figures. It is crucial to address this data gap, as climate change, deforestation, extensive agriculture, and unsustainable water use are likely to further intensify the severity and impacts of drought, including displacement (IDMC, 2019).

Since 2009, floods have accounted for 85 percent of all recorded disaster displacements in Africa. The impacts of floods are exacerbated by underlying development issues such as poverty, inadequate urban planning, drainage systems, waste management, and riverbank erosion (IDMC, 2018). In Sierra Leone, the capital city of Freetown experienced severe flooding and a major landslide in August 2017, resulting in the destruction of approximately 1200 homes and infrastructure and displacing around 11,800 people (IFRC, 2017). Unregulated urban sprawl and deforestation worsened the impacts of these events. Efforts have been made to enhance flood risk reduction, awareness, and response in collaboration with various stakeholders in Freetown. Similarly, Niger has faced significant floods. The city of Niamey experiences annual floods during the rainy season due to rapid urban expansion and settlements in flood-prone areas. Despite government bans on construction in these areas, people continue to build and return to it (Fiorillo et al., 2018). Floods affect both urban and rural communities, with those previously displaced by conflicts often being overlooked when faced with new displacements caused by floods. The state of Borno, already impacted by the insurgency of Boko Haram and other armed groups, has also been affected by floods (IDMC, 2018). This is to prove how climate-related events may exacerbate already existing problematics and worsening the already pejorative conditions in which local populations in these areas have to face daily.

1.3.4 Analysis of Flood Displacement and Mitigation Strategies

In countries like Cameroon, Somalia, and South Sudan, floods have led to the displacement of hundreds of thousands of people in recent years. These countries already face the challenges of conflict and disasters, which exacerbate humanitarian crises (OCHA, 2019). In Sudan, floods regularly displace thousands of people in the Jebel Marra area of Darfur, where ongoing clashes further worsen their situation and hinder access for assistance. In Ethiopia, Kenya, and Somalia, areas already affected by drought are often struck by sudden onset hazards. Coastal erosion-related displacement is less documented but has been identified across West Africa, where slow-onset sea level rise and poor coastal management, coupled with sudden-onset events like storms and tidal surges, contribute to the problem (IDMC, 2019).

To address the recurring displacement caused by floods, it is essential to assess the likelihood and scale of future flood events. Reactive measures alone are insufficient, and a proactive approach to risk mitigation is required. Long-term development investments focusing on flood prevention and risk reduction are necessary, supported by baseline data to inform decision-making (Ionesco et al., 2017). The riverine flood displacement risk model, improved in 2018, provides more detailed population exposure data, offering insights into the potential number of people displaced by future riverine floods. On average, it estimates that 2.8 million people in Africa could be displaced annually by such floods (IDMC, 2019).

Countries with high population densities like the Democratic Republic of Congo, Ethiopia, and Nigeria face greater flood displacement risks. Nigeria, in particular, experiences substantial flooding due to heavy precipitation upstream from neighbouring countries, leading to hundreds of thousands of displacements each year. With an average of 785,000 flood displacements annually over the past decade, Nigeria surpasses all other African countries combined. The model predicts an annual average of 442,000 flood displacements in the future, establishing Nigeria as having the highest flood displacement risk in Africa. Relative to population size, Somalia exhibits the highest relative flood displacement risk on the continent, with one in 100 people potentially being displaced in any given

year. Other countries with notable relative risk include Chad, Congo, Liberia, and Madagascar. However, these figures are likely underestimates as the model only considers riverine flooding and uses housing destruction as a proxy for likelihood. Urban areas with inadequate drainage and water management systems are at even higher risk. Moreover, this model does not assess the impact of rapid urban growth on increasing flood displacement risk (IDMC, 2019).

To conclude, frequent and intense storms, triggered by climate change, have led to widespread flooding and displacement across many African countries. Over the past decade, more than a million displacements have been caused by storms and cyclones, with notable impacts from events like Cyclone Idai and Cyclone Kenneth. While media attention often focuses on certain countries, such as Mozambique and Malawi, the impacts on other vulnerable countries like Comoros receive little coverage (IDMC, 2019). These storms have severe consequences for agriculture, livelihoods, and income, and recovery can take months or even years. Addressing the underlying drivers of risk, including unregulated urban expansion, poor water and waste management, and poverty, is essential to effectively manage floods and storms. Strengthening early warning systems, disaster risk awareness, and implementing disaster loss and damage databases are crucial for preparedness and response. Ongoing projects and local initiatives aim to enhance flood modelling, risk reduction, and data collection to improve resilience across the continent (African Union et al., 2018).

1.3.5 Analysis of Population Growth, Urbanization, and Climate Change Linkages to Migration in Sub-Saharan Africa

As already mentioned, population growth and climate change can be considered directly correlated given that as more people exist on Earth, the more fossil fuels emissions will be produced. One key indicator highlighting the contribution of the population to environmental problems is the IPAT equation ($I = P \times A \times T$). This equation is composed by three factors: population (P), affluence intended as real per capita GDP (A), and technology (T). The product of the interaction of these three factors is the environmental impact (I). The IPAT equation also pointed how environmental problems

are not just about pollution but are determined by multiple factors acting together to produce a compound effect, such as good governance aimed at improving wealth and environmental protection (Weeks, 2021).

However, in some least developed regions, such as the sub-Saharan one, institutions and infrastructures are lacking the means to improve their impact due to conflicts and grassroots political problems. Moreover, in the same region, climate-induced natural disasters and hazards are highly affecting the population, especially those individuals inhabiting already fragile drylands and exposed coastlines. According to the 2021 Groundswell report, the population of this broad area largely relies on agriculture as a first source of subsistence and employment and 3.5 percent of it will likely become climate migrants by 2050.

The fertility rate in sub-Saharan Africa is higher than the global average, therefore natural growth is far more important than in the rest of the world. At the same time, it makes it more difficult for the region to achieve its developmental goals. Indeed, expanding primary services, such as education, would result much more difficult with an ever-growing population and with climate change worsening the situation (Bongaarts & Casterline, 2013).

Migration influenced by environmental change is especially high in the Horn of Africa region due to the instability in the rural and urban areas given the higher percentage of conflicts, as the recent developments in Sudan demonstrate, influencing internal and international movements (OCHA 2022). Moreover, environmental factors contribute to the emigration of rural populations, as land degradation and drought-induced famines amplify the push factors, while urban areas attract people with their promise of social and economic opportunities. However, cities are unable to absorb all the low-skilled workers, leading to increased social frictions and potential civil conflicts, further exacerbating dissatisfaction and poverty (IOM 2019). As economies undergo structural transformation, the relative size of the agricultural sector diminishes, leading to inevitable movements of people within and across countries (FAO, 2018). By 2050, the population of least developed countries (LDCs) is projected to reach 1.9 billion, with the proportion of urban population doubling

compared to the beginning of the twenty-first century. In LDCs, youth constituted 20.9% of international migrants in 2013 (Global Migration Group, 2014). Africa alone will witness the entry of 11 million youth into the labor market annually over the next decade (FAO, 2018). The combination of environmental changes and demographic shifts is expected to intensify rural-to-urban migration in LDCs. This influx of migrants will exert significant pressure on urban infrastructure, the environment, and employment opportunities. Consequently, migrants may find themselves trapped in newly formed urban slums and areas prone to flooding, inadequate sanitation, and disease, thereby exacerbating issues of inequality, insecurity, and unsustainability. However, well-managed migration can also provide opportunities for livelihood diversification and access to education, among other benefits (IOM, 2019).

Consequently, unplanned settlements and slums often host these migrants, where inadequate access to basic necessities such as sanitation and clean water create hazardous living conditions. In 2018, UN HABITAT reported that sub-Saharan Africans living in informal settlements account for 53.6% of the total urban population. Terrorist groups proliferate in such environments of turmoil and discontent, especially in urban peripheries, therefore worsening the already precarious social and security aspect (UN HABITAT, 2018).

Another important factor to be highlighted is that weather shocks actually result in long-term internal migrations within one state and not in cross-border or short-term ones (Kaczan and Orgill-Meyer, 2020), furtherly debilitating the social equilibrium and economy of an already disaster-stricken country. These environmental events do not allow the populations to prepare for displacement, preventing people from migrating longer distances also in the hope of going back to their place of origin left so unexpectedly. Indeed, international migration is proven to be more costly and difficult to sustain in the long term, while internal short-term migration represents the most sensible response to climate-induced disasters and pressures. For example, Galvin (2009) argues that in the context of short-term migration resulting from adverse climate events, the resilience of pastoralists is reflected in their ability to adapt and be flexible. It is important to recognize that when

these capacities appear to be diminishing in the short term, it may signify an adjustment to changing circumstances in the long term.

In summary, this chapter has provided insights into the intricate dynamics and obstacles encountered by populations in Sub-Saharan Africa in relation to migration generated by climate change. The theories examined in this chapter have yielded significant insights into the determinants of climate-induced migration, encompassing environmental deterioration, natural calamities, and resource scarcity. These theoretical frameworks have facilitated our comprehension of the fundamental factors and consequences of climate change on migratory trends in the Sub-Saharan African region. In anticipation of the forthcoming chapter on the political and economic problems of climate change in East Africa, it is imperative to recognise the interdependence among climate change, migration, and the wider socio-economic and political context. The consequences of climate change in East Africa, including but not limited to droughts, floods, and unpredictable patterns of rainfall, have commenced to intensify preexisting political and economic difficulties in the area.

The subsequent chapter will provide a more comprehensive analysis of the precise political and economic ramifications of climate change in East Africa. It will examine its influence on governance structures, conflicts, livelihoods, and the overall trajectory of economic development in the region. Through a meticulous examination of these difficulties, a thorough comprehension of the intricate network of interconnections among climate change, migration, and the socio-political and economic circumstances in East Africa can be attained. In East Africa, the successful resolution of political and economic obstacles linked to climate change is crucial for the formulation of efficient strategies and policies. These measures aim to not only alleviate the consequences of climate change but also foster sustainable development, resilience, and social equity.

Chapter 2: Political and Economic Challenges of Climate Change in East Africa

This chapter examines the East African region, which consists of 13 countries (Burundi, Comoros, Djibouti, Ethiopia, Eritrea, Kenya, Rwanda, Seychelles, Somalia, South Sudan, Sudan, Tanzania, and Uganda) and some of the fastest-growing economies on the African continent, such as Uganda, Ethiopia, and Kenya. In addition, this region is regarded as one of the most climate- and environment-vulnerable on the planet. As it will be further analysed in the sections contained in this chapter, due to a lack of financial, institutional, and technological resources, the region is vulnerable to the effects of climate change and has limited adaptability. The first subchapter will introduce the different impacts on East Africa and prove how much food security is affected by these climatic shocks. The second one will outline the demographic challenges facing the region, thus laying the foundations to better comprehend the reasons behind migratory trends, contained in the third section, and the challenges for women, which can be found in the fourth section, in the designated area.

2.1 Climate Change Impacts on East Africa

In a recent report on Africa's climate, the World Meteorological Organisation (WMO) identified East Africa as a climate change hotspot. In the majority of the African continent, significant variations in annual temperature and precipitation variability were recorded between 1981 and 2010. In 2021, temperatures in the region were even higher than the 1981-2010 average. South Sudan and the eastern Central African Republic (CAR) recorded temperature anomalies exceeding 0.7 °C. These climate changes are not merely a future hypothesis, but rather a multi-decade-long process with varying effects in different regions. The effects of climate change on East Africa's climate are significant (WMO, 2020).

In fact, the analysis of East Africa reveals substantial precipitation, particularly in northern Sudan and northwestern Tanzania. This region is distinguished by a significant disparity in both the

intensity and distribution of precipitation. Southern regions, such as Ethiopia, Uganda, southern Somalia, Kenya, and Tanzania, have dryer seasons than they are accustomed to. Particularly in the fourth quarter of 2021, Ethiopia, Somalia, northern sections of Kenya, and Uganda experienced severe drought (WMO, 2022).

The annual rainfall pattern throughout the entirety of East Africa is exceedingly irregular. However, in recent years, the lack of rainfall during the monsoon seasons has had a direct impact on the region's food availability and accessibility. Ultimately, this climate factor, along with the limitations of the COVID-19 pandemic and the existing conflicts in the region, rendered more than 58 million people food insecure (WMO, 2022). This extraordinary lack of precipitation has irreversible and profound effects on the region's retreating glaciers, such as those on Mount Kilimanjaro in Tanzania, Mount Kenya, and the Rwenzori mountains in Uganda, which are all projected to vanish by 2040 (Trisos et al., 2022). The principal issue in the region can be traced to the absence of moisture normally supplied by the Indian Ocean, which has been severely impacted by global warming.

In addition, the La Nina signal and negative values of the Southern Oscillation Index (IOD) led to drier-than-normal conditions in East Africa (OCHA 2022). The Index of Southern Oscillation (IOD) is a climate indicator that represents the difference in water temperature between the western and eastern Indian Oceans. These changes in temperature distribution have a substantial impact on climate and weather in various regions of the globe. A positive IOD is frequently associated with drought conditions in East Africa and South Asia, for instance. Likewise, a negative IOD can cause intense precipitation in these regions. IOD interacts with other global climate phenomena, such as El Nino and La Nina in the Pacific, and can influence rainfall patterns, temperatures, and other climatic aspects in many regions of the globe.

This phenomenon is characterised by periodic variations in the distribution of sea surface temperatures along the equator of the Indian Ocean. Ethiopia, Kenya, and Somalia experienced severe drought due to a lack of precipitation during the Gu (April-May-June) and Deyr (October-November-

December) rainy seasons. The La Nina event and a positive index in the southwest Indian Ocean (SWIO) influenced the active start of the 2020/2021 monsoon season and the appearance of tropical cyclones in southern Africa (WMO, 2022).

Africa has been experiencing climate change for decades. It is of particular concern due to the region's low adaptive capacity, which is in a precarious state due to the limited availability of financial, institutional, and technological resources to combat climate change's effects. In addition, the IPCC Report of 2023 revealed that between 2010 and 2020, human mortality due to cyclones, droughts, and floods was 15 times higher in exposed global regions such as Africa (IPCC, 2023). The environmental fragility and increasing complexity of climate phenomena highlight the need for a multidisciplinary and collaborative strategy to combat climate inequality.

That is why, in the next chapter, a comprehensive analysis will be conducted, not only of the climatic and environmental conditions characterizing the region but also of the demographic and socio-economic factors and their reciprocal interactions, also when considering the impact on women more specifically. The aim is to truly understand the significance of migration for the local population and, consequently, to adopt genuinely effective policies, both at the domestic and international levels, avoiding overly simplistic conclusions.

2.1.1 Rural Labour and Climate Change in East Africa

Since several decades, climate change has been a recurring phenomenon, with observable effects on the East African ecosystem, particularly for arid countries, where desertification is causing progressive land degradation. In addition to climate change, factors such as population pressure and certain environmentally unsustainable human activities, such as deforestation, intensive livestock farming, and the overexpansion of cultivated areas, contribute to desertification. According to the United Nations Convention to Combat Desertification (UNCCD) (1994), desertification is the progressive degradation of land in arid, semi-arid, and sub-humid drylands caused by a variety of factors, including climatic variations and human activities. Land degradation manifests itself through

the reduction or devastation of the biological and economic potential of the soil, soil erosion by wind and rain, and the permanent loss of vegetation.

The distribution of precipitation is a crucial factor in the desertification process. In arid, semi-arid, and parched subtropical regions, where precipitation is scarce and evaporation is high, the most vulnerable regions exist. The absence of vegetation cover promotes soil erosion (UNCDD, 1994). Repeated and prolonged droughts and brief but intense rains can exacerbate the situation. Climate change and soil degradation are mutually reinforcing, producing a vicious circle. For instance, rising temperatures contribute to the decomposition of organic matter in the soil, resulting in the release of carbon and carbon dioxide, which contribute to global warming. Due to the complex interaction between natural, climatic, social, and economic mechanisms, it is difficult to isolate the effects of climate change alone.

Desertification has a significant effect on the living conditions and survival of East African rural populations. In countries such as Ethiopia, Kenya, and Somalia, a large proportion of the population lives on land that has been severely degraded, highlighting the urgency of addressing this issue (OCHA 2022). Desertification necessitates a global, coordinated response, including measures to mitigate climate change, promote sustainable agricultural practises, safeguard natural resources, and strengthen the resilience of local communities.

East Africa is especially susceptible to climate change, and its effects on human activities, particularly agriculture, which is a significant contributor to the region's economy, are profound. According to the East African Community (EAC), approximately 80% of East Africa's total labour force is employed in agriculture. While more than 70% of the region's industries are based on or dependent on agricultural production, 65% of intra-regional commerce is agro-based (EAC, 2021). As it is shown in Table 2, in countries such as South Sudan (75%), Eritrea (66%), Sudan (55%) and Ethiopia (55%) the proportion of women employed in agriculture exceeds 50% of the employed female population (World Bank, 2022).

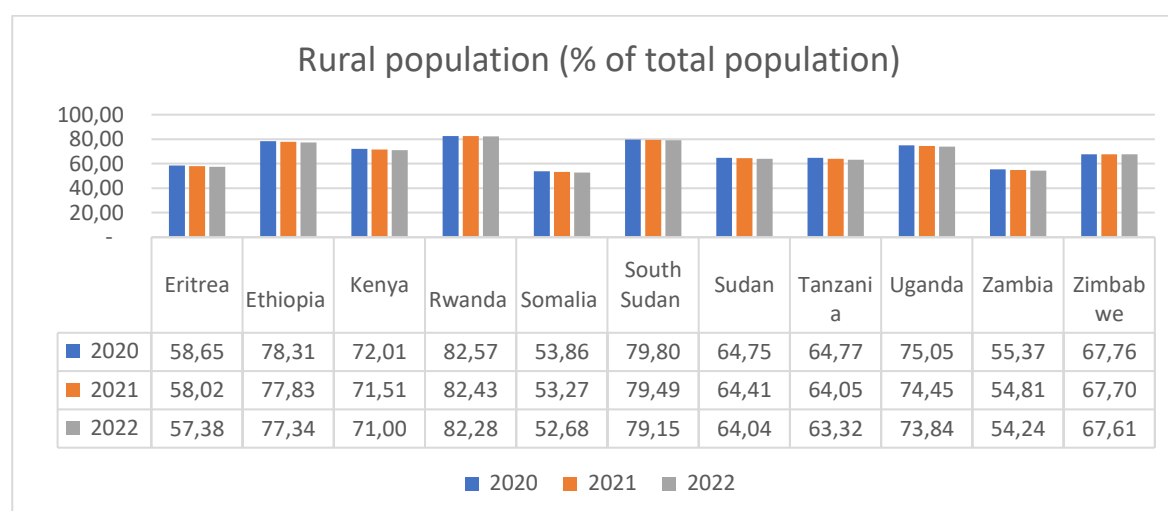
Employment in agriculture, female (% of female employment) (modeled ILO estimate)

Table 2**Employment in agriculture, female (% of female employment) (modeled ILO estimate)**

Country Name	2019	2020	2021
Sudan	54,92	55,18	54,74
South Sudan	75,12	75,27	74,98
Eritrea	65,99	66,32	65,97
Ethiopia	55,92	55,59	55,39

Source: data elaborated from International Labour Organization database, 2021 available at <https://data.worldbank.org/indicator/SL.AGR.EMPL.FE.ZS>

Given the sizable rural population of the entire region, the reliance on agriculture as a means of subsistence is especially pertinent. Even though the urbanisation process is ongoing, more than half of East Africa's population will be rural in 2022, with countries such as Ethiopia, Rwanda, and South Sudan recording even higher percentages, 77.3%, 82.1%, and 79.1% respectively (World Bank, 2023) as it is shown in Figure 3.

Figure 3

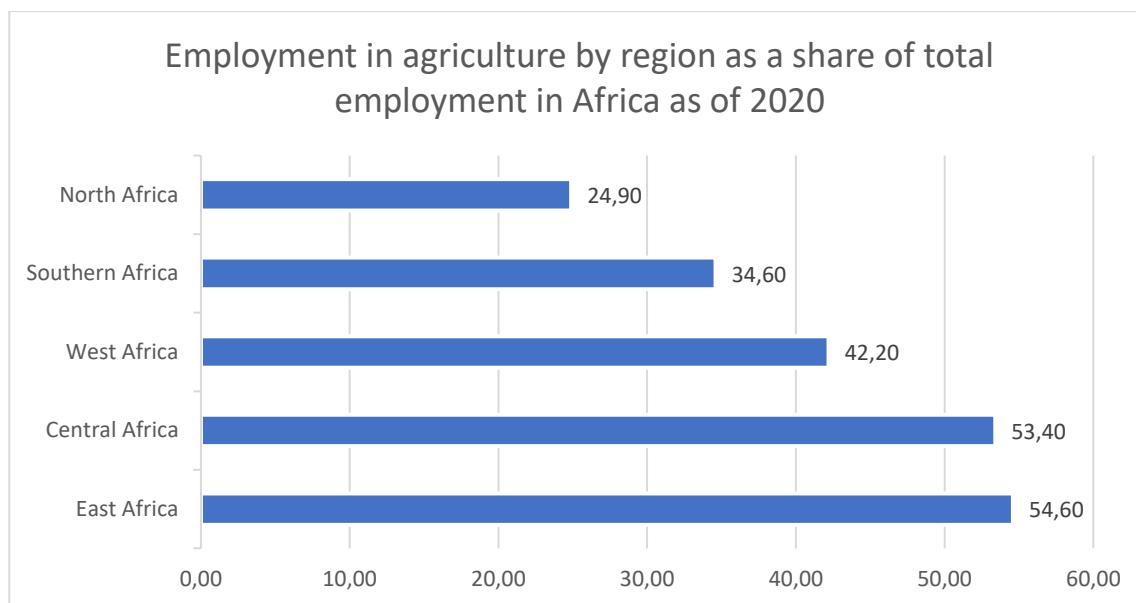
Source: data elaborated from World Bank estimates based on the UN Population Division's World Urbanization Prospects, 2018 available at <https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS>

Climate change threatens the food security and livelihoods of millions of people whose livelihoods depend on agriculture. Extreme weather phenomena, such as protracted droughts or erratic precipitation, can threaten crops and deplete natural resources, testing the resilience of farming communities. Adapting to climate change, protecting natural resources, promoting sustainable agricultural practises, and enhancing the capacity of rural communities to adapt to new climate scenarios are essential to addressing this challenge. To develop a more resilient region and secure a

brighter future for future generations, sustainable agriculture and the diversification of rural communities' income sources are crucial.

Agriculture plays a crucial position in the East African economy, as evidenced by its substantial contribution to regional employment. Agriculture accounts for 54.6% of total employment in the region, which is the highest proportion compared to other regions. In some nations, such as Somalia (83%) and Uganda (72.4%), it exceeds 70% of total employment (OECD, 2020).

Figure 4

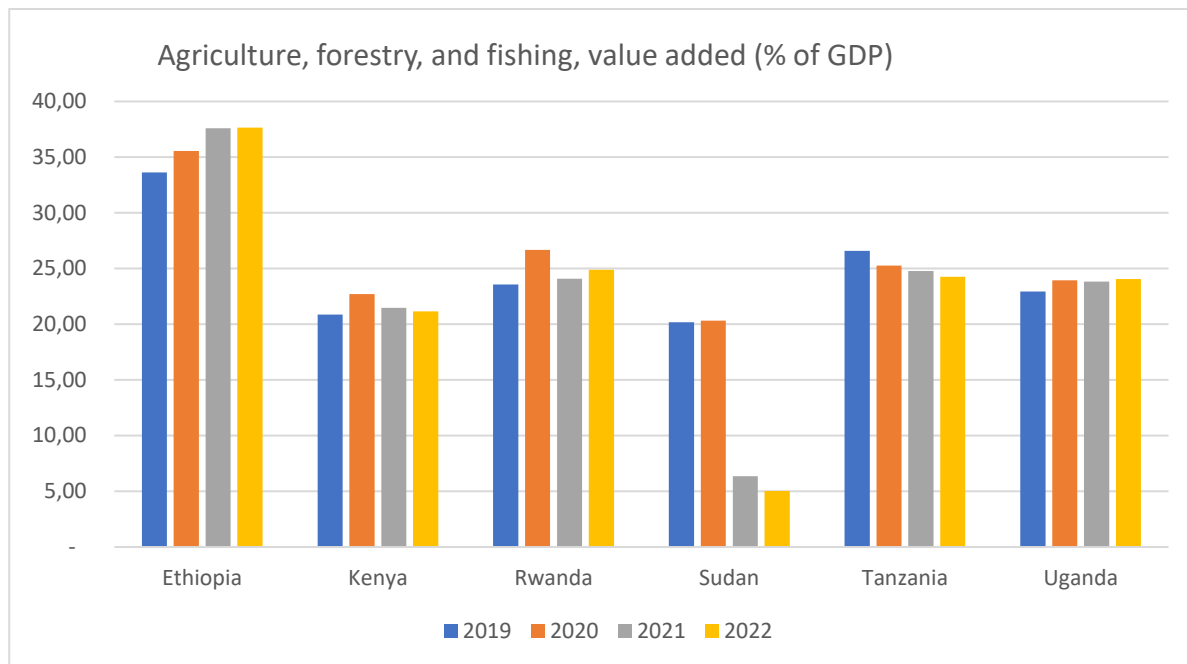


Source: OECD data retrieved from Statista, 2021 available at <https://www.statista.com/statistics/1230033/employment-in-agriculture-by-region-in-africa/>

It also constitutes a significant portion of the region's gross domestic product (GDP). In many nations, such as Ethiopia (37%), Tanzania (25%), and Uganda (23%), the average agricultural value added to the national GDP exceeds or is close to 25%, as it is shown in Figure 5 (OECD, 2020). These numbers illustrate the importance of agriculture as an economic generator and a source of income and employment for millions of people. Due to the sector's reliance on agricultural activities, food security, the socioeconomic well-being of rural communities, and the viability of the region as a whole are all intimately connected.

However, agriculture's susceptibility to climate change represents a significant challenge for the region. Extreme weather events, such as droughts, floods, and changes in rainfall patterns, can cause substantial agricultural damage, putting the food security and economy of farming communities in jeopardy.

Figure 5



Source: data elaborated from World Bank and OECD data, 2022 available at <https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS>

East African agriculture is predominately rain-fed (90-95%), reliant primarily on rainwater and employing limited irrigation techniques (5-10% of agricultural productivity). This agricultural practise ties crop yields closely to seasonal and annual precipitation patterns. Therefore, the variability and volatility of precipitation poses the greatest threat to the region's rural economy, particularly in countries of the Sahelian belt where rainfall patterns are more irregular. The severe droughts that have occurred in East Africa over the past few years have had a devastating effect on the region's food self-sufficiency, negatively affecting cereal production for both local consumption (sorghum, maize, plantains, and tubers) and export (coffee, tea, and cotton) (USAID, 2017). However, it should be stressed that precipitation patterns are not the sole cause of the region's precarious food balance. Non-climate-related endogenous and exogenous factors, such as escalating food prices, high poverty rates, rapid population growth, and conflicts, also play a role.

Consequently, the various interconnections between human groups and production systems can serve as crucial strategies for addressing the problem of climate change and preserving the region's natural resources. The sustainable administration of agricultural resources and practises and the adoption of appropriate policies are essential for ensuring the food security and well-being of rural communities in East Africa by addressing climate vulnerability and its effects on agriculture.

2.1.2 Consequences of climate-induced droughts in the Horn of Africa

The Horn of Africa is currently experiencing a crisis of unprecedented proportions, precipitated by the region's extreme drought, which is shaping up to be one of the most significant and calamitous humanitarian crises of the past four decades. This drought has had far-reaching effects on the socioeconomic and humanitarian pillars of this geographical region, with widespread repercussions felt throughout the affected communities.

Due to the imminent threat of an impending famine, the current environment is infused with a sense of urgency. Meteorological prognostic indices indicated that the season's precipitation may fall below historical norms. The October-December 2020, March-May 2021, October-December 2021, and March-May 2022 seasons would all experience significant hydrological deficits if such a pattern were to continue. This cycle of unfavourable outcomes permitted the onset of a protracted drought in vital areas of Ethiopia, Kenya, and Somalia.

The prolonged drought in the four-year period 2020-2022 exceeded in both duration and severity the already devastating droughts that afflicted the same region in the preceding decades, including the major crises of 2010-2011 and 2016-2017 (OCHA, 2022). There are mounting concerns that the situation could deteriorate in the coming months, with catastrophic consequences.

The number of people affected by this crisis has reached a critical level. At least 36.1 million people are estimated to be affected by this drought, with 24.1 million in Ethiopia, 7.8 million in Somalia, and 4.2 million in Kenya. These numbers represent a significant increase from estimates published in July 2022, when 19.4 million people were anticipated to be affected (OCHA, 2022). This

significant increase is attributable to the unprecedented spread of drought to previously unaffected regions of Ethiopia, as well as the rising demand for aid in Somalia and Kenya.

The imminence of a famine in Somalia, with two districts in a particularly precarious state, accentuates the gravity of the current situation. Between October and December 2022, at least 21 million people across Ethiopia, Somalia, and Kenya are anticipated to experience high levels of acute food insecurity. Particularly in Somalia, it is estimated that approximately 6,7 million people will experience acute food insecurity, with over 300,000 people living in catastrophic conditions (OCHA, 2022).

Drought has wreaked havoc on the agricultural and pastoral industries. In the region, more than 8.9 million livestock have perished, with consequences that transcend ordinary economic value. Numerous farming families rely on these animals for their subsistence and income, and their extinction has had far-reaching effects. It is estimated that due to the lack of livestock, more than 120 million litres of milk will no longer be produced, leaving more than 1.6 million children without a vital nutritional resource. The unstoppable decline of the livestock industry may generate structural changes in the socioeconomic dynamics of affected communities, resulting in a long-lasting impact (FSNWG, 2022).

In the affected regions, the protracted drought has caused a spiralling increase in food costs. In addition to poor agricultural yields and rising global food and petroleum prices, macroeconomic challenges have contributed to a substantial increase in food prices. In Somalia, for instance, food prices in drought-affected regions have surpassed those of the 2017 drought crisis and 2011 famine. Even in Ethiopia, the local food supply cost increased by more than 33 percent in the first half of 2022 (WFP, 2022). This has made it more difficult for many already-vulnerable households to obtain sufficient, nourishing sustenance. The impact of the drought on the health of those afflicted is an additional critical consequence. Due to water shortages, sanitation conditions have swiftly deteriorated, with over 16.2 million people struggling to obtain sufficient drinking water for cooking and cleaning (UNICEF, 2022). The prevalence of cholera and measles has increased due to the

increased risk of water-borne diseases. In addition, malnutrition, which is exacerbated by a lack of nutritious food, has made individuals more susceptible to infection and disease. The forced decision to choose between food and medical care as a result of rising food prices can result in the discontinuation of vital HIV treatments (WHO, 2022).

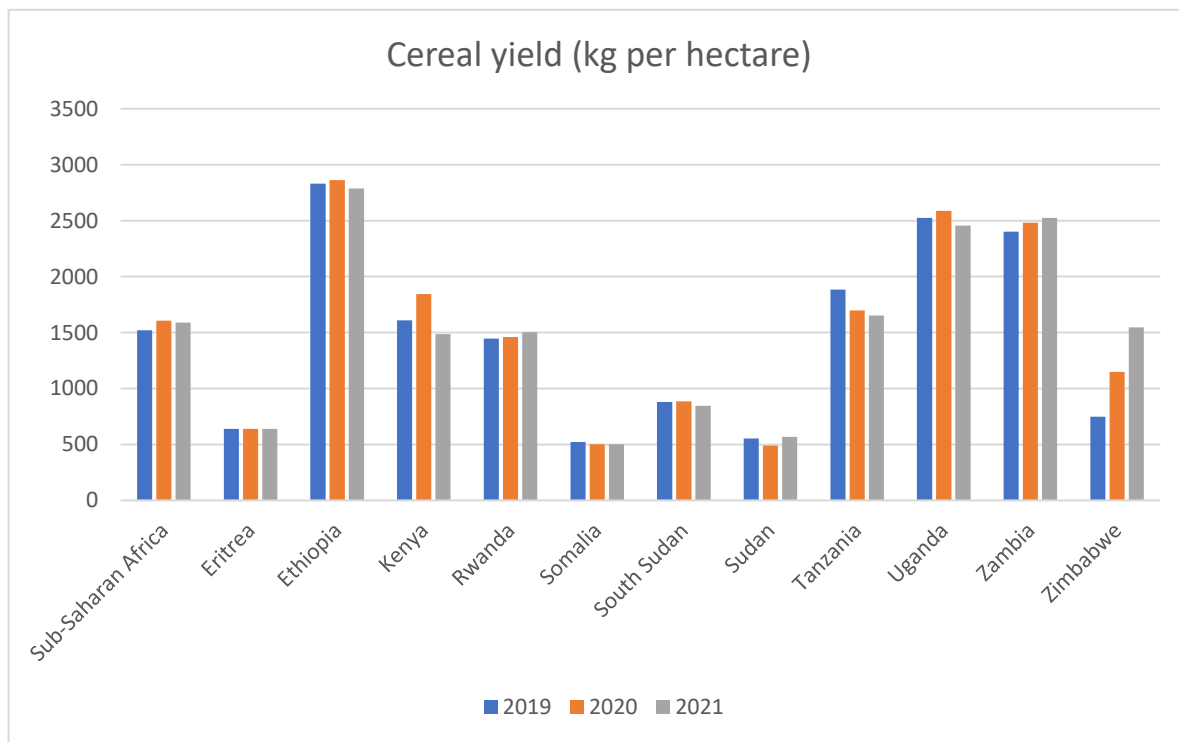
More than 1.3 million people are compelled to abandon their homes in search of alternative sources of food, pasture, and means of subsistence as a result of the wide range of hardships brought on by this crisis (IOM et al., 2022). This phenomenon heightens the risk of conflict and exacerbates the strain on essential services that are already severely compromised. Gender dynamics have been profoundly altered, with women and girls confronting especially severe difficulties. An alarming aspect of this crisis is the increase in gender-based violence and sexual exploitation. The right to education is also threatened, as millions of children are forced to stop attending school due to the drought's effects. Despite efforts to mitigate the impact of this emergency, the co-occurrence of persistent droughts over the past several years and additional shocks, such as conflict, flooding, the COVID-19 pandemic, and the Desert Locust epidemic, has severely hampered the ability of affected communities to recover and resist (OCHA 2022).

2.1.2 Food insecurity in East Africa

As stated previously, East Africa's agricultural system is closely tied to rainfall patterns, and the majority of cultivation depends on rainwater. Only five percent of the cultivated land is irrigated. Therefore, the seasonal rainfall pattern and its variability play a crucial role in the agricultural success of the region. This is why crops are especially susceptible to these climate changes. Changes in agricultural and pastoral practises have also had an impact on the current management of natural resources by rural communities. The introduction of export commodities has increased the cultivation intensity, depleting the soil and contributing to its erosion. At the same time, climate variations that cause droughts are a significant factor in soil pulverisation and the loss of soil fertility, which increases the erosive effect of rainfall.

The current situation illustrates the food insecurity of the entire East African region by comparing the cereal production yields of the countries in the region to the sub-Saharan African average. In comparison to other regions of the world, Sub-Saharan Africa has a lower percentage of crop yields and must import a significant portion of its food (UN, 2015). As shown in Figure 6 below, many East African countries, including Sudan, Somalia, and Ethiopia, have a lower yield than the subcontinent average, highlighting the need to implement sustainable agricultural policies and practises to ensure food security in the region.

Figure 6



Source: data elaborated from World Bank data retrieved from Food and Agriculture Organization available at <https://data.worldbank.org/indicator/AG.YLD.CREL.KG>

To satisfy the rising population growth rates in East Africa, more is required than grain production for domestic food consumption. This has caused all countries in the region to regularly rely on food assistance from the international community. This assistance has become a habituated and constant practise, independent of the occurrence of particular emergencies, and has become an indispensable resource for coping with the persistent food shortage. Population growth and the inability to increase agricultural production adequately have placed a strain on the region's food

security. Food insecurity has become a pervasive and chronic problem, endangering the health and nutrition of millions of people in the region.

East Africa is vulnerable to international market fluctuations and external aid policies due to its reliance on food aid. Thus, food security becomes a crucial and intricate issue, requiring long-term solutions to address the structural obstacles that imperil the sustainability of agriculture and food production in the region. The projected climate change over the course of the 21st century could have devastating effects on East African agriculture and food security. This region, which is already susceptible to a variety of socioeconomic factors, is subject to a complex interaction between natural and human factors that affects the availability of resources and the livelihoods of rural communities (Müller, 2009).

In conclusion, climate change could exacerbate this problem. Rising surface temperatures are anticipated to increase water evaporation, thereby decreasing the availability of water resources and exacerbating the region's water stress. New drought cycles could further jeopardise the livelihoods of rural populations, endangering the availability of food and water for livestock and increasing the likelihood of resource-related conflicts. Even if global warming is limited to less than 2 °C, sub-Saharan Africa is anticipated to experience a 10% decline in agricultural productivity by mid-century (WMO, 2020). This decrease could reach 20-30% by 2050 in the event of an even greater temperature increase. FAO (2023) predicts a decline in agricultural productivity for all major crops in East Africa, particularly maize.

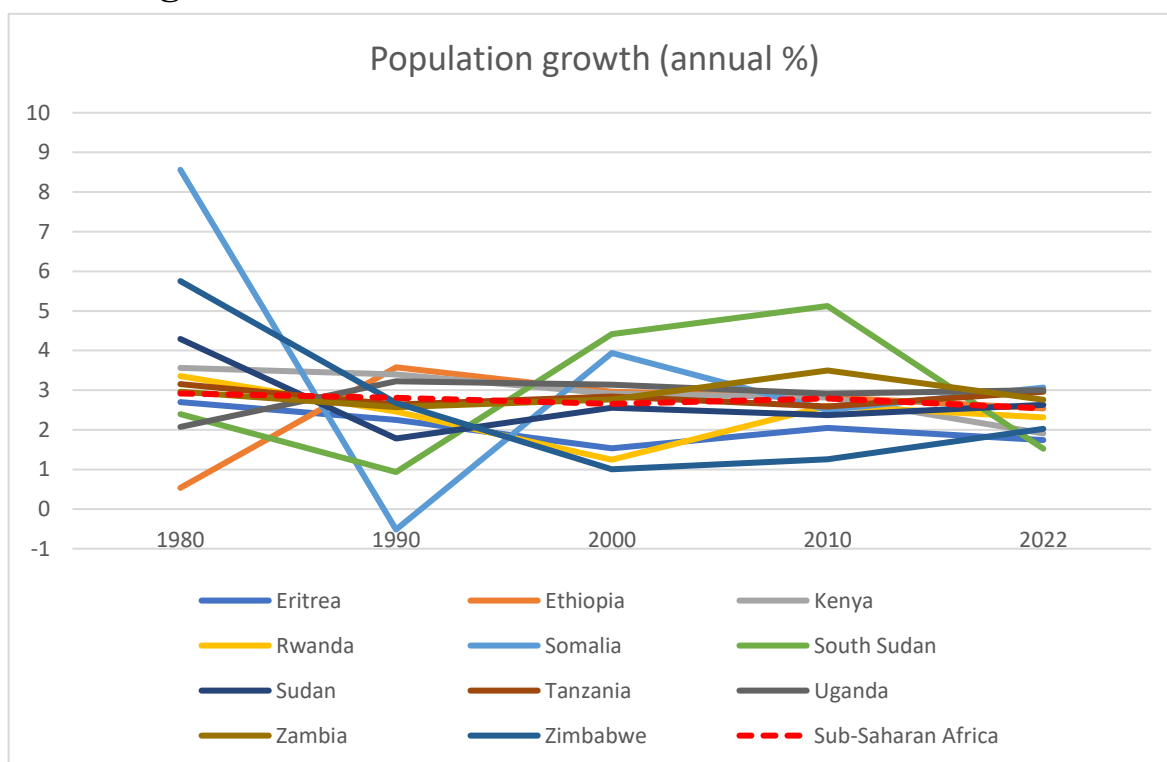
2.2 Demographic Challenges in East Africa

According to UN estimates, the global population is projected to increase substantially and alarmingly from 7.8 billion in 2021 to 10.4 billion in 2100. African countries, notably sub-Saharan Africa, will experience the greatest population growth, from 1.18 billion in 2021 to 3.8 billion in 2100 (World Bank, 2021). However, sub-Saharan Africa is experiencing a slower demographic transition than

other regions of the globe. Despite a decline in infant mortality, the number of children per mother remains extremely high. Since the 1980s, the average number of offspring per woman has decreased from 6.8 to 5.0. This has resulted in a continuous increase in the population of sub-Saharan Africa, with a growth rate of 2.5% in 2022, and even higher rates in some East African countries, such as Somalia with 3%, Tanzania, and Uganda with 2.9%.

During the 21st century, East Africa will experience a rapid and constant increase in population. According to recent estimates, Ethiopia, which is already the most populous nation in the region and the second most populous on the entire African continent, will have a population of 223,4 million by the year 2100 (World Bank, 2022).

Figure 7



Source: data elaborated from UN Population Division Data Portal available at <https://population.un.org/dataportal/home>

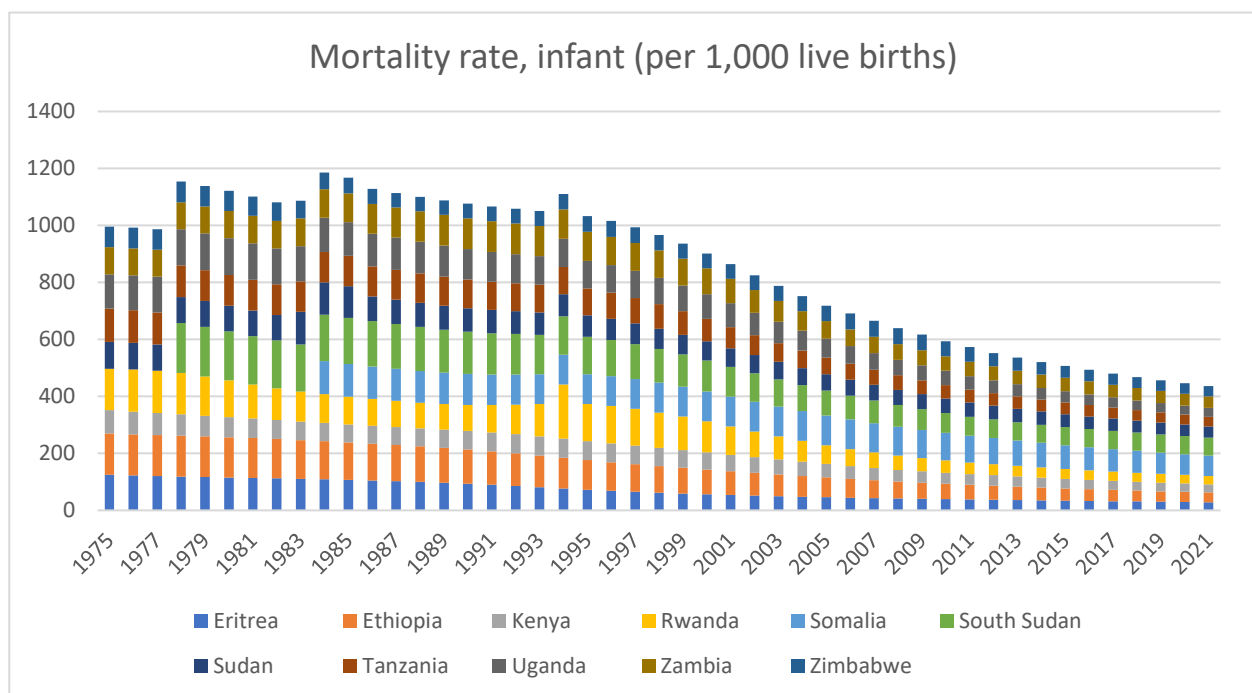
Rapid population growth can exacerbate pressure on natural resources, the environment, and the economy, which poses a significant challenge to the region. Increased demand for food, water, energy, and services may strain the region's ability to provide adequate living conditions for its growing population. Moreover, population growth and climate change may have a synergistic effect on the food security and environment of East Africa. Rising temperatures, diminished water

resources, and climate instability may have a negative impact on agricultural and pastoral activities in the region, posing a threat to food production and rural community adaptation. Increased pressure on food, water, health services, and education necessitates an adequate and sustainable response to assure the welfare and growth of communities.

2.2.1 Fertility Rate and Future Prospects in East Africa

All East African nations are in the earliest stages of demographic transition. This indicates that, despite a decline in the infant mortality rate, the high fertility rate and, consequently, the birth rate maintain the population growth rate high. From 1975 to 2021, the infant mortality rate in East African countries decreased significantly (see Figure 8). This improvement was due to improvements in health, access to medical care, and living conditions.

Figure 8

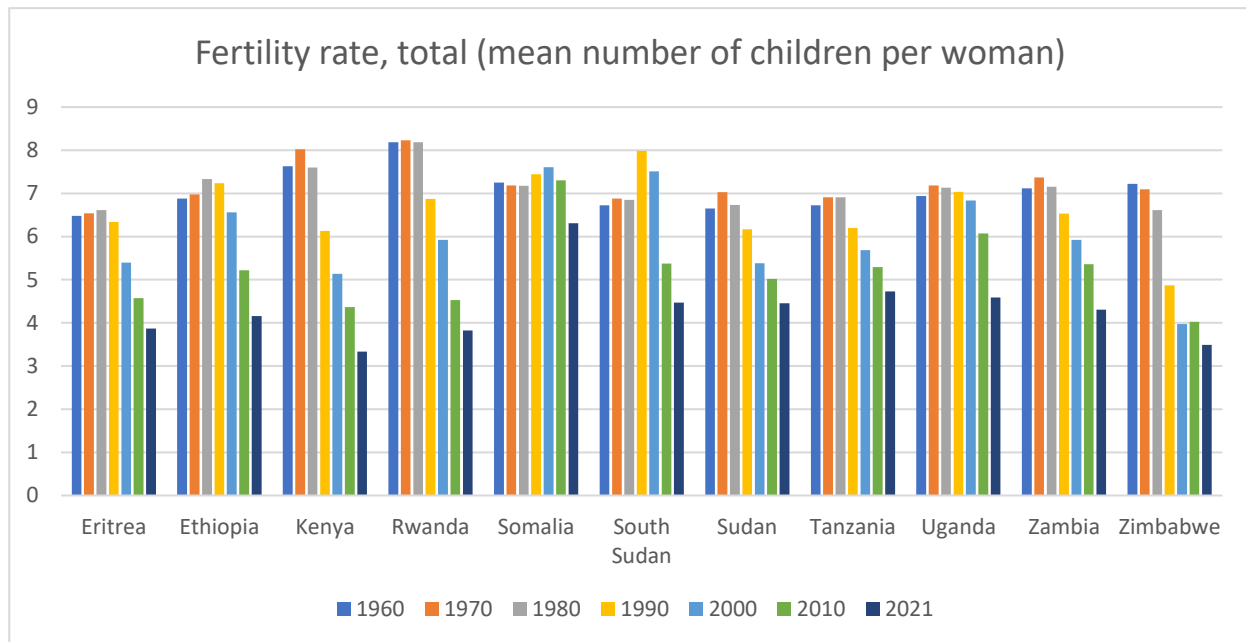


Source: data elaborated from World Bank estimates developed by the UN Inter-agency Group for Child Mortality Estimation (UNICEF, WHO, World Bank, UN DESA Population Division) available at <https://data.worldbank.org/indicator/SP.DYN.IMRT.IN>

Despite the decline in neonatal mortality, the region's high fertility rate remains the dominant factor (see Figure 9). During the same time period, the total fertility rate decreased from 6.9 to 5.0 offspring per woman. However, this is still elevated compared to fertility rates in regions with more

advanced demographics. The combination of a low neonatal mortality rate and a high birth rate helps to maintain high rates of population growth. This situation presents challenges for the region in terms of resource management, the provision of essential services such as education and healthcare, and the creation of economic opportunities that are sustainable for the entire population.

Figure 9



Source: data elaborated from World Bank data retrieved from United Nations Population Division, World Population Prospects 2022 available at <https://data.worldbank.org/indicator/SP.DYN.TFRT.IN>

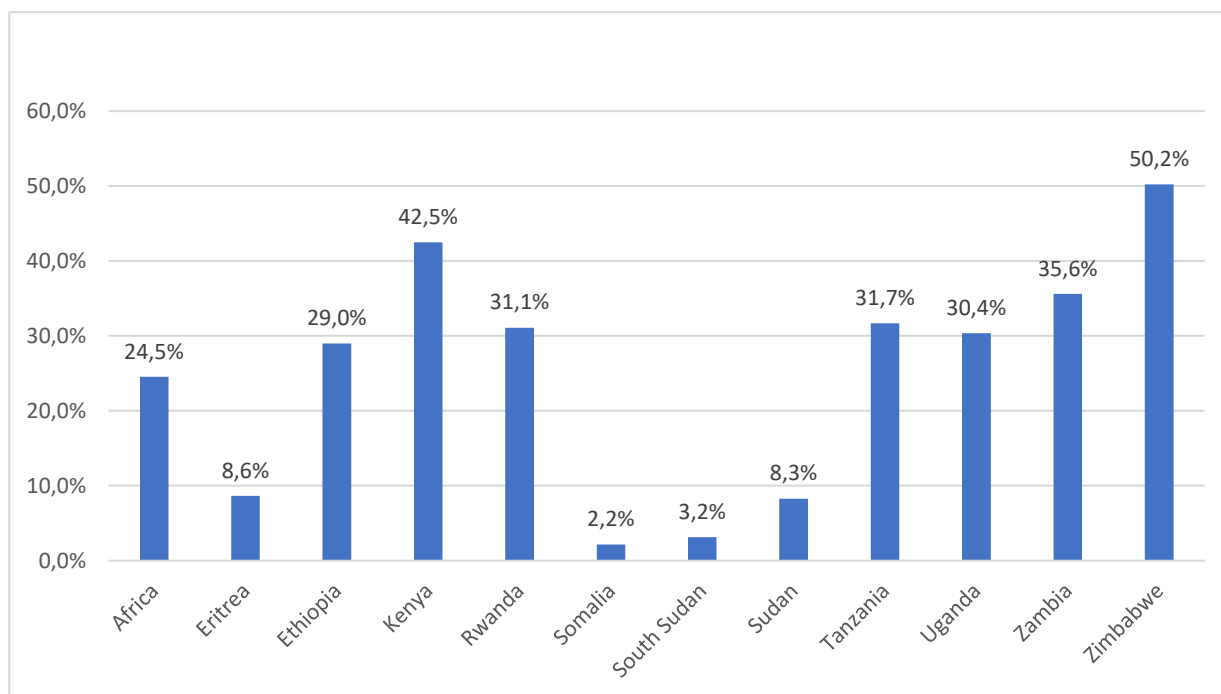
The theory of demographic transition suggests a correlation between a decline in infant mortality and a decline in the total fertility rate. Families with a high mortality rate tend to have more children to mitigate for potential losses, viewing offspring as a vital resource for family sustenance. As mortality rates decline, parents feel less pressure to have a large family and prefer to invest more in the well-being and education of each child. This increases the utilisation of contraceptive methods and the adoption of birth control practises. In addition, demographic transition theory suggests a strong inverse relationship between a country's economic development and fertility rate (Weeks, 2021). In other words, as socioeconomic conditions improve, the preference for smaller families tends to increase. This relationship is empirically confirmed in sub-Saharan African nations, including East

Africa, where fertility rates remain high due to low economic development and slow-moving progress in socioeconomic indicators.

In sub-Saharan Africa, the high fertility rate is strongly associated with the persistence of a high infant mortality rate (Bongaarts, 2020). The theory of demographic transition suggests a correlation between a decline in infant mortality and a decline in the total fertility rate. This phenomenon can be explained by the fact that when the mortality rate is high, parents tend to have more children to make up for potential losses. Children are an indispensable resource for elderly families. Nonetheless, as mortality rates decline, parents are more likely to desire fewer children and to invest more in each child's education and health, as opposed to having more children. In order to control and limit the number of pregnancies, the use of contraceptive methods and abortion has increased.

Figure 10

Modern contraceptive prevalence, MCP (All women) 2020



Source: elaborated data retrieved from Family Planning 2020 available at https://www.track20.org/pages/participating_countries/countries.php

In sub-Saharan Africa, the decline in fertility rates began later than in other regions. It progressed more slowly than in other developing regions, in part because socioeconomic levels and

socioeconomic indicators improved more slowly. Despite similarities with the theory of demographic transition, the pronatalist character of African societies also influences high African fertility. Individually, the use of contraceptive methods is limited, and state governments frequently resist adopting birth control policies, as it can be seen from the low contraceptive use in countries like Somalia and South Sudan, as shown in Figure 10. This is partially attributable to the perception that birth control is not a government priority or that it conflicts with cultural and religious values (Bongaarts, 2020).

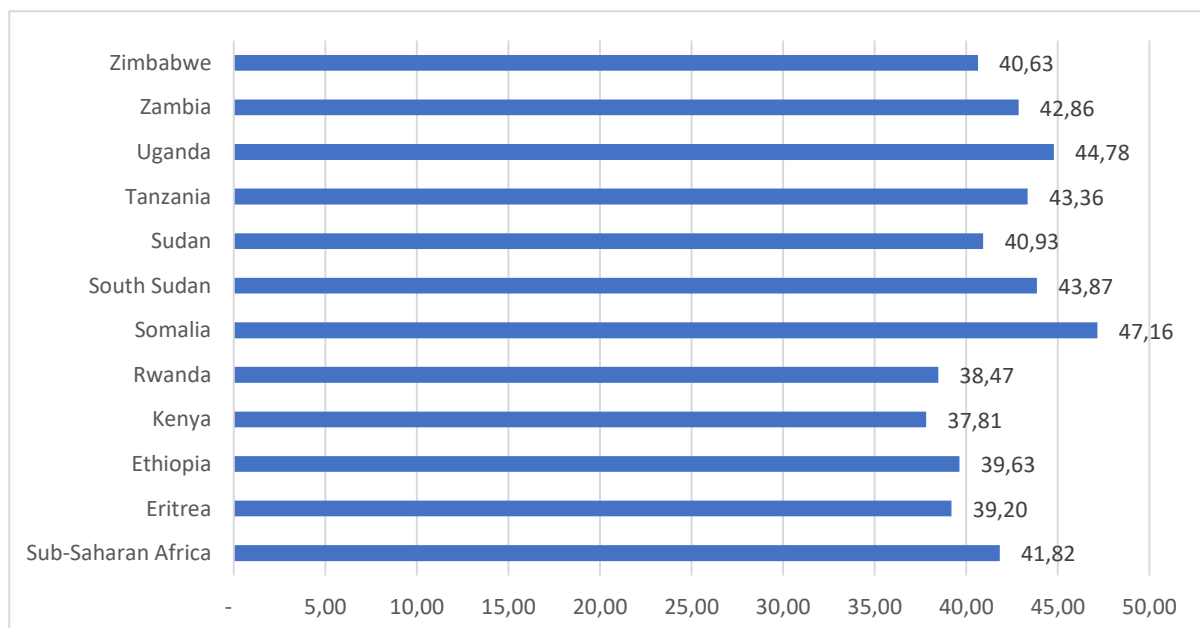
To explain the continued high fertility rates in sub-Saharan Africa, some researchers have focused on morbidity trends or the incidence of infectious diseases among children. Typically, the demographic transition begins with an epidemiological transition, marked by a decline in infectious diseases and infant mortality. In sub-Saharan Africa, however, child morbidity has not decreased to the same extent as child mortality due to inadequate sanitation systems. Even though the number of children who survive infectious diseases has increased as a result of improved nutrition, access to medications, and vaccinations, inadequate sanitation facilitates the recurrence of infections.

Various studies have shown, for instance, that the prevalence of diarrheal diseases in the first five years of life is higher in East Africa (Tareke et al., 2022). As a result, the concept of reducing the number of children becomes less appealing, as parents are influenced by the likelihood that their children will continually contract infectious diseases, which can have devastating effects on their physical and cognitive development. Thus, childhood morbidity makes it riskier and less desirable for parents to contemplate having smaller families, as the likelihood of their children falling ill again remains high. If child morbidity remains high, the direct relationship between reducing child mortality and lowering fertility rates weakens. In other words, it is not enough to increase children's survival from infectious diseases through medical and pharmaceutical interventions; sanitation must also be improved to reduce the incidence of childhood diseases. This suggests that progress in contraception may be slower than progress in infant mortality reduction (Fuchs & Goujon, 2014).

In East Africa, inadequate sanitation systems continue to exist, and there is still a lack of effective vaccines and medications for a number of childhood diseases (Tareke et al., 2022). As a consequence, parents are influenced by the high risk of their children becoming ill again, which helps to maintain high fertility rates. In light of East Africa's projected population growth in the future decades, the region will be confronted with significant socioeconomic and security challenges. In addition, the prevalence of a young population, including a significant proportion of children and adolescents, will strain the region's educational and health care systems. The demographic future of East Africa and sub-Saharan Africa as a whole can be significantly influenced by policy decisions and targeted interventions addressing maternal and child health issues and improving access to fundamental sanitation.

Figure 11

Population ages 0-14 (% of total population), 2022



Source: elaborated data retrieved from United Nations Population Division. World Population Prospects: 2022 available at <https://data.worldbank.org/indicator/SP.POP.0014.TO.ZS>

According to UN projections, East Africa's young population (0-24 years old) will increase steadily in the future decades and it is already a prevalent percentage of the total population as it is demonstrated in Figure 11. In 2015, the population aged 0-14 was estimated to be 155 million, rising to 209 million by 2030, 281 million by 2050, and 367 million by 2100. The population of those aged 15 to 24 will increase from 68 million in 2015 to 104 million in 2030, 153 million in 2050, and 238

million in 2100. The adult population (ages 25-64) will also continue to grow, reaching 120 million in 2015, 187 million in 2030, 330 million in 2050, and 777 million in 2100 (UN DESA, 2022).

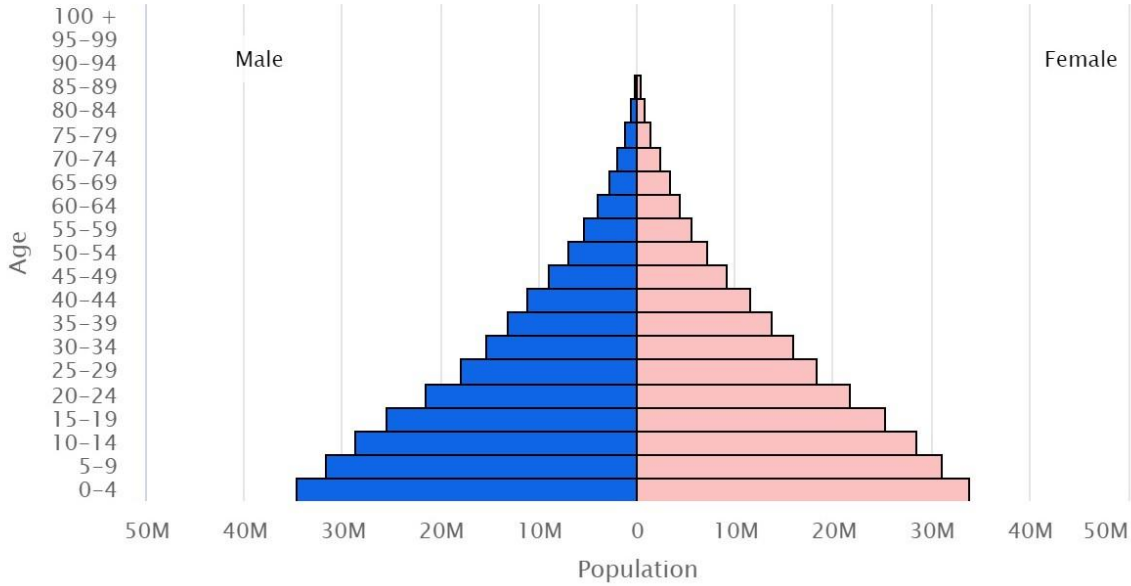
2.2.2 East Africa's "Youth Bulge"

Notable is the fact that until 2100, the youth population will be notably larger than the adult population. This imbalance is evident when analysing the East African age pyramids. The large number of young people poses significant socioeconomic challenges, as it necessitates a greater focus on the educational, health, and employment requirements of this age group. To assure a sustainable and prosperous future for East Africa's young population, regional institutions and governments will need to address these challenges.

The "youth bulge" phenomenon, i.e., the high proportion of young people (15-24 years) relative to the adult population, will be one of East Africa's greatest demographic challenges in the coming century. According to UN projections, the population of this age group will increase significantly in the future decades, having a significant impact on the region's overall population growth. The population aged 0-14 will increase from more than 188 million in 2023 to more than 244 million in 2100, according to US Census Bureau estimates. The population between the ages of 15 and 24 will increase from 94 million in 2023 to nearly 176 million in 2100. Similar growth is anticipated for the 25-64 age group, with an increase of nearly 169 million in 2023 and nearly 673 million in 2100 (UN DESA, 2022). However, the greatest cause for concern is the expected demographic expansion of young people, particularly in the 15-24 age bracket, over the next century as it can be seen in Figure 13.

Figure 12

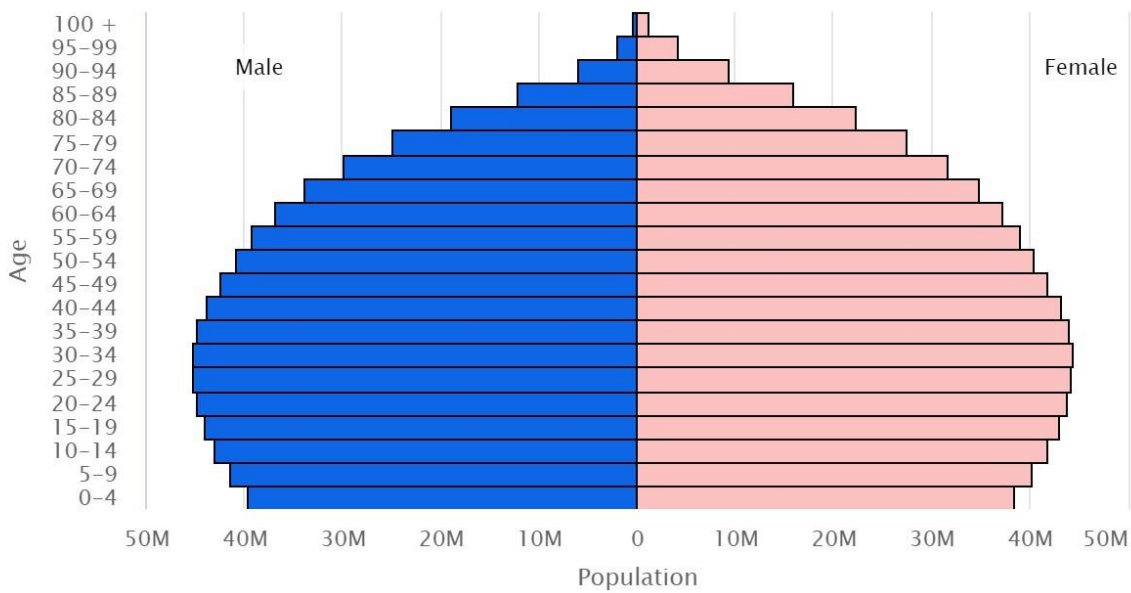
Eastern Africa Population Pyramid (2023)



Source: U.S. Census Bureau, International Database retrieved at https://www.census.gov/data-tools/demo/idb/#/dashboard?menu=countryViz&COUNTRY_YEAR=2023&COUNTRY_YR_ANIM=2023&CCODE_SINGLE=*H&CCODE=*H

Figure 13

Eastern Africa Population Pyramid (2100)



Source: U.S. Census Bureau, International Database retrieved at https://www.census.gov/data-tools/demo/idb/#/dashboard?menu=countryViz&COUNTRY_YEAR=2023&COUNTRY_YR_ANIM=2023&CCODE_SINGLE=*H&CCODE=*H

The youth bulge is especially significant because it can have significant effects on the region's stability and security. Several empirical investigations have demonstrated a correlation between youth bulge and political violence. This relationship can be explained by the disparity between a country's robust demographic growth and its weak economic development, combined with a labour market that cannot absorb the abundant supply of young people. Poverty and unemployment among youth can engender a widespread sense of frustration and discontent, leading to protests or even civil strife.

The uneducated nature of the "youth bulge" is a further cause for concern. Frequently, young adults of working age lack access to adequate education or vocational training opportunities, rendering them unattractive to employers and increasing their likelihood of engaging in illicit or violent behaviour. An essential consideration is that the rapid growth of the region's youth population coincides with severe sanitation system deficiencies. Despite advancements in child survival, infectious diseases continue to be a major cause of paediatric morbidity and mortality. These unsanitary conditions can facilitate the spread of disease, impair the health and physical and cognitive development of young people, and hinder their ability to partake in the workforce (PRB, 2012).

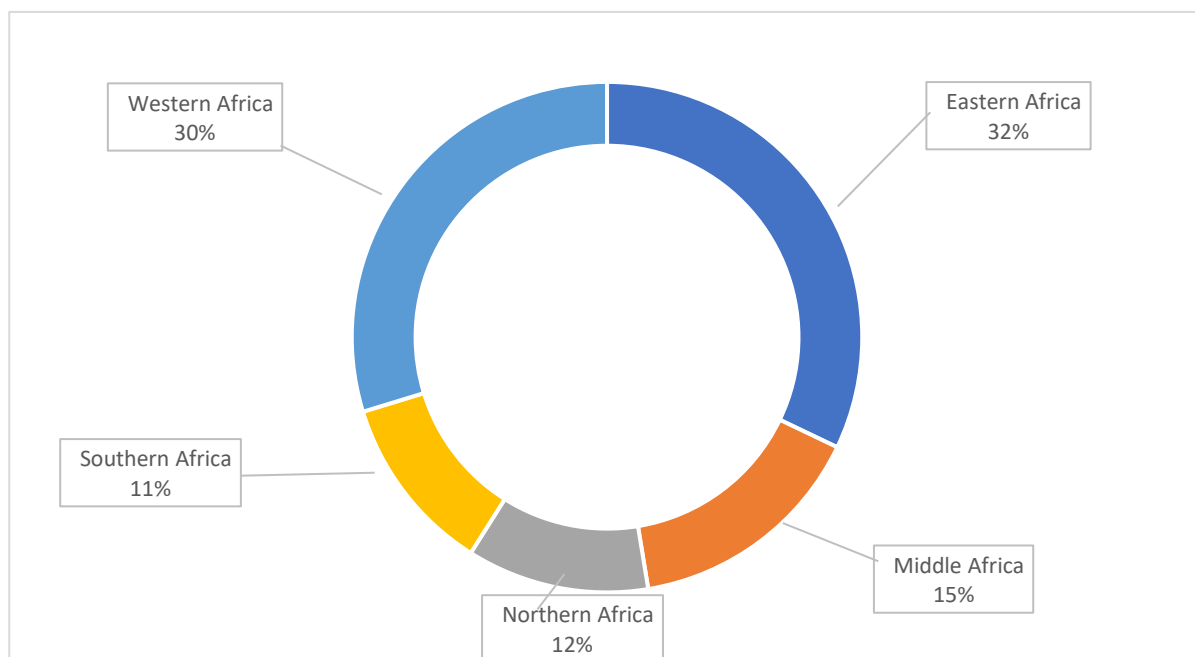
Governments in East Africa must employ appropriate policies and strategies to address the phenomenon of youth bulge and mitigate its negative effects. It is essential to invest in education, vocational training, and employment opportunities for young people. In addition, it is essential to improve access to sanitation and health services in order to reduce child morbidity and mortality. Promoting family planning and lowering fertility rates can help balance population growth and create a favourable "demographic window" for economic development. Lastly, it is essential to address the fundamental causes of poverty and instability in the region. This includes promoting sustainable economic development policies, combating corruption, encouraging investment, and developing infrastructure (Rigaud et al., 2021).

2.3 Migration in East Africa

The majority of migration in East Africa occurs within the same country or between neighbouring nations. As of 2020, the region hosted approximately 3.8 million international migrants out of a total of 10.4 million international migrants hosted in sub-Saharan Africa, thus constituting the largest proportion relative to other regions, as it is shown in Figure 14. Southern Africa (1,3 million) and Middle Africa (1,8 million) do not even come close, while Western Africa's 3.5 million migrants are still fewer. Even Northern Africa, which is home to 1,3 million international migrants, accounts for less than half of all international migrants in the Eastern region (UNDESA, 2020).

Figure 14

Africa's International Migration Stock, 2020



Source: elaborated data retrieved from UNDESA 2020 available at <https://www.un.org/development/desa/pd/content/international-migrant-stock>

In 2021, the leaders of the member nations of the Intergovernmental Authority on Development (IGAD) recognised freedom of movement based on the Protocols of Free Movement of Persons and the Protocol of Transhumance. They are in the process of being implemented to regularise the entry of labour migrants and acceptable working conditions for these individuals, as well as the right to freely reside there for up to 90 days and the right to apply for a residence permit.

This protocol is intended to facilitate travel for citizens of member states and to encourage migration within the region.

Seasonal migration, in which farmers and breeders migrate in accordance with the alternation of dry and wet seasons, is one of the primary traditional strategies for adapting to climate variability. These transient and recurrent migrations qualify as a circular phenomenon. During the dry season, farmers frequently migrate to coastal regions in quest of alternative income opportunities. Coastal cities in Tanzania and Kenya, such as Dar es Salaam and Mombasa, are anticipated to experience emigration beginning in 2030 due to rising sea levels and storm surges. Migration caused by climate change will not inherently reduce populations in these regions, but it will significantly slow population growth due to climate impacts. It is critical to implement prompt actions to strengthen coastal resources through ecological and traditional infrastructure while optimising local adaptation options. Moreover, as part of long-term solutions, decision-makers should contemplate planned and participatory relocation (Rigaud et al., 2021).

Even within the same country, seasonal migratory movements can occur, with migration from rural to urban areas, where the informal labour market offers higher incomes than agricultural ones despite precarity and insecurity. In addition to rural-urban mobility, there is also significant rural-rural mobility, particularly among poorer farm households, driven by the seasonality of various crops. In conclusion, socioeconomic, climatic, and cultural factors influence migration within East Africa (Lacroix, 2011). Adopting appropriate and sustainable policies at both the national and regional levels can aid in the efficient management of migration flows and the resolution of problems associated with internal migration and the mobility of people within the region.

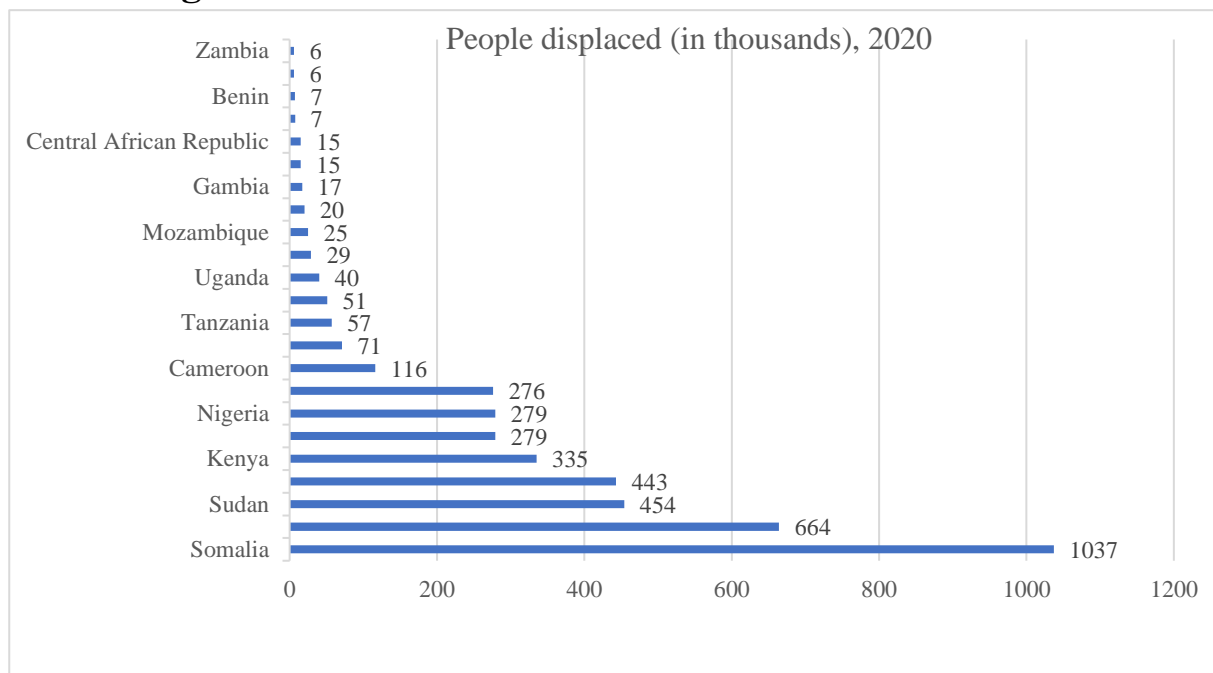
2.3.1 Climate Change and Migration in East Africa

Recent years have witnessed a significant occurrence in East Africa: slow-onset environmental changes have had a profound impact on migration in the region, progressively transforming seasonal movements of rural populations into permanent displacements. This change is the result of the

deterioration of the natural resources available to rural communities, which has made permanent migration a superior adaptation strategy to short-term solutions such as unsustainable agricultural expansion or overgrazing. In fact, the latter actions may exacerbate the desertification process and increase the hazard to human survival. Drought and desertification are the primary causes of these permanent migrations, which threaten the agricultural productivity and food security of rural populations. These climatic factors, coupled with poverty and a dearth of economic opportunities in the northern regions of East Africa, force people to pursue a better quality of life and employment opportunities in the southern regions and urban areas. These movements generally follow the same trajectories as seasonal migrations, which means that people migrate from the north to the south and from rural to urban areas, both within the same country and between neighbouring nations (EAC, 2023).

As it is shown in the chart in Figure 15, it can be noted that the majority of new population disaster internal displacements have occurred in Eastern and the Horn of Africa countries. These regions have been especially affected the most by storms and floodings immediately followed by droughts. Furthermore, climate disasters exacerbate these countries' already fragile conditions due to terrorism and civil conflicts. States such as Somalia, Ethiopia, Sudan, and South Sudan, the most impacted by internal migratory movements, are also regions suffering the most from civil unrest, bad governance and terrorist warfare. Thus, the graph highlights how better prevention and response to natural disasters and forced displacements inherently originates from better governance and peace-driven actions, which are formally lacking in the mentioned countries.

Figure 15



Source: elaboration from the Global Internal Displacement Database available at <https://www.internal-displacement.org/database/displacement-data>

Concomitantly, according to fertility-population projections by the United Nations and the Intergovernmental Panel on Climate Change (IPCC) and based on potential climate developments concerning international migration, an additional 1.21 to 5.32 per thousand individuals in sub-Saharan Africa will leave their country annually due to climate conditions near the conclusion of the century (Berlemann and Steinhardt, 2017). In the year 2022, the East and Horn of Africa, alongside the Great Lakes region, witnessed a significant surge in internal displacements, affecting approximately 2.6 million individuals within their respective countries. Among the most affected nations were Ethiopia, Somalia, South Sudan, and Sudan, with these regions experiencing notable increases in forced displacements (UNHCR, 2022).

In particular, Northern Ethiopia bore the brunt of the crisis, with nearly one million additional internal displacements occurring during the year, largely attributed to the conflict in the region. However, the situation saw a positive turn with the signing of a peace agreement in November 2022, which addressed some of the root causes of the conflict. In Sudan, an estimated 783,000 people were compelled to flee their homes due to persistent intercommunal conflict and violence that followed the military coup in October 2021. This ongoing turmoil continued to exacerbate the displacement crisis,

which has risen exponentially since the outbreak of the conflict in the country in April 2023. Somalia faced its own challenges, with 607,300 people being newly displaced in 2022, primarily driven by a combination of persistent insecurity and drought. The situation in Somalia steadily deteriorated throughout the year, underscoring the complexities of the displacement dynamics in the region. South Sudan experienced violence in specific regions, namely Unity, Upper Nile, and parts of Jonglei states, leading to nearly 288,200 new displacements within the country. This outbreak of violence further strained the already precarious humanitarian situation in South Sudan (UNHCR, 2022).

Due to its susceptibility to climate change and environmental degradation, the rural population is particularly susceptible to seasonal and persistent migration. However, the majority of these individuals are impoverished and require additional funds for long-distance travel. As a result, the majority of migration occurs within the same country or East African region as opposed to more distant locations. Notably, while migration can be a strategy for adaptation for vulnerable populations, it can also create or exacerbate precarious situations in the destination regions. Migration from rural to urban areas, for instance, can result in unplanned urbanisation, which can cause issues with land management, access to essential services, and social conflicts. In addition, rural-rural migration may increase population pressure on destination ecosystems, thereby increasing the risk of land degradation and conflicts over control of scarce and extremely climate-dependent natural resources (Twirkize & Spitzer, 2022).

East Africa confronts a complex and interconnected problem involving environmental change, population pressure, and migration. To address this issue, it is essential to embrace sustainable policies that responsibly manage natural resources, invest in adequate infrastructure, and offer local communities economic development opportunities. Regional and international cooperation is essential for addressing transnational climate change and migration issues. Only through a global approach based on solidarity will it be possible to construct a sustainable future for the Sahel, assuring the welfare of present and future generations.

2.3.2 Migratory Routes in East Africa

In recent years, the intercontinental migration movement from Africa to Europe has increased significantly, with the majority of migrants attempting to reach Europe via the perilous Mediterranean routes. Nevertheless, according to IOM estimates for 2019, the most popular migration route for countries comprising the East and Horn of Africa region is the eastern one, which alludes to the route aimed at the Arab Peninsula, particularly Saudi Arabia. In fact, approximately 63% of the movements monitored in Djibouti, Ethiopia, and Somalia were directed towards the peninsula. IOM (2019) reports that migration towards Europe via the Central Mediterranean route accounted for only 2% of cases, whereas movement towards other Horn of Africa countries accounted for 33%.

IOM estimates that in 2019, approximately 15,414 migrants travelled along the Northern Route towards North African and European countries, a significant decrease from the 32,840 movements recorded in 2018 (IOM, 2019). The overwhelming majority of these migrants are adult men, while a sizeable proportion are unaccompanied minors. Both the complicity of the local authorities and the porousness of the borders, which significantly simplify the passage through Libya, facilitate the migration flow. However, only about 5% of the country's total migrant population is estimated to be from East and Horn of Africa nations. The detention of migrants has become a source of income for Libya, which lives in abject destitution otherwise. The presence of migrants presents smugglers with an economic opportunity by establishing a market for services and infrastructure related to the migration process. This has resulted in the overloading of unequipped and inhuman detention centres in the country, where organised criminal groups exploit the vulnerability and desperation of migrants.

Africa-to-Europe migrants are frequently referred to as economic migrants or labour migrants. This category consists primarily of young, low-skilled males who are willing to accept dangerous, low-paying work. East and Horn of Africa migrants frequently travel in groups and with family members in search of better opportunities abroad to support their families and improve their economic circumstances. Some migrants seek international protection as asylum seekers, petitioning for refugee

status in order to flee persecution or hardship in their home countries. The majority of East African migrants travelling along the Northern Route are adult males (54%), followed by adult females (36%). In contrast, only 8% of offspring are male and 2% are female. However, approximately 5% of the migrants were unaccompanied minors, the highest proportion compared to all other routes (IOM, 2019). The low level of education is another distinguishing characteristic, suggesting that many of them come from disadvantaged socioeconomic backgrounds and may have difficulty obtaining employment and prosperity in their home countries.

Regarding the most popular route for these countries, the Eastern one, the most popular route these migrants take to reach the Arab Peninsula is via Yemen. In fact, 138,215 migrants from East Africa were accounted for in 2019, compared to 3,452 migrants from Southern Europe. This is also due to the perception that countries on the Arab peninsula, such as Saudi Arabia, are more accessible than other European destinations, and the fact that less information is disseminated about the dangers of crossing the Gulf of Aden compared to the Central Mediterranean Route. According to IOM interviews, many migrants were unaware of Yemen's security dangers and sea crossing in that region. It is important to observe, however, that the data on migration from East Africa is dominated by Ethiopian nationals, who account for 92% of the arrivals registered in Yemen from the Horn of Africa, compared to only 8% of Somali arrivals (IOM, 2019). However, the expanding trend requires continued observation and analysis. These population movements merit a comprehensive comprehension of their underlying causes and the intricate dynamics that fuel them.

To completely comprehend the phenomenon of East African migration, it is necessary to analyse a number of interconnected factors comprehensively and holistically. In addition to economic factors, it is vital to consider the impact of climate change and environmental degradation on these migrations. East Africa is a region that is especially susceptible to the effects of climate change, such as desertification and drought, which have a negative impact on food security and natural resources, putting a strain on rural communities and therefore contributing to migration (Grey & Mueller, 2012). These slow-onset environmental changes can have a significant impact on the livelihoods of rural

populations, causing some people to seek alternatives elsewhere. Therefore, permanent migration becomes one of the adaptation strategies for rural populations, despite the fact that it frequently results in new challenges in the destination locations, such as spontaneous urbanisation and demographic pressure on ecosystems.

It is crucial to avoid a simplistic approach that reduces the phenomenon of African migration to a purely economic issue. Migration is a complex phenomenon that is influenced by political, environmental, social, and economic factors, and only a comprehensive analysis can reveal the underlying causes and provide long-term solutions. A thorough comprehension of these dynamics can aid in the development of more suitable policies and strategies for managing migration fluxes and mitigating their effects on the population and the environment. Frequently, there is a tendency to disregard such migratory flows as merely economic migrations, without understanding or taking into account the intricate connection between climate change, environmental degradation, population growth, and the depletion of people's livelihoods.

2.4 Women and Gender Issues in East Africa

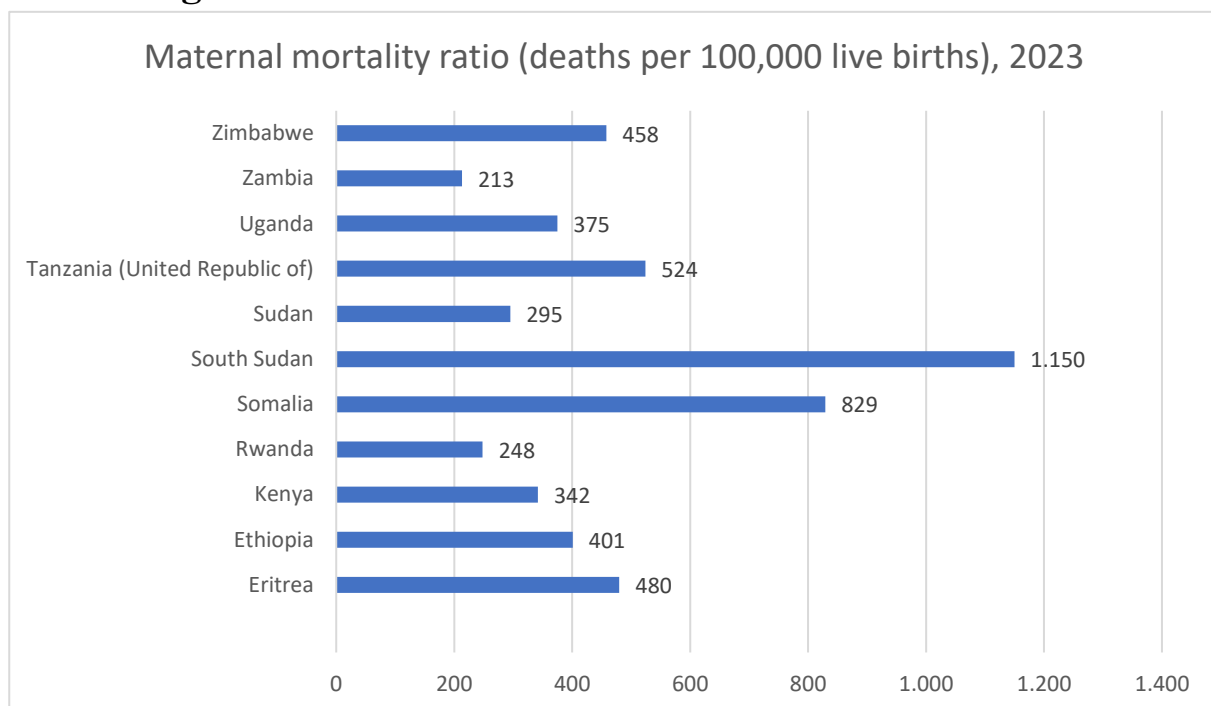
East Africa is one of the world's regions with the lowest human development levels and the greatest gender inequality. This conclusion is supported by data from the United Nations Development Programme (UNDP), which has compiled a ranking of the Human Development Index (HDI) and Gender Inequality Index (GII) for the region's countries.

Several East African nations, including Ethiopia, Sudan, and Uganda, rank at the bottom of the HDI, which evaluates a nation's level of human development based on parameters such as life expectancy, education, and per capita income. South Sudan represented the lowest HDI classification in 2021. Access to essential services, education, health, and income are severely lacking in these nations, highlighting their extreme destitution and human underdevelopment.

The Gender Inequality Index (GII) also highlights the continuation of substantial gender disparities in the region. Access to education, employment opportunities, political engagement, and

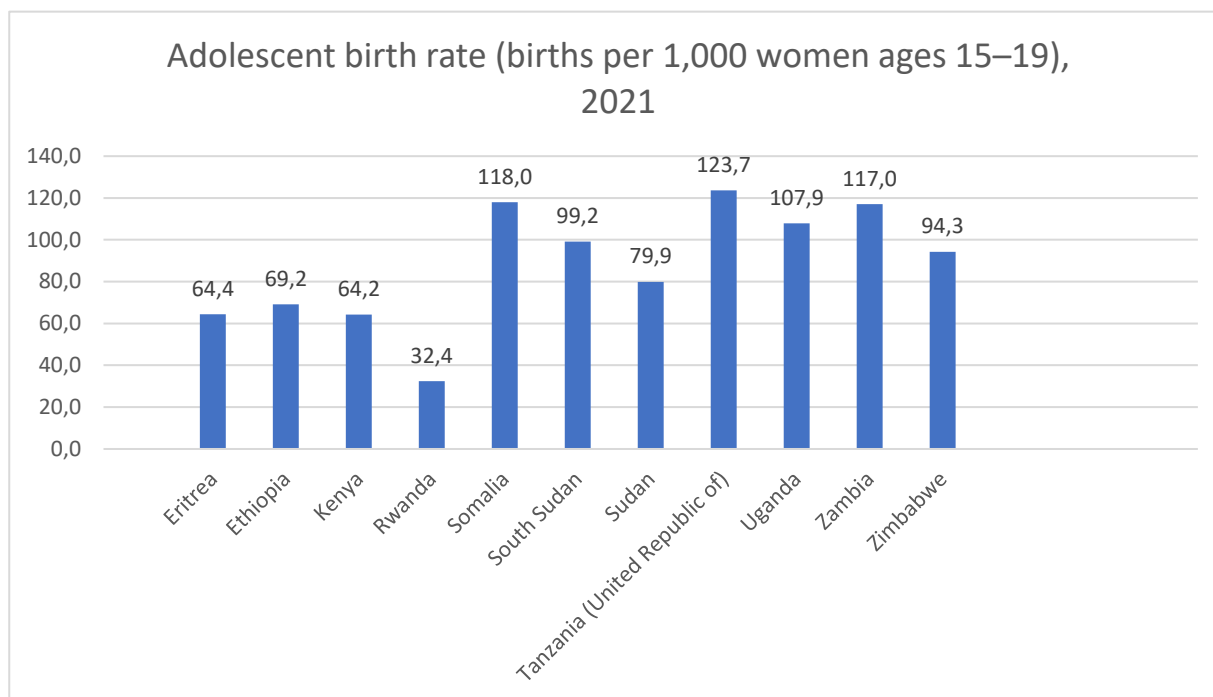
economic resources pose significant obstacles for women in East Africa. These gender inequalities limit women's opportunities and potential realisation in the region. Moreover, according to data collected in 2010, East Africa was the region with the highest number of missing women, posing a growing concern for human development in the region (UNDP, 2016). The combination of low levels of human development and gender inequality renders East Africa a vulnerable region that faces formidable obstacles in its efforts to improve living conditions and advance sustainable progress, as maternal mortality ration still remains high in some region (see Figure 16). The large fertility rate is also crucial to development issues. In Somalia, for instance, one in twenty-five women dies from complications related to pregnancy or childbirth, and many of those who survive have health issues related to problematic deliveries (UNDP, 2021). As it is shown in Figure 17, in countries such as Somalia, Tanzania, and Uganda, the teen birth rate exceeds 100 births per 1,000 women aged 15 to 19 (WHO, 2023).

Figure 16



Source: elaboration from World Bank retrieved from WHO, UNICEF, UNFPA, and UNDESA/Population Division available at <https://data.worldbank.org/indicator/SH.STA.MMRT>

Figure 17



Source: elaboration from World Bank data retrieved from the United Nations Population Division available at <https://data.worldbank.org/indicator/SP.ADO.TFRT>

2.4.1 Early marriage in East African Countries

Another indicator of gender health issues is early marriage. This enduring phenomenon is especially pertinent in East, West, and Central Africa, where approximately fifty percent of females are married before the age of eighteen. In some countries, such as Ethiopia, forty percent of marriages between women aged 20 to 46 occur before the age of eighteen, whereas in others, such as South Sudan, the proportion exceeds fifty percent (UNICEF, 2023a). Sub-Saharan Africa was home to approximately 15% of the world's child brides a quarter of a century ago, and the impact is becoming increasingly apparent. However, among young females who have recently been married, this proportion has significantly increased to 35%. Moreover, if the trends observed over the past decade continue, it is anticipated that by 2030, this percentage will continue to rise, reaching a noteworthy 41% (UNICEF, 2023b). This rise indicates a pronounced and unstoppable upward trend in the occurrence of minor brides in this area. The rate of early marriages will double by 2050 if the current trend persists. These

numbers indicate that this practise is associated with a high maternal mortality rate (Mathur et al., 2003).

In West, Central, and East Africa, the phenomenon affects approximately fifty percent of females under the age of eighteen on average. The disparity between the rates of child marriage in rural and urban areas suggests that urbanisation has a positive effect on combating the social and cultural norms that support this practise. Urgent action is required to alter these attitudes, particularly in the continent's rural areas. However, contrary to popular belief, early marriage does not prevent young women from HIV. In reality, HIV/AIDS remains a significant threat, with an estimated 1.5 million new cases worldwide in 2021, primarily in sub-Saharan Africa. This region's adolescent girls and young women continue to be highly susceptible (Murewanhema et al., 2022). Compared to their male counterparts, adolescent girls and young women are three times more likely to acquire HIV/AIDS. About 82% of young women newly infected with HIV/AIDS reside in sub-Saharan Africa, with 85% of new vertical infections occurring there alone. Specifically, two-thirds of newly infected women between the ages of 15 and 49 are from eastern and southern Africa (UNAIDS, 2022).

Taking into account the disparities between men and women in the context of HIV/AIDS, this challenge necessitates gender-based health strategies. A little more than half of married young women in 57 countries (mostly in sub-Saharan Africa) made their decision based on their sexual and reproductive health (UNAIDS, 2022). As a result, early marriage increases the risk of other diseases, such as cervical cancer. This practise poses a significant threat to the development of Africa, as a one percentage point increase in the adolescent birth rate is associated with a nine-month decrease in life expectancy, a 1.1% increase in adult female mortality, and a 0.2% worsening in maternal mortality (UNDP, 2016). The psychological effects of early marriage are primarily due to the dangers young brides encounter during pregnancy, childbirth, and daily life.

2.4.2 Women in the Agrifood Sector in East Africa

Although East Africa is endowed with a wealth of natural and cultural resources, it confronts significant challenges associated with high levels of gender inequality and human development. Inequality in the region has significant effects on the resilience of local communities, particularly in rural areas, and on the efficacy of adaptation strategies to climate change. In the agri-food industry, East African women perform crucial roles in the production, processing, and marketing of products. Nonetheless, these women encounter numerous economic and socio-cultural obstacles that impede their full development and participation in decision-making. They require assistance gaining access to land ownership, credit, production means, and innovative technologies, as well as participation in economic decision-making processes (FAO, 2023).

Increasingly apparent are gender disparities in access to the resources and technologies required to mitigate the effects of climate change. Due to the increased labour of women in some regions as a result of climate change, it is of critical importance that women have access to tools and technologies that can alleviate this burden. Even when there is a genuine desire on the part of women to implement climate-sustainable solutions, resource constraints can pose significant barriers to the adoption of these technologies in many parts of East Africa (Murage et al., 2015). Thus, it is necessary to resolve not only material but also cultural and social barriers. Gender norms play a crucial role in determining women's access to particular technologies, often based on cultural evaluations of what is deemed acceptable in a given context. Such norms may prevent women from adopting climate-friendly agricultural practises like conservation agriculture or agroforestry, for instance. In addition, they may hinder women's access to vital resources such as fertilisers and enhanced seeds, as well as their ability to utilise them effectively. Grassi et al. (2015) cite this as a significant obstacle to devising practical and inclusive climate change adaptation strategies.

It is also important to observe that gender norms may influence women's perceptions of emerging and innovative technologies. This may result in reluctance to embrace non-traditional cultural solutions. For pervasive and effective adoption, a strategy that promotes material access to

technologies and addresses issues of awareness, education, and social norms is required. On the other hand, it should be acknowledged that women frequently play a crucial role in the selection and conservation of cereal seeds, preserving traditional plant varieties and their wild relatives. (Murage et al., 2015) This contribution is crucial for sustaining a broad and diverse genetic base, which is essential for adapting to climate change. Consequently, addressing the difficulties posed by gender norms in access to technologies necessitates an approach that acknowledges and values the active and significant role of women in agriculture and biodiversity conservation.

In rural areas, limited access to essential services such as education, health, drinking water, electricity, and family planning is pronounced. This deficiency has a negative impact on the lives of women because it makes it more difficult for them to perform both domestic and professional responsibilities. Cultural biases and social traditions frequently relegate women to subordinate positions, limiting their opportunities for advancement and active participation in their communities. This discrimination against women makes East African women especially susceptible to external disturbances, such as the effects of climate and environmental change. Despite this, they are also crucial actors in the protection of the environment and ecosystems. (Murage et al., 2015) found that women have developed a variety of adaptation strategies that are frequently tied to the need to preserve the productivity of soil, water, and vegetative resources.

However, gender disparities are evident in the administration of natural resources. Due to their underrepresentation in environmental protection-related institutions and decision-making processes, women confront difficulties in gaining access to and exercising control over these resources. In contrast, research indicates that gender equality is associated with increased environmental awareness and the preservation of natural resources (Grassi et al., 2015). Gender issues must be integrated into the planning and implementation of sustainable development initiatives in East Africa in order to address these issues. This integration will result in a more inclusive and equitable approach that takes into account the demands and contributions of women. Recognising women's vital role in preserving

the environment and bolstering the resilience of rural communities, policies and programmes should be crafted with their unique characteristics and needs in mind.

In conclusion, the scenario of gender inequality in East Africa hinders the region's ability to develop and face environmental challenges. Integrating gender into sustainable development agendas is essential for ensuring a sustainable, equitable, and inclusive future for East Africa, in which women can completely contribute to the well-being of their communities and the protection of the environment.

2.4.3 Gender inequality and cultural challenges in East Africa

Gender inequality is most pronounced at the economic and labour levels, where women encounter numerous obstacles when attempting to make meaningful contributions to agriculture, food production, and distribution. Access to land and credit are systematically denied to women in the agricultural sector, which is a pillar of the East African economy. They are frequently compelled to cultivate less fertile land and must struggle for land ownership, which is crucial to their economic security. Women fear losing the products of their labour due to a lack of secure property rights as a result of land management uncertainty, which is a significant barrier to long-term investment.

In addition, cultural restrictions and illiteracy limit women's access to the information and financial services necessary for enhancing their productivity and expanding their economic activities. This lack of access to resources and training hinders women farmers' ability to compete with imported goods, making it difficult for them to secure a stable and sustainable livelihood for themselves and their families (FAO, 2023). Due to this, the region continues to struggle with persistent food insecurity and inadequate economic diversification. In the sphere of food distribution, women continue to dominate the informal economy, especially in the street food and food retail sectors of local markets. This industry is a significant source of female employment. However, they are subject to additional forms of discrimination and exploitation. (Young et al., 2020) Food value chains tend to perpetuate cultural prejudices that relegate women to service roles and low-skilled employment, making it

challenging for them to attain positions of leadership and greater responsibility. Moreover, women working in the formal economy, such as in the food processing industry, are frequently subjected to discrimination and are underrepresented in positions of authority (FAO, 2023).

It is essential to acknowledge that East African women have played a crucial role in environmental protection and rural community resilience. Women have developed adaptive strategies to conserve natural resources, protect biodiversity, and mitigate the effects of climate change despite the obstacles they confront. First, the issue of women's access to land and credit is crucial. In the majority of East African nations, it is difficult for women to gain access to productive land, which is frequently prioritised for males. Due to the uncertainty associated with land ownership, this restriction has a negative impact on women farmers' productivity and their capacity to invest in land improvements. Access to credit is also difficult for women, who frequently have a lower level of education and encounter legal and cultural barriers. This makes them less knowledgeable and less able to gain access to the financial services required to develop their economic activities (Njuguna-Mungai et al., 2022).

In the agricultural sector, East African women frequently produce food for sale, including fruits, vegetables, cereals, tubers, and roots. However, the absence of adequate infrastructure, such as roads and efficient transport methods, results in high transport costs, which reduces the competitiveness of these products in comparison to imports. This contributes to regional food insecurity and has a disproportionate impact on women farmers, whose earning potential is diminished. Women in East Africa are also extensively involved in food distribution and are frequently self-employed in the informal sector. Numerous of them operate in the street food industry, where they play a crucial role. However, gender discrimination persists even here, with women occupying low-skilled and frequently precarious positions. (Tavener et al., 2019) The value chains of the food supply chain tend to perpetuate traditional cultural prejudices, relegating women to low-level, poorly paid and underpaid positions. This makes women susceptible to employment insecurity,

a lack of occupational health and safety protection, and the risk of being laid off during economic downturns or as a result of the automation of production processes.

The difficulty of balancing work and family obligations is another significant barrier to women's empowerment. In addition to working, African women are frequently responsible for household and childcare. Traditional social norms assign women the primary responsibility for domestic responsibilities, including unpaid family activities such as farm labour. This significantly restricts their availability for independent, paid work. In rural East Africa, inadequate infrastructure exacerbates the domestic burdens of women, making it difficult for them to balance work and family obligations. Inadequate access to essential services, such as education, health, potable water, electricity, and sanitation, imposes additional constraints on women's ability to balance family and work responsibilities (FAO, 2023).

2.4.4 Gender Inequality in the Agrifood Sector in East Africa

The promotion of gender equality is a crucial objective outlined within the framework of the United Nations Sustainable Development Goals (SDGs). The objective of Sustainable Development Goal 5 is to promote gender equality and enhance the empowerment of women and girls. Ensuring gender equality on a global scale stands as a primary avenue for attaining this objective. In developing nations, the agricultural labour force has a significant proportion of women, exceeding 40 per cent (Doss et al., 2011). These women play a crucial role in subsistence production within various communities. Globally, the proportion of women who own land is less than 15%, which is much lower compared to men (FAO, 2018). This implies that women possess limited agency in the governance and administration of land and natural resources. In a number of sub-Saharan African nations, gender disparities in agricultural output are evident. These differences in performance between male and female producers vary by country due to a variety of state-specific factors. These include disparities in the use of fertilisers and improved crop varieties, access to and use of credit, land tenure, and the affordability of labour (FAO, 2023).

Alene et al. conducted a study on gender productivity inequality in Kenyan agriculture in 2008, but it was limited to maize production in western Kenya. The researchers found a 19% gender disparity in this field. The gender disparity in agricultural productivity is associated with unequal access to agricultural inputs and women's tenuous land rights. Social norms that influence gender roles and the division of labour within households and market contexts affect this unequal allocation of inputs. These profoundly interconnected social parameters are founded on entrenched gender stereotypes, discriminatory gender-based laws and policies, and a hostile environment for women farmers. Gender norms and customs influence the utilisation of inputs, productivity, and income generation, as well as the adoption decisions of producers and the beneficiaries of innovations.

In other words, the culture of gender norms influences the utilisation of essential productive inputs, such as land. This interaction influences the adoption and investment decisions of producers. Even if land, labour, and fertilisers were distributed equally between female and male farmers, differences in agricultural productivity resulting from the interaction of gender norms would persist due to multiple inputs, some of which are more readily quantified and addressed. Often, gender disparities in access to inputs and agricultural productivity result from the perpetuation of cultural norms that assign caregiving and housework primarily to women. The expectation that women perform uncompensated housework places a substantial burden on their shoulders. In conjunction with the high level of economic activity in poorer nations, this doubles the burden of women. This additional burden may manifest itself in unequal distributions of inputs and resources among households and farms (Rodgers, 2018).

In agricultural contexts governed by stringent gender norms, primary endowments, such as male and female labour, may play very distinct productive roles. Gender-related social norms are not only individually perceived constructs, but also tangible obstacles embedded in organisations, economic transactions, and group characteristics. These standards differ by region and social and demographic factors. Depending on the local context, development policies and projects in the agricultural sector, such as training programmes, farmer associations, and technological innovations,

may be more or less effective due to the existence of these norms and constraints. It is essential to dismantle this structure of restrictions in order to close the agricultural productivity disparity between men and women (FAO, 2023).

Environmental sustainability is also threatened by low agricultural productivity, which is exacerbated by climate change. Low levels of productivity result in intensive land use, which feeds a pernicious cycle of degraded natural resources and low levels of productivity. Due to reduced soil fertility and erosion caused by unsustainable land-use practises, such as the inefficient use of chemical fertilisers and pesticides, the production of staple commodities in a number of African nations falls significantly short of their potential. Moreover, rising average temperatures and alterations in precipitation patterns will have a significant effect on agriculture (Rodgers, 2018). According to Vermeulen et al. (2012), food systems contribute up to one-third of greenhouse gas emissions and must therefore contribute to the solution for reducing global warming. The effects of climate change on male and female farmers are likely to vary, and as a result, they may employ different adaptation strategies. Access to and adoption of climate-smart agricultural practises are hindered, however, by gender disparities in agriculture. Overall, the effects of climate change and gender-differentiated adaptation on poverty reduction are significant. The agricultural sector has the potential to play a crucial role in climate mitigation and adaptation that takes gender into account. However, widespread adoption of environmentally sustainable and climate-smart agricultural practises has not yet occurred (Rodgers, 2018).

To promote gender equality in agriculture and the formal sector, it is essential to strengthen legislation against gender discrimination in the workplace and to ensure ratification and implementation of International Labour Organisation conventions. The provision of rural public goods and infrastructure by local governments must incorporate the aim of gender equality. Improving legal regimes pertaining to land tenure and educating women about their legal rights in this regard is another crucial strategy. In addition, measures are required to eliminate entry barriers in

value chains, such as easing access to credit, vocational training, maternity protection measures, and childcare services (FAO, 2023).

The private sector can promote gender equality by, for example, increasing women's access to skilled employment. The situation of women in producing countries can be brought to the attention of the public by non-governmental organisations. It is essential to promote women's participation in decision-making by encouraging them to have their voices heard in workers' organisations and negotiation processes. Women's cooperatives are deserving of exceptional support and assistance in developing, enhancing, and marketing their products. In conclusion, any sustainable development strategy for West Africa must take gender equality and women's empowerment into account, as the resilience of rural communities, especially in the face of climate change and threats to the stability and prosperity of the region, is largely dependent on the role of women.

In conclusion, this chapter exploring the political and economic obstacles posed by climate change in East Africa sheds light on the significant interconnections between demography, migration, and the status of women within the area. From a theoretical perspective, it is apparent that climate change intensifies pre-existing vulnerabilities and disparities, hence emphasising the necessity for efficient policy measures. Demographic variables, such as the swift expansion of population and urbanisation, contribute to the heightened pressure on resources and infrastructure, resulting in an elevated susceptibility to climate-related occurrences. Migration patterns arise as a result, wherein populations endeavour to get more advantageous living conditions, frequently leading to additional pressure on host regions and potential conflicts.

The condition of women in East Africa holds great importance due to the various challenges they encounter, which are further intensified by the impacts of climate change. The perpetuation of vulnerability among individuals is exacerbated by limited access to resources, education, and healthcare, hence impeding their ability to effectively adapt and make meaningful contributions to sustainable development. As it will be dealt in the next chapter, it is imperative to acknowledge the interrelatedness of the topics at hand, namely the examination of the involvement of women in

migration generated by climate change and the connection between conflict and these phenomena in the sub-Saharan African region. Women frequently have a disproportionate impact from the repercussions of climate change, while simultaneously assuming a pivotal role in influencing and formulating effective strategies and remedies. In the forthcoming chapter, a more comprehensive exploration will be undertaken on this complex interplay among women, migration, and conflict within the sub-Saharan African context. Through an examination of case studies and empirical data, the dissertation objective is to elucidate the particular obstacles and prospects that emerge within this particular framework.

Chapter 3: The Role of Women in Climate-Induced Migration and the Interplay of Conflict

The issue of climate change presents a significant challenge that is currently being faced by the international community. The impacts of this phenomenon are now evident at a worldwide level and are anticipated to escalate in the forthcoming period. The phenomenon of environmental migration is widely acknowledged as a significant outcome of climate change. The element of gender is pronounced within the framework of environmental migration. Women often demonstrate increased vulnerability to the impacts of climate change when compared to men. These phenomena can be ascribed to a multitude of causes, encompassing the observation that women often face restricted access to economic and social resources. Individuals within this particular group demonstrate an elevated inclination towards encountering socioeconomic problems, including but not limited to poverty, restricted educational opportunities, and unemployment. This hampers their ability to efficiently address the repercussions of climate change, encompassing issues such as unemployment, housing destruction, and limited availability of food resources. In addition, women undertake caring obligations within the familial environment. They assume the duty of delivering care for those who fall into the categories of children, old, or those who are unwell.

This situation poses a heightened difficulty in terms of mobility, as individuals are faced with the duty of ensuring the welfare of their loved ones. In societies marked by patriarchal structures, women often experience instances of discriminatory treatment. The present situation may place limitations on individuals' ability to use their agency in making decisions about their lives, including their right to participate in migration. This chapter explores their role in climate-induced migration and the interplay of conflict in East Africa. The argument presented in this chapter aims to shed light on the gender inequality and climate change in the region.

By examining the regional overview of climate-induced negative effects, the chapter establishes the need to address these challenges. Furthermore, it explores policies to advance and

promote gender-sensitive awareness on climate migration in Sub-Saharan Africa. The first section of this chapter delves into the relationship between gender inequality and climate change in East Africa. The second section provides a comprehensive regional overview of the negative effects caused by climate change, highlighting their implications for migration patterns and women. Finally, the third section examines existing policies and initiatives that aim to advance gender sensitivity and awareness regarding climate-induced migration in Sub-Saharan Africa.

3.1 Gender Equality and Climate Change

Many women migrate due to environmental factors. In certain circumstances, women are compelled to engage in migration as a consequence of severe climatic conditions or other occurrences that render their places of residence uninhabitable. In alternative scenarios, individuals engage in voluntary migration with the aim of pursuing improved life prospects. Female environmental migrants encounter several obstacles, both throughout their migration process and upon reaching their ultimate destination (Aguilar, 2009). Individuals in this particular demographic exhibit heightened susceptibility to instances of sexual and gender-based violence, human trafficking, and labour exploitation (Aguilar et al., 2015). Additionally, individuals in this group encounter heightened challenges when it comes to securing jobs and receiving social services. Females frequently exhibit heightened susceptibility to the consequences of climate change in comparison to males. For example, in Kenya (IUCN, 2015), fetching water can account for up to 85% of a woman's daily energy expenditure. This burden is even more significant during droughts, with some women spending up to eight hours a day searching for water.

When formulating policies and programmes to address the phenomena of environmental migration, it is crucial to consider the influence of gender. In order to facilitate the safe and dignified migration of women environmental migrants, it is imperative to develop policies and programmes that are tailored to their unique needs. Measures that can be undertaken to mitigate the difficulties encountered by female environmental migrants include, for example, advocating for the advancement

of women's empowerment and the attainment of gender equality. These types of interventions are expected to mitigate the susceptibility of women to the consequences of climate change and enhance their prospects of engaging in migration with security and respect (Aguilar et al., 2015).

3.1.1 Gender inequality in access to water: an obstacle to women's development

Access to clean water is a fundamental human right, but for women and girls in many developing countries, this is still a challenge. According to a 2011 study conducted in 45 developing countries, in households in developing countries, it is 64% of the time for women to fetch water. In households with access to an improved source of water, this percentage is lower but still significant. Girls were found to be twice as likely to be responsible for fetching water compared to boys (Sorenson et al., 2011).

There are several reasons why women are more often responsible for fetching water. In many countries, women have less decision-making power than men and are more restricted in their options. In addition, women are often considered more responsible for taking care of the family and the home and are therefore also expected to take care of water. Collecting water can be a demanding task, requiring time and effort. Women often have to travel long distances to reach water sources and have to carry heavy containers of water on their shoulders. This can have a negative impact on their health and well-being, both physical and mental. Climate change is making access to water even more difficult for women. In many areas, rainfall is less predictable, and floods and droughts are more frequent. This makes it challenging to find reliable water sources, and women often have to spend more time and effort finding water (Figuereido et al., 2013).

In Uganda, 71% of urban households boil drinking water, but only 38% of rural households do so. This means that rural women are at greater risk of contracting diseases related to contaminated water, such as diarrhoea, gastroenteritis and other illnesses. Furthermore, 59% of rural households do not take any measures to treat their drinking water (Uganda Bureau of Statistics, 2012). This means that rural women often have to drink unsafe water, which can cause serious health problems.

The distance between drinking water sources and the homes of rural households can also be a problem. The Ugandan study found that 17% of urban households and 62% of rural households travel half an hour or more to reach the source of drinking water. This means that rural women often have to spend a lot of time and effort collecting water, time that they could spend on other activities, such as education or work. Finally, 21% of urban households and 15% of rural households have access to improved toilets that are not shared (Uganda Bureau of Statistics, 2012). This means that rural women are at greater risk of contracting diseases related to poor hygiene.

Gender inequality in access to water has a negative impact on women's development. Women who have to spend a lot of time collecting water have less time for other activities, such as education, work and participation in public life. This can limit their opportunities and prevent them from realising their potential. This phenomenon can be attributed to various variables, which encompass the fact that females frequently encounter limited availability of economic and social resources. Also, individuals in this particular demographic exhibit a higher propensity to experience impoverished living conditions, limited access to educational opportunities, and inadequate employment prospects. This diminishes their capacity to effectively manage the consequences of climate change, including unemployment, housing devastation, and food scarcity. Frequently, women assume nurturing responsibilities within the familial context. They bear the responsibility of providing care for individuals who are children, elderly, or ill. This circumstance presents an increased challenge in terms of mobility, as individuals must strategize and prioritise the well-being of their loved ones. In patriarchal countries, women frequently encounter discriminatory treatment. This circumstance can potentially curtail individuals' capacity to exercise agency in determining various aspects of their lives, encompassing their entitlement to engage in migratory movements (FAO, 2023).

Also, the drought in Kenya is exerting a profound and detrimental influence on the female population, particularly women and girls. More than four million individuals are currently experiencing severe food insecurity, with a significant number being compelled to relocate in order to access sustenance and clean water. As a result, women and girls who are in vulnerable situations

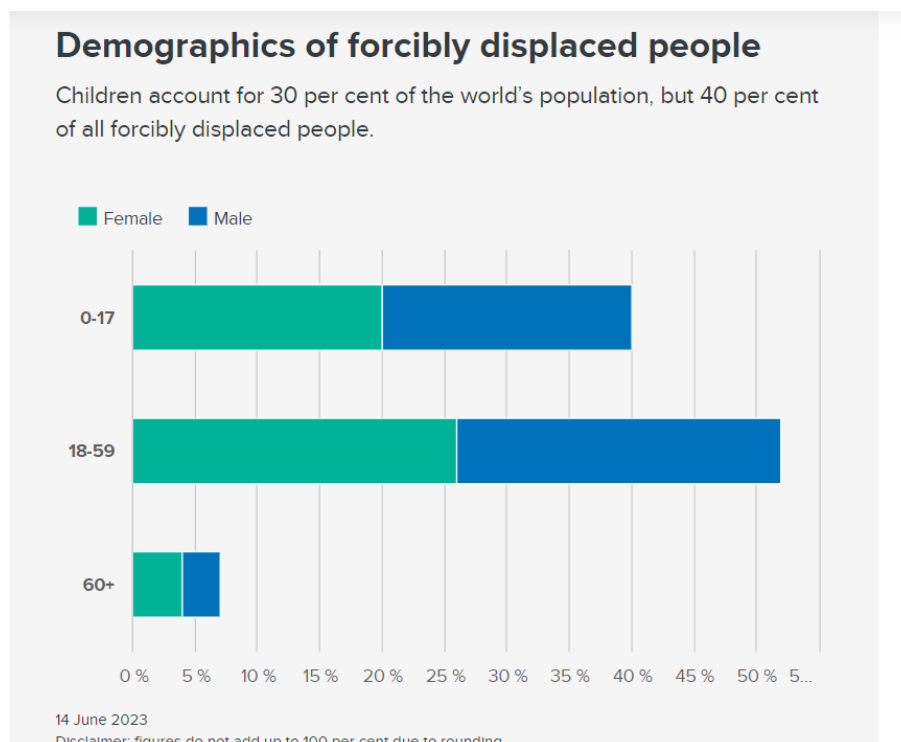
are facing significant challenges in accessing essential healthcare facilities as well as safety and support programmes. The occurrence of gender-based violence, female genital mutilation, and child marriage has witnessed a surge in prevalence during the drought. Adolescent females are experiencing an increased incidence of unintended pregnancies, primarily attributed to the limited availability of family planning resources and contraception services. Approximately 134,000 women are presently experiencing pregnancy or engaging in nursing activities within regions of Kenya that are affected by drought. A significant portion of the population is currently experiencing malnutrition and anaemia, conditions that pose a potential risk to the lives of pregnant women. Moreover, the ongoing drought is compelling women and girls to confront exceedingly difficult decisions. In certain circumstances, individuals are compelled to arrange marriages for their daughters as a means of obtaining sustenance or cattle. Many individuals are compelled to traverse extensive distances in pursuit of water and sustenance, so exposing themselves to the perils of sexual violence and various other forms of exploitation (UNFPA, 2022).

In conjunction with the aforementioned data, it is imperative to acknowledge the significance of women's involvement in addressing environmental calamities. Females frequently assume pivotal roles in the implementation of measures, response efforts, and rehabilitation initiatives pertaining to disaster management. Nevertheless, the experiences and information possessed by individuals are sometimes overlooked or underestimated in terms of their recognition and usefulness. In order to adequately confront the obstacles presented by climate change, it is imperative to incorporate women in every facet of the decision-making process (Puscas & Kanthoul, 2020). Women have the capability to provide a significant contribution to the advancement of policies and programming that prioritise inclusivity and responsiveness to the many demands of society.

3.1.2 Conflict, gender and migration

Climatic disturbances frequently exhibit interconnections with instances of violent confrontations. In many instances, military conflicts have a significant impact on the stability of everyday life, compelling individuals to relocate in search of safer environments for themselves and their families. The phenomenon of displacements can manifest in significant magnitudes, as evidenced by the case of Mozambique. Following the conclusion of the war, about 50% of households in the country experienced internal displacement or sought shelter elsewhere (Brück & Van den Broeck, 2006). According to estimates from 2022, a substantial number of individuals, potentially reaching 108.4 million, have been compelled to vacate their residences as a result of violent circumstances. Among this population, around 5.4 million have sought asylum in foreign nations, while 62.5 million have been displaced within their own countries and up to 35.3 million are defined as refugees (UNHCR, 2023). According to the UNHCR (2023), the displaced population predominantly consists of women and children, comprising 70 per cent of the total as it is showed in Figure 18. Consequently, women are confronted with the challenges of providing for their families amidst very arduous conditions.

Figure 18



Source: UNHCR Global Trends 2022 available at <https://www.unhcr.org/global-trends-report-2022>

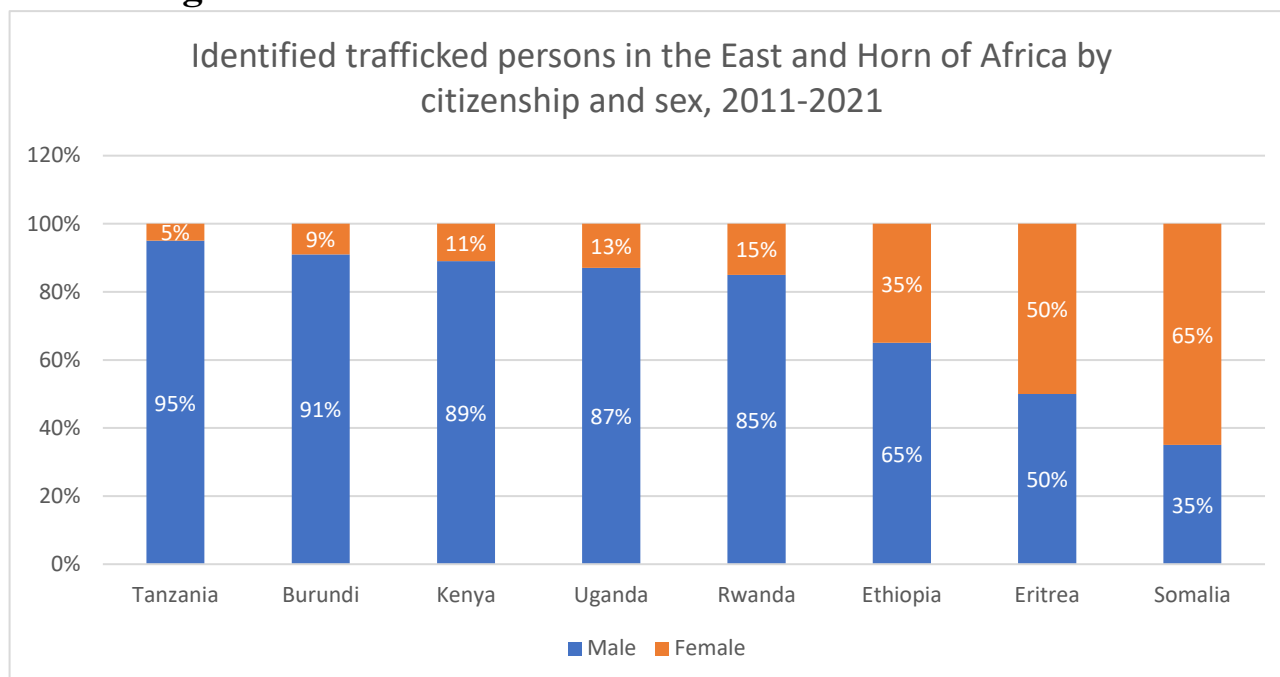
Displaced individuals have substantial wealth depletion and encounter profound economic and social adversity during the process of resettlement. The occurrence of economic prospects being disrupted has the potential to initiate a detrimental loop in which displacement maintains the state of poverty within families, thereby initiating a spiral that is challenging to overcome. The severity of this predicament is exacerbated by the dismantling of social networks and the subsequent depletion of social, economic, and political resources. The aforementioned circumstance is particularly heightened when considering widows or women who serve as heads of homes since they face supplementary societal and traditional limitations (Ibañez et al., 2011).

While it is true that refugee camps can provide improved services compared to the locations from which refugees originate, it is essential to note that refugees often experience prolonged periods of internal displacement, which can last for several years or even decades. The ongoing disadvantageous circumstance disproportionately impacts women, placing them in proximity to metropolitan areas that are frequently vulnerable to climate change-related hazards, including floods, landslides, and heatwaves. Furthermore, it is worth noting that these settlements frequently experience a dearth of vital amenities, such as potable water and sanitation facilities, which significantly hampers their capacity to address and adjust to the impacts of climate change effectively. In order to safeguard the preservation of women's entitlements to land and property from being constrained by societal conventions and customary behaviours, it is imperative for governments to enact proficient land reform initiatives that encompass poverty-targeted and gender-responsive policies and initiatives (UNHCR, 2023).

The occurrence of conflict can give rise to circumstances that render individuals susceptible to trafficking, including but not limited to factors such as poverty, displacement, and limited availability of essential services. Armed factions may employ the strategy of trafficking as a means of warfare, coercing individuals into engaging in forced labour or sexual exploitation. Moreover, the occurrence of war has the potential to impede the functioning of law enforcement and judicial systems, creating a conducive environment for traffickers to carry out their illicit activities. The act

of trafficking in persons constitutes a severe infringement against fundamental human rights, which can transpire at many junctures of the migratory process and include a diverse range of victims and perpetrators. The Counter-Trafficking Data Collaborative (CTDC), operated by the International Organisation for Migration (IOM), is responsible for the collection of data pertaining to trafficking. Its primary objective is to augment the global comprehension of this pressing matter. Based on the data provided by the Counter-Trafficking Data Collaborative (CTDC) spanning from 2011 to 2021, it is evident that the East and Horn of Africa (EHOA) region has documented over 3,000 instances of trafficking. Notably, Kenya, Uganda, Ethiopia, and Burundi have reported the greatest incidence of recognised individuals who have fallen victim to trafficking, as reported by the International Organisation for Migration (IOM) in 2022. In the Eastern Hemisphere of Africa (EHOA) region, it has been observed that 78% of the reported cases pertain to individuals who identify as women and girls. However, it is important to note that there exist disparities in the gender distribution among different nations within the region. Based on an examination of CTDC data spanning from 2002 to 2017, it was determined that a majority of trafficking victims in Africa were minors, surpassing the global average where children accounted for only one-fifth of identified victims (IOM, 2022). Within Sub-Saharan Africa specifically, 34% of trafficked individuals experienced sexual exploitation, 62% were subjected to forced labour, and 4% were victims of other forms of exploitation. The frequency of sexual and child exploitation in Sub-Saharan Africa, namely in the Eastern Horn of Africa (EHOA) region, diverges from the worldwide norm by exhibiting greater rates as shown in Figure 19. In the year 2020, it was observed that women and girls, in particular, experienced a significant degree of violent exploitation, accounting for around 60 per cent of the total victims. The sub-Saharan Africa region has a comparatively low rate of convictions per 100,000 individuals when compared to other regions, hence emphasising the imperative for intensified endeavours in addressing the issue of trafficking (UNODC, 2022).

Figure 19



Source: A Region on The Move 2021 Report, IOM (2022) retrieved from CTDC data

The Eastern and Horn of Africa (EHOA) region has a notable level of complicity among authorities, as documented in reports. Additionally, sub-Saharan Africa serves as a primary source for numerous identified instances of trafficked individuals on a global scale. Traffickers exhibit a significant level of impunity as they specifically target individuals who have been forcibly relocated, those who reside in vulnerable living conditions, and those who have been separated from their families. Certain individuals who have been relocated are compelled to seek assistance from smugglers and may subsequently become vulnerable to human trafficking. Yemen, a strategically significant nation in the area, has encountered instances of armed conflict, resulting in dire consequences for migrants who have become entangled in the situation. These individuals have been subjected to coerced work and have tragically lost their lives at the hands of human traffickers. Collecting reliable statistics on trafficking in the Eastern Horn of Africa (EHOA) region poses significant difficulties due to its clandestine character, prevalent underreporting, and the presence of ethical and operational obstacles. Nevertheless, there have been notable advancements in this regard,

including the establishment of a framework to assess adherence by states and the formulation of global standards and recommendations for the gathering of data (IOM, 2022).

As previously mentioned, the predominant forms of trafficking in this particular location encompass coerced work and sexual exploitation. Displaced individuals, irregular migrants, as well as women and children, are particularly vulnerable to many risks and challenges. In order to effectively address the issue of trafficking, it is imperative to build secure and controlled migration pathways, as engagement in irregular voyages significantly amplifies individuals' susceptibility to exploitation. Although there have been advancements in the identification of victims and the prosecution of perpetrators, the full scope of this crime still lacks clarity. Hence, it is imperative to bolster responses that are grounded in human rights, with a particular focus on women, augment data-gathering efforts, and prioritise initiatives aimed at prevention and protection. The aforementioned efforts are in accordance with the 2030 Sustainable Development Goals and the Global Compact, with the objective of diminishing exploitation and providing assistance to individuals who have been trafficked.

3.1.3 Climate and gender displacement in cities: A challenge for sustainability

Land and housing are essential economic assets that play a crucial role in supporting individuals' livelihoods and overall welfare. In addition, power dimensions are inherent in social position and the allocation of possibilities. The phenomenon of climate change is amplifying pre-existing disparities, particularly with regard to the availability and affordability of land and housing. Specifically, it is facilitating the phenomenon of rural-urban migration, a trend that frequently results in adverse living conditions for women. The phenomenon of rural-urban migration is already associated with the consequences of climate change in numerous global regions. In the context of Kenya, it is observed that a significant proportion, precisely over 25 per cent, of women residing in slum areas have relocated from their rural dwellings as a consequence of land deprivation (Aguilar et al., 2015).

Rural women who undergo migration to metropolitan regions frequently encounter circumstances characterised by severe impoverishment. Frequently, individuals have a deficiency in formal education and skills, resulting in their engagement in low-wage occupations or the informal labour market. Moreover, they encounter security vulnerabilities, particularly individuals belonging to ethnic minority communities. The phenomenon of climate-induced migration poses a significant challenge to the long-term viability and sustainability of urban areas. Many individuals who have recently migrated to urban areas sometimes find themselves residing in informal settlements, which are very susceptible to climate-related hazards. Furthermore, it is frequently observed that these communities are deficient in fundamental amenities, such as access to potable water and adequate sanitary facilities (UNDESA, 2021).

In order to effectively tackle this dilemma, it is imperative for governments to implement policies and activities that are both pro-poor and gender sensitive. It is imperative to advocate for land reform as a means to safeguard and uphold women's entitlements to land and property. Investing in infrastructure and services in urban areas is crucial to ensure the safety and dignity of new residents. Additionally, providing educational and career options for rural women is essential for enhancing their economic and social standing.

3.2 Climate change impacts on women in East Africa: a regional overview

Gender inequality poses a significant obstacle for women residing in East Africa. Females experience a disproportionate impact in terms of poverty, limited access to education, and exposure to violence. Moreover, there is a notable lack of representation of this group in positions of authority and decision-making. Gender-sensitive projects are specifically formulated to tackle these difficulties and enhance the well-being of women. There exists a diverse array of gender-sensitive programmes, all of which are united by their overarching objective of empowering women and advancing gender equality. Gender-sensitive initiatives in East Africa have demonstrated a noteworthy influence on the well-being of women. They have contributed to the enhancement of women's educational and occupational

opportunities, the mitigation of poverty, and the enhancement of health outcomes. Additionally, they have contributed to the enhancement of women's political engagement and the mitigation of gender-based violence. Despite the advancements that have been achieved, there remains a substantial amount of work that necessitates attention and effort. Gender inequality continues to be a significant obstacle in the region of East Africa. Gender-sensitive initiatives play a crucial role in the pursuit of gender equality and the establishment of a fair and impartial society that encompasses all individuals. This section will delve into a more comprehensive examination of the effects of gender-sensitive initiatives, as well as the status of women in East Africa.

3.2.1 Women and the Forests in Uganda

Forests assume a significant position in the livelihoods of several populations over the globe since they offer crucial goods and services such as sustenance, water, fuelwood, shelter, and various other necessities. Nevertheless, the depletion of tree canopy and the diminished availability of forest resources are exerting an adverse influence on these communities, with a particular emphasis on women. In Uganda, it is customary for women to assume the role of gathering firewood and various natural resources to meet the needs of their households. Nevertheless, women frequently encounter restricted opportunities to utilise forests and their resources, mainly as a result of gender-based discrimination, cultural prejudices, and inadequate inclusion in decision-making processes pertaining to forest management (Banana et al., 2012).

In order to confront the issue of gender inequality, the International Centre for Forestry Research (CIFOR) has undertaken a project in Uganda with the objective of enhancing the involvement of women in forest management. The project is grounded in the principle of promoting successful gender inclusion. This entails comprehending the involvement of women in forest decision-making processes, examining the roles played by external actors, supporting participation through adaptive collaborative management (ACM), and assessing instances of achievement.

The initiative has yielded several good outcomes. Initially, the study facilitated the documentation of the diverse roles and degrees of involvement of women in Uganda. Based on the findings derived from focal group interviews and surveys, it has been determined that women possess a significant role in the realm of forest management, albeit frequently experiencing exclusion from the decision-making process. Additionally, the project has made a significant contribution towards enhancing women's participation and inclusion in the forestry sector. The use of ACM (Advocacy, Collaboration, and Mentorship) techniques resulted in an increase in women's self-assurance in expressing their thoughts and facilitated their enhanced access to various resources and opportunities. Furthermore, the project facilitated the promotion of multi-stakeholder relationships across several levels. The collaboration between the National Forest Authority, SCC-VI Agroforestry, and Tree Talk, in partnership with CIFOR, aimed to deliver training, resources, and support to local communities (Mukasa et al., 2016).

Nevertheless, the project also brought to light some obstacles. In order to effectively implement gender-sensitive laws and policies, it is imperative to develop explicit strategies that delineate gender-specific objectives and provide mechanisms for monitoring and evaluating progress towards these objectives. Furthermore, it is imperative to allocate sufficient financial resources and prioritise gender capacity-building initiatives for implementers in order to maintain a consistent and significant influence. In summary, the project conducted by CIFOR in Uganda has provided evidence to support the notion that the integration of gender considerations can serve as a potent strategy for enhancing sustainable forest management and promoting food security at the household level (Mukasa et al., 2016).

3.2.2 The Effects of Drought on Women's Mobility in Ethiopia

The study conducted by Grey, Dou, Mueller and Sheriff (2020) investigated the impact of drought on the mobility of women in Ethiopia. The results indicated that drought emerged as a substantial

predictor of women's mobility. There was a higher likelihood of women who experienced drought being inclined to relocate compared to women who did not experience such conditions. The impact of drought was more pronounced for intra-regional relocations, while it was also observable for inter-regional relocations. The research employed a dataset consisting of person-years to monitor women and ascertain the determinants impacting their mobility longitudinally. The dataset encompassed data pertaining to person characteristics, household characteristics, community features, and exposure to drought.

There are several factors contributing to the heightened vulnerability of women to the impacts of drought in Ethiopia. Initially, it is seen that women have a higher likelihood of assuming the responsibilities associated with food production and water collecting within rural regions. This implies that individuals in these regions experience a more immediate impact as a result of crop failure and water scarcity. Furthermore, it is frequently seen that women have a diminished likelihood of obtaining access to many resources, including but not limited to land, credit, and education. This exacerbates their ability to manage the consequences of drought. Moreover, women frequently encounter societal discrimination, hence exacerbating their challenges in securing jobs or housing within unfamiliar regions (Gray & Mueller, 2011).

The occurrence of drought in Ethiopia might give rise to several adverse implications for the movement of women. Initially, drought conditions can compel women to go to unfamiliar regions in pursuit of sustenance, water, and additional essential provisions. The process can provide challenges and risks, particularly for women who are doing solo travel. Furthermore, the occurrence of drought might have adverse effects on women's ability to obtain education and healthcare services. The aforementioned phenomenon may exert adverse effects on the health and overall welfare of women while simultaneously impeding their ability to engage in gainful employment. Furthermore, the occurrence of drought can heighten the vulnerability of women, hence amplifying their susceptibility to acts of aggression, exploitation, and abuse. The susceptibility of women to various forms of

violence is heightened when they are displaced as a result of drought (Desai & Mandal, 2021; UNFPA, 2022).

The impact of drought on the movement of women in Ethiopia is a significant matter of concern. It is imperative for governmental bodies and humanitarian organisations to implement measures aimed at alleviating the adverse impacts of drought on women. The recommended measures should encompass the provision of women with equitable access to various resources, including but not limited to land, credit, and education. Efforts should also be undertaken to mitigate discrimination against women and ensure their safety from acts of violence. In conjunction with these, there exist other additional interventions that can be used to provide assistance to women impacted by drought in Ethiopia, such as ensuring that women have equitable access to safe water, sanitation, and hygiene facilities. Finally, it is vital to furnish women with comprehensive knowledge regarding drought and its ramifications, alongside pertinent facts pertaining to their entitlements and available choices.

Migration has emerged as a prominent approach among Ethiopians to address a range of challenges, such as recurring famines, conflicts with neighbouring nations, political suppression, and elevated levels of unemployment. According to official estimates, the number of Ethiopians engaged in overseas employment, whether on a permanent or temporary basis, is between 800,000 and 1 million individuals. In the year 2008, the Ethiopian economy extensively relied on remittances from migrants, amounting to a substantial sum of over US\$800 million. In 2007, the documented inflows of remittances exceeded the amount of foreign direct investment. A significant proportion of individuals migrating to the Middle East consists of women, namely young women who are drawn to opportunities for remunerated domestic work. In the period of 2012-2013, licenced Ethiopian overseas recruiting agencies received a total of 182,000 applications for employment opportunities. It is important to note that this figure accounts for around 30 to 40 per cent of the entire population of Ethiopian migrants who sought work in the Middle East at that time. According to Wondimagegnhu and Fantahun (2023), the majority of the remaining 60 to 70 per cent are subjected to trafficking or smuggling facilitated by illicit brokers.

Climate change has been found to have a notable influence on the necessity for Ethiopian women to migrate to Saudi Arabia. The agricultural sector in Ethiopia, which serves as a crucial means of sustenance for numerous rural people, has been negatively impacted by the shifting climatic patterns observed in the region. These changes manifest in the form of rising temperatures, occurrences of heat waves, and intensified precipitation events. Climate-related calamities such as droughts, floods, and other extreme weather events have resulted in adverse consequences such as crop failures, food insecurity, and economic instability (Semenza & Fantahun, 2019).

Consequently, young females residing in rural areas of Ethiopia are pushed to pursue different avenues for generating revenue and sustaining their livelihoods. The act of migrating as domestic workers to the Middle East, specifically Saudi Arabia, has emerged as a compelling choice for these women, offering them career prospects and the ability to assist their relatives residing in their countries of origin financially. The decision to move is influenced by the presence of limited economic prospects and the heightened vulnerability resulting from climate change (Schewel, 2022). Furthermore, the socioeconomic advancements arising from climate change also contribute to the proliferation of travel chances to nations afflicted by infectious diseases. The field of travel medicine must take into account the health implications arising from global phenomena, such as climate change, as well as the potential dissemination of infections to previously unaffected regions. The necessity for health systems to adapt and manage the possible impact on population health is underscored by the impacts of climate change on migration patterns and the accompanying health implications (Semenza & Fantahun, 2019).

In summary, the adverse effects of climate change in Ethiopia, including disruptions in agriculture and economic instability, lead to the necessity for Ethiopian women to travel to Saudi Arabia as domestic servants. The dynamic nature of the climate and its associated socioeconomic ramifications exert influence on migratory trends, impacting both the economic well-being of individuals and the overall health of populations.

The migration in question also carries adverse consequences for the human rights of female migrants. The Ethiopian government has enacted a prohibition on labour migration from Ethiopia to the Middle East as a direct response to the human rights abuses inflicted upon Ethiopian migrants. The prohibition encompasses all nations situated in the Middle East region and remains currently enforced. The kafala system in the Middle East establishes a sponsorship arrangement whereby the residence permits of migrant workers are linked to their sponsoring employers. This linkage poses challenges for workers seeking to switch employers or depart the country without the explicit approval of their respective sponsors. Individuals who engage in such actions without proper authorisation are classified as undocumented and may be subject to incarceration and removal from the country, despite the fact that numerous migrants endure adverse labour circumstances, mistreatment, and exploitation. The phenomenon of irregular migration to Saudi Arabia mainly involves the recruitment and employment of male individuals across many industries (Ashine, 2017). Hence, within the context of Ethiopia, the influence of educational credentials and gender is substantial in shaping the occupational choices made by migrants, as well as their vulnerability to mistreatment and exploitation.

A considerable proportion of individuals who returned to their place of origin had been gainfully employed prior to their migration, mostly driven by the more favourable employment prospects offered in Addis Ababa in contrast to rural regions. The motivations for migration exhibited a range of factors, encompassing instances of educational setbacks, aspirations for achievement or alteration, exposure to positive narratives of achievement from acquaintances, marital dissolution, the loss of a spouse or parents, the pursuit of autonomy, inadequate career prospects, restricted job availabilities, and meagre familial earnings. Saudi Arabia has been perceived as an appealing location for various reasons, including the convenience of obtaining residence permits, few educational prerequisites, the option of obtaining free-visa or visa on demand, and the involvement of traffickers and smugglers. Before their migration, certain participants were provided with information regarding

employment and living conditions. However, despite being cautioned, they remained resolute in their decision to travel (Wondimagegnhu & Fantahun, 2023).

Nevertheless, a considerable number of migrants lacked prior knowledge, and of those who had such knowledge, a significant majority discovered the material to be misleading and deceptive. A multitude of exploitative and abusive practices frequently accompanies labour migration to Saudi Arabia for Ethiopian workers. A significant number of workers lack awareness of the challenging circumstances they may encounter, such as extended periods of employment, pay retention, deprivation of fundamental necessities, and potentially even instances of sexual assault or rape (NSVRC, 2021). Individuals who adhere to lawful pathways frequently encounter deceitful assurances of safeguarding and assistance from recruitment companies. According to the National Sexual Violence Resource Centre (NSVRC, 2021), migration to Saudi Arabia is characterised by its challenging and unsatisfactory nature, leading to a sense of remorse among certain individuals.

Ethiopian labour migrants employ three primary methods to journey to Saudi Arabia: first, by securing work contracts facilitated by Private Employment Agencies (PEAs); second, by resorting to illicit means of transportation across land and water; and third, by acquiring a visa specifically designated for the purpose of doing the Hajj pilgrimage. The predominant choice among migrants is to secure employment through contractual agreements, with a notable disparity in gender distribution. Specifically, a much more significant proportion of females opt for this approach compared to males (Woldemichael, 2013). Nevertheless, irrespective of the chosen mode of migration, a significant majority of individuals who return to their home countries encounter distressing circumstances, such as incarceration, maltreatment, deprivation of essential resources, and apprehension regarding potential sexual violence. Upon their return to Ethiopia, many returnees feel significant trauma as a result of these distressing events (Fernandez, 2010).

The phenomenon of labour migration to the Middle East exerts notable effects on marital and familial dynamics within Ethiopia. The idea of exploitation and sexual assault often leads to the perception that women who are employed in the Middle East are not viable candidates for marriage.

The extended absence of married women has been observed to potentially result in divorce and separation, as evidenced by instances when husbands have entered into subsequent marriages during their wives' absence. A considerable number of young women who have repatriated to Addis Ababa indicate a strong inclination to engage in further migration, mostly driven by the scarcity of employment prospects and the adverse impact of low social status on their prospects of matrimony (Shewamene et al., 2022).

3.2.3 Somalia and climate change: a gender analysis

In a study conducted by Kolmannskog (2009), the researcher examined the effects of climate change and migration on pastoral families residing in Somalia and Burundi. The research revealed that a significant number of males from pastoral households engaged in labour migration as a consequence of the adverse effects of prolonged drought. This resulted in women being left behind to assume the responsibilities of caring for their families and communities. Consequently, women encountered escalating perils of ostracism from their familial and communal networks, alongside the heightened vulnerability to acts of sexual violence (Kolmannskog, 2010).

The research additionally revealed that the phenomenon of climate change and migration is amplifying pre-existing gender disparities in Somalia and Burundi. Females exhibited a higher propensity for experiencing poverty, illiteracy, and unemployment in comparison to their male counterparts. The intersection of climate change and migration has exacerbated the challenges faced by women in accessing essential resources and services while also heightening their susceptibility to violence and exploitation. Somalia is currently confronted with an unparalleled humanitarian crisis resulting from a confluence of variables, namely climate change, armed conflict, and human movement. Somalia, characterised by its dry and semi-arid climate, predominantly relies on pastoralism as its primary economic pursuit. Nevertheless, the phenomenon of climate change has resulted in a heightened occurrence and severity of droughts, hence causing significant devastation

to both pastures and animal populations. The aforementioned circumstances have compelled several pastoralists to relocate in pursuit of alternative grazing lands, frequently leading them to places that are already inhabited by other pastoralists or armed factions (Kolmannskog, 2009).

The ongoing armed clashes in Somalia have exacerbated the complexity of the situation. Various armed factions engage in a competitive struggle to gain control of valuable resources, frequently resorting to acts of aggression against civilian populations. The current circumstances have posed challenges in terms of locating a secure habitat for pastoralists and other individuals who have been displaced. The phenomenon of people migration serves as an additional contributing factor to the ongoing humanitarian catastrophe in Somalia. Individuals who experience displacement as a result of drought or violence frequently relocate to urban areas, where there is a prevalent presence of poverty and limited access to essential services. This phenomenon has the potential to contribute to a rise in criminal activities and a heightened sense of insecurity. In the context of Somalia, it is evident that women face heightened vulnerability to a range of difficulties, such as malnutrition and mortality, which are exacerbated by drought conditions. The tragic situation described is accompanied by an increased incidence of sexual and gender-based violence against women, which is exacerbated by both the armed war and the prolonged drought (UN Women, 2021).

Simultaneously, Somali women encounter substantial barriers when attempting to obtain education and healthcare, hence impeding their prospects for enhancing their socio-economic circumstances. The aforementioned circumstances lead to a significant imbalance between genders in terms of accessing fundamental services and acquiring skills, which, therefore, has adverse effects on their empowerment and autonomy. Additionally, it is worth noting that Somali women experience a disproportionate impact in terms of poverty and social marginalisation. The gender gap in the socio-economic realm is exacerbated by the absence of economic possibilities and restricted access to economic and social resources. Consequently, women find themselves in a position of disadvantage and marginalisation (Kolmannskog, 2010). Therefore, the compounding issues faced by Somali women on a daily basis are exacerbated by the junction of gender and the contradicting environmental

situation. The situation in Somalia serves as a striking illustration of the interconnections and mutual influence of climate change, armed conflict, and human movement.

Somalia exhibits a high degree of gender inequality, positioning it among the countries with the greatest disparities between genders globally. The region has experienced intensified challenges encountered by women and girls due to the impacts of climate change, which have compounded pre-existing concerns like illiteracy, child marriage, and maternal mortality. Females, particularly young women and girls, encounter increased vulnerabilities in relation to malnutrition, exposure to violence during the process of water collection, economic setbacks, and limited availability of essential services. The combination of limited food availability, inadequate access to potable water, and involuntary population displacement has resulted in a substantial increase in malnutrition rates and the prevalence of waterborne illnesses in Somalia. According to projections made in 2018, it was anticipated that over 1.2 million children residing in Somalia will experience acute malnutrition, indicating a 50 per cent rise compared to the preceding year. The nation also faced an epidemic of Acute Watery Diarrhoea (AWD) and cholera in 12 of its 18 regions, wherein the mortality rate at one juncture surpassed 2.3 per cent, surpassing the emergency threshold by more than twofold. Approximately 5.5 million individuals continue to face the potential threat of being exposed to watery illnesses, including cholera. Moreover, over the period spanning from November 2016 to September 2017, it is anticipated that around 926,000 individuals experienced displacement as a direct consequence of drought conditions. The additional stress placed on the already vulnerable infrastructure and services has resulted in significant challenges, notably in relation to the availability of safe drinking water and sanitation facilities. This has consequently contributed to an increased prevalence of diseases in the country (UNDP, 2018).

The Global Report on Food Crisis 2022 Mid-year Update reveals a concerning trend of increasing acute food insecurity worldwide. It predicts that a significant number of individuals, estimated to be around 205 million, will be in urgent need of help across 45 countries. When taking into account further data from 2021, the estimated population in the 53 nations and territories covered

by the report is projected to reach roughly 222 million individuals. This figure represents the highest level ever recorded in the seven-year history of the survey. Moreover, there has been a notable escalation in the gravity of acute food insecurity, as seen by the projection that around 45 million individuals across 37 countries will encounter severe malnutrition. This dire situation places them in imminent danger of succumbing to famine and potential fatality. It is projected that some 970,000 individuals will be confronted with catastrophic circumstances (IPC/CH Phase 5) in the year 2022, should no intervention be implemented. The largest concentration of these individuals is anticipated to be in Somalia, with additional populations affected in Afghanistan, Ethiopia, South Sudan, and Yemen (WFP & FAO, 2023)

The presence of insufficient healthcare services is a contributing factor to the elevated incidence of maternal mortality. The deepening of drought has resulted in an increase in the practice of early marriage and female genital mutilation, which has had adverse effects on the health and well-being of women. Women are also subject to limited economic options, which have a profoundly detrimental effect. An illustration of this phenomenon can be observed in the case of gradual climate events, which impede women's ability to obtain economic resources and autonomy, hence increasing their susceptibility to gender-based violence (Khan, 2023). The occurrence of conflict-related sexual violence has been confirmed by the United Nations Assistance Mission in Somalia (UNSOM), impacting a total of 400 girls, 12 women, and seven boys. The main individuals responsible for these acts were determined to be clan militias and Al-Shabaab, while the Somali Police Force was found to be involved in 16 instances and the Somali National Army in 25 occurrences. The security forces of Jubbaland and Puntland were found to be accountable for a total of nine and five documented incidents, respectively. The remaining instances were ascribed to unidentified armed entities. Rape and attempted rape emerged as the most commonly reported manifestations of sexual violence. There was a notable rise in the incidence of sexual violence as compared to the preceding reporting period.

This increase can be attributed to the escalation of clan conflicts, primarily stemming from land disputes, as well as the precarious security conditions prevailing within internally displaced

persons' settlements. The imposition of movement restrictions in response to the epidemic has impeded the ability of survivors to avail themselves of essential services and monitoring. The predominant approach to resolving issues remained centred around the customary system, which prioritises the interests and rights of the clan over those of the survivor. The provision of judicial services, including the processing of cases related to sexual violence, had a temporary suspension. Despite the provision of remote services, the availability of psychosocial support remained inadequate as a result of limited funding. The inadequate availability of personal protection equipment among shelter employees hindered their capacity to provide assistance to survivors of gender-based violence. As a reaction, the United Nations created a set of guidelines to facilitate the provision of remote service delivery in order to assist practitioners (UN, 2021).

The exacerbation of food and water problems, which in turn impact livelihoods, can be attributed to the absence of development and mismanagement of land. The World Bank has made investments in several initiatives, including cash transfers, livelihood support, and improved access to financial services, with the aim of enhancing the empowerment of women and girls. In the realm of education, the presence of high illiteracy rates among women is a hindrance to their involvement in decision-making processes. There exist initiatives, such as the one proposed by the World Bank, that seek to enhance literacy rates and offer educational opportunities and leadership development programmes specifically targeted at girls. One instance of an initiative promoting gender equality is the Somalia Women's Empowerment Platform, which the World Bank founded. This platform aims to facilitate gender equality in several areas, such as projects, research, and policy debate (World Bank, 2022).

At the same time, UNSOM is facing multifaceted impacts from climate change, which have elicited noteworthy solutions to address the escalating issues. The profound impacts of climate-induced alterations on individuals' means of subsistence, notably in terms of migration and coerced relocation, serve as pivotal catalysts. The alterations impede the endeavours of UNSOM in its pursuit to facilitate peace, security, and the establishment of effective government and judicial frameworks

in Somalia. The adverse effects caused by climate change, such as the deprivation of livelihoods and the exacerbation of poverty, have a direct influence on the emergence of complaints and fragility. Consequently, these factors hinder the effective execution of UNSOM-assigned responsibilities (Eklöw & Krampe, 2019).

One key element of this phenomenon pertains to the impact it has on migration patterns and individuals' mobility. Climate-induced alterations result in societal pressures that intensify grievances and generate political advantages for diverse actors. Moreover, it compels individuals to partake in unlawful alternative vocations such as human trafficking and charcoal selling. The presence of grievances pertaining to group allegiances is a substantial risk factor, as it exerts an influence on conflicts across several levels and impedes the process of conflict resolution, hence prolonging the duration of conflicts. There exists a notable deficiency in awareness, particularly within the donor community, concerning the direct correlations between environmental concerns, livelihoods, migration, and displacement, despite the evident interconnections between climate-related alterations and socioeconomic and political dynamics at the local level (Nellemann et al., 2014).

Nonetheless, two prominent dynamics must be emphasised. Firstly, temperatures are experiencing a gradual increase (IPCC, 2022). Women are subjected to increased physical exertion and health hazards due to several factors, particularly in their routine activities such as water retrieval and firewood collection. The lack of adequate access to uncontaminated water sources in Somalia, particularly in rural regions, also renders its population vulnerable to waterborne illnesses and many hazards, including gender-based violence and abuses of human rights (Thulstrup et al., 2020).

Secondly, the occurrence of climate-induced displacement in Somalia has witnessed a notable surge, primarily attributable to causes such as the occurrence of droughts in the years 2011 and 2017. The aforementioned circumstances have resulted in a notable increase in internal displacement, wherein women, in particular, are confronted with an elevated susceptibility to sexual abuse, particularly within the confines of Internally Displaced Persons (IDP) camps (Eklöw & Krampe, 2019). The camps exhibit precarious living circumstances, marked by inadequate physical structures,

which pose significant obstacles in guaranteeing security and safeguarding the well-being of internally displaced persons (IDPs), particularly women. The phenomenon of displacement can also have a detrimental impact on the established clan systems that are intended to protect against instances of harassment and violence, hence exacerbating the vulnerability of certain groups, specifically women belonging to ethnic minority communities (Human Rights Watch, 2018).

3.2.4 The Situation in Sudan: Climate Change, Conflicts, and Migration

Sudan is currently confronted with a multifaceted scenario characterised by political instability, ongoing conflicts, and the detrimental consequences of climate change. This chapter examines the interplay between climate change, wars, and migration in Sudan, specifically concentrating on the geographical areas of Darfur. Sudan has been marked by enduring political instability and protracted conflicts over an extended period. Following the coup in Sudan in October 2021, political protest factions have encountered suppression and aggression from security troops. The state of emergency that was implemented subsequent to the coup has been terminated as of May 2022. However, instances of misconduct persist, encompassing arbitrary detentions and acts of violence directed towards non-combatants (Human Rights Watch, 2023). The presence of conflicts and political instability has further intensified the difficulties encountered by Sudan in its efforts to tackle climate change and effectively manage migration.

The effects of climate change have further intensified the already severe circumstances in the nation. Sudan, akin to several other nations, is currently grappling with the ramifications of climate change, encompassing elevated temperatures, altered precipitation trends, and intensified occurrences of extreme weather phenomena. The aforementioned impacts have had detrimental effects on the stability of the food, water, and economic systems, resulting in heightened levels of vulnerability and the exacerbation of migration pressures in the Sudano-Sahel area (McDonnel & Brottem, 2020).

As already reiterated multiple times, a significant number of individuals experience involuntary displacement annually as a result of climate-related risks, with projections indicating a probable escalation in this figure in the forthcoming years. In the region of Darfur in Sudan, the region experienced long-term increases in rainfall and vegetation in the 20 years prior to the civil war of 2003-2005. This led to migration from areas with decreasing resource availability to areas with increasing resource availability. An increase in interethnic violence in these areas during this time period was also detected because of this, and there have been incidents of violence targeting non-combatant individuals, resulting in fatalities and forced migration. Climate-induced migration in Sudan encompasses both internal and cross-border movements as individuals relocate to metropolitan centres (De Juan, 2015).

Notably, the ecosystem of Darfur has been adversely affected by environmental alterations, including a decrease in rainfall and vegetation coverage. The aforementioned alterations have played a role in the limited availability of crucial resources such as water and cultivable land. The alterations in the environment have posed significant challenges for numerous individuals in the region, particularly nomadic Arab communities, in their efforts to maintain their customary means of subsistence. Additionally, it encompasses a diverse array of ethnic groups, each characterised by distinct settlement patterns and livelihood choices. Certain ethnic groups exhibit varying degrees of vulnerability to environmental changes, primarily as a result of their geographical positioning and economic pursuits (Flint & De Waal, 2008).

In light of the depletion of available resources, the act of migration has arisen as a viable means of ensuring survival for a significant number of individuals residing in the region of Darfur. Nevertheless, it is imperative to acknowledge that this occurrence is not a contemporary phenomenon, as it possesses profound historical origins. Migration studies place significant emphasis on the notion that demographic change is not primarily driven by isolated ecological shocks. However, it is the gradual and sustained decline in the availability of resources that frequently compels populations to contemplate migration as their sole recourse (Raleigh & Kniveton, 2012).

The geographical distribution of ethnic groups in Darfur's habitation zones leads to differing degrees of susceptibility to environmental fluctuations. Moreover, several ethnic groups exhibit a higher vulnerability to the impacts of environmental change as a result of their distinct livelihood choices. The spatial and occupational segregation of ethnic groups had significant consequences for the differential impacts of environmental changes on various populations. The rise in immigration within some areas of Darfur resulted in an escalation of population density, thus generating an increased demand for resources and subsequently intensifying competition. Resource conflicts have a heightened tendency to escalate when they involve diverse ethnic groupings. The confluence of resource competitiveness and ethnic variety has the potential to heighten the likelihood of violent interethnic conflict (De Juan, 2015).

The region of Darfur has seen a persistent problem of conflicts related to resources, which have been more prevalent in the 1980s and 1990s. Frequently, these confrontations entail the participation of Arab militias and non-Arab factions. As the availability of resources diminishes and competition becomes more intense, the potential for conflicts to develop, resulting in acts of violence and displacement, increases (Benjaminsen et al., 2012). The initiation of the civil conflict in Darfur was not inherently linked to resource-related factors. However, its origins can be traced back to the efforts of rebel factions combating both economic and political marginalisation (Flint & De Waal, 2008). Nevertheless, the intensification of the battle was influenced by factors such as competition for resources and alterations in the environment. Arab militias, frequently originating from regions characterised by resource competition, engaged in acts of aggression and forced displacement against non-Arab communities. The exacerbation of violence was perpetuated by the active participation of the government and its commitments to the distribution of land. A notable association becomes evident upon analysing the regions impacted by diminished vegetation and the spatial dispersion of assaults on rural settlements. The occurrence of violence was shown to be more prevalent in regions that had relatively lower levels of environmental changes (Olsson & Siba, 2013). This proposition

posits that although environmental changes were not the exclusive catalyst for the conflict, they exerted a substantial impact on the spatial distribution of violence in the region of Darfur.

The phenomenon of climate change exerts substantial effects on migratory women originating from Sudan and those now residing in the country. Climate-related risks have a significant impact on agricultural activities, resulting in disruptions that contribute to both food insecurity and economic instability. This adverse effect is particularly pronounced among women, who are frequently involved in small-scale farming and household food production (Brottem & McDonnell, 2020). The adverse effects of climate change contribute to the exacerbation of difficulties encountered by migrating women, who are frequently compelled to depart from their residences and social networks. Consequently, they experience the loss of economic opportunities and heightened susceptibility to exploitation and gender-based violence (IOM, 2022).

Moreover, the phenomenon of climate change plays a significant role in the deterioration of vital natural resources, like forests and water sources, that hold immense importance for the sustenance of numerous women residing in Sudan. The exacerbation of water and firewood scarcity resulting from climate change imposes a heightened strain on women, who bear the primary responsibility for procuring these essential resources for their households in the region, as African women and children are the ones collecting more than 60 per cent of the domestic firewood supply in the continent (Steady, 2014).

To conclude, the implications of climate change on migrant women originating from Sudan and those migrating from Sudan emphasise the pressing necessity for all-encompassing and gender-sensitive approaches in tackling the difficulties they encounter. The recommended methods should encompass several initiatives aimed at improving women's access to resources, bolstering their economic prospects, offering assistance for sustainable agricultural practices, and advancing gender equality and social protection.

3.3 Climate migration as an adaptation strategy and gender roles

The current section aims to examine the use of climate migration as a means of adaptation in the context of Sub-Saharan Africa, while also considering its interplay with gender roles. In order to effectively tackle these concerns, it will be highlighted the significance of incorporating the perspectives, requirements, and knowledge of women in the development of climate change policies and initiatives. The involvement of women is fundamental to facilitate the adaptation and mitigation efforts of households and communities in response to the effects of climate change. Hence, the active engagement of individuals in climate change talks and decision-making processes is vital to ensure the efficacy and inclusivity of climate change initiatives. Thus, the objective is to examine the connections between climate change, migration, gender roles, and gender equality in order to offer valuable insights and recommendations to policymakers, practitioners, and stakeholders in this complex and interlinked realm.

3.3.1 Advancing Gender Equality through Migration Policies

The degradation of natural resources can exert a direct influence on the welfare of individuals and result in the displacement of entire communities from their sources of income. Females are disproportionately vulnerable to the consequences of climate change and calamities, such as migration, yet possess limited capabilities to mitigate or adjust to these occurrences. Consequently, the provision of equal land rights to women can contribute to the mitigation of environmentally induced forced migration. This objective can be achieved by implementing policies and activities aimed at promoting awareness of the positive contributions made by women in the realm of environmental conservation, as well as by providing assistance to women in their involvement in land and natural resource management. An alternative effective strategy would involve granting women the necessary access to information and knowledge in order to effectively engage in sustainable land management practices (Omolo, 2011).

For instance, initiatives that facilitate the involvement of women in agricultural or water management collectives can contribute to their acquisition of the requisite expertise and understanding for the sustainable management of land. Moreover, the implementation of training programmes focused on sustainable agriculture practices has the potential to assist women in mitigating their environmental footprint. Migration is a critical approach that women can employ in order to respond and adjust to the impacts of climate change effectively. Migration can facilitate employment opportunities for women in regions with more stable climates or allow them to send financial contributions back to their families.

Nevertheless, women do not always possess the autonomy to make decisions regarding migration. Frequently, women's ability to move freely is constrained by patriarchal societal systems. In addition, women may encounter economic and regulatory obstacles that impede their ability to migrate in a secure and consistent manner. Gender-sensitive migration policies and programmes have the potential to enhance women's opportunities for mobility and mitigate the obstacles they encounter. Policies and programmes should prioritise the enhancement of job possibilities. It is imperative that women are afforded equitable access to a diverse array of work options, extending beyond the confines of the domestic sector. This encompasses both transient and seasonal career prospects overseas, as well as job opportunities in metropolitan regions (Aguilar et al., 2015).

In addition, it is imperative that women are provided with consistent, well-organized, and secure pathways for migration. This includes the provision of visas and travel documents, along with the availability of protection and aid services. The objective of this study is to explore strategies for decreasing the expenses associated with remittances. The financial burden associated with remittances might pose significant obstacles for women. Policies and strategies should be designed with the objective of mitigating the expenses associated with remittances, hence facilitating more financial transfers by women to their respective families. Enhancing the range of transport choices available to women is a crucial measure in mitigating the susceptibility of women to the impacts of climate change. Gender-sensitive migration policies and programmes play a crucial role in facilitating

the provision of necessary resources and opportunities for women to effectively cope with the consequences of climate change (UN Women, 2021).

One potential illustration entails the establishment of a transient and periodic migration initiative, which would facilitate the employment of women in industries such as agriculture or construction in regions characterised by less climatic volatility. An additional initiative might involve the implementation of a training programme targeted towards rural women who aspire to join the workforce in metropolitan regions, thereby facilitating their employment in more lucrative industries. Legal and psychological assistance programmes have the potential to aid migrant women in navigating the difficulties associated with the process of migration. It is imperative to acknowledge that the development of migration policies and initiatives that are sensitive to gender must incorporate a comprehensive understanding of the distinct requirements and encounters of women. Women from diverse socio-cultural backgrounds may exhibit varying requirements and obstacles, necessitating the customisation of policies and programmes to address their unique circumstances effectively (OECD, 2018).

The Solar Sisters programme in Uganda (Arc Finance, 2012) serves as an illustrative instance of a reintegration initiative that is attuned to gender considerations while concurrently fostering principles of equality and sustainability. The initiative tries to deliver solar electricity and clean cookstoves to rural communities in Africa. The campaign places emphasis on women as both sellers and leaders, yielding substantial effects on the well-being of women and their respective communities. Solar Sisters offers women the chance to generate cash and foster personal growth. Female individuals undergo training in solar and clean cooking technology and are provided with a credit that can be utilised to procure goods. The female individuals remunerate their credit obligations through the commissions they accrue from sales transactions. Additionally, the project offers women assistance and opportunities for establishing professional connections. The women convene on a regular basis to engage in the exchange of personal narratives and acquire knowledge through mutual interaction. This intervention facilitates the development of confidence and self-esteem in women.

Solar Sisters has made a substantial contribution to the well-being of women and the communities they reside in. Female participants in the programme experience an increase in their financial earnings, hence enhancing the overall well-being of their families. Women are increasingly assuming leadership roles within their communities, actively advocating for the adoption of solar energy and clean cooking practices. Solar energy and clean cookstoves offer a cost-effective and environmentally friendly alternative to conventional energy and water sources. This enhancement positively impacted the well-being of women and their families. Moreover, female individuals who engage in the Solar Sisters initiative not only generate a source of financial remuneration but also gain the prospect of advancing their professional growth. This intervention has the potential to enhance individuals' self-esteem and social standing. Ultimately, the individuals involved in the project were actively contributing to the advancement of solar energy and the adoption of environmentally friendly culinary practices within their own communities. This has the potential to enhance environmental conditions and promote public health.

Nevertheless, implementing proactive mitigation strategies in adverse-climate affected countries presents significant difficulties, especially in the context of developing countries, due to a range of factors. The presence of lumpy assets, such as livestock, creates challenges in generating quick capital through sales. Reduced availability of alternative livelihood options further complicates the situation. The costliness of resilience measures, such as adopting alternative crops or constructing stronger structures, poses additional barriers. Additionally, the poorest households may lack nonessential expenditures, making it even more challenging to cope with adverse circumstances. Furthermore, inadequate social networks and insufficient public assistance programs exacerbate the situation. Consequently, migration continues to be a prevalent and crucial response to these challenges. (Kaczan and Orgill-Meyer 2019).

For instance, Food aid delivery in Ethiopia has historically involved food-for-work (FFW) programs, free food distribution (FFD), and more recently, cash transfers through the Productive Safety Net Program (PSNP). The government of Ethiopia has primarily relied on food-for-work

programs for distributing food aid, with free food transfers accounting for approximately 37% of total food aid distributed since 1995. While food-for-work programs are effective for those capable of working, free transfers remain crucial, especially during times of crisis (Caeyers & Dercon, 2008).

During the drought of 2002-03, when crop-dependent areas experienced a significant decline in food production, a potential crisis emerged. Large quantities of food aid, nearly 1.5 million tonnes, were pledged and distributed through the Disaster Prevention and Preparedness Commission (DPPC). However, the actual distribution of food among households within villages is not determined by international partners or the DPPC. Instead, a hierarchical distribution process is followed. The federal government allocates food to each district (Wereda), which then assigns allocations to individual Peasant Associations (PAs) within the Wereda. The PA is responsible for preparing beneficiary household lists and distributing the food. An important aspect of this process is that while the food allocation to each Wereda is determined at the federal level, the designation of beneficiary households occurs at the local community (PA) level (Caeyers & Dercon, 2008). Local political competition and elections take place, but there are concerns about potential political manipulation and historical control by those in power at the national or regional level. Voters often view the ruling party as agents of the state and rely on them for access to various benefits, such as health services or agricultural inputs. This perception creates a reluctance among voters to challenge the ruling party, as it may jeopardize their welfare and survival. Electoral competition has only increased significantly during the 2005 elections, and prior to that, rural areas largely supported the ruling national coalition (EPRDF) to secure access to essential state resources. While these dynamics shape the distribution of food aid, it is important to consider the complexities of local politics, power dynamics, and the influence of resource distribution on electoral behaviour in Ethiopia's rural areas (Caeyers & Dercon, 2008).

3.3.2 Gender-sensitive reintegration of returning migrant women: an opportunity for equality and sustainability

The process of reintegrating returning migrant women is multifaceted and presents various challenges, which can be attributed to variables such as societal conventions, economic hardships, and limited prospects. Nevertheless, it is worth noting that reintegration schemes that take into account gender sensitivity have the potential to provide substantial prospects for achieving equality and promoting sustainability.

Firstly, it is worth noting that reintegration schemes have the potential to contribute to the reduction of gender imbalances. Migrant women who have returned to their home countries frequently encounter limited access to resources and opportunities in comparison to their male counterparts. Reintegration programmes can offer individuals targeted assistance, including training, orientation, and access to financing, in order to facilitate their successful reintegration into both society and the economy. Additionally, it is worth noting that reintegration schemes have the potential to foster environmental sustainability. Migrant women who have returned possess significant expertise and understanding in the fields of agriculture, agroecology, and sustainable resource management. Reintegration initiatives have the potential to facilitate the utilisation of these abilities, enabling individuals to make meaningful contributions towards the attainment of a more sustainable future. An instance of a reintegration initiative in a South Asian nation was observed, wherein returning migrant women were offered training and supervision in the field of sustainable agriculture. The women acquired knowledge on cultivating crops that are resilient to both drought and flood conditions, as well as adopting sustainable land management techniques. This has played a significant role in enhancing the capacity of local communities to adapt to the impacts of climate change (Diker et al., 2021).

A reintegration plan was implemented in several sub-Saharan African nations, wherein returning migrant women were offered comprehensive training and mentoring in the field of agroecology. The women acquired knowledge and skills in the cultivation of organic crops through

the utilisation of traditional agricultural methods. This intervention contributed to the enhancement of agricultural productivity and the mitigation of environmental contamination (Aguilar et al., 2015). Programmes should be designed to cater to the unique requirements of returning migrant women, taking into account their distinct experiences and challenges. These programmes should also aim to address gender inequalities by actively promoting equality. Furthermore, it is crucial that these programmes are developed and implemented in close collaboration with local communities. The United Nations Development Programme (UNDP) has implemented several projects at the regional level, in collaboration with its GGCA programme and other partnerships, with the aim of enhancing knowledge and strategic decision-making about the intersection of gender and climate change (Alboher et al., 2010).

One of the aforementioned projects entailed a comprehensive three-week training programme focused on agriculture, with the primary objective of empowering women residing in rural areas. A cohort of twenty-six female entrepreneurs hailing from six distinct African nations (Ethiopia, Kenya, Rwanda, South Africa, Tanzania, and Uganda) actively engaged in a comprehensive training programme. This initiative aimed to equip them with essential competencies in business management, enabling them to implement lucrative agribusiness and renewable energy initiatives effectively. The training programme exhibited a high level of efficacy in fostering the success of women as entrepreneurs while concurrently addressing the pressing issue of climate change. The participants have acquired knowledge on cultivating crops that are resilient to drought and floods, implementing effective irrigation methods, and generating sustainable energy from renewable resources. This intervention has contributed to enhancing the capacity of their communities to withstand and adapt to the adverse effects of climate change.

The training programme for women entrepreneurs was implemented in three provinces of Kenya, namely Machakos, Taita Taveta, and Bungoma. In 2014, a training session was sponsored by the African Union in partnership with the UNDP Regional Service Centre in Africa. This programme aimed to provide similar opportunities to 50 women from 10 Francophone nations (Aguilar et al.,

2015). UNDP also facilitated a productive debate and knowledge-sharing event in Nairobi, focusing on the intersection of gender, climate change, and disasters. The gathering convened a diverse group of grassroots women leaders, national policy officials, and development partners hailing from ten African countries. The dialogue served as a forum for the exchange of experiences at the national level while also fostering opportunities for regional collaboration. The programme encompassed field visits to three locations in Kenya, providing attendees with the opportunity to directly observe instances of sustainable practices that can aid communities in adapting to climate change. These projects have provided evidence that the empowerment of women plays a crucial role in combating climate change. Participants have reported experiencing positive effects from their involvement and have subsequently applied the knowledge gained within their own communities. Furthermore, they have actively disseminated this newfound knowledge to others (Aguilar et al., 2015). By offering women the necessary resources and opportunities, they can be empowered to achieve success in entrepreneurial and developmental endeavours. Women have the potential to acquire valuable knowledge from one another. Hence, it is imperative that these programmes prioritise the facilitation of networking and cooperation possibilities.

To conclude, this chapter highlighted the importance of comprehending the significance of women's involvement in climate-induced migration in Sub-Saharan Africa is essential for gaining insights into the obstacles they encounter and the possibilities they have in defining sustainable and equitable resolutions. This chapter has provided insights into the intricate relationship between conflict, climate change, and migration, emphasising the unequal effects experienced by women. This approach allows for the derivation of the apparent conclusion of the importance of gender dynamics in climate-induced migration. Women frequently encounter unique obstacles as a result of entrenched gender norms, restricted availability of resources, and heightened susceptibility to assault and exploitation. Furthermore, the interconnection between climate change, conflict, and gender underscores the necessity for a comprehensive approach that effectively tackles these intersecting concerns.

Gender-sensitive policies are crucial for promoting equality and sustainability in the region. It is imperative that these policies actively foster the empowerment of women, guarantee their equitable involvement in decision-making procedures, and effectively tackle the fundamental socio-economic disparities that contribute to their susceptibility. In addition, it is imperative for migration policies to take into account the distinct requirements and needs of women, ensuring their safeguarding, facilitating their access to essential resources, and offering avenues for sustainable livelihoods. Through the implementation of gender-sensitive policies and migration programmes, the region of East Africa has the capacity to effectively utilise women as catalysts for transformative action in the context of climate-induced migration. The enhancement of women's economic, social, and political empowerment would not only bolster their ability to withstand challenges, but also make a significant contribution to the broader sustainability and growth of the region. Collaboration and prioritisation of gender equality by governments, international organisations, and civil society are crucial in effectively addressing climate-induced migration in Sub-Saharan Africa. The creation of a future in which women's rights are safeguarded and their role in climate-induced migration is acknowledged and assisted necessitates the implementation of collaborative action.

Conclusion

To conclude, sub-Saharan Africa's population is highly impacted by climate change and its effects. In the near future, existing estimates show possible higher numbers of climate refugees, which will be even more difficult to manage. In order to face such climate change-induced challenges for the population living in the more vulnerable areas, good governance and socio-economic preventive measures could improve regional resilience. Furthermore, planned and managed migration could better the circumstances of climate-caused relocations. While urban centres should implement socio-economic measures to take in migrants, national entities should work towards improving health, education, disaster management and other infrastructures to prevent forced displacements in the first place (Mbyozo, 2021).

In conclusion, the interplay between violence, climate change, and migration in Sub-Saharan Africa is a multifaceted and interconnected phenomenon. The susceptibility of this region to the detrimental impacts of climate change is notably heightened, hence intensifying preexisting conflicts and resulting in heightened patterns of migration. The difficulties at hand have a disproportionate impact on women, who encounter elevated levels of hazards and vulnerabilities throughout the entirety of the procedure. This work aimed to illustrate that female environmental migrants encounter several obstacles, both throughout their migration process and upon reaching their ultimate destination. Individuals in this particular demographic exhibit heightened susceptibility to instances of sexual and gender-based violence, human trafficking, and labour exploitation. Additionally, individuals in this group encounter heightened challenges in terms of employment opportunities and accessing various social welfare programmes.

Preventive measures such as advocating for the advancement of women's empowerment and the attainment of gender equality are expected to mitigate the susceptibility of women to the consequences of climate change and enhance their prospects of engaging in migration with security and respect. The international community bears the responsibility to encourage countries to

implement measures aimed at safeguarding female environmental migrants from instances of sexual and gender-based violence, human trafficking, and labour exploitation. This can be achieved by means of peace-building and community-led activities and the provision of victim support services. Also, it is essential to develop gender-responsive policies. These policies should recognise and address the distinct challenges faced by women, such as increased risks of violence, restricted access to resources, and limited decision-making power. By integrating a gender perspective into policy frameworks, governments can ensure that women's needs are adequately addressed and their rights protected.

For example, in Africa, UN Women initiated a collection of initiatives in collaboration with indigenous communities with the objective of providing a secure environment for women. These endeavours also encompassed the monitoring of human rights conditions, as well as the implementation of alternative dispute resolution mechanisms and community mobilisation projects. An illustrative case in Uganda entailed the active involvement of women in comprehending court processes and procedures, hence facilitating their enhanced engagement in public policies and processes. The Women's Situation Rooms were established in Kenya in anticipation of the 2013 elections as a responsive measure to address the likely occurrence of violence during and after the electoral vote. During this period, women played an active role as election observers and provided assistance to the election process through several means, thus resulting in a safer environment for voters and for the general population at the results of the election.

An additional aspect to consider is the inclusion of women in policy deliberations, strategic planning, and execution, thereby affording them the opportunity to share their distinct expertise and viewpoints. This measure will contribute to the enhancement of policies that are more specifically suited to cater to the unique requirements of women and successfully mitigate their vulnerabilities. In addition to the formulation of policies, it is crucial to prioritise the provision of educational, training, and employment options for women who migrate due to environmental factors. The phenomenon of migration resulting from climate change frequently leads to the disruption of

established systems for distributing resources, hence intensifying pre-existing gender disparities. Policies should be designed with the objective of guaranteeing fair and impartial access to resources, encompassing land, water, and livelihood possibilities, for individuals of both genders. The attainment of this objective can be facilitated by implementing land and resource tenure changes that place emphasis on gender equality alongside ensuring equitable access for women to finance, training, and income-generating opportunities.

It is imperative for governments and organisations to allocate resources towards educational and training initiatives aimed at providing women with the necessary skills to effectively adapt to and address environmental shifts. Furthermore, the provision of support networks, counselling services, and financial assistance can contribute to the development of resilience among women and aid in their ability to handle the various hurdles encountered throughout the migration process. This intervention possesses the capacity to enhance the process by which individuals engage in the reconstruction of their lives and afterwards make substantial contributions to society. The issue of climate change is a substantial worldwide concern that requires a thorough and coordinated solution on a global scale. The resolution of the intricate matter of migration caused by climate change necessitates the implementation of joint efforts and cooperation among governmental bodies, civil society entities, and local communities. Through collaborative efforts, stakeholders have the ability to formulate comprehensive strategies that incorporate the viewpoints and requirements of women. This objective can be accomplished by means of collaborative partnerships, the exchange of knowledge, and the formation of multi-sectoral working groups that facilitate the convergence of various stakeholders. By adopting these approaches, it would be possible to guarantee the safe and dignified migration of women, enabling them to actively participate towards the construction of a more prosperous future for society as a whole.

In summary, it is crucial to adopt a comprehensive and gender-sensitive strategy towards climate-induced migration in order to effectively promote sustainable development within the region. Through the acknowledgment and resolution of the unique obstacles encountered by women, it is

possible to foster a society that is characterised by fairness and adaptability. The resolution of these difficulties and the establishment of a future in Sub-Saharan Africa that is characterised by environmental sustainability and social justice necessitate the collaborative endeavours of all parties. Taking these facts into consideration, there are potential problems with a narrative that solely focuses on seeing migration as an adaptation and an opportunity for more developed countries in demographic crises and labour shortages. The focus should be shifted to the most affected countries and their mitigation and adaptation measures, not to the opportunities for the most developed ones. It should also be underlined that migration highly discriminates against women who are more exposed to climate change due to social norms that limit their resilience and towards the poorer part of the population, which is less likely to migrate longer distances.

Climate change-induced migrations could indeed represent an opportunity in the ageing regions of the world with low birth rate problems, such as Europe. However, attention should be put on the most affected countries and especially on fragile individuals who cannot leave and migrate, as it is the case with women. That is why, our focus should be more on how we can mitigate the effects of climate where they occur, primarily through policies aimed at preventing or addressing social and economic imbalances among the population. The world needs Africa to follow a sustainable growth path, especially when considering its future economic and demographic growth.

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