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Droughts, Displacements, and Human Implications: A Southern Africa Perspective

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Abstract: Natural hazards have existed worldwide since time immemorial. Rapid climate changes continue to exacerbate the recurrences of these natural hazards, thus generating enormous socio-economic and environmental challenges. Southern Africa is among the global regions most affected by natural hazards. Existing literature on natural hazards mainly focuses on floods, storms,

and earthquakes, while drought-related hazards have not attracted the same attention. This has both policy and practical implications. This study closes this gap. The study uses a quantitative content analysis approach and draws from the quantitative data on drought and displacement in Southern Africa collected by the Internal Displacement Monitoring Centre. It also uses standard rainfall indices (SPIs) to explore how rainfall deviations possibly impact internal displacement. The objective is to (i) explore the drought-displacement nexus in Southern Africa and (ii) propose policy and practical interventions. An analysis of the SPI index for four Southern African countries selected purposefully. The article shows that drought is a significant natural hazard that displaces people in the selected countries. Such human displacement results in several challenges in source regions and receiving regions. In this regard, intervention measures to deal with droughts must adopt a holistic approach to address the resultant vulnerabilities and build future resilience. The study recommends adopting and implementing social policy-based interventions in dealing with the socio-economic impacts of drought displacement in Southern Africa.

Keywords: Climate change, displacement, drought, migration, loss and damage, SPI.

Introduction

Climate change continues to spew catastrophic natural hazards for Africa. These hazards range from wildfires, floods, storms, earthquakes, droughts, epidemics, and dry mass movement (Adaawen et al., 2019; Dube et al., 2022a; Owain & Maslin, 2018). A significant issue of concern in contemporary policy and academic debates is that Africa contributes less to the global emission of greenhouse gases (GHG) than industrialised countries, and yet it bears the brunt of the vagaries of climate change (Conway & Vincent, 2021; Nassor & Makame, 2021; Zickgraf et al., 2016). The Intergovernmental Panel on Climate Change Sixth Assessment Report (IPCC, 2021) identifies Africa as a climate change hotspot. In this region, temperature changes are rising faster than the global average. Temperature is expected to surpass 2°C relative to the late-20th century mean temperature (Emergency Events Database¹. Temperature increases coupled with high evaporation and low precipitation will displace vast sections of the African population, which rely on land and agricultural activities for livelihoods and income (Khan et al., 2021). This is why the climate change and human displacement nexus is receiving sustained scholarly and policy attention globally (Abdulmalik, 2019; Hussain et al., 2020; Ibrahim & Mensah, 2022; Kluger et al., 2020).

Climate change is defined by the Intergovernmental Panel on Climate Change as “a change in the state of the climate that can be identified ... by changes in the mean and the variability of its properties, and that persists for an extended period, typically decades or longer” (IPCC, 2021). One of the significant challenges climate change brings in Southern Africa is the challenge of extreme droughts (Dube et al., 2022b). Drought is an extended period of arid weather with insufficient rain. Drought is usually categorised into four major categories: agricultural, hydrological, socio-economic, and meteorological. In this study, drought generally refers to an acute general

¹ The Emergency Events Database EM-DAT <https://www.emdat.be/>

precipitation or snow deficiency over an extended period (usually a season or more), leading to water shortage (Chivangulula et al., 2023). Many droughts occur when conventional weather patterns interrupt the water cycle (Lézine et al., 2021). Changes in atmospheric circulation patterns can cause storm tracks to be stalled for prolonged periods (Chivangulula et al., 2023). This disruption can dramatically impact the amounts of precipitation that a region typically receives, thus leading to drought (Mekonnen, 2020). Wind patterns can also disrupt how moisture is absorbed in various areas. Droughts negatively impact the essential aspects of human life, especially food security and livelihoods, in many parts of the world (Maharjan et al., 2020).

About 70 per cent of the African population engages in land and rural activities (Ndhlovu, 2022), with their livelihoods enormously based on agriculture, forestry, and fishing, which are vulnerable to natural hazards such as drought. Consequently, when rain fails, much pressure is exerted on those dependent on activities that rely on good rains. The evidence seems to suggest that given the intensity of droughts that are being experienced, the challenge of rural to urban, regional and international migration is now worsening in some settings. Academics such as Adaawen et al. (2019) and Owain and Maslin (2018) documented the role of droughts on migration patterns. The World Bank (2023a, 2023b) estimated that drought and other weather events attributed to climate change could lead to the displacement of more than 86 million people within Africa by 2050.

The study stands at the intersection of three strands of literature: the literature on droughts, the literature on migration, and the literature on human displacement. Therefore, the study has the potential to contribute to ongoing debates on links between climate change and human development by inserting additional debates that may guide policy formulation and practical implementation by policymakers and development practitioners and further theorisations by academics.

Research Problem

Several studies have warned that natural hazards such as drought will continue to lead to forced migration and displacements (Amadi & Vundamina, 2023; Aziz et al., 2019; Dahou et al., 2012). However, natural hazards such as drought have not yet attracted sustained scholarly attention to guide policy formulation and implementation. This is despite several models having projected increased incidence of droughts across the African continent with a severe drying trend in the Sahel (Achberger, 2020; Aziz et al., 2019; Dahou et al., 2012; Serdeczny et al., 2017). The droughts in Northern Africa have been blamed for the migration challenges resulting in many deaths of migrants on the sea as they struggle to cross to Europe in search of greener pastures. Regardless of these claims, very few studies have explored how droughts have altered migration patterns. This study focuses on drought and its relationship to forced migration and displacement from a social policy perspective. In the survey, displacement and forced migration refer to people's involuntary movement or relocation as a drought response strategy.

Research Focus

This study explored the implications of drought and displacement in the Sub-Saharan African region. This region is among the global regions most prone to natural disasters, particularly those related to climate change. This has enormous practical implications for an area where about 70% of the people rely on agriculture for livelihood and income (Ndhlovu & Mhlanga, 2023). The central theoretical position supported is that drought-driven displacement has enormous adverse livelihood implications and that a social policy approach can help deal with most of the resultant challenges.

Research Aim and Questions

This study aimed to understand the impact of drought and human displacement on people. To achieve this, the following research questions were set: What is the drought and human displacement nexus condition in Africa? What intervention options can be adopted to reduce the impact of drought in Africa?

Theoretical Perspective

Predicated on the need to propose intervention mechanisms, this study deploys the social policy approach in analysing the implications of drought in Southern Africa. The social policy approach relates to public actions that can either safeguard or harm people in certain areas (Adesina, 2007). Mkandawire (2001) defines social policy as "collective interventions directly affecting transformations in social welfare, social institutions and social relations... [as well as] access to adequate and secure livelihoods and income." Hall and Frost (2009) view the policy as "...encompassing any planned or concerted action that affects people's lives and livelihoods." At the heart of social policy is the need to guarantee every citizen's life of dignity regardless of status, ethnicity, age, gender, or any other distinctive feature. In drought, social policy would involve protection, vulnerability, poverty, and short-term risk analysis and provide for production, security, reproduction, redistribution, and social cohesion. Deploying this approach could enable a comprehensive analysis of the implications of drought.

Social policy is critical for development. Social policy has three important roles: (i) productive functions (i.e., producing human capital), (ii) redistributive and (iii) protective roles. Thus, there should be a link between social and economic policies. Mkandawire (2009) posits that "social policy [should] work in tandem with economic policy to lead to socio-economic development." When analysing the implications of drought, focus should be placed on 'production', 'social cohesion', 'protection' and 'accumulation'. While 'productivity' and 'redistribution' are the easiest to measure quantitatively, it is crucial to rise above 'production' and 'redistribution' features and examine other needs that exert pressure in specific territories. In this way, the approach could allow us to scrutinise the impact of drought and displacement and then propose interventions.

Literature Review

This study also reviewed existing literature to establish what is currently known about drought or climate change and human displacement in Africa. It found that the literature on displacement and human impacts has been increasing in recent decades (Adaawen et al., 2019; Amadi & Vundamina, 2023; Fernández et al., 2019; Hussain et al., 2020; Ibrahim & Mensah, 2022; Kelly-Hope et al., 2023; Maharjan et al., 2020). This literature mainly focuses on floods, conflict, and storms and how these natural hazards impact lives and livelihoods. However, no existing literature has comprehensively attempted to discuss human displacement or forced migration due to droughts using empirical evidence. This section reviews the literature on forced migration, droughts (climate change), and human displacement as interconnected problematic aspects.

The reviewed literature posits that migration, or the movement of people, is common and natural and comes about for numerous reasons, whether for human development or survival and adaptation in the face of adverse circumstances. Amadi and Vundamina (2023) flag migration as a universal principle that encourages people to move away from areas of socio-economic, environmental, and political hardship towards those areas with more opportunities. The African region is currently one of the most vulnerable to environmental degradation and natural disasters from climate change (Ibrahim & Mensah, 2022; Kluger et al., 2020; Kwembeya, 2021). Although Africa contributes only 4% of the world's total greenhouse emissions (Oliver & Peters, 2020), it is among the region's most susceptible to adverse climate change variability (Sy, 2016). Half of the ten countries most affected by extreme weather in 2019 were in Africa (World Meteorological Organisation, 2020).

Drought is mainly determined by rainfall performance in each location, and droughts occur in areas of low and high rainfall (Ayugi et al., 2022). Rainfall amounts are projected to decrease in the coming decades, and droughts are projected to become more frequent and have a more significant impact due to climate change in areas of Africa that are already water-stressed (IPCC, 2018). Climate change is projected to change the characteristics of droughts (Achberger, 2020). However, there is still substantial uncertainty about how climate change will shape the frequency, intensity, duration, and spatial extent of drought in the 21st century. The IPCC provides estimates of the chances of crossing the global warming level of 1.5°C in the following decades and posits that unless there are immediate, rapid, and large-scale reductions in greenhouse gas emissions, limiting warming to close to 1.5°C or even 2°C will be a mammoth task (IPCC, 2018). Climate change leads to increased global temperatures, which worsens drying, and the duration and intensity of natural droughts are also projected to accelerate (Aziz et al., 2019). If droughts become more frequent and last longer, the time between drought events will become shorter than the recovery time (Chivangulula et al., 2023). This may overstretch the coping strategies of affected communities and permanently damage ecosystems and livelihood mechanisms that, in turn, can affect human migration patterns (Lézine et al., 2023).

In a rural community such as Africa, climate change can destabilise the fundamental aspects of human life, mainly health and well-being, by affecting the ability to grow food and impeding access

to housing and other basic infrastructure. About 70 per cent of the African population depends on land as a source of livelihood or additional income, and therefore, rainfall represents a key resource that keeps communities intact (Ndhlovu & Mhlana, 2023). The livelihoods of most people on the continent depend on activities such as agriculture, forestry, and fishing, which are susceptible to climate change. The disruption and destabilisation of these activities by climate change result in population displacement and migration, increasing the number of 'climate refugees' or 'migrants.' Rigaud et al. (2018) found that climate change impacts were already, directly and indirectly, exacerbating human movements both within countries and across borders in Africa.

Droughts significantly differ from other natural disasters, posing severe economic and social development challenges to Africa. Unlike floods, wildfires, or earthquakes, droughts can occur anywhere. They develop gradually, their start and end are difficult to determine, and their impact often lasts longer than the drought (Achberger, 2020). Given their slow onset, immense spatial scope and protracted duration, droughts represent the most destructive natural disasters, and their effects have been witnessed across Africa (Conway & Vincent, 2021; Ibrahim & Mensah, 2022; Mensah et al., 2020; Rigaud et al., 2018).

Ibrahim and Mensah (2022) aver that the gravity of climate change-induced drought has been long-acknowledged on the continent, with the 2009 introduction of the Kampala Convention having recognised the issue of climate-induced internal migration. The Kampala Convention called for protecting people affected by climate-induced migration through proper planning, humanitarian assistance, community engagement, remediation, and documentation of displaced persons. According to Serdeczny et al. (2017), addressing the climate-change-induced problem requires deploying tripartite dimensions, namely, flood, drought, and sea-level rise, mainly associated with migration. This is indispensable for a continent frequently experiencing these challenges.

Although the literature on climate change abounds, no precise social policy-based interventions have been proposed. Most of the interventions proposed by scholars are scientific, emphasising the need to control human activities and not adversely impact the planet (IPCC, 2018). While these interventions are crucial, they do not provide immediate solutions to livelihood and income challenges currently unfolding in the region. They seem not to focus on 'bread and butter' issues for the farming population in the area. Reducing climate change-inducing activities remains challenging in a developing region like Africa. The region is still trying to industrialise, and few incentives can satisfactorily convince countries to adopt cleaner methods. Therefore, transformative social policy approaches can potentially safeguard human life. At the same time, more sustainable methods are still being sought to determine how best to respond to natural hazards such as drought. Existing literature is largely silent on these aspects.

Research Methodology

General Background

The data source for the study was the Internal Displacement Monitoring Centre (2022). This is the world's leading data source for the analysis of internal displacement. IDMC was established by

the Norwegian Refugee Council in 1998 at the request of the Inter-Agency Standing Committee to set up a global database on internal displacement. Today, the centre remains the leading source of information and analysis on internal displacement caused by armed conflict, generalised violence, and human rights violations worldwide. Since 2009, IDMC has also monitored displacement due to disasters associated with natural hazards, including droughts.

The IDMC Data Portal enables the luxury of exploring, filtering, and sorting data to produce autonomous representations in graphs, tables, and charts. The data can also be accessed and exported to generate visualisations. The portal's data covers a relatively long period, stretching back to 2008, enabling the authors to examine the trajectory of migration and displacement over time.

Data Collection

This study employed a quantitative content analysis approach in which statistical material on drought, displacement and migration was systematically categorised, recorded, and analysed. The focus was counting and recording drought-related displacement and migration statistics, measuring and observing the migration trajectory over time. This method is reputable for its capacity to provide objective, reliable, and generalizable results. Quantitative content analysis data can be analysed using standardised and rigorous techniques, such as mathematical formulas, statistical tests, or computer software. This study uses simple descriptive statistics to analyse and interpret the data. The aim is to provide a reliable overview of drought, migration and human displacement in Africa through a more robust, coordinated and data-driven verification process.

Data Analysis

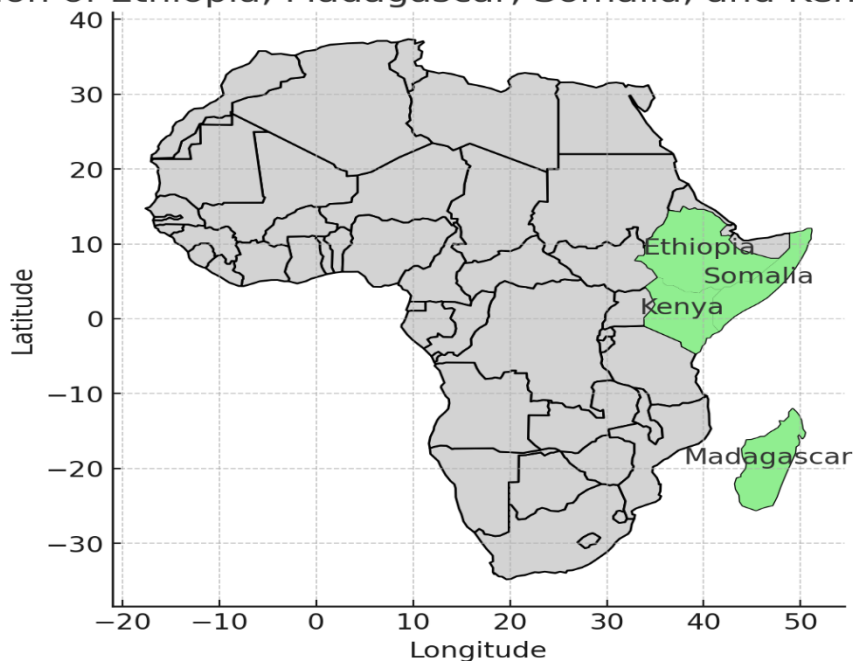
The study also uses standard rainfall indices (SPIs) to estimate wet or dry conditions based on the precipitation variable. Regarding data used to generate the SPI index for various countries, the SPI values range from -2 or less (arid conditions) to +2 (highly wet conditions). Climate Data from Tealtool was used for country-level data. The tool has global climate data that ranges as far back as 1950. It allows those regions that do not have access to climate data to utilise satellite-based data, which has been validated as reliable data. The TEAL was built on previous C3S demo tools: the European Climatic Energy Mixes (ECEM, 2015–2018) and the C3S Climate & Energy Educational Demo (2019–2020). TEAL's historical data was generated from ECMWF ERA5 datasets, which can provide hourly estimates of many atmospheric, land and oceanic climate variables. The data has been accepted and used in recent climate change research (Dube & Nhamo, 2023).

The aim was to explore how deviations in rainfall amounts possibly impacted internal displacement. Although the study focused on the entire SSA, only drought internal displacement data for five countries, Ethiopia, Somalia, Kenya, and Madagascar, was available for analysis (see Figure 1).

Figure 1

Location of Study Areas

Location of Ethiopia, Madagascar, Somalia, and Kenya in Africa



Source: Authors' development.

Results

The results of this study are presented based on four countries to understand the drought occurrence to examine frequency and intensity as well as the resultant displacement.

Drought and Displacement in Kenya

The first country to be examined was Kenya. Evidence from climate data (Figure 2) shows that Kenya has been witnessing an increased frequency and occurrence of drought and growing intensity, particularly in recent years. The country is particularly vulnerable to droughts, as shown by the many years it has had a negative SPI index. Four out of the most severe droughts were recorded between 2000 and 2022, with 2021 and 2022 being some of the most prolonged and intense droughts. There is clear evidence of increased severity of drought in that country. There is clear evidence of climate change judging by the declining SPI values, which points to a decline in rainfall in the area and increasing aridity of the country. This could worsen and increase desertification.

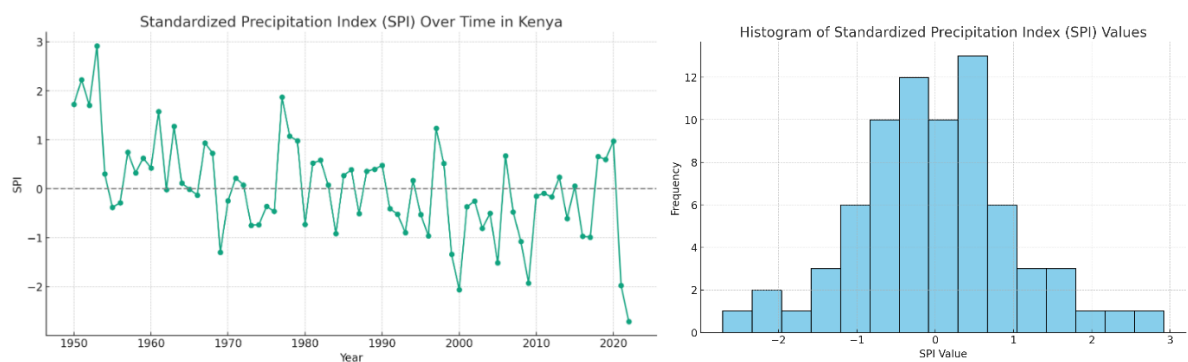
Evidence from Figure 3 shows that this period of extreme drought coincides with a high number of drought-related displacements in Kenya. This explains the increasing rate of internal displacement, particularly since 2022, when SPI values ranged between -1 and -3, and people moved in search of food or pastures for livestock. Although there was a drought in 2021, the IDMC has no displacement records for that particular year. It is possible that households still had some food reserves accumulated between 2018 and 2020 when the country's SPI values revolved around +1 and when the land was wet enough for agricultural production. This, therefore, enabled their

resilience in the advent of future droughts. Given the cultural and traditional way of life, particularly amongst the Massai Community, who are mainly nomadic in search of pastures. Drought can trigger significant human migration, resulting in disruptive livelihoods and loss of socioeconomic livelihoods. Ecosystem losses and other losses in livelihood security, such as livestock, could be huge in proportion to human migration-induced damage and losses.

The SPI Index also points to some years of extremely high rainfall. However, these years were mainly quarantined until the 1950s. Drought episodes are, therefore, in the majority. They can also cause concern as they expose the country to flooding and damage crops and livestock, particularly in low-lying and coastal areas.

Figure 2

Drought Frequency and Intensity for Kenya 1950-2022

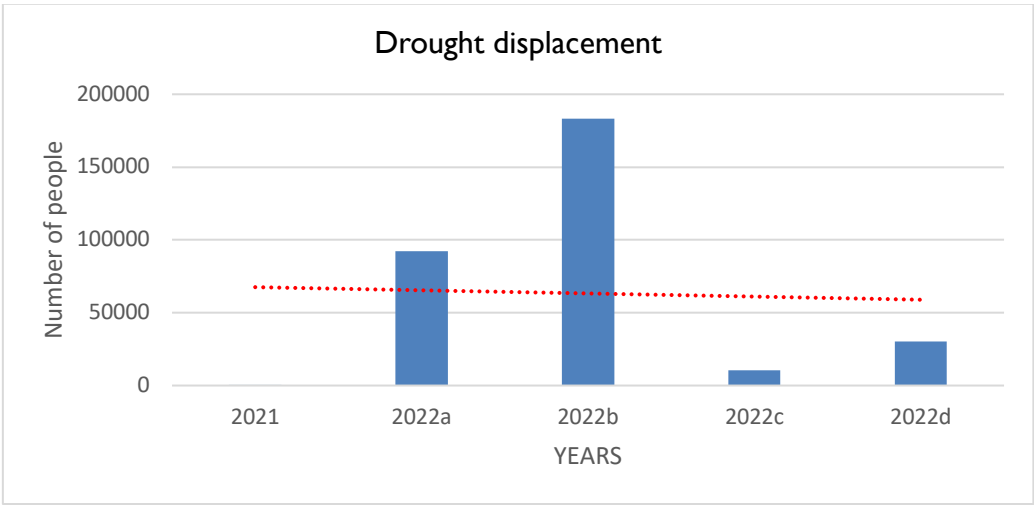


Source: Authors' development.

Drought recurrences in Kenya correlate with the internal displacement data captured by IDMC. Figure 2 shows recurring displacements due to drought in the last two years, with four waves of drought-induced displacements recorded in 2022 alone. In the first wave, 92,352 were affected. The second wave displaced 183,216 people, 10 488 were displaced in the third wave, and 30,150 were displaced in the fourth wave. In 2022, a staggering 316,206 people were displaced by drought, while only two persons were displaced in 2021.

Figure 3

Drought Displacement in Kenya



Drought and Displacement in Somalia

In Somalia, a country that shares the border with Kenya, the picture is not very different from the situation in Kenya. In the 1950s, extreme wet periods ranged from +2 in the mid-1950s to around +1 throughout the 1960s. However, rainfall seems to be declining since then, although there were streaks of very wet years in the late 1980s (Figure 4). Some of the harshest droughts the country has ever faced were in 2021 and 2022, when SPI values declined to around -2. Generally, the government has been susceptible to droughts for many years, and the country's instability does not help matters either. The increasing droughts point to increasing aridity and possible desertification of the area. This is a concern as it humpers human capability to produce and threatens human development in many respects.

There have also been several years of average rainfall, as shown by years that concentrated around 0 (see Figure 4). Decreases in rainfall have enormous negative implications for agricultural countries like Somalia since they affect households' capacity to put their labour to productive use in farming for livelihoods and incomes. This correlates with the enormous number of internal displacements recorded by IDMC.

Figure 4

Drought Frequency and Intensity in Somalia 1950-2022

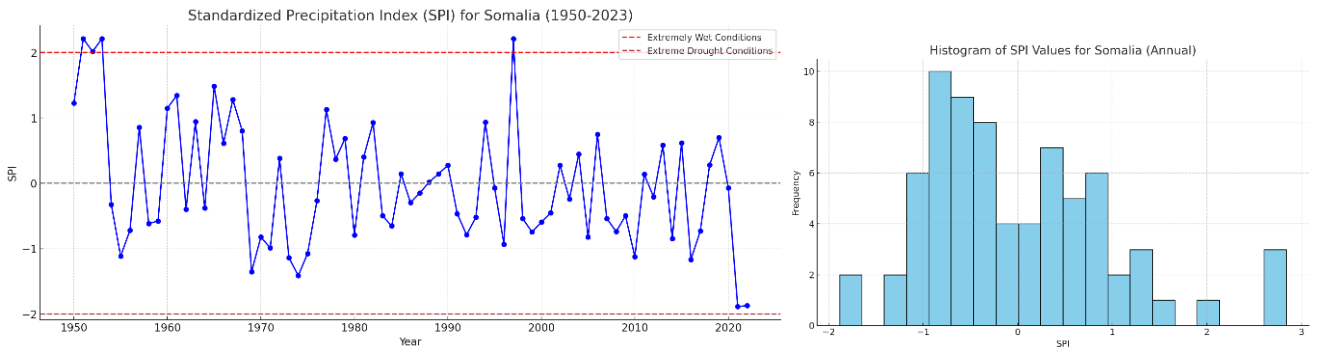
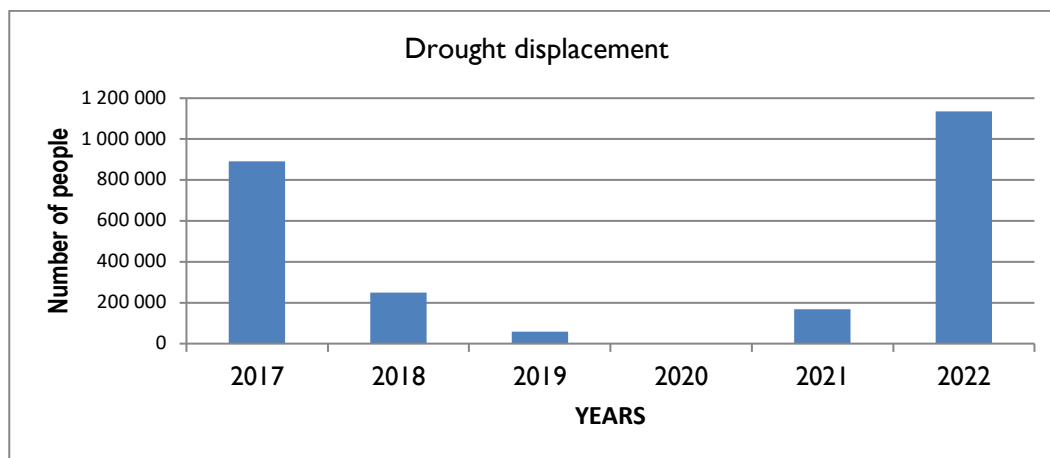


Figure 4 shows that in 2017, drought resulted in the displacement of 891,157 people from their places of origin in Somalia. 2018, another drought wave saw the displacement and migration of 248 758. In 2019, 59 655 were displaced and migrated due to drought. Even though data shows that 2019 and 2019 received above-average rainfall, the shock of two successive droughts in 2016 and 2017 could be to blame. The climate data used was for a country report. It is still possible that other areas and regions of the country could have experienced a drought that resulted in human and livestock displacement. In 2020, 1,184 were displaced or forced to migrate due to drought; in 2021, 167,608 had to relocate. A staggering 1,134 143 people were displaced or migrated due to drought in 2023. Prolonged and recurring droughts induce large swaths of forced migration among communities. The data shows that although displacement and migration due to drought slowed down in 2018 and 2021, a sharp rise reemerged in 2022. These displacements have enormous social, economic, and environmental implications. Displacements affect the development trajectory through agriculture and other natural resource-based economic activities and disrupt social networks, which households often rely on for production and social reproduction. Where families are affected this way, they usually migrate to other areas as a survival strategy.

However, the complexity of displacement data in Somalia may result from a dirty mixture of complex factors, including conflicts, requiring context-specific comprehensive analysis.

Figure 5

Drought Displacement in Somalia



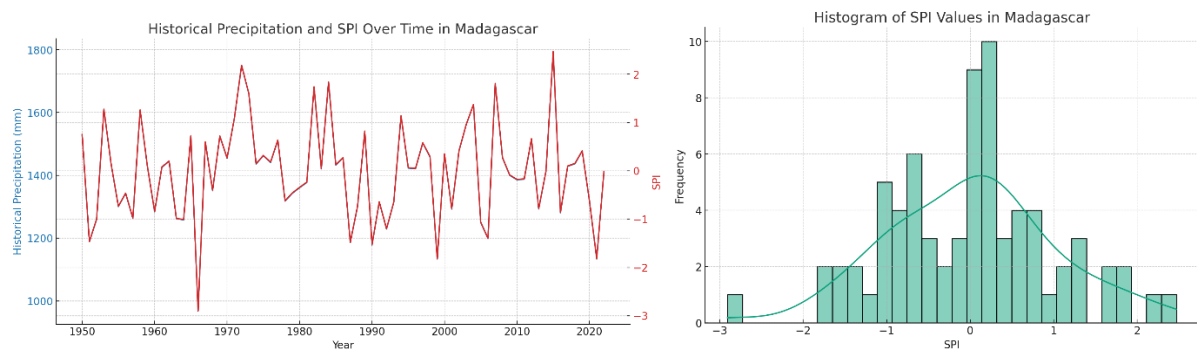
Drought, Displacement, and Forced Migration in Madagascar

Madagascar seems to fare better in terms of the number of years, which are extremely dry compared to Kenya and Somalia at a national level. The picture must be understood in the context of a country that receives some of the highest numbers of tropical cyclones, which disrupts the accurate picture of the occurrence of drought in the country. Most of the major tropical storms in the Southwest Indian Ocean (SWIO) would have made landfall in Madagascar, particularly in the northern parts of the country (Dube & Nhamo, 2021; Otto et al., 2022). Several years (Figure 6) receive annual average rainfall amounts, given the frequency of years near the SPI 0 value. The country experiences highly variable rainfall, with one extreme drought recorded between 1964 and 1965. The country that is highly susceptible to tropical cyclones also experiences some of the most

extreme droughts in other parts of the country. This significantly challenges the country's agriculture production and food security. Droughts also lead to the loss of different ecosystem services that can result in the provision of wild foods, such as wild fruits and fodder for animal grazing, which worsens the situation and ultimately disrupts human livelihood security.

Figure 6

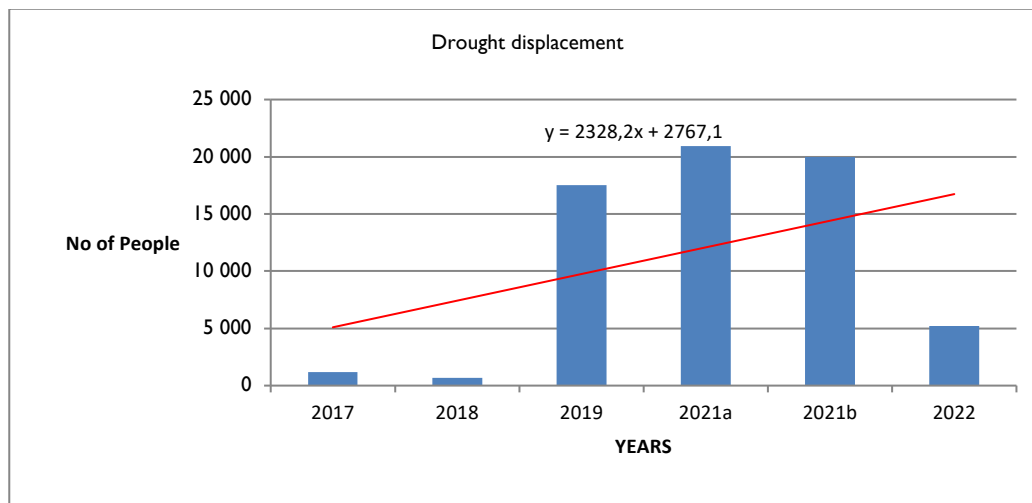
Drought Frequency and Intensity in Madagascar 1950–2022



However, reviewed literature shows that although drought-induced displacements have been recurring in recent years, these displacements have been confined to the southern part of the country called *Grand Sud* (the Grand South) (Marchetta et al., 2021). Figure 7 shows that in 2017, 1,190 people were displaced due to drought. This number dropped slightly to 686 in 2018. The improvement in terms of displacement in this period can be explained by the fact that 2015 and 2016 had received very wet conditions, reached +3 SPI value and thus allowing for food production that could have been adequate to sustain the population in the next few years even when dry conditions worsened to about -1 in 2020 and -2 in 2022. In 2019, however, about 17,493 people were displaced, possibly as food reserves began to run out. In 2021, the IDMC documented two waves of displacement in the country due to drought. In the first wave, 20,909 were affected, while about 20,003 were displaced in the second wave. A drought that occurred in 2022 also affected 5,214 people. The increasing number of drought-displaced people in the country is explained by the fact that tropical cycles destroy crops in most parts of the country. At the same time, drought renders agricultural activities unsustainable in the southern region. Both scenarios destroy livelihood activities and cause food insecurity. Collectively, this triggers displacement.

Figure 7

Drought Displacement in Madagascar

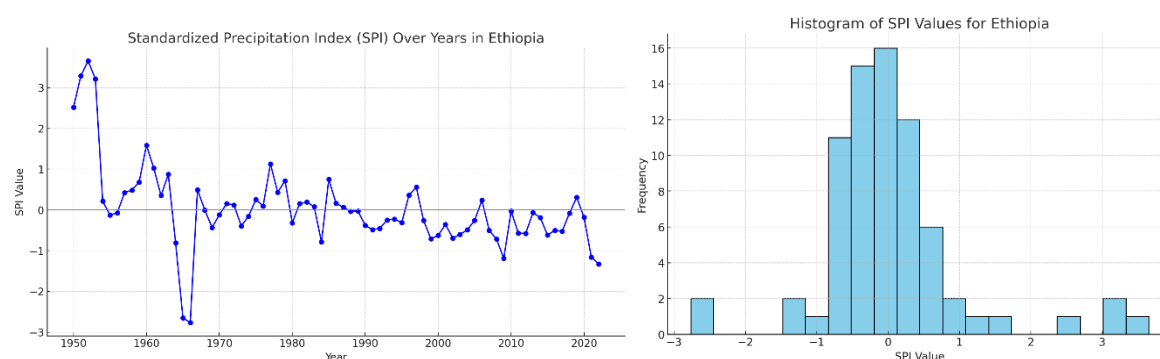


Ethiopian Droughts, Displacements and Forced Migration

Ethiopia is also experiencing a rainfall decline. The 1950s were years of very high rainfall amounts that reached around +4 SPI value. Some of the worst droughts were coincidentally recorded around 1964 and 1965 when the SPI value reached around -3. In recent years, we have also witnessed increased incidences of rainfall that are below average in successive years. The years of the COVID-19 pandemic, 2019 to 2022, have been years of drought, with 2021 and 2022 being some of the years of severe drought in that country (see Figure 8). Such droughts challenge livelihood security for those who depend on agriculture and other land-based activities in that country.

Figure 8

Drought Frequency and Intensity in Ethiopia 1950-2022

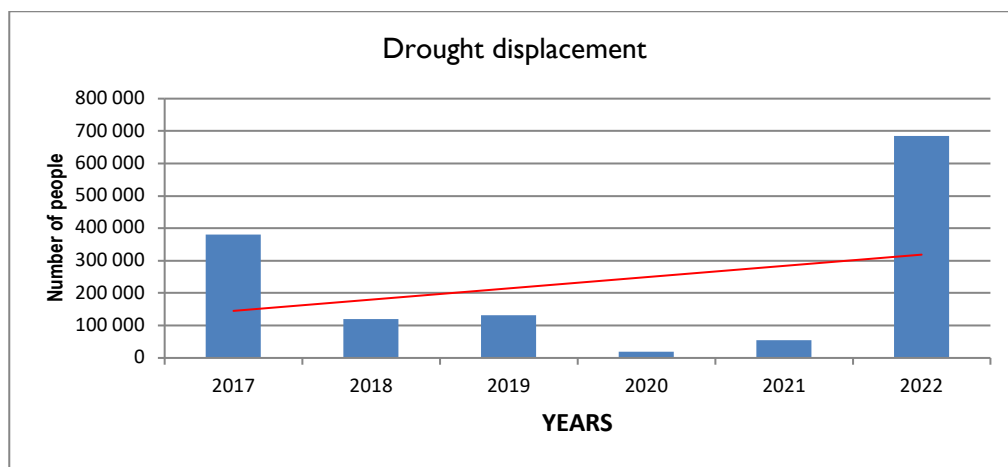


An analysis of precipitation patterns in the countries of the study reveals a general picture of countries battling with countries experiencing some of the harshest droughts. Given that the data used national precipitation data, some areas could be experiencing far worse intensity of droughts, which could hamper land-based economic activities.

Figure 9 shows that the number of people displaced by drought has been high in recent years, thus making drought a significant challenge in the country. In 2017, drought was responsible for the displacement or migration of 380,830 people in Ethiopia. Another 120 320 were displaced or migrated in 2018, 130 957 in 2019, 19 834 in 2020, and 54 019 people were displaced or relocated in 2021. The reduction in displaced people between 2019 and 2021 could have been related to the COVID-19 safety protocols that restricted people's movements. As a result, as soon as these restrictions were lifted, 685,740 were again displaced in 2022. Thus, it can be concluded that the slowdown in displacement was more related to COVID-19 than to the local climatological conditions.

Figure 9

Drought Displacement in Ethiopia



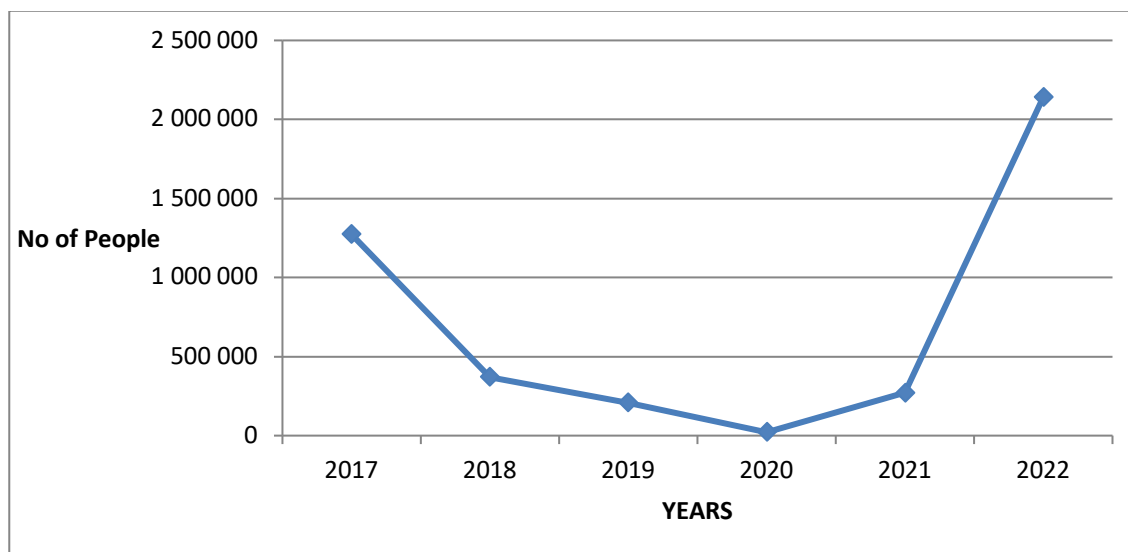
A drought was also recorded in Angola. In 2021, this drought displaced about 7,386 people, the only one recorded in that country since 2008.

Trends of Drought in Africa

The study uses data from Somalia, Ethiopia, Kenya, Madagascar, and Angola to project the drought trends in Africa. The study found that droughts have been recurring in the last six years, with significant numbers of people being displaced or migrating from their areas of origin. Figure 10 shows that in 2017, 1,273,177 people were displaced or relocated due to drought in all five countries. About 369 764 people were affected in 2018, 208 105 in 2019 and 21 018 in 2020, while 269 927 were affected in 2021. In 2022, a staggering 2 141 303 people were displaced or migrated due to drought in all five countries.

Figure 10

Drought Trends in Africa



In Figures 1, 2, and 3, the data shows that while displacements due to drought slowed down in 2018 and 2021 in the East African countries of Somalia, Ethiopia, and Kenya, a sharp rise reemerged in 2022, with the number of people displaced reaching a total of 2 136 089 for the three countries. In Southern Africa, displacement numbers due to drought soared between 2018 and 2021 in Madagascar, reaching 40 912 in 2021 before slowing down to 5 214 in 2022. Angola, which had not recorded drought displacements since 2008, also registered 7,386 in 2021.

Discussion

This section discusses the drought-human displacement nexus in Africa in accordance with the study's first research question and proposes intervention strategies for the second research question.

The Condition of Drought and Human Displacement Nexus in Africa

The data from the IDMC show that drought is a significant problem, mainly in the East and Southern sub-regions of Africa. In East Africa, Somalia, Ethiopia, and Kenya have been the most affected countries, and IDMC recorded the highest numbers of drought-induced displacement and migration due to drought. In Southern Africa, Madagascar has been the country most affected by drought, which has caused much damage to crops and livestock. This is supported by Danevad (2022), who posits that Madagascar has been experiencing an ongoing drought since 2019. Marchetta et al. (2021) identify the ongoing drought as the worst drought in 40 years. About 1.64 million people are facing acute food insecurity and need urgent humanitarian assistance due to the drought (Danevad, 2022). This has resulted in high forced migration, especially from the southern region called *Grand Sud* (the Grand South) (Marchetta et al., 2021). The statistical evidence above shows that drought is an enormous problem which continues to trigger unplanned migration and forced displacement. In a region where agriculture is a significant source of livelihood and income (Ndhlovu, 2023), people's displacement and forced migration have adverse social and economic

implications. The region's socioeconomic impacts of natural hazards are widely reported (Ibrahim & Mensah, 2022; Kelly-Hope et al., 2023). Scholars acknowledge that natural hazards slow Africa's development (Dube et al., 2022b). However, among the many natural hazards discussed by scholars, drought has not received satisfactory policy and academic attention. The impact of drought often goes unreported due to drought being a slow onset event against rapid climatic events such as tropical cyclones. For instance, despite recent droughts in Southern Africa, extreme events such as cyclones and flooding have been widely reported (Khan et al., 2021; Lézine et al., 2021). The intensity and recurrence of these destructive natural hazards have diverted the attention of scholars and policy establishments away from the equally problematic reality of droughts. The impacts of drought, unlike other natural hazards, are very slow to notice. The effects can sometimes be experienced many seasons or even years after the drought event. As a result, scholars rarely document the impact. This has enormous policy and practical implications. This study shows drought is among the problematic natural hazards in Africa.

The study confirms fears by previous scholars who documented the adverse impact of drought on lives and livelihood security. Martin et al. (2016) found that in Morocco, for example, droughts threatened the livelihood of farmers and pastoralists and compounded vulnerabilities which sometimes triggered pastoralists to migrate. The forced displacement of people in the countries under study is a cause for concern. The concern emanates from several dimensions. The IDMC data, however, is mainly descriptive and provides no qualitative reasons for the various reasons for drought-based displacement. This presents a particular limitation. Existing studies also do not investigate where people displaced by drought often go. However, it is not far-fetched to believe that this drought-forced migration contributes to the rapid rise in the population of some urban. The IDMC data does not provide insight into this issue. However, previous studies hint at the matter. For instance, Wafula et al. (2022) argue that Nairobi's rapid urbanisation can be tracked to droughts as pastoralists abandon their lives to settle in urban areas where they have to grapple with several challenges associated with today's urban challenges of overpopulation, pollution and resource constraint in every facet. In Madagascar, Randriamparany and Randrianalijaona (2022) argue that drought often results in compounded poverty for the rural population, including women. To escape poverty, most youth, realising the failure of agricultural production, usually escape seeking green pastures.

The displaced people often move with children who are forced to abandon school, which could prove disruptive and perpetuate a cycle of poverty. Some students are forced to drop out of school, negatively affecting their prospects for a better future and disrupting the achievement of Sustainable Development Goals. Thus, drought has both short- and long-term effects on the African population. Asmall et al. (2021) noted that droughts result in malnutrition and stunting, which have a potential adverse impact on children's development and their potential for academic success.

Drought events also force some farmers into debt (Baudoin et al., 2022) as a way to cope with temporary disruptions to their livelihood security or sell their assets as a coping mechanism, which further entrenches vulnerabilities of communities, either the ones that are displaced or those that stay behind. Therefore, recovery efforts from such events must address some pertinent issues and

disruptions triggered by drought events. An approach that ensures drought resilience will have to address the loss of assets and other support structures if such support is to be sustainable.

There is no doubt that the majority of those who are forced to migrate are young and able-bodied, which leaves the remote areas even more vulnerable to shocks as the aged and ill are left behind with very little chance to adapt. The migration of non-disabled people also worsens the inequalities that exist between the rural and urban populations. There is a serious debate on the vulnerability of metropolitan areas to climate change and how rapid rural-to-urban migration will worsen the challenges already faced by urban areas. Whatever the position of scholars, interventions must be sought to reduce the impact of drought in Africa.

Towards Transformative Social Policy Interventions

This section satisfies the second research question, which seeks to explore interventions for the identified drought challenges in Africa. This study proposes social policy-based interventions to deal with the impacts of drought-induced displacement in rural Africa. The focus is mainly on production, income generation, social protection, social cohesion, and cooperation since these are crucial to the sustenance of the welfare of agricultural communities that are likely to be most affected by drought.

Production and Income Generation

In dealing with the impacts of drought displacement, households' production potential and income generation capacity must be strengthened to reduce displacement. The social policy framework shows that for development to be realised and citizenship enjoyed thoroughly, inhabitants of particular areas need to be able to sustain livelihoods through production. In rural Africa, livelihoods can be considered 'protected' when households carry out sustainable agricultural activities. However, in many African communities, agrarian activities are rain-fed, and most households have no access to irrigation facilities (Ndhlovu, 2022). The presence of drought undermines agricultural activities, including crop and livestock production. Inadequate rainfall constrains crop production where irrigation facilities are not available. Drought also affects pastures and promotes the spread of animal diseases and pests. This undermines households' food production and income generation and exposes them to food insecurity and poverty.

Food and income insecurity also result in additional challenges, such as malnutrition. The number of undernourished people has been increasing across the various sub-regions on the continent. In East Africa, a total of 124.2 million people were recorded as undernourished between 2014 and 2016, up from 103.9 in 1992; 58.9 million people were recorded in Central Africa, up from 24.2 million between in 1992, while in Southern Africa, the number had risen to 217.8 million in 2016 from 175.7 million in 1992. West Africa is the least affected region, with 31.5 million people in 2016, down from 44.6 million in 1992². Drought, therefore, affects the 'production' aspect of the social policy and eventually triggers forced migration towards areas conceived as 'habitable'. In Madagascar, for instance, Marchetta et al. (2022) describe the ongoing drought as the worst drought

² The Food and Agriculture Organization <https://openknowledge.fao.org/>

in 40 years, while Danevad (2022) reports that about 1.64 million people are facing acute food insecurity and need urgent humanitarian assistance due to the drought in that country. This has resulted in high migration, especially from the southern region called *Grand Sud* (the Grand South) (Marchetta et al., 2022).

Drought significantly affects households' production potential and income generation capacity. Most of the households that are most prone to drought-induced displacement are those that rely on agricultural activities. Household members' absence of adequate off-farm employment opportunities is a significant challenge that often leads to the sale of productive assets to meet food and other basic needs. Most households have no choice except to move to different regions they consider habitable. Intervention strategies to reduce drought-related displacement must promote access to adequate and secure livelihoods and income through strengthening production and income generation. Improved irrigation systems and broader access to drinking water, electricity, and finance would support higher economic growth and poverty reduction during drought. These factors are interlinked - electricity-powered irrigation systems and deep tube-well pumps, and access to finance facilitates the building and maintenance of all these facilities.

Social Protection

Social protection is one of the critical features of the transformative social policy framework. Adesina (2021, p. 4) posits that the “transformative role of social policy stretches from the economy to social relations and social institutions . . . [and] involves a wide range of instruments to raise human well-being, transform social institutions, social relations and the economy.” In other words, responding to the challenges spewed by drought requires transcending the provision of social assistance programmes to include social security aspects such as health, education, and particularly infrastructural development. Households are often displaced by drought due to a lack of resources to strengthen resilience and leap back. Intervention strategies entail the provision of critical agricultural infrastructure, such as irrigation facilities. This can reduce the levels of displacement since households can carry out agricultural activities using irrigation facilities.

Social Cohesion and Cooperation

When analysing the impact of drought and displacement, it is essential to go beyond production and protection aspects and focus on social cohesion and cooperation requirements, which are also critical to African rural communities. Social cohesion is one of the essential components of the transformative social policy framework. Although multi-faceted, social cohesion can be expressed in four main categories: social, task relations, perceived utility, and emotion. It is defined by Burns et al. (2018, p. 10) as “. . . the extent to which people are co-operative, within and across group boundaries, without coercion or purely self-interested motivation.” It involves “understanding the social infrastructure, institutions, customs and material and non-material relations that either constrain or enable the individual in whatever pursuit they are engaged” (Murisa, 2007). It denotes the potential of a community to build a shared identity and a sense of belonging.

Social cohesion and cooperation in the form of networks (political and communal), cultural norms (formation of cooperatives), and other social attributes are also essential in sharing knowledge, exchanging experiences and cooperation among farmers. These networks and cooperatives are critical as they increase the chances for increased productivity and income generation. Productivity and income are vital components of the transformative social policy framework as they also increase social protection. Farming households often cooperate during ploughing, weeding, and harvesting sessions to make the work easier. They can also share farm equipment and other farm services. These networks are vital as they increase productivity. Networks are also helpful in increasing the social protection of households. Intervention mechanisms, therefore, should ensure that people are not displaced by drought but rather that social safety nets and infrastructure are increased to reduce the levels of displacement.

Conclusions and Implications

This study aimed to explore the human implications of droughts and displacements in Southern Africa using IDMC data. The data show that drought is among Africa's dominant problematic natural hazards. East and Southern Africa are the regions most affected by drought, with the highest number of people displaced or migrated due to droughts. Drought also has enormous socio-economic implications, with agricultural activities most affected. Current trends implicate climate change as the primary cause of migration. With climate change worsening globally, droughts could worsen and extend to areas where the IDMC did not find data. Although drought has ignited enormous socioeconomic effects in the region, it has not received the same attention as other natural hazards, such as floods, storms, and earthquakes. This is mainly because drought impacts primarily unfold in the long-term and are not noticeable immediately like other disasters. As a result, drought has not received the same academic attention. Yet, it has enormous social and economic implications for most people in the region, who depend on farming for livelihood and income. This study has highlighted this gap in the literature to provoke academic and policy interventions on the impact of drought and displacement in the region. The study advocates for swift intervention mainly because the drought affects the already vulnerable society groups, such as peasant categories. While scientific solutions are vital, the study proposes the need for social-based interventions since these are crucial to the sustenance of the welfare of agricultural communities affected the most by drought.

If no interventions are implemented, displacement and unplanned migration could become a severe developmental and security issue on the continent. Therefore, adopting and implementing policy and practical frameworks to manage and facilitate migration is fundamental. This study recommends adopting social policy-based interventions to improve household production, income generation, social protection, and social cohesion and cooperation. The aim is to ensure that communities are assisted through sustainable food production. The study avers that improved irrigation systems and broader access to drinking water, electricity, and finance would support higher economic growth and poverty reduction during drought. These factors are interlinked - electricity-powered irrigation systems and deep tube-well pumps, and access to finance facilitates the building and maintenance of all these facilities.

The study cognises that the relationship between drought and displacement is complex and indirect. Drought-induced displacement is a dynamic occurrence concurrently influenced by socio-economic, political, and environmental factors, household composition, and personal characteristics. Drought interacts with these factors to generate displacement and migration.

Suggestions for Future Research

To comprehensively understand displacement and migration in the context of drought in Africa, future research should deploy interdisciplinary approaches to account for the broader context in which drought displacement and migration ensue. Micro-, meso- and macro-level dynamics that shape displacement and influence migration need to be evaluated jointly to understand the role of drought in migration decisions. Further research on the nexus between drought migration and displacement is required to enhance an understanding of managing migration successfully and identify opportunities for supporting appropriate adaptive measures. Integrating drought migration and displacement into national frameworks for adaptation and targeting financial and technical support for adaptation to drought is one possible policy option.

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Conflict of Interest

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