Migration, translocality and development in times of climate change

Mitra|WA Working Paper Series
Volume 1

Climate change as a driver of migration? A comparative case study in eastern and northern Ghana

Álvaro Pantaleón Osuna [1]
Palacký University, Faculty of Science, 779 00 Olomouc, Czech Republic.

Abstract

Academic studies and media reports have pointed to climate change as a dominant factor responsible for future mass migrations from and within the Global South. In response to the deterministic nature of their estimates and predictions, this research explores the link that migrants establish between the environmental changes they experience and migration as a climate adaptation strategy. Furthermore, the overlaps between the profile and migratory behavior of those who manifest a greater presence of climate change in their migratory processes and their counterparts are analysed to identify potential unique climate migration patterns and practices. The quantitative analysis of data gathered in the context of the Mitra|WA project in Ghana's Eastern and Northern Regions in 2022 reveals that, while migration is not predominantly propelled by climate change climate, it does not constitute a new form of mobility demarcated from existing migration patterns and practices. This paper provides an opportunity to redirect future research towards the factors that determine the agency of individuals in response to climate hazards and to explore the role of climate change in a set of drivers of migration in a West African setting.

Keywords: Environmental changes · Adaptation strategies · Climate-induced migration · Drivers of migration · Translocality

1. Introduction

1.1 Background

The increased attention to the nexus between climate change and migration is evident in the rise of high-profile publications and the accumulation of empirical evidence in academic literature. Particularly since 2010, the media and political discourse have echoed predictions of potential mass migrations from and within the Global South, attributing climate change as the dominant driver. However, these claims have been questioned and refuted as their dissemination permeated the collective imagination.

The first estimates and predictions date back to 1985,when the UNEP researcher Essam El-Hinnawi estimated that at that time there were 30 million displaced people, a figure that could increase to 50 million by 2010. These results were based on climate change projections for regions where mass migration was assumed deterministically, ignoring the immobility of the agents, and disregarding other adaptation strategies.

This prediction was followed by the oft-cited projection of 200 million by 2050 (Myers 1993, 2002; Myers and Kent 1995). Its uncritical repetition has disguised it as a scientific truth or empirical evidence that we find not only in the media but also in official communications and research reports from the United Nations University Institute for Environment and Human Security (Renaud, 2007) or the Geneva-based Global Humanitarian Forum (2009).

The most recent predictions indicate that, by 2050, 143 million individuals from Sub-Saharan Africa, Latin America, and South Asia will migrate due to climate-related factors (Rigaud et al., 2018). Sub-Saharan Africa is expected to witness the displacement of over 85 million people, the 4% of its total population, as a consequence of increased flooding, drought, high temperatures, and erratic rainfall patterns (Rigaud et al., 2018).

The lack of agreement on terminology and definitions within the conceptual framework presented by each author exacerbates these criticisms, resulting in an inability to compare findings. These disparities are linked to a range of factors, including (I) the nature of the environmental phenomenon (whether triggered by climate change or not); (II) the differentiation between migratory flow and stock; (III) the temporal scale (permanent, temporary, or circular); (IV) the level of the agency involved (from voluntary to forced migration); and the distance that must be covered for

[1] alvaropantaleonosuna@gmail.com

someone to be considered a migrant (Gemenne, 2011). However, the most significant difference is between maximalist scholars (Suhrke, 1994), who contend that climate change is the primary driver of migration; and minimalists, who argue that migration is a multi-causal decision (Dun & Gemenne, 2008).

Despite these inconsistencies, these projections instil a sense of insecurity in society that has begun to define the lines of the migration policies of the Global North, which uses climate migrations as a justification to pre-emptively reinforce its borders:while the European Union aims to "protect itself to keep these people in their places and minimize migration" (Trombetta, 2014), the US Department of Defene blames these potential migratory flows for generating insecurity in the countries of destination (Boas, 2015). Similarly, the United Nations Framework Convention on Climate Change (UNFCCC) points out the need to "avoid, minimize and address climate displacement"; and, in turn, the UN Security Council warns about mass climate migration and the consequent risk of aggravating conflicts (Boas, 2015).

In response to this speech, this research proposes an analysis of migration trends in one of the most mobile regions in the world: West Africa (Romankiewicz & Doevenspeck, 2015). While research has examined climate-related migration in the sub-region to some degree (e.g., Teye & Nikoi, 2022; Van der Geest, 2011; Zickgraf et al., 2016)), there is still a limited understanding of the dynamics of climate-induced migration in West Africa and how migration is employed to cope with climate change and variability (Afifi et al., 2016).

1.2 Purpose of Study

The primary objective of this research is to determine whether migration is currently a response to climatic phenomena that could turn predictions of mass displacement into reality.To accomplish this, and considering that agriculture is the primary household economic activity in the studied areas (see chapter 4.3.4), three questions were posed: (1) How do the respondents perceive the effects of environmental changes on agricultural activity? (2) What is the linkage that interviewees establish between climate risks and migration as an adaptive response? (3) What differences characterize the profile and migratory behavior of climate-induced migrants compared to other migratory movements?

To achieve this, the main challenges faced by the agricultural sector were identified, along with the most common climate risks and the strategies employed by the interviewees to adapt to them. Due to the difficulties in establishing a direct link between environmental changes and migration based on the respondents' answers, the influence of climate change on the migratory process of absent household members was traced by computing four variables. This enabled an analysis of the profile and migratory behavior of migrants whose migration process has been most influenced by climate change compared to others.

This research contributes to the existing literature through a perspective that avoids being deterministic in the relationship between climate change and migratory flows, taking into consideration the multi-causality of decision-making and the structural factors that contribute to agricultural underproductivity.

With this purpose in mind, the research utilized the database of the Mitra|WA project in the Northern Region and Eastern Region of Ghana. The project employs a translocal livelihood and mobility approach at the household level to gain a deeper understanding of the drivers, practices, structures, and processes of rural-urban and cross-border migration, as well as the interconnectedness and dynamics between areas of origin and destination.

2. Literature Review

2.1 Migration patterns in West Africa

Migratory movements on the African continent, except the Maghreb region, tend to occur at the regional level (Flahaux and De Haas, 2016). In West Africa, 72% of mobility takes place within the territory of member countries. The region is characterized as a particularly mobile territory, with an intra-regional mobility six times higher than the intra-European (Olsen, 2011).

Migratory movements in this region typically occur in a coast-bound manner, from Sahelian countries such as Burkina Faso, Mali, or Niger, to mineral-rich countries with more productive agriculture, such as Ghana (Flahaux and De Haas, 2016). These current migration patterns in the region are deeply rooted in historical antecedents: even in the precolonial era, population movements in search of fertile land for cultivation were common. Colonial economic and recruitment policies further stimulated labor migration from countries in the northern savannah zone to countries in the South. Currently, these intra-regional migratory flows are facilitated by the Protocol on Free Movement of Persons, Right of Residence and Establishment adopted in 1979 by the Economic Community of West African States (ECOWAS), consisting of 15 out of the 16 countries in the region (Teye, 2022).

Contrary to the popular image of African ‘boat people’, the migrants that countries like Ghana have been sending to extra-continental destinations, such as Europe or the United States, have largely been highly skilled professionals, such as doctors or nurses (Teye, 2015). However, due to the increasingly restrictive migration policies imposed by countries in the Organization for Economic Cooperation and Development (OECD), there has been a diversification of destinations for West African migrants (Flahaux and De Haas, 2016).

On the African continent, there has been an observed increase in migration flows to oil-rich countries in Central Africa, such as Equatorial Guinea or Gabon, as well as to South Africa (Bakewell and De Haas, 2007). Additionally, there has been a recent upward shift toward Gulf countries, particularly Saudi Arabia, the United Arab Emirates, Qatar, and Kuwait (Teye, 2022). These migrations to the Middle East are often mediated by private recruitment agencies and intermediaries seeking employees for the construction and

domestic service sectors (Awumbila et al., 2017). However, the poor working conditions and abuse suffered by individuals in these destinations have become notorious, leading some countries like Nigeria or Ghana to ban these recruitment systems (Bisong, 2021).

Far from invading the Global North, levels of extra-continental migrations in Africa are lower than intra-regional migrations and are also lower than international standards (Flahaux and De Haas, 2016). When climate factors are included in the equation, the findings in the literature seem to not change these data.

2.2 Migration as an adaptation strategy

Despite its minimal anthropogenic contribution to the acceleration of climate change, West Africa is expected to be particularly affected by environmental changes (Ezeife, 2014). Its geographical position and limited adaptive capacity make it a highly vulnerable region to the effects and variability of climate change (Stanturf et al., 2011; IOM, 2021).

According to previous studies, the impacts can be more pronounced in households whose main economic activity is linked to the agricultural sector, especially when it comes to rain-fed crops (Cattaneo and Peri, 2016; Jarawura and Smith, 2015; Kubik and Maurel, 2016; Teye et al., 2015;). Cattaneo and Massetti (2015), found a relationship between a scenario of 23ºC in the dry season and migration as an adaptation strategy for households involved in agricultural production. However, no significant impact is detected in non-farm households. This finding is particularly significant considering that, according to the Ghana Statistical Service (GSS), in 2021 Ghana's agriculture employed 41% of the population and accounted for 19.1% of the country's GDP.

Climate-induced migrations in West Africa are often characterized by short-distance and short-duration movements (Findley, 1994; Henry et al., 2004 2003; Grolle, 2015; De Longueville et al., 2020), with permanent migrations being an uncommon strategy for dealing with climate change (Dreier and Sow, 2015). For instance, in the Upper West Region of Ghana, households with limited capacity for economic diversification adopt migration as a livelihood strategy during the dry season, moving to other areas with agricultural or mining activities and later returning to their place of origin (Rademacher-Schulz et al., 2014).

However, not all individuals affected by environmental changes make the decision to migrate. Even though situations of immobility have not received much attention from researchers for a long time, there is a growing interest in studying those who choose to stay and understanding the reasons behind their decision, even when their livelihoods are severely impacted by climate change. Recent empirical evidence collected in the literature indicates that Sub-Saharan Africans prefer to implement in-situ adaptation strategies that allow them to avoid the migration process (Esipova et al., 2011; Setrana, 2021). At times, situations arise where households must organize themselves translocally, with at least one member residing in a different destination than the area of origin, so that others can remain in the rural environment. Those who stay in the area of origin are referred to as "immobiles" or "stayers" (Carling, 2002; Mata-Codesal, 2018).

The strategies adopted in rural settings to adapt to climate change may involve modifications of economic, social, or natural structures (Afriyie et al., 2018). However, not all individuals who choose to stay do so because of successfully adopting adaptation strategies. The most vulnerable profiles, such as the very poor, the elderly, or women, may aspire to escape environmental stress but lack the resources to actualize their intentions. These populations are referred to as "trapped" populations (Foresight, 2011; Schraven et al., 2020). Nevertheless, in-situ adaptation strategies may deteriorate over time due to prolonged exposure to environmental stress, leading to a willingness to migrate, regardless of its feasibility (Meze-Hausken, 2000).

2.3 Conceptual framework

In this research, the term "climate-induced migrant / environmental-induced migrant" is used according to the definition stated by the International Organization for Migration (IOM, 2007), which considers them as "persons or groups of persons who, for compelling reasons of sudden or progressive changes in the environment that adversely affect their lives or living conditions, are obliged to leave their habitual homes, or choose to do so, either temporarily or permanently, and who move either within their country or abroad." Therefore, the use of the term "climate refugee," coined by El-Hinnawi in 1985, is avoided as it is inconsistent with the definition of "refugee" as defined in the Refugee Statute of the 1951 Geneva Convention, which does not include the climate variable.

On the other hand, the term "adaptation strategy" is used to refer to adjustments in natural or human systems in response to current or expected climatic stimuli or their consequences (IPCC, 2007). Migration can be considered as an adaptation strategy since it enables households to modify their exposure to climate and environmental stressors, diversify their income sources when on-site adaptation is either impossible or undesirable, and contributes to their resilience strategy (Mbiyozo, 2020).

Despite many studies establishing the link between environmental changes and migration decisions, the research by Borderon et al. (2019) indicates that among the empirical studies reviewed in their systematic review, none of the papers mentioned environmental change as the sole driver of migration. A driver is understood as an external structural force that leads to the initiation and perpetuation of migration. These drivers can function as push agents, inciting departure from the place of origin; or as pull agents, attracting migrants to a host area (Massey et al., 1999 Van Hear, 2012).

To address climate-induced migrations from a multi-causal perspective, the research uses the Foresight Framework (2011) classification as a reference, thus avoiding deterministic links between migration and environmental changes. This framework establishes that

migratory responses are influenced by the convergence of drivers at three levels: the macro level, the micro level, and the meso level.

The macro level is composed of five groups of drivers: (I) political factors (discrimination and persecution of individuals, freedom enjoyed, conflict and insecurity, political incentives, or coercion); (II) economic factors (labor opportunities, income, wages, producer and consumer prices); (III) demographic factors (population size, density, structure, disease prevalence); (IV) social factors (education-seeking, family/kin obligations); and (V) environmental factors (exposure to hazards, land productivity, habitability, food, energy, and water access).

On the other hand, the micro level is composed of the specific characteristics of households or individuals, such as age, sex, level of education, or marital status. Both levels are influenced by the meso level, which includes factors that facilitate or hinder migration processes, such as technology, the cost of displacement, or social networks. When these factors converge, certain profiles in the same context are more likely to migrate than others. Failure to consider these interactions could result in a spurious relationship between environmental change and migration (Abu, Codjoe, and Sward, 2014).

Van Hear (2012) classifies migration drivers into four categories aligned with the macro level (predisposing/underlying drivers, proximate drivers, and precipitating drivers) and the meso level (mediating drivers).

(I) Predisposing or underlying drivers, which are the factors that create an unfavourable socio-economic context, increasing the likelihood of out-migration. Examples include globalization, unequal trade terms, and demographic transformations.

(II) Proximate drivers, that directly cause migration and are a result of the predisposing factors. In migrant-sending areas, macroeconomic challenges, security issues, and environmental changes can drive migration. In migrant destination areas, opportunities arise due to economic growth and peaceful communities, attracting migrants.

(III) Precipitating drivers are the conditions that trigger the decision to migrate. In West Africa, these conditions often relate to the economic sphere, including high unemployment, low incomes, poverty, and low agricultural product prices. Other precipitating factors include inadequate access to healthcare, education, and other social welfare services.

(IV) Mediating drivers facilitate or constrain migration. They include the presence and quality of transportation, improved communication networks, social networks, and the availability of resources necessary for migration.

3. Study Area and Research Methods

3.1 Study site description

The research was conducted in a total of five municipalities belonging to three districts in the Eastern Region of Ghana, and another five municipalities belonging to a single district in the Northern Region of the country. The districts in the Eastern Region were Atiwa East, where the municipality of Frimposo was analyzed; Fanteakwa North, where the analysis focused on the municipalities of Feyiase and Besebuom; and Fanteakwa South, whose municipalities of Dadetsunya and Olantan were studied. In the Northern Region, the municipalities of Bulugu, Gaa, Limo, Pumo no. 1, and Zinindo, all belonging to the Gushegu Municipal District, were examined. These municipalities were referred to as the Area of Origin (AoO) of respondents and migrants.

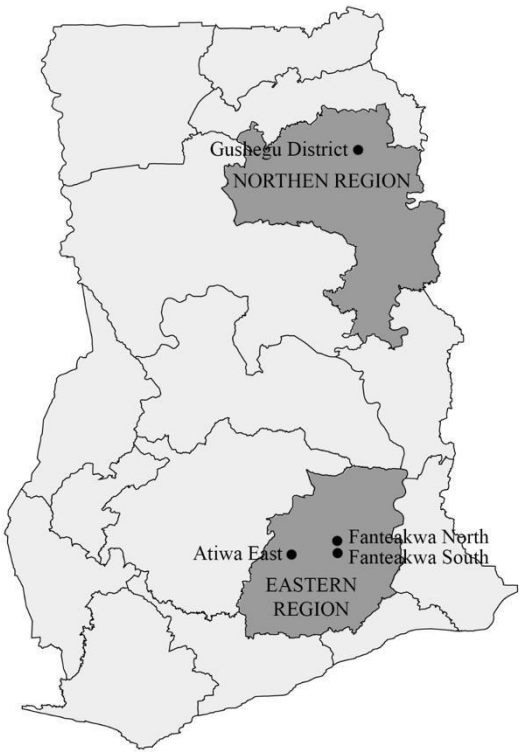

Fig 1. *Location of the Areas of Origin (AoO) in the Eastern and Northern Region. Source: Author's own elaboration*

3.1.1 Area of Origin (AoO): Eastern Region (Atiwa East, Fanteakwa North, and Fanteakwa South)

Atiwa East, Fanteakwa North, and Fanteakwa South, in the central zone of the Eastern region, border Lake Volta and Kwahu South to the North; Upper Manya Krobo and Yili Krobo Municipal districts to the East; Abuakwa North Municipal, Kwahu West Municipal, and Atiwa West districts to the South; and Kwahu South and Kwahu East districts to the West. The combined population of the three districts amounts to a total of 176,268 individuals, spread over 1,496.1 km^2 (GSS, 2021). Nearly 60% of the population falls within the working age range (15-64), and the majority reside in rural areas. Across the three districts, the literacy rate exceeds 70.5%.

The closest urban conurbation with a population over 100,000 inhabitants is the city of Koforidua, the regional capital. It is 60km and a 70 minutes' drive away from the nearest municipality within the study area (Dadetsunya). Communication between these localities relies heavily on an inadequately-maintained road network.

Farming serves as the predominant economic activity within the study area. Noteworthy cash crops cultivated in the region include cocoa, oil palm, and rubber. Additionally, significant food crops produced consist of plantains, maize, cassava, cocoyam, rice, and various vegetables, with tomatoes being particularly prominent (Narh et al., 2023).

The study area is characterized by a bimodal rainfall pattern, with a short dry season between November and February. Historically, the highest rainfall levels are observed in June. However, in the past decade, alterations in the rainfall pattern led to an increased unpredictability (Wehner et al., forthcoming)

3.1.2 Area of Origin (AoO): Northern Region (Gushegu District)

Gushegu (or Gushiegu) Municipal District is located in the northwestern zone of the Northern Region of Ghana. It borders with the Northeast Region to the North, Saboba District to the East, Mion and Nanton to the South, and Karaga to the West. The district's population reaches 153,965 individuals spread over 2,837 km^2 (54.56/ km^2), with a 76.4% of rural population. 49.6% of the population is under the age of 14, surpassing the working-age population (47.8%). Only 21.8% of the population is literate (GSS, 2021).

Infrastructure in the five research localities remains largely underdeveloped. Many roads are in a dilapidated state, educational institutions beyond the primary level are scarce, and adequate healthcare facilities are scattered and often inaccessible to a significant portion of the population (Wehner et al., forthcoming).

Employment opportunities and the presence of other economic activities in Gushegu are limited. The primary activity is labour-intensive subsistence farming, particularly cultivating crops such as soybeans, maize, and groundnuts. This activity is highly threatened by the impact of climate change, as this district is among the top five regions that have experienced an increase in the duration of dry periods in the last 30 years. Normally, the rainy season occurs between May and October. However, the farming period is diminishing due to reduced rainfall, while heavy downpours that damage crops are becoming more frequent (Ungruhe et al., 2023).

3.2 Study population

Between 52 and 67 households were interviewed in each of the 10 municipalities that comprise the study. In each municipality, a listing exercise was conducted to determine the number of migrant and non-migrant households. A Stratified Sampling Technique was used to select 286 migrant and non-migrant households for the questionnaire survey in each region, utilizing Computer Assisted Personal Interviewing (CAPI). 75% of the selected households had one or more members residing outside the AoO.

A Multistage Sampling Technique was employed throughout the analysis. In the first phase of the research, to capture the experiences of migrants with environmental changes and the strategies employed, only those who had been sensitive to such changes over the last 10 years were considered, resulting in a sample of 274 households in the Eastern Region and 281 households in the Northern Region.

In the second phase of the research, the micro-level profile and migratory behaviour of a total of 376 migrants from the Eastern Region and 367 from the Northern Region were analysed. Due to surprisingly low numbers of climate-related migrants identified in the sample of Northern Ghana (see chapter 4.3), only those belonging to the Eastern Region were considered for the last comparative analysis between a subset of the sample and the remaining households. This analysis compared migrants whose migration process had been more influenced by environmental changes with the rest of the sample. The objective was to identify differences between both groups that could define climate-influenced migrations as an independent category with distinct patterns.

The determination of subgroup members was based on the computation of four variables: (I) perception of environmental changes over the last 10 years; (II) identification of at least one environmental change as a negative factor in agriculture; (III) recognition of environmental change as a challenge for agriculture; and (IV) selection of changes in agricultural conditions, either individually or in combination with other categories, as a reason for migration. Furthermore, the main challenges presented to the respondents concerning agriculture were divided into "environmental challenges" and "non-environmental challenges". A Pearson's Chi-square test was conducted to explore the possible association between the categorical variable "environmental challenges", which represents respondents who identified environmental changes as the main challenges to agriculture, with the variable "reason of migration".

3.3 Methodology

3.3.1 Data collection

The database from the first phase of the "Migration and Translocality in West Africa (Mitra|WA)" project, which employed a multi-local survey under a translocal approach, was used for this research. It consisted of two interlinkable tables via a primary key (Household-ID), provided in a simple table format (*.csv). Both tables pertain to the Area of Origin (AoO) and are divided into the "Household Module" and the "Migrant Module".

Data on the socio-demographic characteristics and economic activities of all household members aged 10 years and above, as well as changes in land use, climate change sensibility and strategies, and migration history of the household were collected in the "AoO Household Module". The "AoO Migrant Module" collected information on the

profile of the migrant, their migration experience, and the translocal interactions and flows of resources among present and absent household members. Quantitative survey techniques were utilized to collect data from 572 households and their prospective migrant members in the AoO using Census and Survey Processing System (CSPro) Software.

3.3.2 Data analysis

Data extracted from the surveys were analyzed using Statistical Package for Social Sciences (SPSS). Challenges for agriculture, environmental changes, and adaptation strategies were presented as means, frequency tables, and two-way tables comparing the Eastern Region and the Northern Region. The AoO_Household_Module.csv file and the AoO_Migrant_Module.csv file were merged to identify the two subgroups of migrants. Pearson's Chi-square tests were also used to compare the categorical variables of the subgroups. Their coefficient of association was measured by Cramer's test. Questionnaires were analysed at 95% confidence interval (a = .05).

4. Results

4.1 Households' perception of environmental changes

Most respondents in both the Eastern (95.8%) and Northern Region (98.3%) were sensitive to environmental changes during the past 10 years. A total of 555 out of the 576 respondents from the Eastern Region (ER) (n=274) and the Northern Region (NR) (n=281) identified the major challenges for agriculture in a multiple-choice question.

The variables causing the greatest concern were the increase in input prices (77.4% ER; 80.4% NR) and the presence of pests and diseases (69.3% ER; 56.2% NR), followed by "changes in environmental conditions" (58.0% ER; 40.9% NR). In the Eastern Region, challenges such as storage facilities (36.9%) and transportation networks (34.7%) stood out, whereas respondents from the Northern Region placed greater emphasis on access to credit (30.2%). Other structural factors, such as market access or access to land, were also highlighted in both regions albeit to a lesser degree.

To delve into the experience of the participants with environmental changes, respondents were asked about the phenomena they had perceived to a greater extent and assessed their potential impact on agriculture. Consistent with the major challenges for agriculture, "pests and diseases" prevail as the most perceived environmental change among the households (95.3% ER; 97.2% NR). Soil fertility decrease was also frequently mentioned, especially in the Northern region (96.44%). Both regions coincide in the perception of strong winds and an increase in air temperature, highlighted by 80% of the respondents. In terms of precipitation patterns, high values were reported in both regions regarding the decrease in precipitation (88.7% ER; 94.4% NR) and rainfall variability (91.61% ER; 87.19% NR). 96.4% of the respondents considered all these factors as detrimental to agriculture.

4.2 Implemented strategies for environmental change adaptation.

Data have revealed significant disparities in the adaptation plans across each region. The Northern Region exhibited a higher overall implementation rate (74.4%) than the Eastern Region (47.5%). It also excelled in the rate of strategies implemented per household, with an average of 2.34 strategies per household compared to 1.65 in the Eastern Region.

In both regions, the dominant approach remained the utilization of pesticides and fertilizers, particularly prevalent in the Eastern Region (93.1% of the households), where they constitute 56.3% of the overall strategy aggregate in the region. Other frequent initiatives included the planting of alternative crops (24.6% ER; 52.2% NR) and changes in planting dates (19.2% ER; 34.0% NR).

While the rest of the techniques adopted in the Eastern Region presented low values, households in the Northern Region presented a wide range of strategies, from the installation of irrigation systems (15.3%) to water harvesting methods (12.4%). These techniques are still unpopular due to their cost of implementation and the requirement of proximity to dams in the case of irrigation. As an alternative, some farmers use diesel pumps or rely on small dugouts with canals to cultivate crops, but these options are still economically unaffordable for most farmers (Teye and Owusu, 2015).

Among the strategies less identified by respondents as responses to environmental changes, are the ones related to mobility. Although some cases of temporary migrations to urban (8) or rural (1) areas and permanent migrations (3) are recorded in the Northern Region, none of the interviewees in the Eastern region indicated resorting to displacement as a response to climate change. Finding off-farm work is registered, although this measure does not necessarily imply migratory movements.

These findings are consistent with the ones of Kassim et al. (2021) in the northern area of the country, which indicate that migration was the least popular adaptation strategy used by farmers. Vinke et al. (2020) also state that if in-situ adaptation strategies are successful, people are less likely to migrate. However, Meze-Hausken (2000) argued that in-situ adaptation strategies are sensitive to the passage of time: at the beginning of a drought, better-off households suffer less and migrate less, but if the drought persists, outmigration becomes a strategy for everybody.

4.3 Analysis of climate change-induced migrants and their migratory behavior

In the Eastern Region, a total of 211 households reported being translocally organized, representing 77% of the total population studied. In the case of the Northern Region, this figure rises to 213, accounting for 75.8% of the total sample. After merging the AoO Household Module Database with the AoO Migrant Module Database, a total of 376 migrants belonging to households that had experienced

environmental changes over the last 10 years were identified in the Eastern Region. In the case of the Northern Region, there were 367 cases.

To determine which characteristics of the migrant profile could determine their reason for migration, a Pearson's Chi-square test was conducted among the variables sex, age, marital status, education, and occupation before migrating. The same process was carried out to ascertain whether the reason for migration had any relationship with the destination and the migrant's new occupation. Only the occupation before migration ($p < 0.001$), occupation after migration ($p = 0.003$), and sex ($p = 0.003$) yielded significant results. However, in the two cases related to occupations, more than 20% of the cells had estimated values below 5, rendering the test invalid. This was not the case for the sex variable, although the Cramer's coefficient showed a very low value (0.153).

A comparative analysis was carried out within a subset of the sample, considering migrants whose migration process had been more influenced by climate change. This was based on the four criteria (see chapter 3.2).

Pearson's Chi-square test was conducted to examine the relationship between "environmental challenges", which represents respondents who identified environmental changes as the main challenges to agriculture; and migration reasons. The result showed a significant relationship ($p < 0.001$), but with a moderate association according to the Cramer's coefficient (0.299). Data showed that, while in the Eastern Region, 58% of the surveyed households identified "changes in environmental conditions" as a challenge for agriculture, among those who migrated due to agricultural conditions, this percentage increased to 89.7%.

As a result, a sample of 35 participants classified as "climate-induced migrants" and a sample of 341 participants classified as "non-climate-induced migrants" were obtained. Surprisingly, asking the same questions and in the same order in the Northern Region resulted in a sample of climate-induced migrants too small for robust analysis (n=5). This result opens new lines of debate on how migrants identify their displacement in response to the notorious climate changes in the Northern Region, where they may identify climate factors as a constant over which other factors such as economic and employability have more weight.

Hence, the following sections only refer to the Easter Region.

The migrants were compared based on their gender and age, highest level of education, marital status, and main occupation in the Area of Origin (AoO). Their migration behavior was analyzed in terms of their destination, the new main occupation in the Area of Destination (AoD), and duration of absence.

4.3.1 Age and sex of the migrants

Men account for 54.5% of the sample of non-climate-induced migrants, while women represent 45.5%. Female migrations generally occur at younger ages, outnumbering male migrations, but once adulthood is reached, their presence in the migration process diminishes.

The average age is 34.8 years for male migrants, while females have an average age of 31.8 years. Most absent household members fall within the age range of 20-39 years, accounting for 63.3% of the participants. The second most frequent age group is those aged 40-49 years, representing 17.9% of the total sample. The results show that migrations between the ages between 10 and 20 years are rare and predominantly female. They involve young students seeking to continue their education in other locations, which tends to occur at a younger age.

In the case of climate-induced migrants, migration is predominantly male, accounting for 82.86% of this sample. Some authors also argue that men are more prone to migrate in response to environmental pressure than women (e.g. Afriyie et al., 2018; Hamza et al., 2009; Heaney and Winter, 2016). Steinbrink and Niedenführ (2020) relate the predominantly male migration phenomenon to the fact that men tend to migrate in an initial expansion phase, and only after migration has consolidated, do women migrate in the maturation phase as labour migration or partner migration.

Unlike non-climate-induced migrants, there are no records of migrants under the age of 20, but both samples agree that the most common age range among migrants is 20-39 years (54.3% for climate-induced migrants), followed by 40-49 years (25.7%). Deressa et al. (2011) point to age as a determining factor in experiencing environmental changes. In their study in Ethiopia women between the ages of 31 and 50 are more sensitive to temperature and precipitation variations than other age groups.

Finally, female representation in the migration process of the climate-induced sample is inversely related to the age of the subject.

4.3.2 Highest level of formal education

In the non-climate-induced sample, the most common level of formal education completed is junior secondary (56.5% for men; 46.5% for women), followed by senior education (19.4% for both sexes). Data reveal clear evidence of patterns in schooling, where women are more present in the lower educational levels, such as non-formal education or primary, and only 3.2% reach tertiary education. This figure is three times higher in the case of men (10.8%).

In the case of climate-induced migrants, junior secondary is also the most frequent level of education completed (54.3%). However, the results indicate a higher representation of migrants who have only completed primary studies (25.7%) than those who have reached senior secondary education (11.4%). Only one subject in the sample completed tertiary education.

The fact that educational migration is present in only one sample may influence this result. If we isolate educational migrations, the level of education between the two samples balances out. In this aspect, it is also noteworthy

that despite adult women having a considerably lower level of completed formal education than men, young women are currently the ones who migrate the most for education.

4.3.3 Marital status of the migrant

For the analysis of the marital status of migrants, only those over 18 years old were considered. This criterion did not generate changes in the climate-induced sample but reduced the non-climate-induced (n=327) for this analysis.

The analysis results reveal that the predominant marital status in the non-climate-induced sample is monogamous marriage, comprising 44.6% of the overall sample. The second prevalent category is "unmarried", which accounts for a total of 33.3% of the sample, and it is followed by "living together", that represents 17.1% of the sample. Regarding the climate-induced migrants, common patterns with the compared sample were identified. Monogamous married migrants similarly represented much of the sample (71.4%), followed by "not married" (17.9%). The rest of the categories reflect only specific situations.

4.3.4 The main occupation in the AoO

Most of the non-climate-induced migrants (46%) were employed in the agriculture, forestry, and fishing sectors before their migration. In the male section of the sample, the proportion of employment in this sector is even higher (53.2%). However, women's main previous occupation was education (40%). They are also more prominent in the wholesale and retail trade sector (11%) and other service activities. A total of 5% of the sample was unemployed.

In the case of climate-induced migrants, due to the nature of migration, the main occupation is in agriculture, forestry, and fishing (94.3%), with individual representations in wholesale and retail trade and other service activities.

4.3.5 Destinations of the migrants

The mobility data of non-climate-induced migrants revealed the existence of both national (96.8%) and international (3.2%) migrations. The most frequent destinations within the country were the Eastern region and Greater Accra, although migrations to most regions of the country were identified. Migrants who crossed the border chose the West Africa region as their destination on four occasions (Ivory Coast, Nigeria, and Togo), three cases to North Africa and the Middle East region (Israel, Qatar, and UAE); and four cases to Global North countries (Italy and the United States).

In contrast, the movement of climate-induced migrants took place within the Eastern region (48.6%) and to Greater Accra (40%). Except for two movements to the Northern region, the rest of the migrations reached neighboring regions such as Ashanti and Bono East. No evidence of international migrations was found in this sample.

51.6% of the non-climate-related migrants remained in their region, as did 48.6% of the climate-related ones, who largely maintained their occupation in agriculture. This makes sense considering that the Eastern Region, along with Ahafo, Ashanti, Bono, and Bono East, has the most fertile soils and regular rainfall in the country, making them suitable for crops and working as a pull factor.

Some authors suggest that climate change could be a barrier to movements and limit international migrations. For example, Henry et al. (2004) notes an inverse relationship between droughts and international migrations, which are essentially more costly due to the longer distances, border controls, and immigration restrictions and which may be unaffordable in times of severe crisis. However, although coherent with this research, it is remarkable that in a region as presumably mobile as West Africa, there is relatively few cross-border regional movement, despite political mechanisms that facilitate movements.

4.3.6 New occupation in the AoD

The main occupation of non-climate-induced migrants in their destination remained agriculture, forestry, and fishing (25.2%). The gender difference in this sector was accentuated, with a higher prevalence among men than women. Education remained popular among women, but it was no longer their primary activity. Instead, other service activities (19.4%) and wholesale and retail trade (39.4%) are their most common occupations.

On the other hand, the main occupations of men were diversified, especially in sectors dominated by men such as construction, electricity, gas, steam, and air conditioning supply, transportation and storage, and administrative and support service activities. Some categories such as health and social work activities, mining and quarrying, and public administration and defense showed values lower than 2% of the sample.

The main occupation for climate-induced migrants remained agriculture, forestry, and fishing (37.1%), although this sector was exclusively male-dominated. Likewise, male participants in the sample who changed their sector did so mostly to sectors where women were not represented, such as construction, mining and quarrying, transportation and storage, or electricity, gas, steam, and air conditioning supply. On the other hand, the activities of women in the sample were limited to other service activities and, primarily, wholesale and retail trade.

Surprisingly, the mining sector has little representation in the region, despite its national significance and the presence of several gold, copper, and nickel mines. The unemployment rate of non-climate-related migrants decreased from 5% to 0.9%, which is remarkably low considering that the national average is 3.5% (World Bank, 2022).

In both samples, the migration processes enable migrants to access job opportunities that were not available in their AoO. The greater occupational diversity results in a decrease in participation in the agriculture, forestry, and fishing sectors once the individual reaches the AoD.

4.3.7 Duration of migration

The chronologies of the migratory stock revealed a significant increase in migratory flows recorded by the non-climate-induced movers during the period from 2010 to 2021, with a more pronounced rise from 2015 onwards. Within this time frame, 68.3% of the movements of migrants who, as of August 2022, were still living in areas different from their places of origin occurred. The average duration of these absences was estimated to be 10.3 years, dating back to the first migratory movements in 1980.

Similarly, climate-induced migrations data placed 65.7% of non-returning migrants within the same period from 2010 to 2021. Since the first migratory movement recorded in 1980, there was an estimated average duration of 12.85 years for these absences. It is worth noting that, at the time of data collection in August 2022, no movement in response to changes in agricultural or farming conditions during the year 2022 had been observed.

In both samples, migrations appear to have a permanent nature, particularly for the climate-related migrants, whose average duration of absences over time was 25% longer. This finding contradicts other studies which argue that permanent migrations are an uncommon strategy in West Africa for dealing with climate change (De Longueville et al., 2020; Dreier & Sow, 2015; Jarawura, 2013). However, this finding is consistent with the study by Suckall et al. (2015) on the relationship between climate change and urbanization in Malawi, which found that 52.1% of the rural population who migrated to cities had stayed there for more than 10 years.

5. Conclusion

With reference to determine whether the singularity of climate-induced migrations can transform predictions of mass migrations into reality, the study explored: (I) How do respondents perceive the effects of environmental changes on agricultural activity? (II) What linkage do interviewees establish between climate risks and migration as an adaptive response? (III) What differences characterize the profile and migratory behavior of climate-induced migrants compared to other migratory movements?

Most respondents identified environmental changes during the last decade, associating them with a negative impact on agriculture. However, the interviewees do not consider climate change as the sole responsibility for the challenges faced by the sector; they also identified other factors stemming from structural needs. The increasing focus on climate change and the catastrophic predictions surrounding it can lead to neglecting other structural deficiencies that affect production and over which greater influence can be exerted. Therefore, governments must differentiate between problems that, despite having a local impact, require global solutions and problems whose solutions are within their management responsibilities.

The implementation of measures to adapt to these environmental changes seems not enough to address the major challenges. One of the key findings of this research is that among all the adaptation strategies proposed for climate change, those related to mobility were barely identified by the respondents. This suggests that the link individuals establish between climate change and migration is not as evident as expected. Only by tracing migrants through computation of variables could the migrants more influenced by climate change in the migration process be identified. However, even this group did not stand out for establishing a more direct relationship between environmental changes and migration, as it always appeared in combination with other factors such as work.

Nevertheless, when comparing the group identified as climate-induced migrants to the rest of the sample in the context of Eastern Ghana, no remarkable profile or behavior differences were identified. This result seems to contradict the alarmist messages of massive migrations to the Global North since climate-induced migrants tend to relocate shorter distances. The findings suggest that the impact of climate change in Ghana is unlikely to generate massive extracontinental migrations. There are other factors influencing migratory processes related to demographic, social, economic, and political reasons, as well as specific characteristics of migrants and elements that facilitate or hinder migration. Climate change is then the recent context in which migrations will continue to occur.

For future studies it is therefore essential not to isolate the role of climate change from other drivers of migration. Rather, research shall emphasize how climate change interlinks with these drivers and how it impacts on migration patterns in conjunction.

References

Abu, M., Codjoe, S. N. A., & Sward, J. (2014). Climate change and internal migration intentions in the forest-savannah transition zone of Ghana. Population and Environment, 35(4), 341–364. https://doi.org/10.1007/s11111-013-0191-y

Afifi, T., Milan, A., Etzold, B., Schraven, B., Rademacher-Schulzb, C., Sakdapolrak, P., Reif, A., Geest, K. V. D., & Warner, K. (2016). Human mobility in response to rainfall variability: Opportunities for migration as a successful adaptation strategy in eight case studies. Migration and Development, 5(2), 254–274. https://doi.org/10.1080/21632324.2015.1022974

Afriyie, K., Ganle, J. K., & Santos, E. (2018). 'The floods came and we lost everything': Weather extremes and households' asset vulnerability and adaptation in rural Ghana. Climate and Development, 10(3), 259–274. https://doi.org/10.1080/17565529.2017.1291403

Awumbila, M., Teye, J. K., & Yaro, J. A. (2017). Social Networks, Migration Trajectories and Livelihood Strategies of Migrant Domestic and Construction Workers in Accra, Ghana. Journal of Asian and African Studies, 52(7), 982–996. https://doi.org/10.1177/0021909616634743

Bakewell, Oliver & de Haas, Hein & Martin, James. (2007). African Migrations: Continuities, Discontinuities

And Recent Transformations. *African Alternatives*. 2. 10.1163/ej.9789004161139.i-185.38.

Bisong, A. (2021). Regional solutions: Regulating recruitment and protection of African migrant workers in the Gulf and the Middle East. Maaastricht: ECDMP.

Boas, I. J. C. (2015). Climate Migration and Security. Securitisation as a Strategy in Climate Change Politics. (1 ed.) (Routledge Research in Environmental Politics; No. 24). Routledge. https://doi.org/10.4324/9781315749228

Borderon, M., Sakdapolrak, P., Muttarak, R., Kebede, E., Pagogna, R., & Sporer, E. (2019). Migration influenced by environmental change in Africa: A systematic review of empirical evidence. Demographic Research, 41, 491–544. https://doi.org/10.4054/DemRes.2019.41.18

Carling, J. (2002). Migration in the age of involuntary immobility: Theoretical reflections and Cape Verdean experiences. Journal of Ethnic and Migration Studies, 28(1), 5–42. https://doi.org/10.1080/13691830120103912

Cattaneo, C., & Massetti, E. (2015). Migration and Climate Change in Rural Africa (CESifo Working Paper 5224). Center for Economic Studies and ifo Institute (CESifo). https://hdl.handle.net/10419/108771

Cattaneo, C., & Peri, G. (2016). The migration response to increasing temperatures. Journal of Development Economics, 122, 127–146. https://doi.org/10.1016/j.jdeveco.2016.05.004

De Longueville, F., Ozer, P., Gemenne, F., Henry, S., Mertz, O., & Nielsen, J. Ø. (2020). Comparing climate change perceptions and meteorological data in rural West Africa to improve the understanding of household decisions to migrate. Climatic Change, 160(1), 123–141. https://doi.org/10.1007/s10584-020-02704-7

Deressa, T. T., Hassan, R. M., & Ringler, C. (2011). Perception of and adaptation to climate change by farmers in the Nile basin of Ethiopia. The Journal of Agricultural Science, 149(1), 23–31. https://doi.org/10.1017/S0021859610000687

Dreier, V., & Sow, P. (2015). Bialaba Migrants from the Northern of Benin to Nigeria, in Search of Productive Land—Insights for Living with Climate Change. Sustainability, 7(3), 3175–3203. https://doi.org/10.3390/su7033175

Dun, O. V., & Gemenne, F. (2008). Defining 'environmental migration'. Force Migration Review, 31 (October), 10-11.

El-Hinnawi, E. (1985). Environmental Refugees. UNEP, Nairobi.

Esipova N., Ray J. & Pugliese A. Gallup World Poll: The many faces of migration. Based on research in more than 150 countries. International Organization for Migration (IOM), Geneva, in cooperation with GALLUP. IOM Migration Research Series No. 43 2011

Ezeife, N.D. (2014). Projected Impact of Global Warming on West Africa: Case for Regional and Transnational Adaptive Measures. Comparative Law, 20.

Findley, S. E. (1994). Does Drought Increase Migration? A Study of Migration from Rural Mali during the 1983–1985 Drought. International Migration Review, 28(3), 539-553. https://doi.org/10.1177/019791839402800306

Flahaux, M.-L., & De Haas, H. (2016). African migration: Trends, patterns, drivers. Comparative Migration Studies, 4(1), 1. https://doi.org/10.1186/s40878-015-0015-6

Foresight: Migration and Global Environmental Change (2011). Final Project Report. The Government Office for Science, London.

Gemenne, F. (2011). Why the numbers don't add up: A review of estimates and predictions of people displaced by environmental changes. Global Environmental Change, 21, S41–S49. https://doi.org/10.1016/j.gloenvcha.2011.09.005

Ghana Statistical Service (2021): Ghana 2021 Population and Housing Census. General Report, Vol. 3A: Population of Regions and Districts. Accra: Ghana Statistical Service.

Global Humanitarian Forum. (2009). The Anatomy of a Silent Crisis. Geneva: Global Humanitarian Forum.

Grolle, J. (2015). Historical case studies of famines and migrations in the West African Sahel and their possible relevance now and in the future. Population and Environment, 37(2), 181–206. https://doi.org/10.1007/s11111-015-0237-4

Hamza, M., El Faskaoui, B., & Fermin, A. (2009). Migration and environmental change in Morocco: The case of rural oasis villages in the Middle Drâa Valley. EACH-FOR. Environmental Change forced Migration Scenarios, 2(2.3).

Heaney, A. K., & Winter, S. J. (2016). Climate-driven migration: an exploratory case study of Maasai health perceptions and help-seeking behaviors. International journal of public health, 61(6), 641–649. https://doi.org/10.1007/s00038-015-0759-7

Van Hear, N. (2012). Forcing the Issue: Migration Crises and the Uneasy Dialogue between Refugee Research and Policy, Journal of Refugee Studies, Volume 25, Issue 1, March 2012, Pages 2–24, https://doi.org/10.1093/jrs/fer052

Henry, S., Boyle, P., & Lambin, E. F. (2003). Modelling inter-provincial migration in Burkina Faso, West Africa: The role of socio-demographic and environmental factors. Applied Geography, 23(2–3), 115–136. https://doi.org/10.1016/j.apgeog.2002.08.001

Henry, S., Schoumaker, B., & Beauchemin, C. (2004). The impact of rainfall on the first out-migration: A multi-level event-history analysis in Burkina Faso. Population and Environment, 25(5), 423-460. https://doi.org/10.1023/B:POEN.0000036928.17696.e8

Intergovernmental Panel on Climate Change (IPCC) (2007). Climate Change 2007: Impacts, Adaptation and

Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson. Cambridge University Press, Cambridge UK, 433-467.

IOM (International Organization for Migration). (2007). Discussion Note: Migration and the Environment (MC/INF/288–1 November 2007 – Ninety Fourth Session). International Organisation for Migration, Geneva, 14 February 2008 IOM.

IOM (International Organization for Migration) (2021). Environmental Migration, Disaster Displacement and Planned Relocation in West Africa. IOM, Geneva.

Jarawura, F.X., & Smith, L. (2015). Finding the Right Path: Climate Change and Migration in Northern Ghana. In: Hillmann, F., Pahl, M., Rafflenbeul, B., & Sterly, H. (eds) Environmental Change, Adaptation and Migration. Palgrave Macmillan, London. https://doi.org/10.1057/9781137538918_13

Kassim, Z., Alhassan, H., & Appiah-Adjei, C. (2021). Farm households' choice of strategies in response to floods in the Builsa-North district, Ghana. Climate and Development, 13(6), 484–492. https://doi.org/10.1080/17565529.2020.1801375

Kubik, Z., & Maurel, M. (2016). Weather Shocks, Agricultural Production and Migration: Evidence from Tanzania. The Journal of Development Studies, 52(5), 665–680. https://doi.org/10.1080/00220388.2015.1107049

Massey, D. S. (1999). International Migration at the Dawn of the Twenty-First Century: The Role of the State. Population and Development Review, 25(2), 303–322. https://doi.org/10.1111/j.1728-4457.1999.00303.x

Mata-Codesal, D. (2018). Is it simpler to leave or to stay put? Desired immobility in a Mexican village. Population, Space and Place, 24(4), e2127. https://doi.org/10.1002/psp.2127

Mbiyozo, A.N. (2020). Migration: A Critical Climate Change Resilience Strategy, Institute for Security Studies (ISS). South Africa. CID: 20.500.12592/x9npqw

Meze-Hausken, E. (2000). Migration caused by climate change: how vulnerable are people inn dryland areas?. Mitigation and Adaptation Strategies for Global Change 5, 379–406. https://doi.org/10.1023/A:1026570529614

Myers, N. (1993). Environmental Refugees in a Globally Warmed World. BioScience, 43(11), 752–761. https://doi.org/10.2307/1312319

Myers, N. (2002). Environmental refugees: A growing phenomenon of the 21st century. Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences, 357(1420), 609–613. https://doi.org/10.1098/rstb.2001.0953

Myers, N., & Kent, J., (1995). Environmental Exodus: An Emergent Crisis in the Global Arena. Climate Institute, Washington, DC.

Narh, J., Wehner, S., Ungruhe, C., & Eberth, A. (2023). The Role of Translocal Practices in a Natural Climate Solution in Ghana. Climate, 11(11), 216. https://doi.org/10.3390/cli11110216

Olsen, A. S. W. (2011). Reconsidering West African Migration. (DIIS Working Paper 2011:21). Danish Institute for International Studies.

Rademacher-Schulz, C., Schraven, B., & Mahama, E. S. (2014). Time matters: Shifting seasonal migration in Northern Ghana in response to rainfall variability and food insecurity. Climate and Development, 6(1), 46–52. https://doi.org/10.1080/17565529.2013.830955

Renaud, F. (2007). Control, adapt or flee: How to face environmental migration? Publication Series of UNU-EHS No. 5/2007

Rigaud, K., de Sherbinin, A., Jones, B., Bergmann, J., Clement, V., Ober, K., Schewe, J., Adamo, S., McCusker, B., Heuser, S. & Midgley, A. (2018). Groundswell: Preparing for Internal Climate Migration. World Bank, Washington, DC.

Romankiewicz, C., & Doevenspeck, M. (2015). Climate and Mobility in the West African Sahel: Conceptualising the Local Dimensions of the Environment and Migration Nexus. In H. Greschke & J. Tischler (Eds.), Grounding Global Climate Change (pp. 79–100). Springer Netherlands. https://doi.org/10.1007/978-94-017-9322-3_5

Schraven, B., Adaawen, S., Rademacher-Schulz, C., & Segadlo, N. (2020). Climate Change Impacts on Human (Im-) Mobility in Sub-Saharan Africa: Recent Trends and Options for Policy Responses. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

Setrana, M. (2021). Choosing to Stay: Alternate Migration Decisions of Ghanaian Youth. Social Inclusion, 9(1), 247–256. https://doi.org/10.17645/si.v9i1.3691

Stanturf, J., Warren, M., Charnley, S., Polasky, S., Goodrick, S., Armah, F. & Nyako, Y. (2011). Ghana climate change vulnerability and adaptation assessment. USDA Forest Services International Program.

Steinbrink, M., & Niedenführ, H. (2020). Africa on the Move: Migration, Translocal Livelihoods and Rural Development in Sub-Saharan Africa. Springer International Publishing. https://doi.org/10.1007/978-3-030-22841-5

Suckall, N., Fraser, E., Forster, P., & Mkwambisi, D. (2015). Using a migration systems approach to understand the link between climate change and urbanisation in Malawi. Applied Geography, 63, 244–252. https://doi.org/10.1016/j.apgeog.2015.07.004

Suhrke, A. (1994). Environmental degradation and population flows. Journal of International Affairs, 47(2), 473.

Teye, J.K. (ed). (2022). Migration in West Africa: IMISCOE Regional Reader. Springer International Publishing. https://doi.org/10.1007/978-3-030-97322-3

Teye, J.K., & Nikoi, E.G.A. (2022). Climate-Induced Migration in West Africa. In: Teye, J.K. (eds) Migration in West Africa. IMISCOE Research Series. Springer, Cham. https://doi.org/10.1007/978-3-030-97322-3_5

Teye, J.K., & Owusu, K. (2015). Dealing with Climate Change in the Coastal Savannah Zone of Ghana: In Situ Adaptation Strategies and Migration. In: Hillmann, F., Pahl, M., Rafflenbeul, B., Sterly, H. (eds) Environmental Change, Adaptation and Migration. Palgrave Macmillan, London. https://doi.org/10.1057/9781137538918_12

Teye, J.K., Yaro, J.A., & Bawakyillenuo, S. (2015). Local farmers' experiences and perceptions of climate change in the Northern Savannah zone of Ghana International Journal of Climate Change Strategies and Management 7(3): 327-347. DOI:10.1108/IJCCSM-05-2014-0066

Trombetta, M. J. (2014). Linking climate-induced migration and security within the EU: Insights from the securitization debate. Critical Studies on Security, 2(2), 131–147. https://doi.org/10.1080/21624887.2014.923699

Ungruhe, C., Steinbrink, M., & Teye, J. (2023). Mobiles Westafrika. Kontinuitäten und Dynamiken von Migration in Zeiten klimatischer Veränderungen. Geographische Rundschau, 75(10), 30-35.

Van Der Geest, K. (2011). North-South Migration in Ghana: What Role for the Environment? International Migration, 49(s1). https://doi.org/10.1111/j.1468-2435.2010.00645.x

Vinke, K., Bergmann, J., Blocher, J., Upadhyay, H., & Hoffmann, R. (2020). Migration as Adaptation? Migration Studies, 8(4), 626–634. https://doi.org/10.1093/migration/mnaa029

Wehner, S., Steinbrink, M., Narh, J., & Ungruhe, C. (forthcoming). Migration and Translocality in West Africa (MiTtra|WA): Empirical data from the multi-local survey on migration and translocal structures in Burkina Faso, Ghana, Nigeria, Sierra Leone. Ghana, Part I/VI: Northern Region, Eastern Region, Greater Accra Region. GFZ Data Services

World Bank Open Data. (2022). World Bank Open Data. https://data.worldbank.org/indicator/SL.UEM.TOTL.ZS?locations=GH

Zickgraf, C., de Longueville, F., Ozer, P., Gemenne, F., & Vigil Diaz Telenti, S. (2016). The Impact of Vulnerability and Resilience to Environmental Changes on Mobility Patterns in West Africa. World Bank. https://www.knomad.org/sites/default/files/2017-04/KNOMAD%20WP%20The%20Impact%20of%20Vulnerability%20and%20Resilience%20to%20Environmental%20Change%20and%20Migration.pdf

About the Author

Álvaro Pantaleón Osuna holds a degree in International Relations from Rey Juan Carlos University (Spain). This paper is an abstract of his master's thesis for his Erasmus Mundus Joint Master's Degree in Global Development Policy during his research stay at the University of Passau.

Publication Details

Cite as:
Pantaleon, A. (2024). Climate Migration as a driver of migration? A comparative case study in eastern and northern Ghana. In: Ungruhe, C., & Wehner, S. (eds.), Migration, translocality and development in times of climate change. Mitra|WA Working Paper Series No 1.

DOI: 10.15475/mitrawa.upa1

Publication Date: July 15th 2024

Editors: Ungruhe Christian, Wehner Stefanie

Contact for the Working Paper Series: Dr. Stefanie Wehner, University of Passau, stefanie.wehner[at]uni-passau.de

www.uni-passau.de/en/mitrawa