

**UNIVERSITY OF GHANA, LEGON**  
**CENTRE FOR MIGRATION STUDIES**

**RESEARCH TITLE - MIGRATION AND AGRICULTURAL  
TRANSFORMATION IN THE NANDOM DISTRICT**

**BY**  
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**This thesis is submitted to the University of Ghana, Legon, in partial  
fulfilment of the award of a Master of Philosophy (MPhil) Degree in  
Migration Studies**



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## DECLARATION

I hereby declare that this thesis is the result of original research work undertaken by me under the competent supervision of Professor Joseph Kofi Teye and Professor Joseph Yaro and that no part of it has been submitted elsewhere for any other purpose. Furthermore, references to the work of other people or bodies have been duly acknowledged.



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## DEDICATION

With a heart full of gratitude and adoration, I would like to celebrate these gallant men and women for their immeasurable support in earning this degree successfully. For this reason, I dedicate this work unreservedly to my surrogate father, Dadematse Tetteh Dartey Agbo, my life coach, Professor Joseph Kofi Teye, my seer, Prophet Eldad Thomas Donkor, and my indispensable confidants, Queen Koryo Piyogu Aplam II and Madam Catherine Kabuki Cudjoe. I am eternally grateful to you all for believing in me and pushing me relentlessly to achieve this magnificent height. You are indeed my inspiration and the wind beneath my wings.



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## ABSTRACT

The implications of out-migration on agricultural transformation have been a topical issue over the years. The mixed effects of the transformation brought about because of people migrating out of communities of origin have been the bone of contention among scholars in migration research. This study, therefore, sought to find out the relationship between agricultural transformation and migration using the Nandom Municipal District as a study area. The study was guided by three main objectives, which shaped the entire discussion and the exact communities sampled. The study adopted the mixed method using a sample size of 150 respondents for the survey using probability and non-probability sampling techniques at different stages of the study. SPSS version 21.0 was used to analyze the primary survey data after going through all the required ethical procedures.

The study found that the communities in the Nandom Municipality are predominantly agricultural-based, and migration to urban areas is a common phenomenon among the residents. Seasonal migration is common amongst residents, especially during the dry season. Nonetheless, the majority of the movements are within Ghana. Chieftaincy disputes, lack of a ready market for agricultural produce among others are not the reasons for which people migrate from the community rather; famine, long droughts due to changing climate, poor soils, poor health and educational services infrastructure and delivery, bad road networks, poor crop yields, improper housing facilities are considered by participants as the main reasons why many people migrate out of the communities in the area. Regarding the implications of the out-migration of migrants on the agriculture sector in the study area, the study found that migrant networks have helped left behind relatives to diversify their source of livelihood by establishing agro-chemical and other businesses which provide different services. Both cash and social remittances have

helped transform the agriculture sector even though it is insignificant in comparative terms. The perspective of the implications of outmigration on community transformation, according to most study participants, is positive despite the challenges identified. Several recommendations are also offered at the end of this work.



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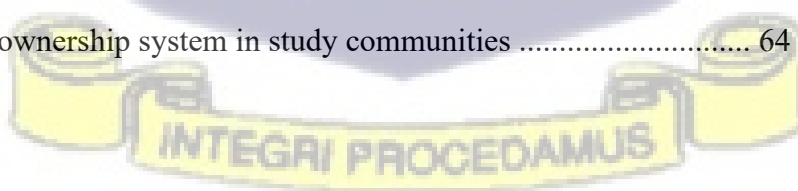


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## CHAPTER ONE

### GENERAL BACKGROUND OF THE STUDY

#### 1.1 Background to the study

Migration, agriculture, and food production are in a complex interrelationship that has attracted research and policy attention globally (Bakewell, 2008). As the world population is surging (Gu et al., 2021; UNHCR, 2021; Chamie, 2020) and communities are urbanizing (Teye, 2018), globalization is facilitating the fluid flow of human movement across space. Migration has been a livelihood strategy for many migrants, especially from poor nations (Murrugarra et al., 2011; Awumbila et al., 2015). Current global migration flows have been attributed to climate change, political conflicts, urbanization, and improved transportation systems (Ratha et al., 2010; Ajaero and Onokala, 2013; Awumbila et al., 2015).

Although media discussions tend to portray mass international migration from developing countries to developed countries, a large proportion of migrants from the developing world move to destinations within their regions (De Hass, 2010; Teye et al., 2019).

In many West African countries, including Ghana, rural-urban migration is the dominant type of migration, and recent data have shown that migration flows are not only urbanizing but feminizing (Awumbila et al., 2015). The effects of rural-urban migration on agricultural production and the broader rural economy have been the subject of several debates in academic circles (Crush & Caesar, 2017; FAO, 2018).

Several researchers have suggested that out-migration tends to affect farm labour and the associated increase in farm labour wages (Yaro, 2008; Madaha and Wejnert, 2011; Taylor et al.,

2019). Contrary to these assertions, other researchers have argued that migration can enhance agricultural production and rural development in migrant-sending areas in relation to remittances. For instance, the transfer of skills, knowledge and technology from the migrants and return migrants to areas of origin can potentially enhance agricultural production and broader rural development (FAO, 2018; Dinbabo et al, 2017).

However, in recent years, the debate on the impacts of out-migration on agriculture has expanded to cover the linkages between migration and food security (Choithani, 2017). As of 2023, Sasu (2024) reports that Ghana's agricultural sector contributed approximately 177.6 billion Ghanaian cedis (about 11.7 billion U.S. dollars) to the country's Gross Domestic Product (GDP).

According to the Ministry of Food and Agriculture (2024), the Upper West region of Ghana is significantly agrarian with over 80% of the population in the Upper West region involved in agriculture as a source of livelihood, either through direct or indirect means.

However, the region, like most regions within the northern sector of Ghana, is currently faced with rising levels of the out-migration of its active youthful populations to other urban areas of Ghana, particularly for improved standards of living and better employment opportunities. According to the 2021 population and housing census thematic report on migration published by the Ghana Statistical Service in March 2023, the Upper West region continues to exhibit some of the highest rates of out-migration in Ghana (Ghana Statistical Service, 2023). Specifically, at a relatively lower population attraction rate of 3.4% to the Upper West region, the out-migration rate in the Upper West region currently stands at 20.4% (Ghana Statistical Service, 2023).

This data reveals a sustained pattern of out-migration in the Upper West region of Ghana, given the statistical equality it presents when compared to migration data from the 2010 population and

housing census in Ghana. The report also indicates that the Upper West region, with a percentage value of 49.7% shows a relatively higher out-migration pattern as compared to other regions in the northern parts of Ghana, such as the North East region (49.4%) and the Northern region (48.1%). Given that, the Upper West region has a significant population fraction involved in agricultural activities, these outcomes pose significant threats to long-term farming activities, food security and agricultural-based skilled labour force as opposed to the seeming positive outcomes of out-migration of populations in agrarian regions. While such assertions have merit, no clear data show correlative beneficial outcomes for agrarian regions such as the Upper West region of Ghana. There is no current data from the Ministry of Agriculture or local government service showing that out-migrants return to areas of origin to add value to farming practices, both in terms of knowledge transfer and the introduction of mechanized forms of farming. This trend is therefore worthy of investigation to understand the patterns and reasons for which out-migration occurs in the Upper West region of Ghana. The study also ascertains the nature of agricultural transformation ideals and potentials, and analyzes the relationship between migration and agricultural transformation.

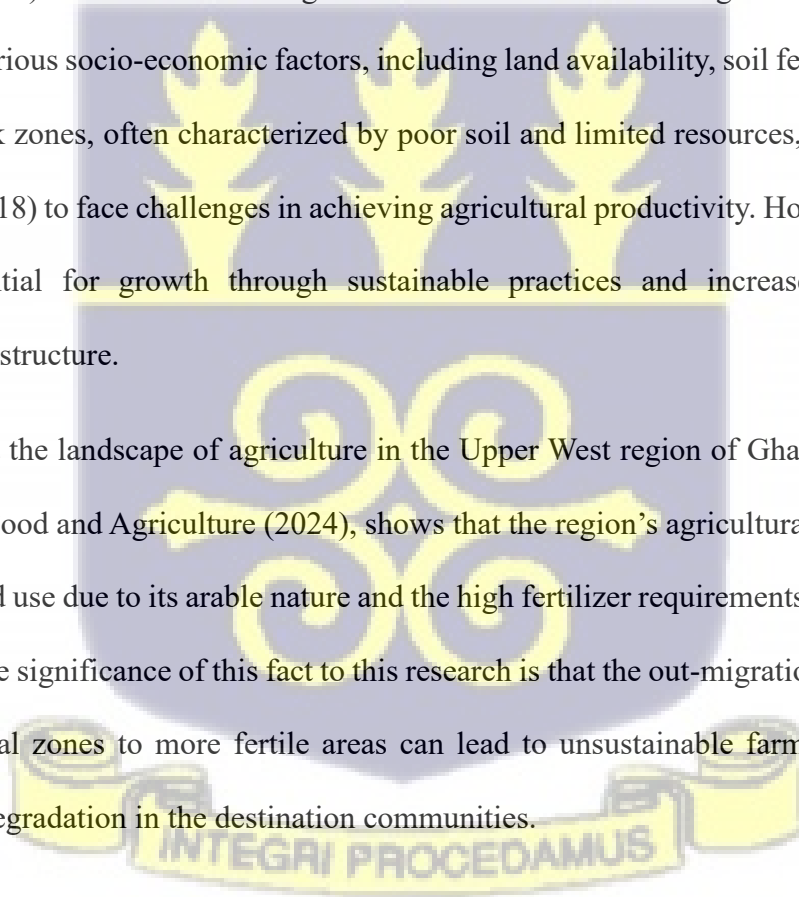
### **1.2 Problem Statement**

Ghana's agricultural sector currently serves as the largest employer of most of its labour force, particularly in the informal sector, while contributing monetary value to Ghana's GDP, representing the third largest contributor to the Ghanaian economy as compared to other sectors (Ghana Statistical Service 2017). Undoubtedly, Ghana's agricultural transformation is still evolving and currently transitioning from traditional methods to more sustainable and technology-driven approaches. The conceptualization of agricultural transformation, which is adopted in this study, is offered by the International Food Policy Research Institute, which states that agricultural transformation is the transformation of an agri-food system from predominantly subsistence farming to high productivity, resulting in reduced poverty and increased food security.

The efforts of the Ghanaian government, over the years have been directed at making agriculture more attractive to the youth who are heavily involved in rural-urban migration with the launch of significant programmes such as the Youth in Agriculture Programme, Greenhouse Villages Programme, Savannah Accelerated Development Authority, the Planting for Food and Jobs programme, the Agriculture Mechanization Services Enterprise Centers, and the Upper West Agricultural Development Project.

However, region-specific assessment of agricultural contributions to the Ghanaian economy, in the context of the impact of rising out-migration on agricultural practices, has been understudied. Aniah et al. (2019) established that migration of farmers across ecological zones in Ghana is influenced by various socio-economic factors, including land availability, soil fertility, and climate conditions. Weak zones, often characterized by poor soil and limited resources, are also noted by Harden et al. (2018) to face challenges in achieving agricultural productivity. However, these areas also hold potential for growth through sustainable practices and increased investment in agricultural infrastructure.

A further look at the landscape of agriculture in the Upper West region of Ghana, as reported by the Ministry of Food and Agriculture (2024), shows that the region's agricultural practices, reliant on extensive land use due to its arable nature and the high fertilizer requirements, further strain the environment. The significance of this fact to this research is that the out-migration of farmers from weaker ecological zones to more fertile areas can lead to unsustainable farming practices and increased land degradation in the destination communities.



In the context of the movement of people to different settings for want of better socio-economic realities, rates of out-migration, as evidenced by the thematic report of the Ghana Statistical Service, can have profound implications for agricultural transformation ideals. As evidenced by the research of Charlton, et al. (2021), the out-migration of younger and more dynamic individuals often results in labour shortages, hindering the adoption of modern agricultural techniques and the maintenance of traditional practices. This labour gap, as indicated by Charlton et al. (2021), can worsen the pressure on remaining agricultural lands, leading to over-exploitation, soil erosion, reduced soil fertility, and deforestation. Furthermore, it is stated by Šūmane et al. (2018) that the departure of a significant portion of the farming population can disrupt traditional farming practices and knowledge transfer, potentially resulting in the abandonment of land or the adoption of less sustainable methods.

Another significant effect of out-migration, as highlighted in the studies of Brauw et al. (2021), is its impact on agricultural supply chains, shifting demand towards urban-centric systems and reducing investment in rural agricultural infrastructure, which limits farmers' access to resources and markets. It can therefore be deduced that the high dependency on agriculture, coupled with out-migration, reinforces the state of socio-economic vulnerabilities faced by remaining residents, highlighting the need for policies that integrate sustainable development practices with sound migration policies.

The data on the Upper West region of Ghana, as shared by the Ministry of Food and Agriculture (2024), signifying the agricultural potentials of the region, positions it as a valuable research context given its history and rate of out-migration trends. However, given the vast administrative jurisdiction of the Upper West region of Ghana, thus comprises eleven administrative districts, this study narrowly focuses on the Nandom District as its unit of analysis. The Nandom District is

selected as this study's unit of analysis because the district's agricultural landscape holds promise for agricultural transformation through international partnerships and collaborations that could lessen out-migration, which unintentionally puts economic and social pressure on urban areas. For instance, a recent joint agreement between the Nandom Naa, HRM Naa Prof. Edmund N. Delle Chiir VIII, and former Nigerian President Olusegun Obasanjo aims to transform local farming activities by empowering farmers in Nandom, with the potential to stimulate economic growth (Upper West Media, 2024).

This partnership signifies strategic economic and individual livelihood enhancement opportunities that populations leaving Nandom, particularly, can take advantage of, rather than moving to southern and urban centers to pursue relatively unavailable employment opportunities. This argument is supported by the studies of Antwi-Bosiakoh, Tuota, Marfo, & Andoh (2014), which established that, for Nandom youths who have migrated to urban areas such as Accra, their purpose for migrating out of Nandom was to seek better livelihoods. Secondly, Nandom District's over-reliance on rain-fed agriculture, dominated by small-scale food crop production, highlights the potential for impactful research into sustainable agricultural practices and irrigation innovations.

Also, studies examining migration-related issues in Nandom District have substantially focused on areas other than the relationship between migration and agricultural transformation. For instance, the studies of Baada, Kansanga, Kangmennaang, & Luginaah (2023) looked at migrant women's food insecurity in Ghana, while the research by Zaami (2020) focused on the involvement of social networks in gendered migration strategies in Ghana. In the Nandom District, Tanle (2023) examined married women's out-migration and the experiences of their left-behind husbands. Also,

the studies of Mainu (2022) analyzed gender-related migration issues, climate change, and women's agencies in migration from northern Ghana.

Again, given that migration-related issues are often statistically quantified and interpreted, this study's use of a mixed methods approach presents fresh perspectives by blending both qualitative and quantitative data that not only provides a comprehensive analysis but also ensures that the statistical data is enriched with personal narratives and subjective experiences of the participants. As such, this study seeks to fill the knowledge gap and contribute significantly to the migration and agricultural literature of Ghana and to inform policy structure and implementation processes relating to out-migration and the potential for agricultural transformation in the Nandom District of the Upper West region in Ghana.

### **1.3 Research Objectives and Questions**

The general objective of the study is to examine the effects of rural out-migration on agricultural transformation in the Upper West Region of Ghana.

#### ***1.3.1 Specific Research Objectives***

The study is based on the following objectives

- i. To describe and analyze the pattern and multifaceted reasons for migration in the Nandom District.
- ii. To assess the nature and dynamics of agricultural transformation in the Nandom District.
- iii. To examine the relationship between migration and agricultural transformation in the study area.

#### ***1.3.2 Specific Research Questions***

- i. What are the primary patterns and driving factors of migration in the Nandom District, and how do socio-economic factors and demographic variations influence these patterns?"

- ii. What are the major changes in agricultural practices in the Nandom District, and how have technological advancements, environmental and economic factors influenced these transformations and their impacts on local farming communities?
- iii. How does migration affect agricultural practices, productivity, and land use in the Nandom District, and what are the implications of these trends for agricultural transformation?

#### **1.4 Rationale for the Study**

This study will provide in-depth knowledge of the relationship between migration and agricultural transformation. This research will also provide the required information for the analysis and understanding of this phenomenon in the Ghanaian context and, for that matter, the Upper West region of Ghana, which has been categorized as a region with food insecurity (World Food Programme, 2009). In addition to the benefits itemized above, the study will help to identify effective strategies for policymakers to manage regional migration and improve food security. This study is also expected to contribute value to existing knowledge on migration in Ghana and serve as a reference for future researchers who would like to conduct studies in a similar area.

#### **1.5 Research Context**

The Upper West region is one of the major food baskets for the people of Ghana and neighbouring countries due to several factors (Abdul-Korah, 2008). The region is characterized by peasant farming with a focus on cereals, yams, and other farm products. However, researchers argue that the region is also a reservoir of agricultural labour force for the middle belt and southern Ghana (Abdul-Korah, 2008). With the increasing out-migration of its potential labour force, both male and female, to the south, a labour vacuum is created that suppresses the sustenance of the agricultural system (Yaro, 2008).

In the context of climate change vulnerabilities and significant out-migration, coupled with aging family members left behind, the food security needs of the population, especially those in rural communities, are compromised. Migration in the Northern regions of Ghana was traditionally seasonal, with families moving to urban areas in the south to seek alternative livelihood opportunities during the lean farming season.

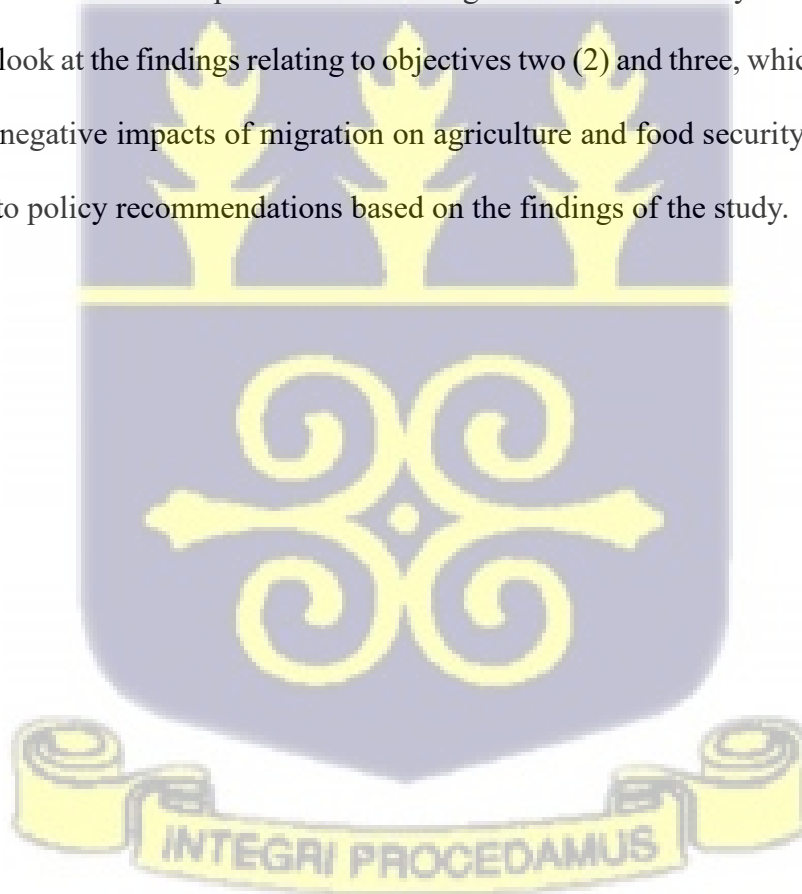
The challenges are worsened by climate change, which has altered rainfall patterns, leading to prolonged droughts, high temperatures, and decreased soil fertility. Many migrants, dependent on farming, can be cultivated only in one season per year and to avoid redundancy, they migrate south. This trend has serious consequences for food production in the northern parts of Ghana due to the loss of labour. On the other hand, some researchers argue that seasonal out-migration benefits the community of origin. While Yaro (2008) and others have established a relationship between migration and food security in Ghana and other parts of the world, these findings have not been specifically applied to the selected communities, such as Bilegam, Nadomkpe and Dabolteng. Therefore, this study aims to expand the knowledge on this subject.

## **1.6 Organization of the Study**

The thesis has been organized into five main chapters, with each chapter having some sub-units to be discussed. The first chapter, which is the background to the study, will proceed with the general introduction to the study and then continue with the background and problem statement of the study. Subsequently, the chapter will look at the study objectives, research questions and rationale for the study to give clarity to the subject matter under investigation and the need to conduct this study. The entire research structure will be outlined here to describe the sequence of flow of the various chapters accordingly. Finally, the ethical issues and chapter conclusion will be presented

here. Chapter two (2) will be devoted to reviewing relevant literature on various concept relations in the study. Specifically, chapter two will focus on critically perusing the population and migration trends, rural-urban migration trends.

Subsequently, Chapter Three (3) will be dedicated to discussing the methodology adopted for the study. It will describe the geographical background of the study communities, sampling techniques used, the sampling size, data collection techniques and tools, data analysis techniques and tools adopted. The findings of the research will be divided and discussed under two main chapters. Thus, chapter four (4) will be dedicated to discussing the study findings in relation to objective one, which investigates the factors responsible for out-migration from the study area. Chapter five (5) of the study will look at the findings relating to objectives two (2) and three, which seek to examine the positive and negative impacts of migration on agriculture and food security. Also, discuss the findings related to policy recommendations based on the findings of the study.



## **CHAPTER TWO**

### **REVIEW OF LITERATURE**

#### **2.1 Introduction**

This chapter focuses on the review of related literature on the relationship between rural out-migration and its consequences on agricultural activities. The chapter is discussed under thematic areas and involves a scoping review of the literature. The thematic areas under which this chapter is discussed include migration in Ghana, agricultural activities in Ghana, rural-urban migration in Ghana, the definition of a rural setting or area, migration and agriculture in Ghana, and the study area. Following this, the chapter continues to situate the whole study in a theory by looking at the theoretical and conceptual framework that underpins the study. The theoretical underpinnings look at the various migration theories and then narrow down to the main theory on which the whole study is situated.

#### **2.2 Migration**

Migration has become a high-priority issue on the policy agenda of several countries globally. In 2019, a total of 272 million people globally were estimated to be international migrants (IOM, 2020). There were more male migrants than females in the proportion of 52 percent and 48 percent, respectively. A greater proportion of international migrants have been noted by the International Organization for Migration (2020) to be of working age (20-64) years. Global migration estimates depict migration trajectories occurring within low-income and middle-income countries, typically referred to as the Global South. Movements within and from Africa are estimated at about 15 to 22 million people migrating within Africa (IOM, 2020; African Economic Outlook, 2020).

Out-migration, a significant phenomenon, has far-reaching implications for both sending and receiving regions. Out-migration is described by Bazillier et al. (2017) as the movement of individuals or groups from their place of origin or residence to another locality, often driven by economic, social, demographic, or environmental factors, with implications for labor availability, community structures, and regional development dynamics.

In Ghana, the dynamics of out-migration have been influenced by various socio-economic factors, including employment opportunities, educational aspirations, and economic instability. According to the World Bank (2022), Ghana has experienced a substantial rise in international migration, with an estimated 1.2 million Ghanaians living abroad, primarily driven by the pursuit of better job prospects and improved living conditions. This trend aligns with the findings of Antwi Bosiakoh et al. (2021) in their study on north-south migration, which highlights how economic disparities between Ghana's northern and southern regions contribute to migration patterns. In-country out-migration, as explained by Gartaula & Niehof (2018), refers to the internal movement of people from one region, district, or locality to another within the same nation, particularly from northern regions like Nandom, which is driven by limited economic opportunities and educational resources, prompting youth to seek better prospects in urban centers such as Accra (Antwi Bosiakoh et al., 2021).

The Ghana Statistical Service (2023) reports that urban migration within Ghana has significantly increased, with Accra's population growing rapidly due to internal migration. This internal migration mirrors international out-migration trends, depicted by the cross-border movement of individuals from their country of origin to another nation for improved livelihoods (Ghimire, et al., 2021). The interplay between internal and external migration shows the broader socio-

economic challenges faced by Ghana, highlighting the need for targeted policies to address regional disparities and support sustainable development.

### ***2.2.1 Forms of Human Migration***

Migration is broadly categorized into two types: international migration and internal migration.

Global literature on migration discusses internal migration under four main types: rural-urban migration, urban-urban migration, rural-rural migration, and urban-rural migration. Of these, rural-urban migration is the most common and significant in terms of literature (IOM, 2020). Lagakos (2020) also notes that the recent focus has expanded to include other forms of internal migration. These four types of internal migration patterns can be observed in a country like Ghana and even within the same locality. Initially, these internal migration patterns were predominantly undertaken by men; however, in recent years, there has been an increasing number of women participating in both internal and international migration (IOM, 2019).

## **2.3 Population Growth Trends, Urbanization and Land Use Space**

The Upper West Region of Ghana, known for its agriculturally based economy, is facing notable challenges linked to population growth, urbanization and land usage. With a rise in outmigration among the population, concerns about labour availability and food security are becoming more pronounced. Understanding population data is essential for tracking growth patterns in the Upper West Region and specifically in the Nandom District. According to the Ghana Statistical Service report (2021), the region had a population of around 868,479 in 2020, showing an increase from census records (Ghana Statistical Service, 2021). Recent demographic surveys conducted by the

Nandom District Assembly indicate that the Upper West Region has a population structure with a percentage of individuals under 30 years old (Nandom District Assembly, 2024).

However, migration trends suggest a migration shift towards areas like WA (the regional capital) and Accra (the national capital), leading to labour shortages in rural areas such as Nandom District (Statistical Service, 2021). The rise in this phenomenon is credited to the improved prospects and educational resources in the major cities in Ghana. Within the context of population growth, the data on fertility and mortality as published by the Ghana Statistical Service (2021) shows that birth rates in the region remain high as compared to urban areas like Tamale, contributing to population growth (Ghana Health Service, 2020). Conversely, high outmigration rates among the youth reduce the labour force available for agricultural activities, impacting food security and local economies (Ghana Statistical Service, 2021).

Essentially, Songsoore (2021) asserts that, in the Upper West Region, urbanization has been relatively slow compared to other regions in Ghana. However, Nandom District has seen a gradual urban expansion due to infrastructural developments and increased economic activities. Specifically, the construction of new roads and schools has contributed to this trend (Nandom District Assembly, 2022). As such, this finding aligns with the observation of Dadashpoor et al. (2019) that the expansion of urban areas often leads to changes in land use, including the conversion of agricultural lands for residential and commercial purposes. This indicates that, while improved infrastructure has enhanced living conditions, it has also led to increased pressure on existing services (Sas, 2024).

Consequently, as noted by Amoako (2020), urbanization provides new economic opportunities but also contributes to the marginalization of rural agricultural sectors and while there may be the expansion of urban areas as a result of out-migration, environmental degradation, including loss

of arable lands and increased pollution is rife. Relative to land use, Nandom District's land use is predominantly agricultural, with significant areas dedicated to crop farming and livestock rearing whereas residential and commercial developments are concentrated around the town center (Nandom District Assembly, 2022).

Inevitably, population growth and urbanization have led to changes in land use, with increasing areas being converted from agriculture to residential and commercial purposes. This transition has been facilitated by land tenure reforms and government policies aimed at promoting urban development (Niang, 2019). Some of the challenges that accompany this phenomenon, and specifically how it affects Nandom District, include increased demand for land due to population growth and urbanization, which can lead to land scarcity, affecting agricultural productivity (Bonye et al., 2021).

Also, traditional land tenure systems can lead to conflicts over land ownership and usage rights (Ghana Land Administration Project, 2020), whereas conflicts between agricultural and non-agricultural land uses can impact food security and community cohesion (Asaaga, 2021). To this end, while existing literature provides a foundation for understanding population growth, urbanization, and land use in the Nandom District, there are gaps in specific studies focusing on the interplay between these factors in the context of rural-urban migration, necessitating this research to explore these dynamics in greater detail, particularly in relation to efforts to mitigate out-migration in the Nandom District, local policies and community responses.

## **2.4 Agriculture and Food Security Challenges in Ghana**

The data on food security across the globe shows that, as of 2023, 2.33 billion people around the world experienced moderate to severe food insecurity, with almost 900 million people facing

severe food insecurity. Of these, 1.8 billion were unable to afford a healthy meal (United Nations, 2024; World Economic Forum, 2022). These statistics have reflective relevance for Ghana's situation. The report from the Food and Agriculture Organization indicates that about 12.9 million people, representing 39.4% of the total population, face moderate to severe food insecurity challenges (Janoch & Zhang, 2023).

However, Agyekum & Adadi (2021) argue that agriculture remains the most important sector of the economy. SRID (2017) similarly revealed that a large proportion of Africa's poverty reduction agenda is reliant on the sustenance of the agricultural sector. This is significantly so because, it is argued by Macrotrends LLC (2024) that as of 2021, about 687,081,900, a 1.66% increase from 2020, of the population in Sub-Saharan Africa lived in rural communities, and agriculture was found to be the most dominant occupation of the people. Meanwhile, the sub-region is dominated by subsistence agriculture despite the improvement in modern agricultural technology. Invariably, most of the indigenous people are small-holder farmers and grow mainly to feed their immediate family relations and where in excess, sell the surplus at the local market for monetary gains. Equally, the sector is heavily dependent on human labour for its production and obtains most of its workforce among the youth bracket, mainly through family relations.

In Ghana, despite the discovery of oil in commercial quantities in 2008 (GNPC, 2008), agriculture remains the main employer, with over 60% of the population involved in various forms of agricultural practices for their livelihood (Yaro, Teye, & Torvikey, 2018). Nevertheless, 56.7% of Ghana's population lives in urban areas (Ghana Statistical Service, 2021). Urbanization in Ghana has not deterred people from adopting agriculture and food production as their major source of livelihood due to the inherent benefits embedded in the sector. The majority of those in the

agricultural sector are peasant farmers who manage between 1-2 acres of farmland for their production needs.

## **2.5 Migration and Agriculture in Ghana**

Several factors account for the total agricultural activities and output that affect the overall production of agricultural output globally. According to Michaelsen and Haisken-DeNew (2015), citing Young (2013), opine that in developing countries, there exist huge differences in rural and urban employees. It is acknowledged through empirical research that one of such factors is rural-urban migration. Imran et al (2015) note that an individual's migration decision is influenced by several push-pull factors in both rural and urban areas. Equally, the literature on migration and agriculture has long associated economic growth and development with rural-urban migration. According to Ghana's 2021 data on migration, as published by Sasu (2024), indicates that around 19 million people, or 58% of Ghana's population, resided in urban areas, while about 13.8 million lived in rural regions. Since 1990, Ghana has experienced a consistent rise in urbanization, with the urban population overtaking the rural population in 2009. This reflects the rapid nature of rural-urban migration, which is the most common form of out-migration in Ghana, and it is described by Selod, H., & Shilpi, & F. (2021) as the movement of people from rural areas to urban centers, often driven by the pursuit of better economic opportunities, education, and living conditions.

The occurrence of rural-urban migration is not new to the Upper West region, and specifically the Nandom District. As posited through the studies of Antwi-Bosiakoh, Tuota, Marfo, & Andoh (2014), rural residents of Nandom Districts have relocated to urban areas for the same reasons cited in the definition by Selod, H., & Shilpi, & F. (2021).

Meanwhile, De Brauw (2014) suggests that rural inhabitants find employment in the urban centers, which results in labour loss or agricultural unproductivity. Rural-urban migration is closely linked with a decrease in farming activities, food production, and fishing in rural areas, as well as inadequate infrastructure and urban congestion in urban centers (Mbah et al., 2016). The reduction in food production can be attributed to youth rural out-migration and factors such as soil fertility, economic conditions, climate, ecology, socio-cultural conditions, and poor farm management practices. Youth out-migration from rural areas is identified as a major factor in poor agricultural productivity, alongside other contributing factors (Mgbakor et al., 2000; Naab, Dinye, & Kasanga, 2013; Brauw, 2015).

Brauw (2017) also highlighted that rural-urban migration significantly reduces agricultural production, threatening food security by diminishing labour, which in turn decreases the overall cropped area and the quality of work, perpetuating a decline in food production and food insecurity (Anaglo et al., 2014). Contrastingly, the studies of Chamberlin, Jayne, & Sitko (2020), which were conducted in Zambia, showed that out-migrants typically possess more capital resources compared to their non-immigrant neighbours and participate more actively in both input and output markets. The findings also revealed that increased rates of rural in-migration were linked to improved agricultural productivity in the communities that receive these migrants. However, these outcomes are unclear for the Nandom District, whether there are migrants from other rural settings moving to the Nandom District to engage in agricultural practices.

Likewise, out-migration is pointed out by Mbatha & Mofokeng (2021) to have a possible positive impact on rural agriculture through remittances, which can be used to purchase agricultural inputs. In this case, would residents in rural areas need financial literacy regarding the relationship between migration and remittances to support the rural household and local rural economy?

Despite these revelations, the findings from the research by Mbatha & Mofokeng (2021) maintained the underlying consequence of how out-migration leads to a loss of human capital, resulting in low agricultural productivity in rural areas of developing countries such as Ghana. This question arises from the dependence of rural residents on financial support from their urban relatives and friends. Meanwhile, Kusumo, Kurnia, Setiawan, & Tirtosudarmo (2023) provide insight into translating migration benefits into agricultural gains. It highlights that the enduring connection of rural communities to the agricultural sector aligns with the pattern of remittance utilization, where a portion is allocated for agricultural investments, such as land acquisition.

The outcomes of this meta-analysis offer a comprehensive perspective on the relationship between migration and agriculture in Indonesia, forming a foundation for optimizing the potential of migrants through tailored reintegration strategies aimed at mitigating poverty in rural areas. Could this be the case of the Nandom District, or are the outcomes on agriculture because of the out-migration of its youthful population entirely negative? This identified gap adds a clearer perspective to the theme of this study and would further help provide additional insight into the literature on migration and agriculture in the Nandom District.

## **2.6 Empirical Review on the Relationship Between Migration and Agriculture**

Rural-urban migration has been observed to impact agricultural activities in two primary ways: altering farmer households' labour and capital dynamics and affecting the cost-benefit structure of agricultural cultivation due to changes in agricultural markets and technical efficiency (Wang & Benjamin, 2019). Urbanization is a significant driver of changes in rural social structures and the restructuring of agricultural activities.

Agricultural production and labour migration are crucial livelihood strategies in rural areas of developing economies (Ellis, 2000; Scoones, 2009; Asfaw, Tolosso, & Zeleke, 2010). These studies highlight the central role of agriculture and migration as coping mechanisms and sources of income in rural settings. Gray & Bilsborrow (2014) found a positive relationship between out-migration and agricultural activities in rural Ecuador, suggesting that remittances from migrants can support and enhance agricultural production. Mhlanga & Ndhlovu (2021), however, observed in Zimbabwe that despite out-migration and substantial remittances, smallholder agriculture remained largely affected.

Similarly, Zhang et al. (2014) identified an influence of out-migration on land abandonment across various levels (parcel, village, household) in China, indicating a shift away from agricultural activities due to migration. Liu (2014) also explored how elderly individuals and their families cope with the departure of economically active members to urban centers, reflecting on the impact of migration on rural labour dynamics. In the context of out-migration, Aworemi, Abdul-Azeez, & Opoola (2011) argued that rural-urban migration adversely affects rural areas by reducing the labor force available for agriculture, thereby diminishing agricultural productivity and food availability in rural communities.

Areas put into the categories of urban and rural areas are typically based on demographic, political or economic characteristics (Long et al., 2016). Regular rural-urban migration is a vital external manifestation and impetus for urban-rural transformation and development (Ye, 2018; Caulfield et al., 2019; Qian et al., 2016; Liu and Li, 2017; Long et al., 2012). The pull-push theory of labour migration has been extensively used to explain the internal mechanism for rural-urban migration (Woods, 2018; Alvarez-Cuadrado, Poschke, 2011).

Recent literature has shown significant differences in the effects of rural-urban migration on agricultural production and food security which includes numerous positive, negative and indeterminate research outcomes (Get et al., 2018). Thus, a deeper analysis of the effects of rural-urban migration on agricultural production and food security is valuable. According to Turner et al. (2014), the process of transformation of agriculture in rural areas is closely associated with farmers' livelihood systems, the nature of the ecology (Silva et al., 2019), and how resilient the socio-ecological feedback is (Tebboth et al., 2019). Others argue that issues regarding rural tourism development, industry, and rural business also promote the expansion of agricultural transformation research (Hisano et al., 2018; Long et al., 2016; Tu et al., 2018).

Shi (2018) examined the heterogeneous effects of rural-urban migration on rural labour productivity in China using the Roselle framework and the Atamanov and Van den Berg (2012) new economies of labour migration theory in demonstrating the heterogeneous effects of migration on agricultural productivity by applying the simultaneous equations extended by such variables as off-farm income and household wealth.

The study found that rural labour loss for agricultural activities led to a decrease in rice yield per worker per day. Off-farm income had a positive but diminishing offsetting effect as household income increased. Overall, labour loss, influenced by off-farm income and household wealth due to migration, had a negative net effect on agricultural and land productivity. The conclusion was that the massive out-migration of active labour from rural areas poses a future threat to development and food security. Another study in the Philippines examined the relationship

between rural out-migration and overall agricultural output by introducing variables such as rural-urban migration, agricultural employment, inflation rate, and average agricultural wage. The research found a negative relationship between rural-urban migration and agricultural output, while agricultural employment and wages had a positive effect (Villaronte, Yap, and Rosete, 2022).

Research in China investigated the causes and consequences of changes in agricultural cultivation due to rural out-migration. The study revealed that out-migration and urbanization affect cultivation structures and trends, leading to decreased food crop production as rural youth leave, weakening agricultural cultivation (Zhang, Peng, Zhou, and Liu, 2020). In Nigeria, a study with 295 farmers found that poverty, better education opportunities, and lack of social amenities were primary causes of youth out-migration. This out-migration negatively impacted agricultural production (Ayinde, Torimiro, and Koledoye, 2014). Conversely, a study in Zambia explored the impact of rural in-migration on agricultural productivity. It was found that in-migrants are generally more capital-endowed than non-migrants, and higher in-migration rates correlated with increased agricultural productivity, particularly in remote rural areas (Chamberlain, Jayne, and Sitko, 2020).

Lastly, a study in Nepal assessed the impact of rural out-migration on farm production. The findings indicated that effects varied by region, with farming households often neglecting subsistence farming in favor of alternative income sources. Additionally, households with insufficient income tended to switch to livestock farming, which involved more females, indicating a trend towards the feminization of agriculture (Maharjan, Bauer, and Knerr, 2013). Research in

Nigeria has identified rural out-migration as a double-edged issue impacting both rural communities and urban centers.

Aworemi, Abdul-Azeez, and Opoola argue that the out-migration of both youth and adults, who leave rural areas for cities in search of better opportunities, hampers agricultural development. This migration leads to a decrease in agricultural activities as individuals perceive farming as less profitable compared to urban employment, thus diminishing food availability and agricultural productivity. The loss of able-bodied labour in rural areas contributes to the decline of agriculture in these communities. Some scholars have attributed agricultural stagnation to rural out-migration, which is associated with abandonment or decline in agricultural activities (Chen et al., 2014; Regmi and Tisdell, 2002; De Mas, 1990; De Haas, 1998). Urbanization has exacerbated this issue by increasing the rate of out-migration from rural areas. In China, a study explored the effects of rural out-migration on land-use patterns and the ecological environment. The research found that land conversion from farmland to residential areas and woodlands was prevalent. The study noted that depopulation and reduced farmland could lead to improved vegetation in rural areas (Yu, Xu, and Wang, 2020).

Additionally, as the non-agricultural sector attracts labor away from rural farming communities, fewer people engage in agriculture, leading to farm abandonment and a decline in land-use intensity. This migration alters land use morphology and patterns, which are closely linked to agricultural production (Jiang et al., 2013; Xu et al., 2018; Long et al., 2018). Isaac and Raqib (2013) examined the cultural and socioeconomic causes of rural out-migration in Kpong, Upper

West Region of Ghana. They found that motivations for migration included the provision of social infrastructure and improved living standards. The study highlighted that migration was driven by a lack of economic opportunities and limited social amenities. Another study noted that migration patterns from the Upper West Region, the poorest in Ghana, are increasing and evolving. Migrants from this region settling in the Brong Ahafo Region face tenancy-related challenges, which are largely beyond their control. The study also pointed out that worsening environmental conditions due to climate change, combined with rising migratory pressures, could further deteriorate agricultural capacity in the Upper West Region (Luginaah et al., 2009).

De Haan (1999), through an extensive literature review, concluded that the effects of migration on rural livelihoods are context-dependent and cannot be easily generalized. The debate on the impact of rural labor migration on agricultural change in migrant-sending communities remains ongoing (Gray and Bilsborrow, 2014; Jokisch, 2002; Mazambani, 1990; Qin, 2010). A common view is that rural out-migration leads to labor shortages, threatening agricultural production (Black, 1993; Collins, 1988; Zimmerer, 1993). For example, research from Zimbabwe found that migrant households had less average farm labor input and lower production efficiency compared to non-migrant households, suggesting that labor migration was detrimental to communal land agriculture (Mazambani, 1990).

Similarly, a study in the southern Yucatan peninsula of Mexico found that labor migrant households cultivated less farmland and were more likely to invest in pasture development rather than expanding crop cultivation (Schmook and Radel, 2008). However, research in rural Ecuador

indicated a positive association between out-migration and agricultural expansion (Gray and Bilsborrow, 2014).

A 2017 survey analyzed the impact of male-dominant out-migration on gender roles in rural Nepal. It found that male out-migration affected the work and duties of both men and women in migrant-sending communities, often increasing the number of female farm managers. Lokshen and Glinskaya (2009) found that male migration reduced women's involvement in market work by 5.4 percentage points. Mendola and Carletto (2012) observed that migration decreased female paid labour supply and increased unpaid work, such as agricultural activities. Similarly, Mu and van de Walle (2011) revealed that out-migration led to a shift of female labour from non-agricultural to agricultural activities. Binzel and Assaad (2011) argued that male out-migration from rural areas resulted in reduced female participation in wage work and increased involvement in subsistence agriculture and unpaid family work.

However, despite the merit and contributions of these studies, they often focus on broad impacts such as land abandonment or productivity, but do not narrow down to specific aspects like changes in crop types, farming techniques, or agricultural innovation due to the persistence of out-migration, which is currently ongoing in the Nandom District. Also, while most of the studies demonstrate the dual impact of migration on labor supply and productivity in agriculture, influenced by economic factors, labor shifts, and urbanization, it was identified through the empirical review process that, the studies reviewed provide snapshot analyses without long-term data on how migration effects evolve and what that means for agricultural development,

particularly in rural areas with geographical and contextual similarities like the communities within the Nandom District.

## **2.7 Theoretical Framework**

The study relies on three key theories, namely, the Ester Boserup Model, the New Economics of Labour Migration and the Structural Transformation Theory. These theories were selected because they offer insights into key issues relevant to the subject matter of these studies.

### ***2.7.1 The Ester Boserup Model***

The Ester Boserup Model was propounded by Danish economist Ester Boserup, which discusses the relationship between population growth and agricultural production. Boserup's model is notable for its opposition to the Malthusian perspectives on agricultural production and population increases.

Fundamentally, Boserup's model assumes that, unlike Malthus, who argued that population growth would exceed the capacity of food supply, Boserup posited that population pressure can lead to agricultural innovation and intensification (Sinha & Das, 2020). This means that, as population density increases, so does the need for more efficient and productive farming methods. However, Boserup's model suggests that farmers respond to increasing population pressures by adopting more intensive agricultural practices (Attar, 2020).

Essentially, in the context of the Nandom District, the Boserup Model can be significantly relevant, firstly, because the population pressures in rural areas like Nandom can drive out-migration, as individuals seek better opportunities in urban areas. This migration might be partly driven by the need to relieve the pressure on local agricultural systems that are struggling to support a growing population. Hence, the Boserup Model will be useful in explaining agricultural transformation

dynamics in the context of how out-migration has influenced agricultural innovation or otherwise. Also, rural out-migration would be analyzed through the notions of population decline and how agricultural transformation is affected by it in an attempt to assess extensification or technological stagnation rather than intensification. Moreover, Boserup's emphasis on how the availability of labor drives systemic changes in farming provides a critical lens for examining this study's sub-theme on migration patterns and agricultural dynamics. This theoretical lens will help test whether the loss of labor through out-migration disrupts the process of intensification, forces shifts in cropping patterns or the adoption of labor-saving technologies. Finally, given that the Boserup model explains migration as a response to agricultural conditions, when population-driven intensification fails or becomes unsustainable, out-migration becomes an adaptive strategy. This helps to analyze whether migration is both a cause and a consequence of agricultural transformation in Nandom District.

Also, the theory can enable the understanding that, as people migrate, those who remain in the district might adopt more intensive agricultural practices to maintain or increase productivity, which could involve the adoption of new technologies or farming methods in response to the reduced labour force and the need to sustain agricultural output with fewer hands.

Meanwhile, Boserup's model adds understanding to the fact that migration can act both as a catalyst and a consequence of agricultural transformation (Egger, Haberl, Erb, & Gaube, 2020). Thus, as people leave, those who stay behind may need to innovate to sustain agricultural productivity, while successful agricultural innovations might reduce the need for out-migration by improving local livelihoods and economic stability.

### ***2.7.2 The New Economics of Labour Migration***

The New Economics of Labour Migration (NELM) was developed by Oded Stark and David E. Bloom, who opined that households decide on migration decisions collectively, and therefore households make such decisions as a way of the need to diversify income sources, reducing risks and expanding returns (Hughes, 2021). Also, as explained by Sabattini (2022), the theory holds that, in the context of economic uncertainties, migration is often deemed as a panacea for households to create a strategy to attain stable remittances for purposes such as direct consumption, agricultural investment and as a coping mechanism for local shocks.

This perspective is relevant for this study, as argued through the literature review, whether out-migrants return with benefits towards agricultural productivity or not. As such, this theory offers a fresh lens for examining whether migration can compensate for challenges associated with agriculture, like insufficient credit markets or insurance.

In Nandom, households are likely to decide on sending their relatives to urban centers within Ghana to search for better economic opportunities that agriculture may not readily be able to offer to manage the risks associated with the unpredictability of agricultural activities, such as climate change and market volatility. Similarly, the theory will help ascertain whether remittances from relatives who have moved to urban centers are reinvested into agriculture, which creates higher agricultural productivity and facilitates the adoption of modern technologies or not.

Fundamentally, NELM provides a framework to examine the diversified reasons for out-migration, which can adequately assess this study's data on whether sending migrants to perceive economically viable areas, as compared to the Nandom district, creates opportunities to secure capital, overcome market failures and reduce income vulnerabilities in agriculture. On the other hand, some theorists argue that NELM is useful in understanding how remittances can finance

the modernization of agriculture and investments, hence significant for looking into the dynamics of agricultural transformation. Specifically, the case of whether remittances from migrants fund the adoption of technology, farm input or land improvements will be ascertained to understand potential agricultural change despite labor loss. Again, NELM's strength in explaining migration and production activities as interconnected rather than separate decisions bring depth to analyzing how migration and agricultural transformation are mutually constitutive, where migration provides capital for farm innovation while agricultural conditions simultaneously drive migration patterns.

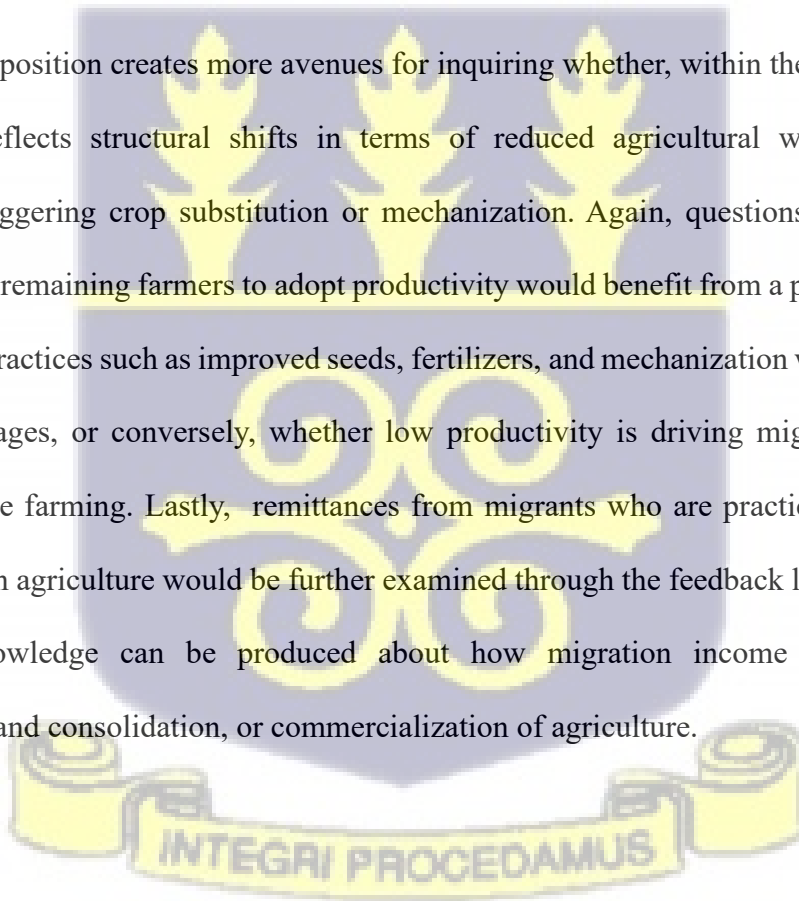
### ***2.7.3 Structural Transformation Theory***

One key principle of this theory, as stated by Porzio, Rossi, & Santangelo (2022), an economic development pathway is created when there are shifts from low-productivity agriculture to higher-productivity industrial and service sectors. Essentially, these shifts from one sector to the other according to Liu, Barrett, Pham, & Violette (2020), occur when economies expand, with capital and labour experiencing movement from agricultural sectors to other sectors that are often driven by productivity increases and rising incomes, significantly shifting demand towards industrial and service goods.

This theory also holds relevance to this study because it explains how urbanization often accompanies structural transformation, as people move from rural to urban areas in search of better employment opportunities and living conditions. Through this theory's application, migration from Nandom can be understood as part of a broader structural transformation, where individuals move in search of better opportunities in more productive sectors. As asserted by Ndhlovu (2020), migration is a response to the limited economic opportunities in agriculture and the aspiration for improved livelihoods.

Agricultural transformation in Nandom can be seen as part of the initial phase of structural transformation, where improvements in agricultural productivity are necessary to release labour for other sectors. As agriculture becomes more productive, fewer people are needed on the farms, which supports migration to urban areas. The relationship between migration and agricultural transformation is integral to the process of structural transformation. Improvements in agricultural productivity can drive migration by freeing up labour, while migration can further support agricultural transformation through remittances and the diffusion of new ideas and technologies. This interconnected process contributes to the overall economic development of the Nandom District.

This theory's proposition creates more avenues for inquiring whether, within the Nandom district, out-migration reflects structural shifts in terms of reduced agricultural workforce and the possibility of triggering crop substitution or mechanization. Again, questions on whether out-migration forces remaining farmers to adopt productivity would benefit from a practical analytical lens where key practices such as improved seeds, fertilizers, and mechanization would compensate for labour shortages, or conversely, whether low productivity is driving migration as farmers abandon unviable farming. Lastly, remittances from migrants who are practically employed in sectors other than agriculture would be further examined through the feedback loop of this theory, where new knowledge can be produced about how migration income accelerates farm modernization, land consolidation, or commercialization of agriculture.



## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter describes the research area as well as the methods employed in the study. This chapter covers the following sub-sections: location and description of the study region, research strategy, research design, study population, sampling techniques, sample size, development of data collection tools, and data collection procedures. The administration of questionnaires during the pre-test stage, final questionnaire construction, data collection, and field precautions throughout the data collection procedure are all covered in this chapter.

#### **3.2 Study District**

The Upper West Region is made up of eleven districts, each of which has its own identity. The legal instrument (LI 2102) established the Nandom District Assembly, with Nandom as the district capital. The district was developed from Lawra, and it is among some of the new districts and municipalities that were established in 2012. Nandom District, was established on June 28, 2012.

##### ***3.2.1 Criterion for the Selection of the Study Area***

Both the District and the three communities for data collection were pre-determined and selected for the study based on their relevance to the research objectives, availability of historical and current data, and diversity of demographic and socio-economic conditions. The selection process also considered the accessibility of the areas for fieldwork and the engagement of local stakeholders, who confirmed their cooperation. Also, Nandom was one of the most urbanized towns in the Region and was noted to experience massive out-migration with an urbanity rate of

50.9 percent in 2010, and with the highest proportion of migrants (2.9 percent) in the Upper West Region (GSS, 2010). These factors ensured that the chosen locations provided a comprehensive understanding of the relationship between migration and agricultural transformation.

### **3.2.2 Study Site**

Nandom District, with a total land area of 404.6 square Kilometers, accounts for about 3.2 percent of the total land area of the Upper West Region. The district is located between Longitude 2°25 W and 2°45W, and Latitude 10°20 N and 11°00 S. The Lambussie and Lawra Districts border it on the east and south, respectively, while the Republic of Burkina Faso borders it on the north and west. The district is made up of 84 settlements, with 86% of the population residing in rural areas. The population density is estimated to be 114 people per square kilometre. It is the region's most densely populated District (Nandom District Assembly, 2024).

### **3.2.3 Area and Population**

According to the 2021 Population and Housing Census, Nandom District has a population of 51,328 out of the 868,479 people resident in the Upper West region of Ghana. Thus, the population of Nandom is 5.91% of the total population of the region. Of this, there are 25,751 females and 25,577 males. The district comprises 88 communities, where 86% of the population lives in rural areas. The district's population is predominantly youthful, with children making up 37% of the total population, while individuals aged 15 to 64 years account for 54.7% of the total population, reflecting an age dependency ratio of 82%, where one active individual supports 0.83 inactive persons (Ghana Statistical Service, 2021).

### **3.2.4 Climate and Vegetation**

Nandom District lies within the Guinea Savannah natural belt. The Guinea Savanah is dominated by a short-grass landscape, with fire-resistant trees, including Shea, Acacia, and Baobab trees, spread about. The vegetation is ideal for cattle production, which contributes significantly to the

district's household income. The long dry season had the greatest impact on the vegetation. The grass grows dry during this time, and subsequent bush burning leaves the land patchy and almost devoid of flora. Human activities such as the indiscriminate tree felling for fuelwood, Charcoal and other purposes, as well as early torrential rains coupled with poor animal husbandry practices, have continually led to a decline in the vegetation cover, leading to the rise in the depletion of soil fertility. Besides, unsuitable farming practices, including road construction, shifting cultivation, and sand and gravel mining, have led to increased land degradation.

Climatically, the tropical continental is experienced in Nandom. The district was characterized by high temperatures with a minimum of 30°C mostly at night and a maximum of 20°C during the day. This encourages the growth of plants. The average monthly temperature was between 10 and 20 degrees Celsius. The highest monthly maximum temperature, generally in May, reaches 40°C, with the lowest minimum temperature, around 10°C, in December, when the Harmattan winds from the Sahara dry up the flora. Crop production was primarily done during the rainy season (May to September/October) due to the district's single maximum rainfall season.

The dry season serves as a potential for the preservation of food crops and other things, as sunshine can be harnessed as a natural preservative. However, because farming was the people's primary activity, it implied that their main sources of life and revenue were limited during the dry season, resulting in the youth migrating to the south in search of greener pastures. As a result, suitable irrigation facilities were required to promote and enhance agricultural activity during the dry season.

### **3.2.5 Geology and Soil**

The district is surrounded by fresh granite and has a gently undulated topography. Sandstone, gravel, mudstone, alluvium, granite, and shale were the principal soil types in the district, which had weathered into various soil grades. Moreover, sand, clay, and laterite ochrosols were some of the soil types that result from seasonal erosion. The presence of different soil types aided home construction by allowing local building materials such as sand, gravel, and clay to be used. Cereals and root tuber crops such as millet, maize, sorghum, and yams thrive in these soil types.

They respond well to organic manure and commercial fertilizers, resulting in a good yield. These soils had the potential to improve agricultural productivity with appropriate precipitation and good farming methods (Nandom Municipal Assembly, 2024)

### **3.2.6 Occupational Profile of Nandom District**

Agriculture is the primary occupation for the people of Nandom, employing nearly 80% of the population in the production of crops and livestock. Commonly cultivated crops include corn, millet, maize, cowpea, and groundnut, with the district having a comparative advantage in groundnut and cowpea production. As agriculture is the main economic activity in Nandom, the development of the district's private sector is intrinsically linked to its agricultural potential. Many local industries are agro-based and small-scale, directly reliant on the district's agricultural output.

For example, the district has several groundnut oil extraction mills and cowpea processing facilities. These industries play a crucial role in the agricultural value chain. Groundnut oil extraction mills process raw groundnuts into oil and by-products, providing a market for local farmers and adding value to their produce. Without the groundnut production from local farms, these mills would face a significant reduction in operation or might even cease to function.

Similarly, cowpea processing facilities convert cowpeas into packaged products for local and regional markets. They rely heavily on a steady supply of cowpeas from Nandom's farmers. If cowpea production were to decline, these facilities would struggle to maintain their operations. Additionally, small businesses that supply seeds, fertilizers, and tools to farmers are essential for supporting agricultural productivity.

These suppliers depend on the ongoing demand from local farmers, and their viability is closely tied to the health of the agricultural sector. Local trading companies involved in distributing agricultural produce act as distribution points for raw commodities, facilitating the movement of crops from farms to markets. These businesses depend on a continual supply of produce from farmers to sustain their operations. These small-scale agro-based industries not only absorb excess labour in the district but also provide additional income opportunities, particularly during the agricultural off-season. They help spread risks for farm-based households and offer a means to cope when farming fails, thus enhancing economic stability in the district.

### **3.3 Research Design**

In this study, a cross-sectional design is employed because it has the capacity to provide insight into the nature and state of out-migration within the Nandom District and agricultural practices simultaneously (Kesmodel, 2018). The cross-sectional design will be applied to participants by collecting data from a diverse sample of individuals at a single point in time, allowing the researcher to capture a broad overview of the variables of interest. This approach is deemed useful to this study because it will enable the identification of correlations between migration and agricultural outcomes, such as whether areas with higher migration rates experience different agricultural practices compared to areas with lower migration rates.

The choice of a cross-sectional design over longitudinal or experimental designs is justified by the specific goals and scope of the study. For example, while longitudinal studies can offer insights into changes over time, they can be resource-intensive, which was anticipated to be one limitation of this research. Unlike experimental designs that require controlled manipulation of variables, which is often impractical in real-world settings, a cross-sectional design provides a practical and efficient method to gather relevant data, analyze the existing situation, and establish initial understandings of the relationship between migration and agricultural transformation in the Nandom District (Wang & Cheng, 2018).

### **3.4 Research Strategy**

This study employs a mixed-method strategy, which entails the adoption of both qualitative and quantitative strategies to execute this research. The mixed method approach is desirable because it offers a combination of numerical precision of quantitative data with the contextual depth of qualitative insights, allowing the researcher to address the research questions holistically (Dawadi, Shrestha, & Giri, 2021). The qualitative aspect of the research provides an in-depth understanding of the personal experiences, perceptions, and motivations of out-migrants and what they make of agricultural practices since it's the dominant occupation in the Nandom District (Strijker, Bosworth, & Bouter, 2020).

The qualitative research approach is useful as it supports the data collection method in this study; it's also capable of obtaining reliable and credible data from respondents and further helps contextualize variables under investigation in this study. Fundamentally, as Borgstede Scholz (2021) reveals, the qualitative approach adds rich descriptions and contextual explanations that complement and enrich the statistical findings obtained through quantitative insights, to allow for

a nuanced evaluation of the complex interactions between migration and agricultural transformation. Quantitatively, the approach employs numerical data and statistical analysis to identify patterns, trends, and correlations related to migration and agricultural transformation. Therefore, quantitative methods will provide detailed information on numbers and statistical representations that may not be captured by qualitative approaches (Doumard et al., 2023). This study then sought a balance between quantitative and qualitative insights to provide holistic and well-informed results and findings of this study's subject matter. As such, the validity of the results in this study is enhanced through the mitigation of possible biases that could emerge due to the absence or lack of either qualitative or quantitative data, which are particularly associated with single-method research.

### **3.5 Sampling Techniques**

Convenience sampling was employed in this study due to its practicality and efficiency in reaching participants within the Nandom District. This technique allows the researcher to select respondents based on their easy accessibility and proximity, which is crucial when time and resources are limited (Stratton, 2021). As such, by leveraging convenience sampling, the study effectively gathered data from various sources: farm families from their homes, from a local school, and from the agricultural extension office.

This approach ensured a diverse range of perspectives while accommodating logistical constraints. The specific communities chosen were Bilegamg, Nandomkpe, and Dabolteng for their relevance to the study's focus on agricultural transformation and migration. The use of convenience sampling in this context is justified by the need to obtain timely and relevant data from readily accessible participants, thus enhancing the study's practicality and feasibility.

Additionally, the stratified random sampling technique was used. This is because it ensured representation across different sub-groups within the communities, such as age, gender, and socioeconomic status, which were crucial for capturing diverse perspectives on migration and agricultural transformation. By dividing the population into distinct strata and then randomly selecting samples from each stratum, stratified random sampling enhanced the accuracy and reliability of the findings, making the results more generalizable to the entire community. This approach also helped in identifying specific patterns and trends within various sub-groups, providing a more comprehensive understanding of the study variables.

### **3.6 Sampling Instruments**

For quantitative methods, data were collected through the use of a survey. This involved the use of a questionnaire to solicit responses from research participants. The questionnaire had several sections relative to the objectives and research questions of the study, ranging from demographic characteristics, perceived causes of out-migration, effects of out-migration on agricultural productivity, out-migration and crop production performance, among others.

Moreover, the survey instrument was made up of both open-ended and closed-ended questions. To make the questionnaire reliable and to correct any errors, it was pretested before the final data collection exercise began. Qualitatively, the study employs semi-structured interviews and field observation to collect data. Semi-structured interviews were preferred because they offered flexibility, which enabled the interviewer to probe deeper into specific responses, uncovering more subjective insights (Naz, Gulab, & Aslam, 2022).

### **3.7 Targeted Population**

The study targeted residents from the Bilegang, Nadomkpe, and Dabolteng communities in the Nandom District.

### **3.8 Sample Size**

A sample size of 150 from the selected communities using both convenience and stratified sampling techniques, which helped to obtain diverse perspectives, was captured on migration and agricultural transformation.

### **3.9 Data Analysis**

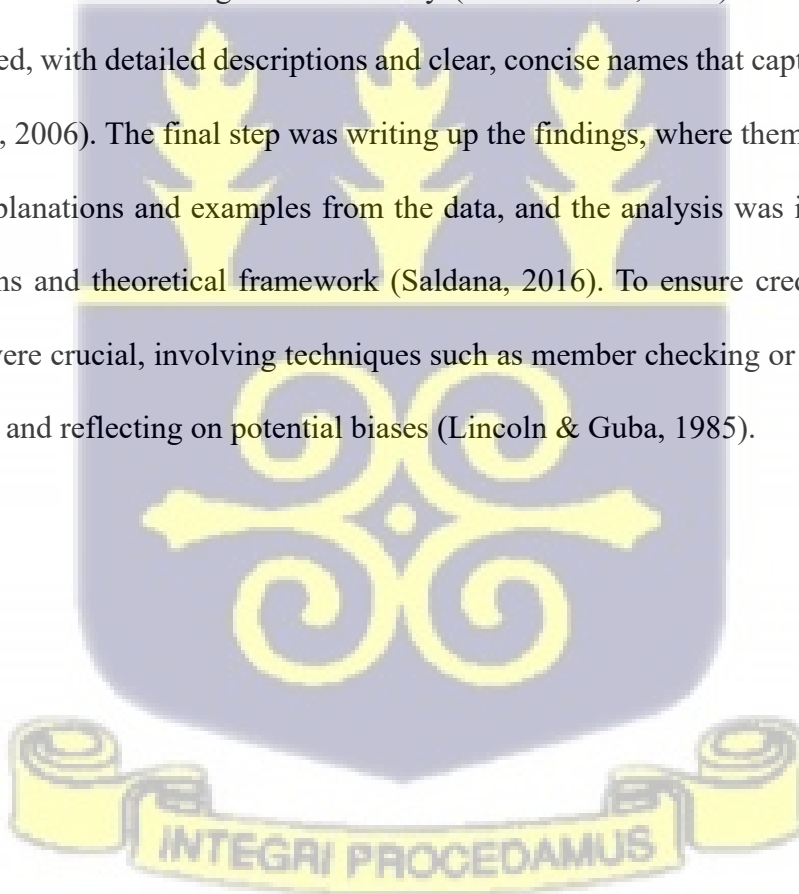
Given the mixed-method approach to this study, the quantitative data obtained through questionnaires were analyzed using the Statistical Package for the Social Sciences (SPSS) software version 24. SPSS is a recommended tool and therefore, aided in entering data obtained from respondents through the questionnaires. In the analysis, both univariate and bivariate techniques were utilized to provide a comprehensive understanding of the data. Univariate analysis focused on descriptive and frequency statistics to outline the general characteristics of the study population, offering insights into individual variables.

Bivariate analysis, on the other hand, involved cross-tabulation to explore the relationships between independent and dependent variables. This approach was conducted at a confidence level of 0.05, enabling the identification of significant associations and facilitating informed conclusions based on the interactions between these variables.

With the qualitative data that was obtained from in-depth interviews, the thematic analysis method was applied. The thematic analysis method involved several detailed steps to systematically analyze qualitative data.

First, familiarization with the data was essential, which included transcribing interviews and thoroughly reading the transcripts to gain a comprehensive understanding (Braun & Clarke, 2006). Initial impressions were noted to guide the analysis. Next, generating initial codes involved identifying meaningful segments of the text and applying codes or labels that summarized these segments (Boyatzis, 1998). After coding, the process moved to searching for themes, where codes were organized into broader categories or themes, and potential themes were identified by examining how codes fit together (Braun & Clarke, 2006).

Reviewing themes followed, requiring the refinement of themes to ensure they accurately represented the data and checking for consistency (Nowell et al., 2017). Each theme was then defined and named, with detailed descriptions and clear, concise names that captured their essence (Braun & Clarke, 2006). The final step was writing up the findings, where themes were presented with detailed explanations and examples from the data, and the analysis was integrated into the research questions and theoretical framework (Saldana, 2016). To ensure credibility, validation and reflexivity were crucial, involving techniques such as member checking or peer debriefing to validate findings and reflecting on potential biases (Lincoln & Guba, 1985).



## CHAPTER FOUR

### THE FINDINGS

#### 4.1 Introduction

This chapter presents the findings from data obtained from 150 respondents within the Nandom District, sourced from the three main communities of Bilegamg, Nandomkpe, and Dabolteng, including their homes, schools, and workplaces. The chapter begins with a detailed analysis of the demographic characteristics of the study participants, followed by an examination of migration trends in the municipality over the years. Subsequently, the chapter explores the causes of outmigration from the communities in the study area, along with a discussion of all relevant themes.

#### 4.2 Demographic Characteristics of Respondents

*Table 1 The Demographic Data of Respondents*

| Variable       | Category     | Percentage (%) | Number of Respondents |
|----------------|--------------|----------------|-----------------------|
| Age Group      | 45 and above | 53.0           | 79                    |
|                | 36-45        | 36             | 54                    |
|                | 26-35        | 6              | 9                     |
|                | 18-25        | 4              | 6                     |
| Sex            | Male         | 58             | 87                    |
|                | Female       | 42             | 63                    |
| Marital Status | Married      | 85.3           | 128                   |
|                | Widowed      | 8.7            | 13                    |

|                         |               |      |     |
|-------------------------|---------------|------|-----|
|                         | Single        | 4.0  | 6   |
|                         | Divorced      | 2.0  | 3   |
| <b>Occupation</b>       | Farming       | 94.7 | 142 |
|                         | Trading       | 4.0  | 4   |
|                         | Other         | 4.0  | 4   |
| <b>Monthly Earnings</b> | 50 or less    | 55   | 83  |
|                         | 60-100        | 38   | 57  |
|                         | 110-150       | 2    | 3   |
|                         | 210-250       | 1    | 3   |
|                         | 250 and above | 2    | 1   |

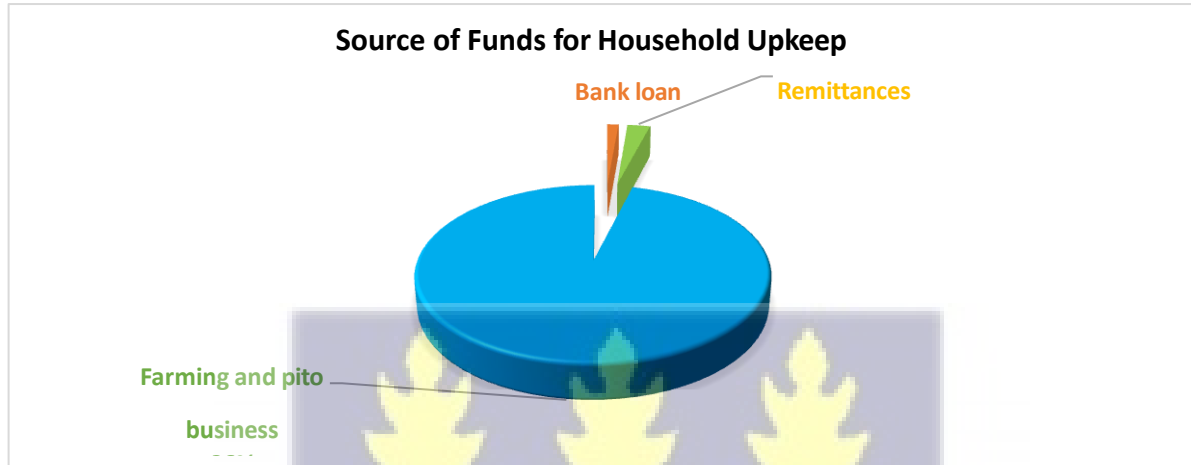
### 4.3 Source of Funding for Household Upkeep

The descriptive analysis reveals that 96% of households in the Nandom District derive their upkeep funds from farming and pito brewing, with only 2.7% relying on remittances and 1.3% on bank loans. This heavy dependence on local agriculture and small-scale brewing of pito highlights the community's economic vulnerability and limited diversification.

The minimal reliance on remittances suggests either a low migration rate or insufficient financial support from family members who have migrated. This suggests that, while migration might offer potential financial relief, its impact on local agricultural development remains weak. Also, the community's reliance on farming highlights the need for agricultural innovations and investment to enhance productivity and sustainability. Moreover, the low percentage of respondents using bank loans reflects limited access to formal financial services, which could be a barrier to both

agricultural development and household economic stability. The figure below illustrates the data obtained.

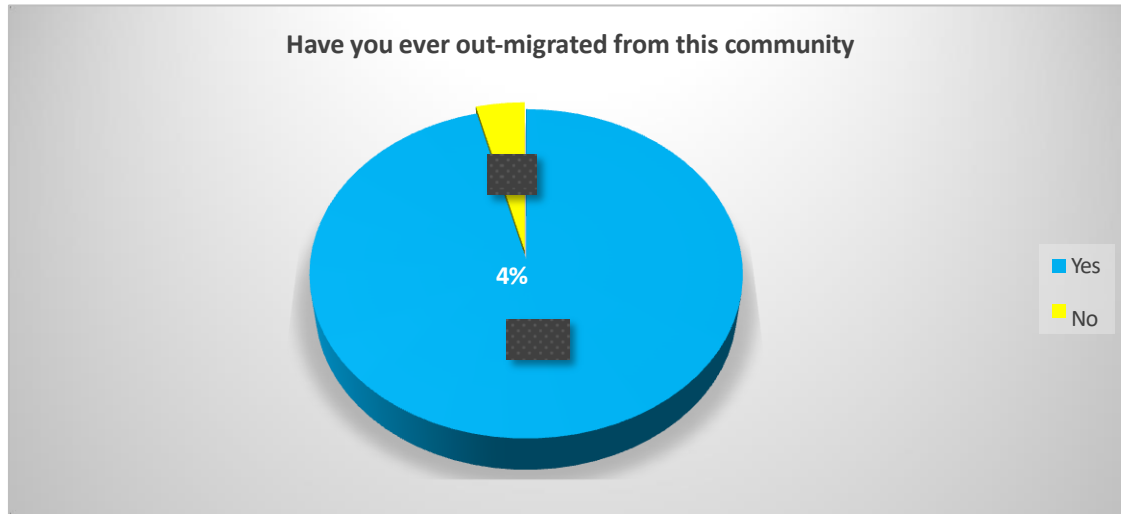
*Figure 1 Source funding for household upkeep*



#### **4.4 Research Objective 1 - Migration History of Study Respondents**

The study examined the migration history of the study area by asking respondents if they had ever migrated out of their communities. The descriptive analysis, as illustrated in Figure 2, reveals that 96% of participants have migrated from their community, while 4% have not. Additionally, the study explored whether respondents knew other inhabitants who had migrated. The results indicate that 98% of respondents are aware of such individuals, while 2% are not, as shown in Figure 2. From Figure 2, it can be concluded that there is a significant rate of out- migration in the study area.

*Figure 2 Migration history of respondents*



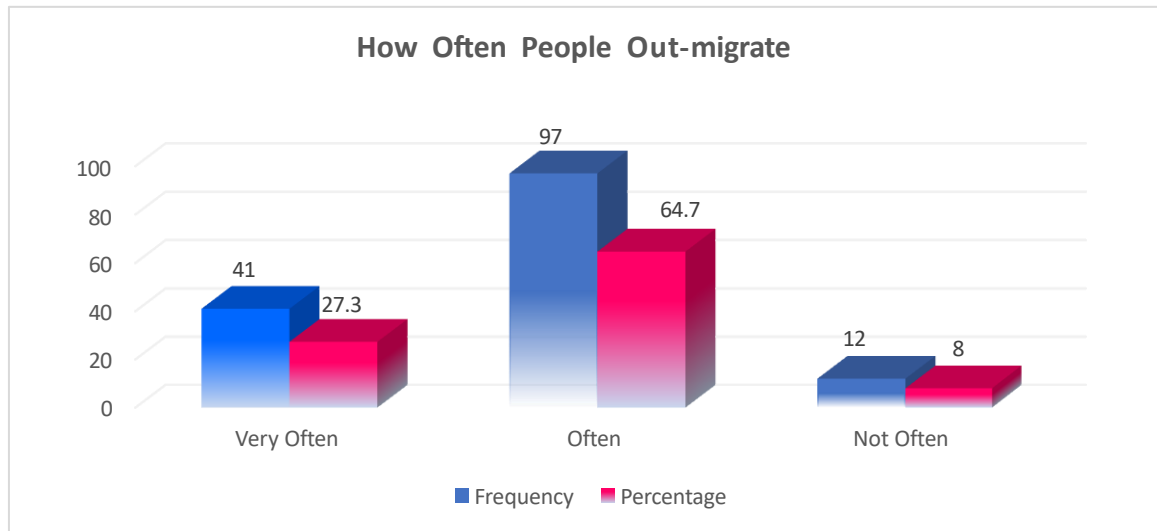
#### 4.4.1 Out-migration rate in study communities

Figure 3 - below illustrates the out-migration trends in the study area. The data reveals that 64.7% of respondents (97 individuals) migrate often, while 27.3% (41 respondents) migrate very often, and 8% migrate infrequently. This indicates that out-migration is a prevalent phenomenon, with a cumulative 92% of the 138 farmers in the study area engaging in frequent migration.

Awumbila et al. (2015) have suggested that rural-urban migration has increasingly become a livelihood strategy for many in Ghana. Historically, rural communities have been pivotal in the agricultural sector, which is largely dependent on local labor. Consequently, the migration of youth from northern to southern Ghana has been observed to negatively impact food security (Yaro, 2008).

Contrarily, some studies argue that rural-urban migration has led to socio-cultural and agricultural transformations through remittances that contribute to the development of the migrants' communities of origin. Awuse, Offi, & Acakpovi (2020) specifically highlight northern Ghana's high internal out-migration rate. Historically, such migration has been predominantly male, suggesting gendered patterns in migration trends.

**Figure 3 Out-migration rate in study communities**



#### **4.4.2 Migration Destinations of Migrants from the Community**

As a result, internal migration serves as a conduit via which socioeconomic difficulties are transmitted to and shared between rural and urban areas in developing countries as well as between developing and developed countries (Amoako-Mensah, 2017). From Figure 3, it is clear from the findings of this study that out-migration is a common phenomenon in the study area. A female teacher in Bilegamg stated that:

*“As for the people in this community, out-migration particularly from here to the South is normal and very frequent, especially during the non-farm season”*

The descriptive analysis highlighted the primary migration patterns, revealing that a significant portion of the population from these communities migrates to major urban centers in Ghana. Specifically, from Bilegamg, 50% of participants indicated that migrants predominantly move to

Kumasi, 20% to Accra, and 10% to Techiman, with 20% migrating to other locations within Ghana. From Nadomkpe, 40% of participants reported migrating to Accra, 30% to Kumasi, 15% to Techiman, and 15% to other areas within the country. Additionally, from Dabolteng, 35% of participants indicated migration to Techiman, 25% to Kumasi, 20% to Accra, and 20% to other locations within Ghana.

Overall, 46% of the total participants noted that residents of the study migrate to Kumasi, 29% migrate to Accra, 13% migrate to Techiman, 9% migrate elsewhere in the country apart from the main destinations named, and 1% migrate to Nandom.

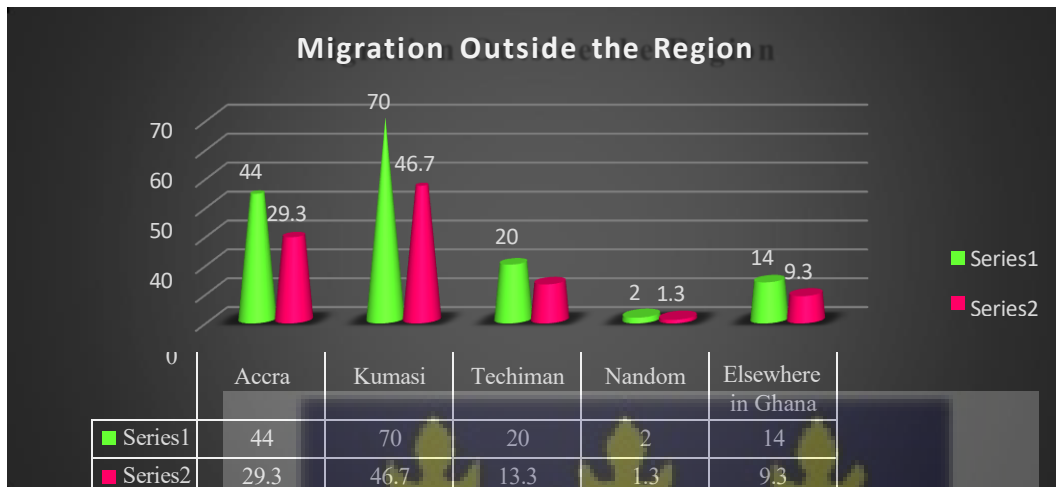
This indicates that most people in the study area primarily migrate to places outside the district and the Upper West Region, mainly to urban centers in southern Ghana such as Accra, Kumasi, and Techiman. This finding aligns with previous research indicating that individuals from rural areas in the Upper West Region, including Nandom, often migrate to larger urban centers in southern Ghana.

According to Awumbila et al. (2013), female porters from northern Ghana, including those from the Upper West, frequently migrate to cities like Accra and Kumasi, highlighting the urban-centric nature of migration. Abdul-Korah (2008) supports this observation, noting that people from the Upper West Region travel primarily to gain experience and seek a different lifestyle in southern Ghana. This pattern is further illustrated by the local proverb: "If a youth does not travel, they will not get experience," underscoring the cultural significance of migration.

The findings are consistent with the studies of De Haas (2010), Awumbila et al. (2015), and Teye et al. (2019), which discuss the dominance of rural-to-urban migration trends in Ghana and other African nations. The migration destinations of individuals from Nandom reflect a broader trend of seeking opportunities and experiences in urban centers outside their rural origins. This confirms

the dominance of rural-urban migration as highlighted in previous research, reinforcing the significance of urban areas as major destinations for migrants from rural communities.

*Figure 4 Migration destinations of respondent's relatives*



#### 4.4.3 Seasons of Outmigration from Community of Origin

The northern regions experience a single rainfall season, spanning three months from June to August. This short period of rainfall is followed by an extended dry season, making farming difficult due to the lack of water, a crucial agricultural resource. Consequently, people migrate away from their local settlements during the dry season as an adaptation strategy.

Rural residents move to the southern regions where there are better opportunities. This migration pattern supports Hoffmann, Konerding, Nautiyal, & Buerkert (2019) claim that rural-urban migrants are driven by the "push" of rural hardships and the "pull" of urban opportunities. The descriptive analysis reveals that 96.7% of migration occurs during the dry season, with only 3.3% happening during the rainy season. This indicates that out-migration is significantly more prevalent in the dry season than in the wet season in the study area.

#### 4.4.4 Migrant Relatives Visit to Community of Origin

The growth of both urban and rural communities relies heavily on robust urban-rural relations. The descriptive analysis highlights the frequency of visits by migrant relatives to their communities within Nandom, specifically in the villages of Bilegamg, Nadomkpe, and Dabolteng. According to the survey participants, in Bilegamg, 73% reported visiting often, in Nadomkpe, 15% reported visiting very often, and in Dabolteng, 11% reported visiting not often. The significance of these return visits is reinforced by a respondent from Dabolteng.

*"well.., I will say that yes, some migrants do visit because some of our relatives who moved out return during festivals and when there is a funeral and sometimes during the beginning of the farm season. However, some also come from time to time just to visit and when they come, they bring all kinds of things like food and even seeds for us to use on our farms. My brother, for instance, brought some agro-chemicals the last time he visited."*

#### 4.4.5 Contributions of Migrant Relatives to Respondents' Occupation

The descriptive analysis reveals the importance of relatives who have currently migrated to the occupation of respondents of the survey. Out of a total of 150 respondents, 96 of them, representing 64 percent, claimed such relatives have been important in supporting the advancement of their major occupation, 49 farmers, which represent 32.7 percent, claimed migrant relatives were very important in contributing to the advancement of their main economic activity, while 5 farmers, representing 3 percent, claimed they were not very important in ensuring the growth of the main economic activity.

Supporting the findings of this study, Awumbila et al. (2014) argue that sending remittances home remained a top goal, even when the migrant thought that migration had not been very effective in helping him or her escape poverty. Such remittances can come in a variety of forms, including cash to cover family members' educational expenses and school fees, as well as food, clothing, and footwear. Respondents explained that cash remittances are common among the youth, especially the men. However, in-kind remittances are common amongst the

seasonal migrants who migrate to work in the south and return during the farming season in the north. For such a category of remitters, items needed for farming during the rainy season become the main remittances brought. This correlates with the non-existence of agro-input shops and the high prices of inputs revealed by most of the study participants.

*Table 6 Contributions of migrant relatives to respondents' occupation*

| How significant is the migration of your relatives to your current occupation? |           |            |
|--------------------------------------------------------------------------------|-----------|------------|
| Response                                                                       | Frequency | Percentage |
| Very Important                                                                 | 49        | 32         |
| Important                                                                      | 96        | 64.0       |
| Not very important                                                             | 5         | 3.3        |

#### 4.4.6 Migrant Relatives' Satisfaction Levels in Destinations as Reported by Respondents

Awumbila et al. (2015) revealed that many rural-urban migrants from the Northern sector often end up in urban slums while seeking better job opportunities and improved living conditions. Satisfaction with migration outcomes varies significantly between the migrants and their relatives left behind. Using cross-tabulation of preferred destinations with satisfaction levels to respondents' views provided deeper insights.

*Table 2 Satisfaction Levels in Destination*

| Destination | % of Participants<br>Satisfied | % of Participants<br>Very Satisfied | % of Participants<br>Dissatisfied | % of Participants<br>Very Dissatisfied |
|-------------|--------------------------------|-------------------------------------|-----------------------------------|----------------------------------------|
| Kumasi      | 75%                            | 18%                                 | 5%                                | 2%                                     |

|          |     |     |     |     |
|----------|-----|-----|-----|-----|
| Accra    | 70% | 12% | 10% | 8%  |
| Techiman | 80% | 20% | 0%  | 0%  |
| Other    | 65% | 10% | 15% | 10% |

From the data, we observe that respondents generally preferred their relatives to migrate to destinations where they perceived better chances of economic success and higher remittance potential. For instance, migrants heading to Techiman showed the highest satisfaction levels (80% satisfied and 20% very satisfied), likely due to perceived better living conditions or successful economic outcomes. In contrast, those in Accra had a higher dissatisfaction rate (10% dissatisfied and 8% very dissatisfied), potentially reflecting challenges in this major urban center, such as higher living costs or difficulty in achieving economic stability.

The dissatisfaction among some respondents was attributed to the fact that migrant relatives return home in poor health or weakened, affecting their ability to contribute to agricultural activities during the farming season. This sentiment was supported by the agricultural extension officer, who noted:

*“The truth is that out-migrants often overwork themselves and return home extremely tired or sick. This impacts their overall productivity on the farm.”*

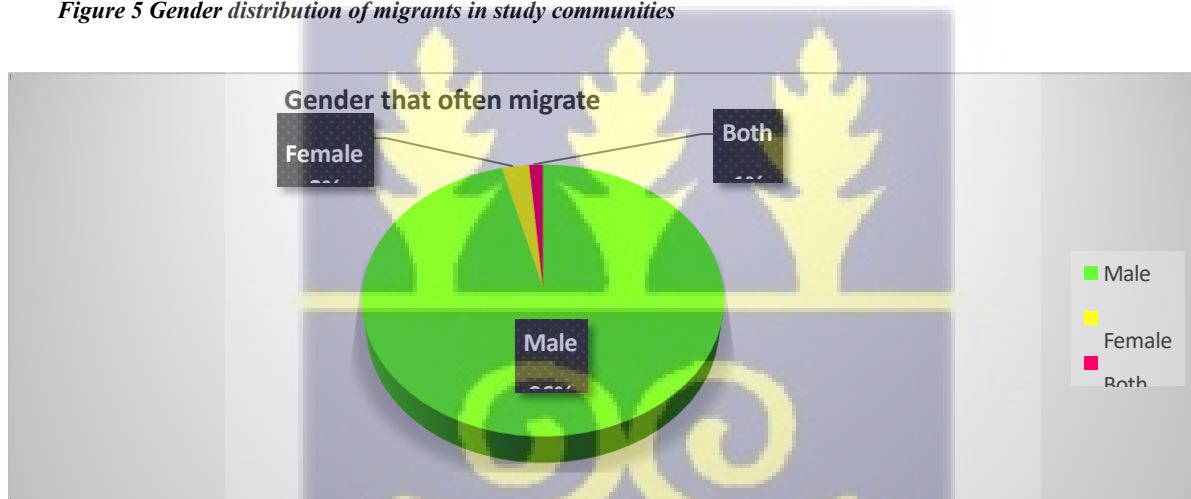
#### **4.4.6 Gender distribution of migrants from study communities**

The analysis reveals variations in migration patterns across the communities in the Nandom District. In Bilegamg, 96% of respondents indicated that males predominantly migrate out of the community, compared to 3% for females, and 1% for both genders. In Nandomkpee, the trend is similar with a high percentage of males (96%) migrating, and a smaller percentage of females (3%)

or both genders (1%). Dabolteng shows a similar pattern, where 96% of the migrating population are males, with only 3% females and 1% both genders.

This data aligns with Boyd and Grieco's (2014) findings that migration patterns differ between genders, with males often migrating in greater numbers. Scholars note that while in some cases females may migrate more than males, the predominant trend in this study indicates that males are more likely to migrate from these communities. This pattern is influenced by both economic opportunities and cultural factors prevalent in the study communities, reinforcing the notion that migration is predominantly a male activity in these areas.

*Figure 5 Gender distribution of migrants in study communities*



*“In line with the tradition and culture of the people in these three communities, it is the men (and mostly married men) who are involved in the migration process. The women are required to stay behind principally to take care of the children, aged parents and farm animals. (Return migrant and Elder, Bilegamg)*

A teacher in the community of Nandomkpee, in an attempt to explain the migration trends in terms of gender, said;

*“It is true that men (and mostly married men) are the ones usually involved in the out-migration during the dry season. For instance, whenever school management calls for a Parents-Teachers Association (PTA) meetings in this School, it is mostly the women who attend the meeting. It is so because the men have travelled out of town.” (Teacher, Nandomkpee)*

#### **4.4.7 Perception of respondents on the marital status of out-migrants**

*Table 7 Perception on marital status of out-migrants*

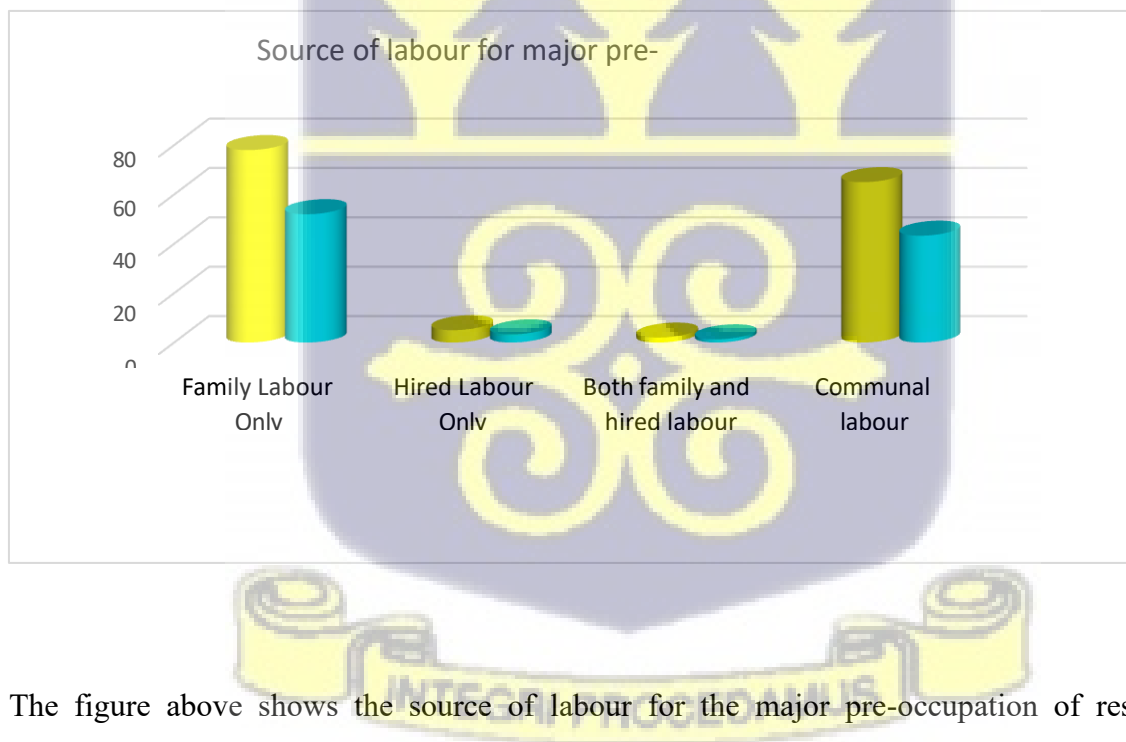
| <b>Which group of people mostly migrate from this community?</b> |                  |                   |
|------------------------------------------------------------------|------------------|-------------------|
| <b>Response</b>                                                  | <b>Frequency</b> | <b>Percentage</b> |
| Married                                                          | 146              | 97.3              |
| Single/Not married                                               | 4                | 2.7               |

Marriage is an important institution in the Ghanaian culture, particularly in rural communities like the study area. It carries significant responsibilities for couples, especially men, in the traditional setting. Consequently, marriage can influence out-migration, especially when partners consider it as an alternative livelihood, as suggested by Awumbila et al. (2015). The study sought to understand the marital status of out-migrants, and the descriptive analysis reveals in Table 7 that 97.3% of the out-migrants are typically married individuals, while 2.7% are either single or not married. This observation is further supported by interviews with chiefs, who indicated that married individuals, especially males, are often more dominant in migration statistics within the communities due to cultural expectations that they must provide for their families.

*“Marriage is an integral part of the culture of the people and husbands are supposed to move out and look for economic opportunities for the well-being of the family”. Most of*

*us who migrate go to the southern part of Ghana, especially Brong Ahafo Region even though some of us went to Accra and Kumasi. I can tell you that there are a lot of my relatives and other people from this area who are living elsewhere in Ghana because there is no work here. (Return migrant and Elder, Bilegamg)”*

**Figure 6: Source of labor for the main pre-occupation**



The figure above shows the source of labour for the major pre-occupation of respondents. According to the respondents to the survey, 52% of the labour for major pre-occupation is from family labour only, while 43.3% is communal labour, with 3.3% being hired labour only and 1.3%

being both family and hired labour. The descriptive analysis shows the source of labour for the major pre-occupation according to the respondents of the survey. This implies that most people in the study area make use of family labour for their agricultural purposes or activities.

In the absence of family labour in the case of out-migration, most households in the study area then resort to communal labour. Thus, the use of hired labour for most agricultural activities in the study area is very minimal, presenting 1.3 percent. Against this backdrop, Huttunen argues that agricultural transformation cannot really take place with the continued use of local farm labour or human power but rather agricultural modernisation (Huttunen, 2019).

#### **4.5 Research Objective 2 - Outmigration effects on labour source and availability**

*Table 8 Outmigration effects on labour source and availability*

| <b>What labor constraints are you encountering in your current job activities?</b> |                  |                   |
|------------------------------------------------------------------------------------|------------------|-------------------|
| <b>Response</b>                                                                    | <b>Frequency</b> | <b>Percentage</b> |
| Yes                                                                                | 105              | 70.0              |
| No                                                                                 | 45               | 30.0              |

Yaro (2008) has established that out-migration of young people tends to create a labor shortage, which negatively impacts net production in agricultural communities like Bilegang, Nandomkpee, and Dabolteng. Descriptive analysis from the survey respondents highlights the labor constraints in current occupational activities. According to the survey, 70% of respondents reported experiencing labor constraints, while 30% disagreed, as shown in Table 8. This indicates that community members engaged in farming are at a disadvantage in the production process. When labour is not available, the cost of hiring increases due to supply and demand factors. Consequently, many individuals in the study area employed in agriculture face labour constraints, as noted by (Caulfield et al., 2019).

*“Truly, out-migration has a direct effect on the availability of farm labour. As the people out-migrate, not all of them will return at the onset of the rainy season. Therefore, the number of people needed to form groups for communal labour or family labour will be reduced. This will also lead to the reduction of the size of the land to be cultivated. The local watchdog committee membership is also adversely affected by out-migration. This has resulted in massive cattle theft in the area. The size of the farm land under cultivation is also affected by the out-migration of teeming youth. (Agric extension officer for Bilegamg, Nandomkpee and Dabolteng)”*

**Table 9 Solutions to Labor Shortages**

| How was the labour shortage problem resolved? |           |            |
|-----------------------------------------------|-----------|------------|
| Response                                      | Frequency | Percentage |
| Hiring labour                                 | 41        | 27.3       |
| Support from neighbours                       | 8         | 5.3        |
| Support from children                         | 4         | 2.7        |
| Extended family support                       | 72        | 48.0       |
| Reduction in the acreage cultivated           | 3         | 2.0        |
| Not Applicable                                | 22        | 14.7       |

The study explored the strategies employed by farmers to manage these constraints. The perceptions of respondents, as depicted in Table 9, reveal various approaches to overcoming labor shortages. The descriptive analysis shows that 48% of participants address labor constraints by seeking support from extended family members. Extended family labor often involves family members working on the farm during peak seasons, such as planting and harvesting, typically without direct monetary compensation but potentially covering costs like food and accommodation.

In contrast, 27% of respondents use hired labor to manage labor constraints. Hired labor is typically engaged on a short-term basis, with costs varying based on the specific agricultural activity, such as planting, weeding, or harvesting. For instance, hiring labor for planting might cost around GHS 100 per day per worker, whereas harvesting might command a higher rate due to its labor-intensive nature. This labor is usually contracted on a per-day basis or for specific tasks and is crucial during critical periods when immediate and intensive labor is needed.

Additionally, 14.7% of respondents indicated that their approach to labor constraints is not applicable, while 5% rely on support from neighbours. Neighbour support often involves informal agreements, where neighbors help each other during busy periods, usually reciprocated later.

Furthermore, 2.7% of farmers use their children for labor, which can include tasks such as weeding or planting, often during school holidays. Finally, 2.0% of farmers reduced the acreage of land cultivated to mitigate labor constraints. This strategy is a direct response to labor shortages, aiming to ensure that the smaller, more manageable land area can be worked with the available labor.

The study highlights that the predominant strategy for managing labour constraints is to seek assistance from extended family members. The second most common approach involves hiring

labour for specific tasks. The descriptive analysis also shows that 88% of respondents have access to labour at the right times, indicating that labour for agricultural services is generally available when needed. In contrast, 11% of farmers reported difficulties in accessing timely labor, suggesting that while labour is often available, there are still gaps in availability that can impact agricultural productivity (See Table 9).

#### **4.5.1 Determinants of out-migration of residents in study communities**

The determinants of residents' decisions to migrate out of their communities, particularly from rural areas to new destinations, vary significantly from individual to individual and from community to community (Yaro, 2008; De Haas, 2010; Awumbila et al., 2014 & 2015). This study aims to explore these reasons within the Nandom District, focusing on the factors influencing out-migration from three specific communities: Bilegamg, Nandomkpee, and Dabolteng. In the Bilegamg community, famine is identified as a major factor driving migration, with the majority of respondents (approximately 85%) acknowledging it as a significant issue.

A notable portion strongly agrees that famine in their area is a primary reason for their migration, reflecting the findings of Awumbila (2015) that rural-urban migration often serves as an alternative livelihood strategy for many rural dwellers. Conversely, in Nandomkpee, chieftaincy conflicts, which are sometimes cited as a cause for migration in other contexts (Black et al., 2011), are not viewed as a significant factor. A large majority of respondents (about 75%) strongly disagree with the notion that chieftaincy disputes contribute to out-migration from their community. Only a small segment (around 10%) considers conflicts as a contributing factor. Similarly, in Dabolteng, while famine is acknowledged as a concern, it does not dominate the reasons for migration as strongly as in Bilegamg. The perception of chieftaincy conflicts also mirrors that of Nandomkpee, with

most respondents rejecting the idea that such disputes play a significant role in migration patterns from their area.

Some respondents indicate the below:

*“ During the dry season, our people are not able to farm and so there could be hunger at home if you don’t find something to do to take care of the family. That is why most people especially our men travel down south to places like Kumasi, Accra, Techiman to find some work to do and return when the rains start. This is the commonest form of migration in our communities here” Resident of Bilgamg”*

*„ “The family size is increasing, and the land is not enough because we have to share and so some family members choose to travel to go and get job down south so they can also help the family. (Issah, Bilegamg)”*

*“In some places, people migrate to the south due to chieftaincy disputes but here in Nandom, we have no such disputes here and so the main reason why our people migrate is to go and work during the dry season to support the family; our community is very peaceful!” (Chief, Bilegamg)*

*“There is a misconception down south, when people hear news about disputes in say Bawku and especially the Twi Radio stations say North, they think all communities are in the same town and so if anyone migrates down south it is because of the conflict, it is absolutely wrong impression because*

*those places are far away from us even here and so we don't migrate to the south because of Chieftaincy disputes" (resident teacher, Bilegamg).*

The chiefs and people of the study communities believe their environment is free from chieftaincy crisis, and as such, migration from the communities is not related to any such issues. The lack of social infrastructure and inadequate service delivery are significant push factors driving migration from rural communities (Teye, Awumbila, Benneh, 2015; Black et al., 2011). In the Nandom area, inadequate health infrastructure has been identified as a major reason for migration. Observations reveal that nearly 90% of respondents consider the poor health service delivery due to insufficient health infrastructure as a key reason for leaving their community.

Health facilities are notably scarce in the studied communities, with no health posts present in any of the three locations (Bilegamg, Nandomkpee, and Dabolteng) except the District capital. As a result, individuals who fall ill are compelled to travel to Nandom or other places for medical treatment. There is a tendency for individuals to remain away from their home communities after recovering from illness. This pattern suggests a one-way migration trajectory, where individuals leave their communities for better health care and often do not return.

*"There is no community clinic or even CHIP compound for the people to attend for medical treatment when they are sick, and so they have to travel to either Nandom, Wa or Techiman for treatment. Just imagine if it is at night and we have to go to such places; how would we get there?" (Resident of Nandomkpee)*

Like the challenges in health service delivery, a significant number of respondents believe that the educational infrastructure in the Nandom District is inadequate and contributes to the out-migration from the area. Specifically, 108 individuals, representing 72% of the sample, agree that the educational system is poor, while 32 individuals, accounting for 21.3%, strongly agree with this assessment. In contrast, only 8 individuals, or 5.3%, think that the educational system is satisfactory and does not contribute to migration. Observations by the researcher further support the majority view. Many schools in the area lack essential facilities, and some students must travel long distances to attend school, exacerbating the problem.

In the context of agriculture and production, many people view poor crop yields as a significant factor driving migration from the area. Many respondents, specifically 92%, consider poor crop yields by farmers to be a key push factor for out-migration. In contrast, a small minority, 2.6%, do not see poor crop yields as a major contributing factor to migration.

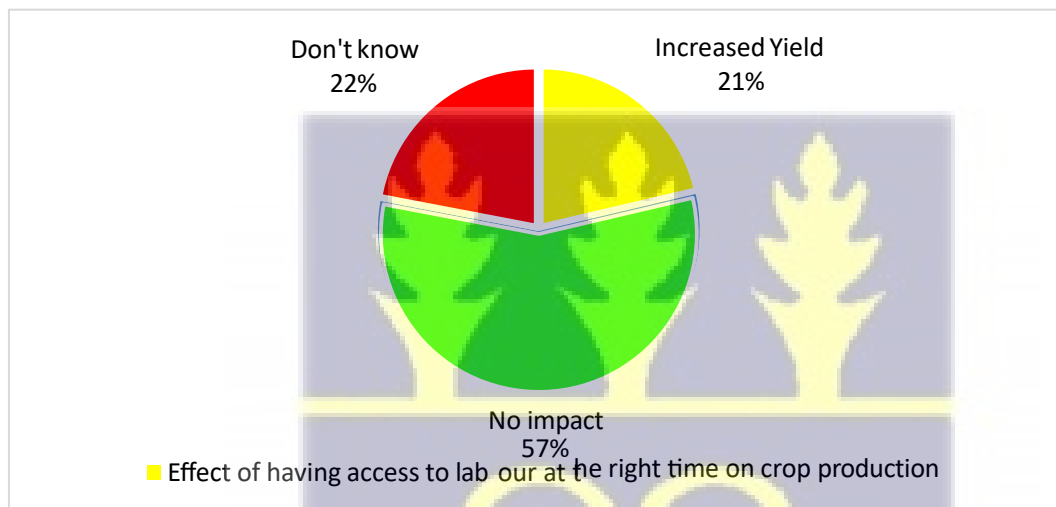
The issue of poor crop yields is often linked to rapid climate changes and their impact on soil quality and moisture. According to Teye and Owusu (2015), climate-related factors such as increased sunshine and other environmental stresses contribute to declining agricultural productivity, which, in turn, influences migration patterns.

#### **4.5.2 Agricultural activity, type of farmland labour and labour constraints**

The study investigated the type of agricultural activity for which hired labor is predominantly employed, focusing on ploughing, weeding, and harvesting. The findings reveal that the primary use of hired labor is for ploughing, with 83.3% of respondents indicating this preference. In

comparison, 15% of farmers use hired labor for weeding, and only 1% use it for harvesting. Additionally, the study assessed farmers' perceptions of the impact of timely labor on crop production. It was found that 21% of farmers believe crop production improves when labor is available at the right time. Conversely, 57% of farmers reported no impact on crop production from timely labor access, while 22% were uncertain about its effect. Overall, most of the farmers felt that timely access to labor does not significantly affect crop production.

*Figure 7 Effect of having access to labour at the right time on crop production*



#### 4.5.3 Role of remittances received in major economic activity

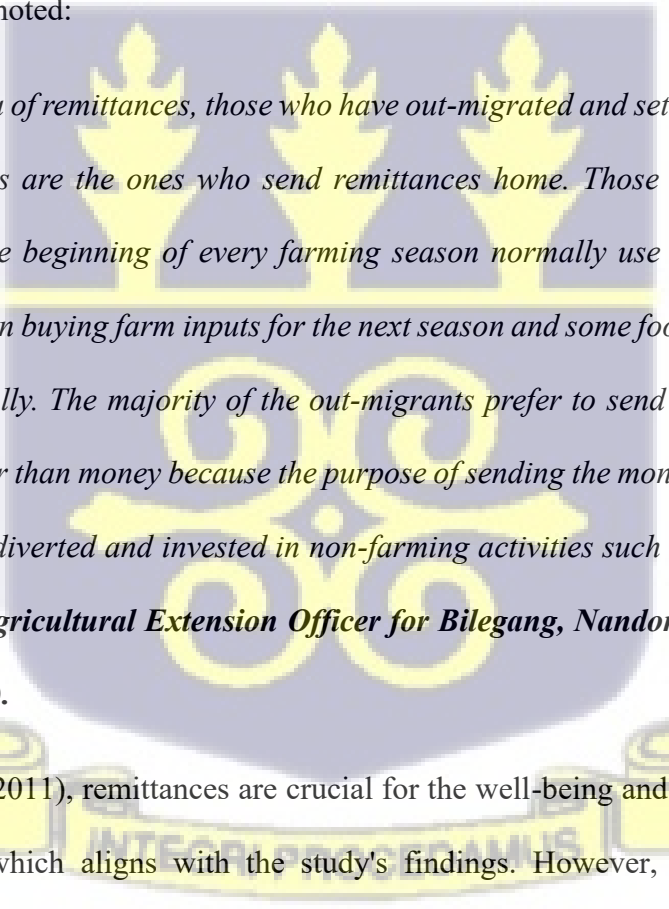
| Do you receive financial support from migrant relatives for your current occupation? |           |            |
|--------------------------------------------------------------------------------------|-----------|------------|
| Response                                                                             | Frequency | Percentage |
| Yes                                                                                  | 86        | 57.3       |
| No                                                                                   | 64        | 42.7       |

The study assessed whether farmers receive financial remittances from migrant relatives to invest in their primary economic activities. Data indicate that most farmers in the study area receive

financial support from migrant relatives. Specifically, 86 respondents (57%) reported receiving financial assistance, while 64 farmers (42%) did not receive any form of remittance, as detailed in Table 4.9. This suggests that financial and in-kind support from migrants significantly influences the local agricultural economy.

The Agricultural Extension Officer for the three communities observed that out-migrants often send remittances in the form of farm inputs rather than cash. This preference arises from concerns that cash could be misused or diverted from its intended agricultural purposes, such as investing in alcohol rather than farm inputs.

The extension officer noted:



*"In the area of remittances, those who have out-migrated and settled in their destinations are the ones who send remittances home. Those who return home at the beginning of every farming season normally use the income generated in buying farm inputs for the next season and some food items not grown locally. The majority of the out-migrants prefer to send home farm input rather than money because the purpose of sending the money could be abused or diverted and invested in non-farming activities such as drinking of pito" (Agricultural Extension Officer for Bilegang, Nandomkpee, and Dabolteng).*

According to Cohen (2011), remittances are crucial for the well-being and survival of migrant households, which aligns with the study's findings. However, the impact of remittances on agricultural transformation can be both positive and negative. The Structural Theory of Transformation, which emphasizes the role of structural changes in

economic development, can be applied here. This theory suggests that the influx of resources, such as remittances, can drive agricultural transformation by altering production practices and resource allocation.

The Chief of Dabolteng highlighted how remittances have facilitated agricultural technology transfer:

*“In the area of agricultural technology transfer, some of the out-migrants have introduced many new and improved farming practices to the Dabolteng community. For example, they encouraged the practice of mixed cropping—growing various crops like millet, groundnut, pepper, sorghum, yam, and maize on the same land. Although initial yields were poor, out-migrants persuaded us to divide our land into blocks and practice mono-cropping, resulting in significantly improved yields” (Chief, Dabolteng).*

The Ester Boserup Model, which focuses on how changes in population pressure lead to innovations in agricultural practices, also provides insight into these findings. The model suggests that as populations grow, there is an increased need for more efficient agricultural methods. In this context, the support from out-migrants not only introduces new technologies but also promotes a shift from traditional farming methods to more productive ones, aligning with Boserup’s assertion that economic pressures drive agricultural innovation.

The Agricultural Extension Officer further noted:

*“Some of the out-migrants have introduced cashew and mango farming techniques that were previously unknown in our communities. They also*

*brought methods for food preservation and preparation of nutritious meals”*

*(Agricultural Extension Officer).*

#### 4.5.4 Availability of agricultural input shops in the community of origin

| 4 Are there agrochemical shops in this community owned by former out-migrants? |           |            |
|--------------------------------------------------------------------------------|-----------|------------|
| Response                                                                       | Frequency | Percentage |
| Yes                                                                            | 6         | 4.0        |
| No                                                                             | 144       | 96.0       |

The effective utilization of enhanced seeds and seedlings is heavily influenced by their availability and the choices made by farmers. In Ghana, the seed system comprises three main components: the formal seed system, the informal farmers' seed system, and the quasi-formal seed system. The Council for Scientific and Industrial Research (CSIR) produces breeder seeds at the beginning of the seed chain, while farmers are the final consumers of these seeds, along with any imported seeds. To understand the impact of seed availability, it is essential to assess how accessible improved seeds and seedlings are to farmers. The study reveals that a significant number of farmers face challenges in accessing these inputs. Availability issues are compounded by factors such as inadequate distribution networks and limited infrastructure, which hinder farmers' access to high-quality seeds and seedlings.

Affordability is a crucial factor that affects the use of seeds and seedlings. From the data collected, only 1 farmer, representing 0.7%, reported that agrochemicals and seedlings are affordable for agricultural purposes. Conversely, 31 farmers (20.7%) indicated that these inputs are not affordable at all.

Most farmers, 118 individuals (78.7%), reported that seeds and agrochemicals are beyond their

financial reach. This suggests that most farmers are unable to obtain the necessary farm inputs, which impedes their ability to engage in effective and enhanced agricultural practices. The lack of affordable and accessible inputs likely influences decisions to out-migrate. Farmers facing challenges in securing farm inputs may seek alternative livelihoods elsewhere, leading to outmigration as a coping strategy. This connection between input accessibility and migration decisions underscores the need to address both availability and affordability to support sustainable agricultural development. It is important to consider that relying solely on second-hand accounts may not fully capture the experiences of outmigrants.

The study's reliance on perceptions of non-migrants may limit the understanding of migration dynamics. Direct insights from outmigrants themselves would provide a more comprehensive view of how seed system issues impact migration decisions. According to Etwire, Ariyarwadana, and Mortlock (2016), improving the quality of relationships, communication flow among group members, and addressing farm characteristics are critical for enhancing seed uptake among smallholders in Northern Ghana. Therefore, enhancing the seed distribution infrastructure and expanding access to superior seed varieties are essential steps toward improving agricultural outcomes and mitigating migration pressures.

#### **4.5.5 Affordability of improved seedlings and agro-chemicals**

| Do you think improved seedlings and chemicals for agriculture are affordable? |           |            |
|-------------------------------------------------------------------------------|-----------|------------|
| Response                                                                      | Frequency | Percentage |
| Affordable                                                                    | 1         | 0.7        |
| Not Affordable                                                                | 118       | 78.7       |
| Not affordable at all                                                         | 31        | 20.7       |

Based on the findings regarding the affordability of seedlings and agrochemicals, the study also sought to gather responses from farmers on the support received from out-migrant relatives. Most

farmers reported not receiving any support from their migrant relatives in terms of seedlings and agrochemicals. Specifically, 130 farmers, or 86.7 percent, indicated they do not receive such support. In contrast, 20 farmers, representing 13.3 percent, reported receiving seedlings and agrochemicals from out-migrant relatives.

The socioeconomic growth of irrigated areas in rural regions has historically been driven by the Green Revolution. For farming systems in these rural areas to advance, they must be highly site-specific and leverage novel technology and approaches based on indigenous knowledge and abilities, tailored to their unique microenvironments. The lack of support from out-migrant relatives could impede the development of more advanced agricultural practices, potentially keeping farming activities at a subsistence level and hindering overall agricultural progress in the area.

#### **4.5.6 Land ownership and accessibility**

Land is a critical dimension in the agricultural industry in Ghana, like many parts of the world. However, traditional land tenure laws place all community lands under the control of chiefs, who hold them in trust for the people. This system often results in male-biased land ownership, disadvantaging females. Accessing land for farming becomes an inevitable challenge for many farmers, especially during population increases, leading to out-migration. This study investigates land access for farming within the community, revealing that 90% of the land is allocated to family ownership, 5% is leased or rented, 2% is not applicable, 1% belongs to communal ownership, and 0.7% is for individual ownership. Consequently, families without sufficient land struggle to farm or expand their farms, leading to border disputes and eventual out-migration for survival.

In the context of the Ester Boserup Model, which posits that agricultural methods depend on population density, the findings suggest that out-migration can alleviate the pressure on land. As

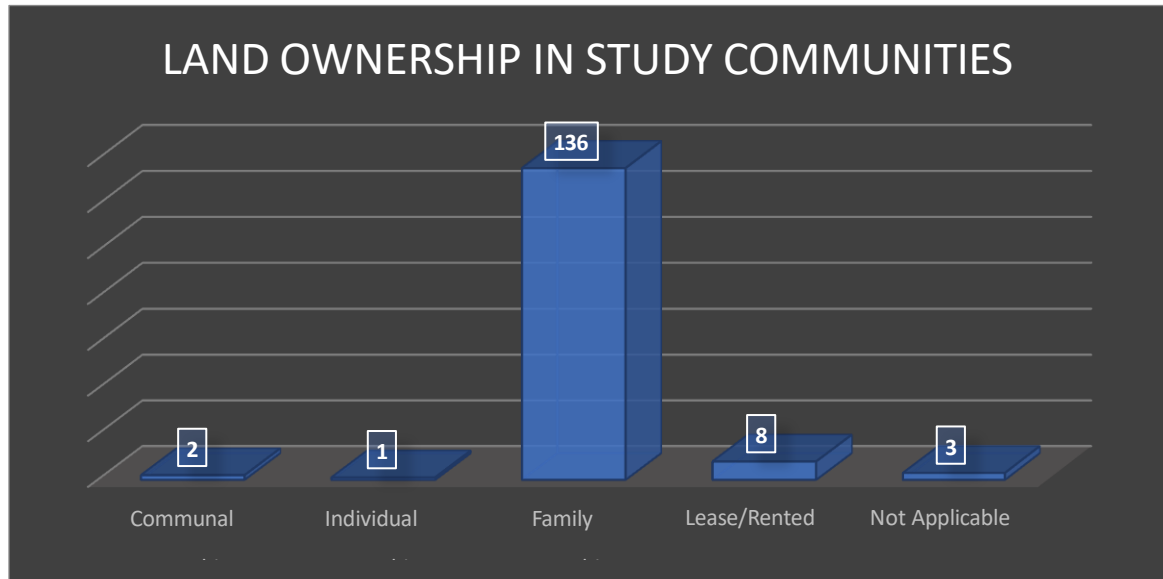
the population decreases, there is less demand for land, allowing the remaining farmers to access more land. This is supported by survey data indicating that 98% of residents agree that out-migration eases land pressure, while only 1% disagreed, and 0.7% found it not applicable. The New Economics of Labor Migration theory, which highlights the role of household decision-making in migration, also applies here.

The decision to migrate is not only a response to land scarcity but also a strategic choice to diversify income and reduce risk. The survey reveals that 79% of respondents do not receive machinery or input support from migrant relatives, indicating that migration serves as a coping mechanism rather than a means to enhance agricultural productivity back home.

Additionally, the Structural Transformation Theory, which describes the shift from an agrarian-based economy to one dominated by industry and services, is reflected in the out-migration patterns. As farmers leave due to land scarcity, they often seek opportunities in urban areas or other sectors, contributing to the structural transformation of the economy. This shift can relieve pressure on agricultural land, but it also underscores the need for policies that support sustainable agricultural practices and equitable land distribution.

Climate change exacerbates these dynamics by increasing the frequency and severity of droughts, driving further migration. Studies suggest that climatic variations impact migration patterns, with significant increases during periods of extended climatic stress. These effects vary by gender and land tenure, with those holding less secure land rights being more vulnerable to displacement (Curran and Meijer-Irons, 2014).

*Figure 8 Land ownership system in study communities*



Traditional land tenure laws reserve all community lands in the hands and control of chiefs in trust for the people. Land ownership is often male-biased, disadvantaging females in society. The descriptive analysis reveals how land for farming or crop production is accessed in the community. As the population increases, accessing land becomes an inevitable challenge for many farmers, causing some to emigrate.

This study investigated land allocation according to survey respondents: 90% of land is family-owned, 5% is leased or rented, 2% is not applicable, 1% is communal ownership, and 0.7% is individually owned. People in families without sufficient land tend to struggle to farm or expand their farms, leading to border disputes and eventual out-migration for survival. With continuous out-migration of farmers, it is expected that the demand for land will decrease, allowing the remaining people more access to land for farming.

#### 4.5.7 Implications of out-migration on food production in study communities

*Table 11 Access to hired labour*

| Do you have access to hired labour at the right times? |           |            |
|--------------------------------------------------------|-----------|------------|
| Response                                               | Frequency | Percentage |

|     |     |      |
|-----|-----|------|
| Yes | 133 | 88.7 |
| No  | 17  | 1.3  |

*Table 12 Effect of labour on crop production*

| <b>Do you have access to hired labour at the right times?</b> |                  |                   |
|---------------------------------------------------------------|------------------|-------------------|
| <b>Response</b>                                               | <b>Frequency</b> | <b>Percentage</b> |
| Increased Yield                                               | 32               | 21.3              |
| No impact                                                     | 85               | 56.7              |
| Don't know                                                    | 33               | 22.0              |

The descriptive analysis reveals changes in production levels. According to the respondents, 44% stated that agricultural production levels have declined over the past years, 32% believe crop production has remained the same, and 23% believe production has improved. Additionally, when asked about the availability of hired labor at the right times, 88.7% of respondents reported having access, while 11.3% did not.

Table 12 illustrates the effect of labor on crop production. Of those who have access to hired labor at the right times, 21.3% reported an increased yield, 56.7% saw no impact, and 22.0% were unsure. Despite the reported access to hired labor, when asked whether the decline in food production is associated with out-migration, respondents indicated other factors are responsible. These findings align with Shi (2018) on the heterogeneous effects of rural-urban migration on rural labor productivity as described in the Roselle framework and by Atamanov and Van den Berg (2012).

#### **4.6 Research Objective 3 - The relationship between migration and agricultural transformation in the Bilegamg, Nandomkpee, and Dabolteng communities.**

This section analyzes various variables and sub-themes to understand the relationship between migration and agricultural transformation in the selected communities in the Nandom District.

#### 4.6.1 Marketing Agricultural Produce

Variables and sub-themes to understand the relationship between migration and agricultural transformation in the selected.

*Table 13 Existence of operational market for marketing produce*

| The existence of an operational market in the local community |           |            |
|---------------------------------------------------------------|-----------|------------|
| Response                                                      | Frequency | Percentage |
| Yes                                                           | 2         | 1.3        |
| No                                                            | 148       | 98.7       |

The study revealed the non-existence of an operational local market in all three study communities surveyed. According to 148 respondents (98.7%), there are no formal markets in their communities where farming activities occur. Consequently, produce from their farming activities is not sold directly within these communities but transported to nearby urban areas within the Nandom District. Although 1.3% of respondents believe there are markets in their local communities, the researcher observed that these are not structured markets but rather open spaces where some farmers occasionally bring produce to sell. In contrast, the researcher noted the presence of an organized market in the District capital, where farmers from rural areas could display their farm produce for customers. The lack of operational local markets in the study communities indicates a critical challenge for farmers in selling their produce locally. This situation necessitates the transportation of agricultural products to urban markets, which might influence migration patterns. Farmers may migrate to urban areas seeking better market access, leading to a shift in agricultural practices and productivity.

According to Boserup, increased population pressure leads to the adoption of more intensive farming methods to increase food production. In the context of this study, the migration of farmers to urban areas can be seen as a response to the lack of local market access, prompting a shift towards more intensive agricultural practices in urban-adjacent areas. Migration enhances agricultural productivity by promoting the adoption of advanced techniques and practices. It provides farmers with better market access in urban areas, improving their income and livelihoods. Additionally, exposure to urban agricultural practices and technologies fosters knowledge transfer and innovation in farming methods.

Migration can lead to rural depopulation, thereby reducing the labor force available for agricultural activities. It also contributes to urban overcrowding, straining resources and infrastructure. Additionally, the intensive farming practices driven by migration may cause environmental degradation and sustainability issues. In the context of agricultural transformation, migration plays a crucial role in facilitating agricultural transformation. As farmers move to urban areas, they gain access to markets, which provide incentives for the adoption of more productive agricultural practices. This shift aligns with the IFPRI's definition, as it can lead to higher productivity, reduced poverty, and improved food security. However, it is essential to address the challenges associated with rural depopulation and urban overcrowding to ensure that the transformation is sustainable and inclusive.

#### **4.6.2 Effects of the community market on agricultural produce**

The researcher aimed to understand how the absence or presence of markets affects the sales of farm produce. Most farmers, 146 respondents (97.3%), believe that there is always a ready market for their produce. Despite the lack of operational markets in their communities of origin, marketing

their produce is not currently an issue due to consistently high demand. Conversely, only 4 respondents (2.7%) reported difficulties in finding a market for their produce. The high demand for produce, even in the absence of local markets, suggests that farmers can sell their products by transporting them to urban areas or other locations with better market infrastructure. This situation may reduce the necessity for out-migration, as farmers can achieve economic stability without relocating. However, the need to transport produce to distant markets could still provide incentives for some farmers to migrate closer to these urban centers for more convenient market access.

The presence of high demand despite limited local market infrastructure indicates potential for agricultural transformation. If local markets were developed, it could further enhance productivity by reducing transportation costs and encouraging farmers to adopt more efficient farming practices. This aligns with the International Food Policy Research Institute's (IFPRI) definition of agricultural transformation, which emphasizes the shift from subsistence farming to high productivity and increased food security.

#### **4.6.3 How agricultural produce is managed after harvest**

To appreciate whether produce is sold or consumed by households, the researcher asked respondents how produce is sold. The descriptive analysis reveals that 81 respondents, representing 54% of farmers interviewed, do not sell their produce from their farms. Rather, produce from the farm is stored and used to feed their households. On the other hand, 66 respondents, representing 44%, stated that they sell their produce, with 42% indicating they sell it internally within the community, and 2% selling it externally. This behaviour has significant implications for out-migration and agricultural transformation.

According to structural transformation theory, as economies develop, there is a shift from agriculture-based livelihoods to more industrial and service-oriented occupations. In the context of the Nandom District, the limited sale of produce suggests a subsistence-based agricultural system, which may not provide sufficient economic opportunities, potentially driving out-migration as individuals seek better livelihoods elsewhere. Conversely, transforming agriculture to enhance market-oriented production could stimulate local economic growth, reduce out-migration, and lead to more sustainable agricultural practices.

*“In the Bilegamg community, majority of the farmers are engaged in subsistence agriculture whereby the farmers produce food crops and animal products mainly to feed their families and only the surplus is sold for extra income. This practice has led to a vicious cycle of abject poverty in the community. As a strategy adopted to break this unfortunate cycle of poverty, the people traditionally resort to seasonal migration to seek greener pastures”” (Respondent in Bilegamg)*

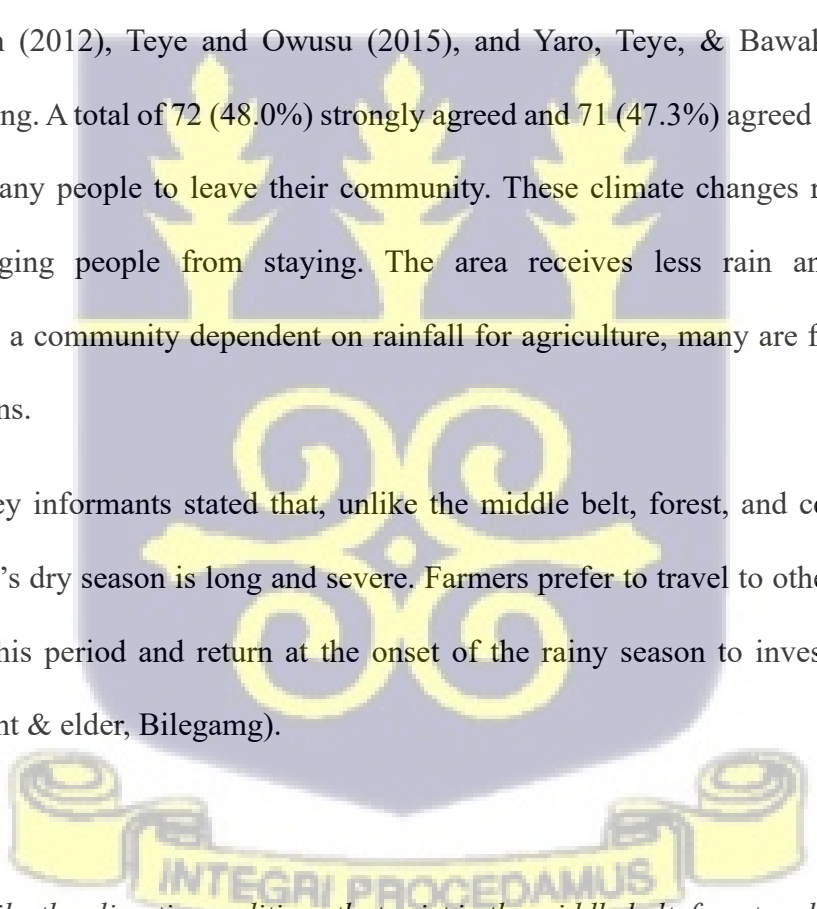
#### **4.6.4 Role of migrant relatives in the sales of agricultural produce**

The study further sought to find out the role of migrant relatives in selling farm produce to the external market. Unfortunately, many farmers do not sell their produce at all, and those that do sell internally, with only a few selling externally. The data indicate that the majority (148 or 98.7%) of farmers do not involve their out-migrant relatives in selling their produce. However, 2 farmers (1.3%) revealed that their out-migrant relatives engage in the sale of produce, especially to the external market. Although the involvement of migrants in the sale of produce is largely insignificant, the study argues that migrant relatives do play a role in the sale of farm produce.

Similarly, the research explored whether migrant relatives have supported respondents in changing or diversifying their business or primary occupation. Only 5 (3.3%) confirmed that migrant relatives have been supportive in changing their business. In contrast, 145 (96.7%) reported receiving no support from migrant relatives living either in Ghana or abroad. Although some support has been received, the inflow of support is relatively insignificant.

Climate change (long drought) and poor rainfall patterns resulting from climate change were also confirmed by most respondents as a cause of migration. Scholars such as Kibreab (2009), Foresight (2011), Alverson (2012), Teye and Owusu (2015), and Yaro, Teye, & Bawakyillenuo (2016) support this finding. A total of 72 (48.0%) strongly agreed and 71 (47.3%) agreed that poor rainfall patterns drive many people to leave their community. These climate changes reflect poor crop yields, discouraging people from staying. The area receives less rain and records high temperatures. As a community dependent on rainfall for agriculture, many are forced to migrate during dry seasons.

In interviews, key informants stated that, unlike the middle belt, forest, and coastal zones, the Nandom District's dry season is long and severe. Farmers prefer to travel to other areas for extra income during this period and return at the onset of the rainy season to invest in farm inputs (Returned migrant & elder, Bilegang).



*“Unlike the climatic conditions that exist in the middle belt, forest and coast zones in Ghana, the dry season in the Nandom Municipality is normally long and severe. So instead of the farmers remaining idle and unproductive*

*throughout the entire duration of the dry season, the farmers prefer to travel to other geographical areas to work for extra income. At the onset of the raining season which comes around June, every year, the farmers will then use the income they have generated to buy farm inputs and then return home”” (Returned migrant & elder, Bilegamg)*

Studies have investigated how home adoption of labour-saving farming technologies affects emigration following family agriculture. Detailed panel data from rapidly changing rural agricultural, migrant-sending scenarios were used to quantify the effects of labour-saving farm technologies on out-migration. The models suggest that household use of farm technology, particularly tractors, significantly boosts out-migration (Lu, 2014; Corbett & Forsey, 2017).

Soil quality is another critical factor. Poor soils for farming have been identified as a strong environmental issue prompting migration from agriculturally dominated communities (Alverson, 2012; Teye and Owusu, 2015; Yaro, Teye & Bawakyillenuo, 2016). Findings from this study confirm these arguments. According to the data, 141 respondents (94%) believe the poor soils result in poor crop yields, motivating migration. However, 5.3% argue that the soil is good for farming and does not justify migration. Nonetheless, the poor soils encourage migration in search of better soils for crop production in southern Ghana. Additionally, population increase against a fixed land supply often results in border disputes, prompting some people to migrate to ease land pressure.

*“One of the major reasons why people migrate, aside from the long dry season and the desire to seek greener pastures, is the population increase against a fixed land in supply. This often results in unnecessary border disputes. Some of the people are involved in out-migration purposely to ease pressure on the available farmlands. (Returned migrant & elder, Bilegamg)”*

The correlations between out-migration from Nandom District and land use/agricultural practices in other ecological zones highlight both enhancing and transforming effects. Literature from the EPA and other bodies shows negative impacts, including land degradation and loss of agricultural productivity in migrant-sending areas. Applying theories like the Ester Boserup Model and Structural Transformation Theory helps contextualize these findings. The Boserup Model suggests that agricultural intensification is a response to population pressure, which is evident in the migrants' adoption of labour-saving technologies. Structural Transformation Theory highlights the shift from agricultural to non-agricultural activities, driven by climate-induced migration and the search for better livelihoods.

#### **4.6.5 Effects of out-migration on food production in the area**

In examining the relationship between migration and agricultural production in rural communities, Yaro (2008) argues that the movement of people from rural areas creates an "empty space" in the labour force. Lawal and Okeowo (2014) support this view, suggesting that agricultural production is likely to decline without sufficient labour input, especially when there is a significant outflow of labour from rural to urban areas. This labour shortage could lead to reduced farm sizes or even

the cessation of farming activities, particularly if the remaining population is predominantly elderly.

To assess the impact of out-migration on agricultural production, study participants were asked to rate various issues using a Likert scale. Contrary to the assertions of Yaro (2008) and Lawal and Okeowo (2014), most participants did not believe that out-migration significantly affects the labour force necessary for farming, as most of the migrants return to the sending communities at the onset of the rainy season. Additionally, many respondents disagreed with the notion that most out-migrants from the community are young people. This finding diverges from studies suggesting that youth predominantly migrate from farming communities in Ghana, especially from the northern sector to the middle belt and the south.

The participants' responses indicate that labour for agriculture in the area relies on a group support system known as "nnoboa," which mitigates the impact of young people's absence. These findings align with data presented in Appendix B on sources of labour for crop production. De Brauw (2014) also argues that rural-to-urban migration does not necessarily reduce agricultural productivity.

Interestingly, over 90% of participants agreed that out-migration increases household production, challenging the perception that out-migration leads to lower productivity, as argued by De Brauw (2014). Many participants believe that migrant relatives serve as a significant market for products produced in the area. However, this contradicts earlier assertions that migrant relatives do not influence the sales of farm produce.

Farmers disagreed that migrant relatives are major contributors to the establishment of agrochemical shops in the area. Most agro-chemical shops are in the district capital, (Nandom), making access to these inputs expensive and contributing to high production costs. Observations during the field study revealed a lack of shops for farm inputs in most communities. When asked about the impact of migrant relatives on agricultural technology, 88.7% of participants did not believe that migrants have helped improve agricultural technology to boost production. Only a minority (8.7%) thought that migrant relatives had introduced modern technology to the area, although these technologies are not widely accessible.

Applying the Ester Boserup Model suggests that population pressure leads to agricultural intensification and technological innovation. In this context, the migration of young people might reduce immediate labour availability but could also stimulate the adoption of labour-saving technologies and more intensive farming practices. This aligns with the finding that out-migration increases household production, as families might adapt by adopting more efficient methods. Furthermore, the New Economics of Labour Migration (NELM) theory posits that migration is a household strategy to diversify income sources and manage risks. Migrant relatives often remit funds, culture, and knowledge back to their communities, which can be invested in agricultural improvements and business diversification. This theory helps explain why a significant portion of participants reported diversifying their operations due to links with migrant relatives, indicating the positive role of remittances in supporting local economies and agricultural productivity.

These findings indicate that while migration may pose challenges to labour availability, it also drives innovation and diversification in agricultural practices. The complex dynamics between migration and agricultural transformation in Nandom highlight the potential for migration to spur economic growth and adaptation in rural communities.

Regarding living standards, studies by de Brauw, Mueller, and Woldehanna (2017), FAO (2018); and Wineman and Hayne (2016) suggest that remittances from out-migrants can improve the living standards of those left behind. However, in this study, over 90% of participants disagree that their lives have significantly improved due to remittances. Only about 4% feel their lives have improved, while 2% see no change. Migration is also expected to bring about cultural and social transformations, such as improved respect for women and changes in land ownership practices. Despite this, most participants disagree or strongly disagree that out-migration has led to increased respect for women or changes in land ownership practices in their community.

The traditional view that women should not own land remains prevalent. Isaac and Raqib (2013) highlighted that migration could enhance social infrastructure and living standards. However, this finding does not align with this study's context, where male education is prioritized over female education. In this study, 76% of participants disagree or strongly disagree that migration has improved girl-child education in the area. Despite mixed feelings about the impact of migration, more than half (50.7%) of respondents believe that rural-urban migration has positively affected their lives. Conversely, 6.7% see it as negative, and 42.7% view it as having both positive and negative effects. Notably, 80% of participants would prefer relatives to remain in the community rather than migrate, citing insignificant benefits from migration. However, 20% still support migration, citing challenges in their current environment as a reason to seek opportunities elsewhere.

#### **4.7 Conclusion**

This study aims to identify how migration impacts agricultural transformation in the Nandom District. It highlights that agriculture remains central to rural livelihoods, despite significant out-migration to urban areas. The study identifies key determinants of migration, such as the adverse effects of climate change on agriculture and inadequate social facilities. These factors drive individuals to seek better opportunities in cities, often with the support of relatives who remain in the rural community. The findings underscore the need to address these issues to sustain agricultural productivity and improve rural livelihoods.



## CHAPTER FIVE

### SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

#### 5.1 Introduction

This chapter provides a summary of key findings from this study, the conclusions drawn, and recommendations based on the study objectives, data obtained, and results generated.

#### 5.2 Summary of Study Findings

Several conclusions have been drawn from the study and the following is therefore highlighted below.

- i. The study reveals that the communities within Nandom District are predominantly agricultural, with migration to urban areas being a prevalent trend. Farming is a primary source of livelihood for many households; however, a significant number of individuals migrate southward for other economic opportunities. Nearly every household has at least one member who has either migrated or previously migrated to southern Ghana.
- ii. Regarding the first research objective, which aimed to understand the reasons behind the increased out-migration from the Nandom District, specifically the Bilegamg, Nandomkpee, and Dabolteng communities, the findings indicate that the primary drivers of migration are not directly related to the availability of markets for agricultural produce. Instead, key factors include famine, prolonged droughts due to climate change, poor soil quality, inadequate health and educational infrastructure, inadequate road networks, low crop yields, and substandard housing conditions.

- iii. In terms of the implications of out-migration on the agricultural sector in the study area, participants noted that migrants contribute positively by diversifying the local economy. They invest in agricultural inputs, such as agrochemicals, from the south upon their return during the farming season and help link local produce to external markets. However, the out-migration has not impacted farmland sizes for women, nor has it altered the male-dominated culture of land ownership. Additionally, the educational opportunities for girls remain unchanged, continuing the existing gender imbalance.
- iv. Despite studies suggesting that remittances from out-migrants can enhance living standards, most participants in this study disagree that their lives have significantly improved due to remittances. Only a small minority feel their lives have improved, while a small fraction sees no change.
- v. Although migration is expected to bring about cultural and social changes, such as increased respect for women and changes in land ownership practices, most participants disagree or strongly disagree that out-migration has led to these improvements. The traditional view that women should not own land remains prevalent.
- vi. Most respondents believe that rural-urban migration has positively affected their lives. Conversely, a small portion views it as negative, while others see it as having both positive and negative effects. Additionally, most participants prefer relatives to remain in the community, citing insignificant benefits from migration, while a minority support migration due to challenges in their current environment.

### 5.3 Conclusion

In conclusion, this study aligns with its objectives and the outcomes revealed several key insights

about migration trends and agricultural transformation in Nandom District. Firstly, regarding the research theme of the pattern and reasons for migration in the Nandom District, the findings affirm that the migration patterns from communities such as Bilegamg, Nandomkpee, and Dabolteng to urban areas in the south are indeed multifaceted. This aligns with the observations made by DeHaas (2010), Yaro, Teye, and Tofirike (2018), and Awumbila (2015), who have documented similar trends. The primary drivers of migration in Nandom, including climate change effects such as erratic rainfall, soil degradation, high temperatures, and poor social infrastructure, remain consistent with broader patterns observed across Africa. For many in the study area, migration serves as a vital livelihood strategy, influenced by the seasonal nature of these movements. The predominance of male migrants, often married men, reflects the cultural norms of the region where men are traditionally seen as the primary breadwinners of their households.

Second, in the context of understanding the nature and dynamics of agricultural transformation in the Nandom District, the study highlights the economic benefits of out-migration on agricultural transformation. Migrants' relatives who remain in the area often experience positive changes due to the knowledge and agricultural practices shared by those who have migrated. The introduction of new farming techniques and the return of migrants with agricultural inputs are commendable. However, the absence of agricultural input shops and effective networks among returned migrants has somewhat limited the overall benefits for the local community.

Furthermore, while migration has led to notable agricultural transformations, the effects are mixed. The sale of agricultural produce through migrant networks has brought significant changes, and the growing population continues to provide a robust labour force. The community's perception of

the impact of out-migration is generally positive, although some participants believe the implications are neutral. Overall, the study underscores the complex interplay between migration and agricultural practices, revealing both positive transformations and ongoing challenges.

The study's findings on rural out-migration and agricultural transformation in Nandom District demonstrate how localized labor movements connect directly to Ghana's broader economic restructuring. The research documents multifaceted migration patterns and their impacts on agricultural practices, including knowledge transfer, remittance-driven investments, and modified farming techniques. However, these observations gain sharper theoretical relevance when situated within Ghana's servicification, where agriculture and manufacturing steadily lose ground to an expanding service sector. Southern Ghana's urban economies now favor service-oriented employment over agricultural production, which explains why rural areas like Nandom function simultaneously as labor-sending regions and sites of remittance-funded agricultural intensification. The positive transformations identified in the study need scrutiny: they may represent genuine agricultural modernization, or they may simply reflect subsistence adjustments within a rural economy that lacks structural support and long-term viability.

De-industrialization theory exposes the contradictions embedded in these findings. Migrants return with capital and knowledge that improve local farming practices, yet Ghana's economic trajectory consistently devalues agricultural labor and rural livelihoods. The mixed effects documented in the study reflect fundamental tensions rather than mere transitional difficulties. The broader economic incentive structure undermines the very agricultural base that remittances temporarily shore up. The agricultural transformations in Nandom District appear less like foundations for

resilient rural economies and more like adaptive responses within communities being absorbed into urban-centred service economies as peripheral labor reserves. Connecting the micro-level findings to macro-economic serviceification clarifies how individual migration strategies collectively reinforce sectoral shifts that marginalize agriculture. This theoretical framing converts the research from a description of migration and agriculture connections into a substantive contribution to debates about rural futures, development pathways, and the spatial inequalities that define Ghana's structural transformation.

#### **5.4 Recommendations and Future Research**

- i. The study recommends that local and national government authorities invest in upgrading health and educational infrastructure in the Nandom District. This includes constructing new schools and health centers and improving existing ones to provide services comparable to those in urban areas. Such investments will help retain young residents by addressing their educational and health needs locally, reducing the need for migration to urban centers.
- ii. The study suggests that climate mitigation interventions be prioritized, including the construction of irrigation dams and the establishment of irrigation input shops. State authorities, in collaboration with donor organizations and environmental NGOs, should provide climate-smart seedlings and support sustainable farming practices to facilitate year-round agricultural activities and adapt to climate change.
- iii. Also, the study advises that agricultural modernization be supported through the introduction of mechanized farming tools and equipment. Structured credit schemes should be implemented to enable farmers to access these tools. This approach, coordinated by agricultural development agencies and financial institutions, can enhance agricultural productivity and reduce the need for migration to urban centers due to poor agricultural

outcomes.

- iv. The study proposes that investment in agro-processing industries be increased. This includes establishing processing facilities and providing support for local entrepreneurs to start agro-processing businesses. Government agencies, private investors, and development partners should collaborate to create job opportunities, reduce post-harvest losses, and create markets for local produce.
- v. The study suggests that improvements be made to rural infrastructure, including roads and market facilities. Enhancing transportation and market access will be crucial for the efficient movement of agricultural products. This should be facilitated by local governments in collaboration with infrastructure development agencies and community organizations.
- vi. The study recommends that local entrepreneurship be promoted through targeted support programs. This includes providing grants, loans, and business training for individuals interested in starting agriculture-related ventures, such as seed supply businesses or equipment repair services. Government agencies, financial institutions, and business development organizations should work together to stimulate local economic development.

#### **5.4.1 Future Research**

- i. The study proposes that further research be conducted to explore the impact of climate change on migration patterns within the Nandom District. This research should be carried out by academic institutions and climate research organizations to better understand the link between environmental changes and migration trends.

- ii. The study suggests that research on the influence of educational improvements on migration trends be conducted. Educational research organizations and universities should investigate how enhancements in education and vocational training can impact migration patterns.
- iii. The study recommends that the socioeconomic impacts of agro-processing industries be examined. Research should focus on how these industries influence local employment and economic conditions. This study should involve economic research institutions and industry analysts to provide insights into the effects of agro-processing on migration and local development.



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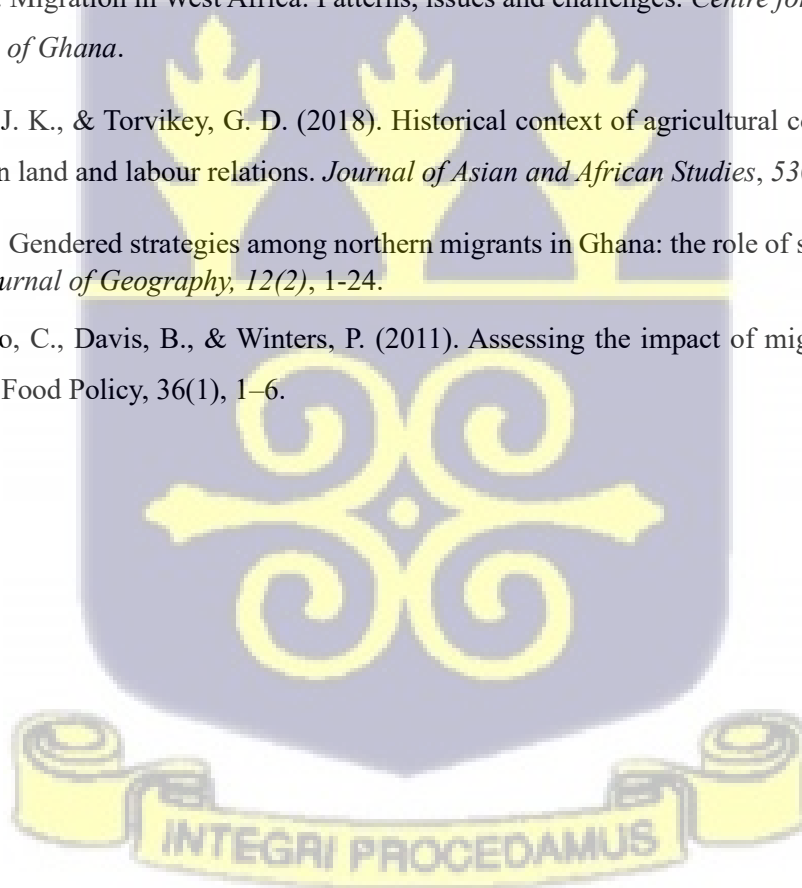
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## Appendices

### Appendix A: Questionnaire



## QUESTIONNAIRE

### Introduction and Consent

Good morning/afternoon, evening, I am Francis Opai Tetteh, a student from University of Ghana. I am in your community/house today to conduct research as part of efforts to examine the effects of migration on agricultural transformation in the Nandom Municipal District. This research is being conducted in partial fulfilment of obtaining an MPhil Degree in Migration Studies from the Center for Migration Studies University of Ghana and as such information from you {respondents} will be treated with the highest confidentiality and shall be a contribution to academic knowledge and not for any malicious reasons. I would be glad if you could spare me a few minutes of time for this exercise. However, the decision to be part of this study is yours and should not be forced to join. If after beginning the study you wish to discontinue for any reason best known to you, please do not hesitate to inform me so I discontinue. Do I now have your permission to start the interview? If yes,

*Please provide the right answers by either ticking or writing in the spaces provided*

### **SECTION A: DEMOGRAPHIC CHARACTERISTICS**

1. Age:  
18-25 [   ]  
26-35 [   ]  
36-45 [   ]  
45 above [   ]
2. Sex:  
Male [   ]  
Female [   ]

3. Marital status:
- |          |   |   |
|----------|---|---|
| Single   | [ | ] |
| Married  | [ | ] |
| Divorced | [ | ] |
| Widow    | [ | ] |

4. Level of Education:
- |           |   |   |
|-----------|---|---|
| Basic     | [ | ] |
| Secondary | [ | ] |
| Tertiary  | [ | ] |
| Islamic   | [ | ] |
| None      | [ | ] |

5. Major occupation
- |         |   |   |
|---------|---|---|
| Farming | [ | ] |
| Fishing | [ | ] |
| Hunting | [ | ] |
| Mining  | [ | ] |
| Trading | [ | ] |
| Others  | [ | ] |

6. Family size:
- |          |   |   |
|----------|---|---|
| 0-3      | [ | ] |
| 4-6      | [ | ] |
| 7-9      | [ | ] |
| 10-12    | [ | ] |
| 12 above | [ | ] |

7. Monthly earnings: [.....]
- |              |   |   |
|--------------|---|---|
| GH 0-50      | [ | ] |
| GH 60-100    | [ | ] |
| GH 110-150   | [ | ] |
| GH 160-200   | [ | ] |
| GH 210-250   | [ | ] |
| GH 250 above | [ | ] |

8. Religious affiliation:
- |              |   |   |
|--------------|---|---|
| Christianity | [ | ] |
| Islam        | [ | ] |
| ATR          | [ | ] |
| 4. Other...  | [ | ] |

9. Source of funds for household

upkeep Bank loan [       ]  
Remittances       [       ]  
Gifts from community members [       ]

**SECTION B:        STATE OF MIGRATION IN THE NANDOM DISTRICT**

10. Have you ever migrated out of this community before?  
Yes [   ]    2. NO    [   ]
11. Do you know people who once lived in this community who have now migrated out of this community in recent times?  
Yes [   ]    2. NO [   ]
12. If Yes, how many have migrated out of this community in the last 12 months  
1-10 [       ] 11-20 [       ] 21-30 [       ] 31 and above [       ]
13. How many people migrated from your household within the last 12 months? 0-3 [   ]    4-6 [       ]    5-9 [   ]    10 above [   ]
14. How often do people in this community migrate out? Very Often [       ]    Often [   ]    Not often [   ]
15. Where do people in this community unusually migrate to in Ghana?  
Accra [   ]    Kumasi [   ]    Techiman [   ]    Nandom [   ]    Elsewhere in Ghana [   ]
16. Do some people in this community migrate outside Ghana to neighbouring countries? Yes [   ]    2. No [   ]
17. In a typical year, when do the people usually migrate?  
Rainy season [       ]    Dry season [       ]
18. How often do migrant relatives visit the community when they migrate out of the community?  
Very often [   ]    Often [   ]    Not often [   ]
19. Were the migrants employed before migrating? Yes [   ]    2. No [   ]
20. How important were your relatives who have currently migrated to your pre-occupation and source of livelihood?  
Very important [   ]    Important [   ]    Not very important [   ]    Not at all important [   ]
21. How regular do you hear from your relatives who have migrated?  
Very regular [   ]    Regular [   ]    Somehow regular [   ]    Not at all regular [   ]
22. Are your relatives who migrated in the last 12 months working in their current destination? Yes [   ]    No [   ]

23. Are you satisfied with the current condition of your migrant relatives in destinations? Very satisfied [            ]            Satisfied [            ]  
Dissatisfied [    ]            Very dissatisfied

24. Did the out-migrants carry some skills that were relevant to the community agricultural production?      Yes      [            ]      No [            ]

25. What is the age category of the out-migrants in this community?

10-15 years      [            ]      16-20 years [            ]      21-25 years      [            ]      30 above  
[            ]

26. In terms of gender which group of people often migrate from this community?

Males [            ]      Females            [            ]      Both

27. In terms of marital status, which group of people mostly migrate from this community? Married [            ]            Single/Not married            [            ]  
Divorcees [            ]

### SECTION C: STATE AND NATURE OF OUT-MIGRATION ON AGRICULTURAL TRANSFORMATION IN NANDOM MUNICIPALITY

#### CI:      **LABOUR AVAILABILITY**

28. Where do you source labour for your major pre-occupation?

Family labour only            [            ]

Hired labour only            [            ]

Both family and hired labour [            ]

Communal labour            [            ]

29. Any labour constraints in your current pre-occupation activities?

Yes [            ]      No [            ]

30. If yes, how was the labour shortage problem resolved?

Hiring of labour            [            ]

Support from neighbours [            ]

Support from children            [            ]

Extended family support            [            ]

Reduction in acreage cultivated            [            ]

31. For which agricultural activity is hired labour used or are you likely to use hired labour?

Ploughing [      ]

Weeding [      ]

Harvesting [      ]

Staking [      ]

Transporting [      ]

32. Do you have access to hired labour at the right times?

Yes [      ]      No [      ]

33. If Yes to Q 17, indicate the effect on crop production.

Increase yield [      ]

No impact [      ]

Increased cultivable land

Don't know ( )

Other (specify) .....

34. Do you receive financial support from migrant relatives for your pre-occupation?

Yes [      ]      No [      ]

**C 2: FARMLAND ACCESSIBILITY AND OUT-MIGRATION**

35. How is land for farming or crop production accessed in this community?

Communal ownership

Individual ownership

Family ownership

Lease/Rented

36. Has out-migration affected land availability or access to farmland in this community?

Yes [      ]      No [      ]

37. Do you receive machinery/input support from migrant relatives for your pre-

occupation? Yes [ ] No [ ]

38. If yes to Q33, how regular?

Very regular [ ] Regular [ ] Not regular [ ] Not all [ ]

39. During farming season, do migrant relatives return to community to help in any way?

**C3: CULTIVABLE LAND SIZE**

40. What is the effect of out-migration on cultivable land size?

Reduced [ ] Remained the same [ ] Increased [ ]

41. Do you receive income/funds from migrant relatives to support your pre-

occupation? Yes [ ] No [ ]

42. If yes, how often do you receive financial support

Very often [ ]

Often [ ]

Somehow often [ ]

Not often [ ]

Not all [ ]

43. Do you receive machinery/input from your migrant relatives to support your

farming? Yes [ ] No [ ]

44. If yes to Q39, how often do you receive such support

Very often [ ]

Often [ ]

Somehow often [ ]

Not often [ ]

Not all [ ]

45. Are migrant relatives able to support the hire large acreages of lands for farming activities in the community? Yes [ ] No [ ]

**C4: OUT-MIGRATION AND CROP PRODUCTION PERFORMANCE**

46. How available are improved seedlings and agro-chemicals to support farmers in the community?

Readily available [      ]

Available [      ]

Somehow available [      ]

Not at all available [      ]

47. Are there agro-chemical shops in this community owned by former out-migrants? Yes [      ] No [      ]

48. In your opinion do you think improved seedlings and chemicals for agriculture are affordable?

Very affordable [      ]

Affordable [      ]

Not affordable [      ]

Not at all affordable [      ]

49. Do your out-migrant relatives send you seedlings and other agro-chemicals for your farming activities?

Yes [      ] No [      ]

50. Have your production levels in any way improved or declined in recent times?

Improved [      ]

Declined [      ]

Remained same [      ]

51. Would you attribute your gains in crop production to the support from migrant relatives?

Yes [      ] No [      ]

**C5: OUT-MIGRATION AND ECONOMIC/MARKET TRANSFORMATION IN COMMUNITIES**

52. In your view, do you think the community population has increased or decreased over the past year?

Increased [      ]

Decreased [      ]

Unchanged [      ]

53. Do you have an operational market in this community?

Yes [      ] No [      ]

54. Do you have ready market for your produce?

Yes [ ] No [ ]

55. In your view, do you think the local market size has expanded or shrunk over the past year?

Expanded [ ] Shrink [ ] Unchanged [ ]

56. Does your household sell their farm produce internally or externally?

Internally [ ]

Externally [ ]

Do not sell produce [ ]

57. Selling farm produce internally or externally, which one do you think will be more profitable?

Internally [ ]

Externally [ ]

58. Do out-migrant relatives serve as network for selling your produce outside this community in any way?

Yes [ ] No [ ]

59. Have you changed business due to your migrant relative support? Yes [ ] No [ ]

#### **SECTION D: REASONS OF OUT-MIGRATION OF RESIDENTS IN NANDOM MUNICIPALITY**

60. In your opinion, tell me how much you agree with me on the following as determinants of the people who usually move out of this community?

| Question                            | Strongly agree | Agree | Neutral/ Not sure | Disagree | Strongly disagree |
|-------------------------------------|----------------|-------|-------------------|----------|-------------------|
| Famine                              |                |       |                   |          |                   |
| Chieftaincy disputes                |                |       |                   |          |                   |
| Poor Health services                |                |       |                   |          |                   |
| Poor educational system             |                |       |                   |          |                   |
| Poor Housing facilities             |                |       |                   |          |                   |
| Poor crop yield                     |                |       |                   |          |                   |
| High formal unemployment            |                |       |                   |          |                   |
| Long drought/Poor rainfall patterns |                |       |                   |          |                   |
| Poor soils for farming              |                |       |                   |          |                   |
| Lack of readily market for produce  |                |       |                   |          |                   |
| Traditional abuses                  |                |       |                   |          |                   |
| Family re-union (married couples)   |                |       |                   |          |                   |
| Poor road networks                  |                |       |                   |          |                   |

61. Indicate how you agree with me on the following statements. **SD**-Strongly disagree **D**-disagree **NS**-Not sure **A**-Agree and **SA**-Strongly Agree

| Statement                                                                          | SD | D | NS | A | SA |
|------------------------------------------------------------------------------------|----|---|----|---|----|
| Out-migration reduces farm labour                                                  |    |   |    |   |    |
| Majority of out-migrants from this community are youth                             |    |   |    |   |    |
| Out migration increases household production                                       |    |   |    |   |    |
| Migrant relatives serve a source for big market                                    |    |   |    |   |    |
| Out-migration promotes investment in agro-chemical businesses locally              |    |   |    |   |    |
| Out-migrants are source of improved technology to farming in this community        |    |   |    |   |    |
| Links with community members and out-migrants promotes diversification in business |    |   |    |   |    |
| Living standards of community members have improved significantly due to           |    |   |    |   |    |
| remittances from out-migrants                                                      |    |   |    |   |    |
| Out-migration have led to increased available farmlands for large scale farming    |    |   |    |   |    |
| Out-migration have led to respect for women in this community                      |    |   |    |   |    |
| Out-migration have increased women access to farmlands.                            |    |   |    |   |    |
| Out-migration have improved girl child education in the community                  |    |   |    |   |    |
| Out-migrants return to community with modern methods of farming.                   |    |   |    |   |    |

62. Do you think rural-urban migration is positive or negative to this community in terms of agricultural production?

Positive [ ] Negative [ ] Both [ ]

63. Would you encourage your relative to emigrate if the structures in the community are improved?

Yes [       ] No [       ]

64. What in your view can be the best strategy to reduce rural-urban migration in the community? Tick all that applies

| Item                                  | YES | NO |
|---------------------------------------|-----|----|
| Building of good roads                |     |    |
| Provision of irrigation facilities    |     |    |
| Provision of credit facilities        |     |    |
| Supporting farmers with free inputs   |     |    |
| Ready market for farm produce         |     |    |
| Establishment of processing factories |     |    |
| Building more social amenities        |     |    |

***Thank you for your time and willingness to participate  
in this study.***





## Interview Guide

### Introduction and Consent

Good morning/afternoon, evening, I am Francis Opai Tetteh, a student from University of Ghana. I am in your community/house today to conduct research as part of efforts to examine the effects of migration on agricultural transformation in the Nandom Municipal District. This research is being conducted in partial fulfilment of obtaining an MPhil Degree in Migration Studies from the Center for Migration Studies University of Ghana and as such information from you {respondents} will be treated with the highest confidentiality and shall be a contribution to academic knowledge and not for any malicious reasons. I would be glad if you could spare me a few minutes of time for this exercise. However, the decision to be part of this study is yours and should not be forced to join. If after beginning the study you wish to discontinue for any reason best known to you, please do not hesitate to inform me so I discontinue. Do I now have your permission to start the interview? If yes,

### Questions for both community leaders and officials for expert interviews

1. Please briefly introduce yourself (*your name if you are okay with that, age, educational background, position or role in community*).
2. What is the major pre-occupation of the people in the community including interviewees household (*probe for kind of farming commonly practised (subsistence or commercial), kind of crops predominantly grown, main source of labour, source of inputs*) etc.
3. Please tell me/ describe the migration history and dynamics of this community (*Probe*

*for migration trends over the years, composition in terms of gender and age, find out migrant`s destinations, find out numbers whether increasing or decreasing)*

4. Why do people prefer to out-migrate (*probe for the causes or drivers of out-migration i.e. Economic, social, cultural, political and or climate change effects*).
5. What are the consequences/effects of out-migration on agriculture in the community (*probe for effects on farm labour, farm size, inputs accessibility, remittances leading to transformations, adoption of modern technology like irrigation, improved seedlings? Find out whether the effects are positive or negative*).
6. How can the negative effects of out-migration in the communities be resolved? *Let the interviewee express himself and make suggestions.*
7. General comments related to this study, questions for clarification are welcome.

*Thank you for accepting to be part of this study.*



**Appendix B:**

**LIST OF TABLES**

Table 4.1: Demographic characteristics of study respondents

Table 4.1: Demographic characteristics of Respondents

| Do you know people who once lived in this community and have now migrated? |     |       |
|----------------------------------------------------------------------------|-----|-------|
| Age of Respondents                                                         |     |       |
| 18-25                                                                      | 6   | 4.0   |
| 26-35                                                                      | 9   | 6.0   |
| 36-45                                                                      | 55  | 36.7  |
| 45 above                                                                   | 80  | 53.3  |
| Sex of Respondents                                                         |     |       |
| Male                                                                       | 87  | 58.0  |
| Female                                                                     | 63  | 42.0  |
| Marital Status                                                             |     |       |
| Single                                                                     | 6   | 4.0   |
| Married                                                                    | 128 | 85.0  |
| Divorced                                                                   | 3   | 2.0   |
| Window                                                                     | 13  | 8.7   |
| Level of Education                                                         |     |       |
| Basic                                                                      | 39  | 42.0  |
| Secondary                                                                  | 31  | 5.30  |
| Tertiary                                                                   | 10  | 1.3.0 |
| Islamic                                                                    | 2   | 1.3.0 |
| No education                                                               | 75  | 50.0  |
| Major Occupation                                                           |     |       |
| Farming                                                                    | 142 | 94.7  |
| Trading                                                                    | 4   | 2.7   |
| Others                                                                     | 4   | 2.7   |
| Family Size                                                                |     |       |
| 0-3                                                                        | 31  | 20.7  |
| 4-6                                                                        | 85  | 56.7  |
| 7-9                                                                        | 23  | 15.3  |
| 10-12                                                                      | 7   | 4.7   |
| 12 and above                                                               | 4   | 2.7   |
| Monthly Earnings                                                           |     |       |
| 0-50                                                                       | 83  | 55.3  |
| 60-100                                                                     | 58  | 38.7  |

|              |            |            |
|--------------|------------|------------|
| 110-150      | 4          | 2.7        |
| 160-200      | 0          | 0          |
| 210-250      | 3          | 1.3        |
| 250 Above    | 3          | 2.0        |
| <b>Total</b> | <b>150</b> | <b>100</b> |

| Response     | Frequency  | Percentage |
|--------------|------------|------------|
| <b>Yes</b>   | 147        | 98.0       |
| <b>No</b>    | 3          | 2.0        |
| <b>Total</b> | <b>150</b> | <b>100</b> |

Table 4.2: Knowledge of respondents on migration trends in the study area

Table 4.3: Size of migration population

| How many have migrated out of this community in the last 12 months |            |              |
|--------------------------------------------------------------------|------------|--------------|
| Response                                                           | Frequency  | Percentage   |
| 1-10                                                               | 121        | 80.7         |
| 11-20                                                              | 24         | 16.0         |
| 21-30                                                              | 4          | 2.7          |
| 31 and above                                                       | 1          | .7           |
| <b>Total</b>                                                       | <b>150</b> | <b>100.0</b> |

Table 4.4: Knowledge on community members migrating outside Ghana

| Do some people in this community migrate outside Ghana? |            |              |
|---------------------------------------------------------|------------|--------------|
| Response                                                | Frequency  | Percentage   |
| <b>Yes</b>                                              | 34         | 22.7         |
| <b>No</b>                                               | 116        | 77.3         |
| <b>Total</b>                                            | <b>150</b> | <b>100.0</b> |

Table 4.5: Rate of migrant relatives visiting community of origin

| How often do migrant relatives visit the community |           |            |
|----------------------------------------------------|-----------|------------|
| Response                                           | Frequency | Percentage |
| Very Often                                         | 23        | 15.3       |
| Often                                              | 110       | 73.3       |
| Not Often                                          | 17        | 11.3       |
| Total                                              | 150       | 100.0      |

**Table 4.6:** Relevance of migrant relatives to respondents' pre-occupation

| The importance was your relatives who have currently migrated to your pre-occupation |           |            |
|--------------------------------------------------------------------------------------|-----------|------------|
| Response                                                                             | Frequency | Percentage |
| Very Important                                                                       | 49        | 32.7       |
| Important                                                                            | 96        | 64.0       |
| Not very important                                                                   | 5         | 3.3        |
| Total                                                                                | 150       | 100.0      |

**Table 4.7:** Satisfaction level of state migrant relatives in destinations

| Satisfied with the current condition of your migrant relatives in destinations? |           |            |
|---------------------------------------------------------------------------------|-----------|------------|
| Response                                                                        | Frequency | Percentage |
| Very Satisfied                                                                  | 24        | 16.0       |
| Satisfied                                                                       | 120       | 80.0       |
| Dissatisfied                                                                    | 5         | 3.3        |
| Very Dissatisfied                                                               | 1         | .7         |
| Total                                                                           | 150       | 100.0      |

**Table 4.8:** Skills of out-migrant relatives

| Did out-migrants carry skills that were relevant to agricultural production? |           |            |
|------------------------------------------------------------------------------|-----------|------------|
| Response                                                                     | Frequency | Percentage |
| Yes                                                                          | 140       | 93.3       |
| No                                                                           | 10        | 6.7        |
| Total                                                                        | 150       | 100.0      |

Table 4.9: Category of migrant relatives

| Which group of people mostly migrate from this community? |           |            |
|-----------------------------------------------------------|-----------|------------|
| Response                                                  | Frequency | Percentage |
| Married                                                   | 146       | 97.3       |
| Single/Not married                                        | 4         | 2.7        |



|       |     |       |
|-------|-----|-------|
| Total | 150 | 100.0 |
|-------|-----|-------|

Table 4.10: State of labour in support of pre-occupation

| Labour constraints in your current pre-occupation activities? |           |            |
|---------------------------------------------------------------|-----------|------------|
| Response                                                      | Frequency | Percentage |
| Yes                                                           | 105       | 70.0       |
| No                                                            | 45        | 30.0       |
| Total                                                         | 150       | 100.0      |

Table 4.11: Sourcing labour for major pre-occupation

| How was the labour shortage problem resolved? |           |            |
|-----------------------------------------------|-----------|------------|
| Response                                      | Frequency | Percentage |
| Hiring labour                                 | 41        | 27.3       |
| Support from neighbours                       | 8         | 5.3        |
| Support from children                         | 4         | 2.7        |
| Extended family support                       | 72        | 48.0       |
| Reduction in acreage cultivated               | 3         | 2.0        |
| Not Applicable                                | 22        | 14.7       |
| Total                                         | 150       | 100.0      |

Table 4.12: Areas hired labour is used

| Which agricultural activity is hired labour used? |           |            |
|---------------------------------------------------|-----------|------------|
| Response                                          | Frequency | Percentage |
| Ploughing                                         | 125       | 83.3       |
| Weeding                                           | 23        | 15.3       |
| Harvesting                                        | 2         | 1.3        |
| Total                                             | 150       | 100.0      |

Table 4.13: Access to hired labour

| <b>Do you have access to hired labour at the right times?</b> |           |            |
|---------------------------------------------------------------|-----------|------------|
| Response                                                      | Frequency | Percentage |
| Yes                                                           | 133       | 88.7       |
| No                                                            | 17        | 11.3       |
| Total                                                         | 150       | 100.0      |
|                                                               |           |            |

Table 4.14: Effect of labour on crop production

| <b>Effect of having access to labour at the right time on crop production</b> |           |            |
|-------------------------------------------------------------------------------|-----------|------------|
| Response                                                                      | Frequency | Percentage |
| Increased Yield                                                               | 32        | 21.3       |
| No impact                                                                     | 85        | 56.7       |
| Don't know                                                                    | 33        | 22.0       |
| Total                                                                         | 150       | 100.0      |

Table 4.15: Remittances from migrant relatives

| <b>Receive financial support from migrant relatives for your pre-occupation?</b> |           |            |
|----------------------------------------------------------------------------------|-----------|------------|
| Response                                                                         | Frequency | Percentage |
| Yes                                                                              | 86        | 57.3       |
| No                                                                               | 64        | 42.7       |
| Total                                                                            | 150       | 100.0      |

Table 4.16: Effect of outmigration on access to farmlands

| <b>Effect of out-migration on availability or access to farmland</b> |           |            |
|----------------------------------------------------------------------|-----------|------------|
| Response                                                             | Frequency | Percentage |
| Yes                                                                  | 147       | 98.0       |
| No                                                                   | 2         | 1.3        |
| Not Applicable                                                       | 1         | .7         |
| Total                                                                | 150       | 100.0      |

Table 4.17: Input support from migrant relatives

| <b>Do you receive machinery/input support from migrant relatives</b> |           |            |
|----------------------------------------------------------------------|-----------|------------|
| Response                                                             | Frequency | Percentage |
| Yes                                                                  | 31        | 20.7       |
| No                                                                   | 119       | 79.3       |
| Total                                                                | 150       | 100.0      |

Table 4.18: Support source from migrant relatives or not

| Response | Frequency | Percentage |
|----------|-----------|------------|
| Yes      | 31        | 20.7       |
| No       | 119       | 79.3       |
| Total    | 150       | 100        |

Table 4.19: Community population trend over time

| Community population trend | Frequency | Percentage |
|----------------------------|-----------|------------|
| Increased                  | 143       | 95.3       |
| Decreased                  | 5         | 3.3        |
| Unchanged                  | 2         | 1.3        |
| Total                      | 150       | 100        |

Table 4.20: Existence of operational market in local community

|       | Frequency | Percent |
|-------|-----------|---------|
| Yes   | 2         | 1.3     |
| No    | 148       | 98.7    |
| Total | 150       | 100.0   |

Table 4.21: Availability of ready market for produce

|     | Frequency | Percent |
|-----|-----------|---------|
| Yes | 146       | 97.3    |

|       |     |       |
|-------|-----|-------|
| No    | 4   | 2.7   |
| Total | 150 | 100.0 |

**Table 4.22: Does your household sell their farm produce internally or externally?**

|                     | Frequency | Percent |
|---------------------|-----------|---------|
| Internally          | 66        | 44.0    |
| Externally          | 3         | 2.0     |
| Do not sell produce | 81        | 54.0    |
| Total               | 150       | 100.0   |

**Table 4.23: Selling produce internally or externally which is more profitable**

|                | Frequency | Percent |
|----------------|-----------|---------|
| Internally     | 12        | 8.0     |
| Externally     | 61        | 40.7    |
| Not applicable | 77        | 51.3    |
| Total          | 150       | 100.0   |

**Table 4.24: Do out-migrant relatives serve as network for selling your produce outside the community**

|       | Frequency | Percent |
|-------|-----------|---------|
| Yes   | 2         | 1.3     |
| No    | 148       | 98.7    |
| Total | 150       | 100.0   |

**Table 4.25: Have you changed business due to your migrant relative support?**

|       | Frequency | Percent |
|-------|-----------|---------|
| Yes   | 5         | 3.3     |
| No    | 145       | 96.7    |
| Total | 150       | 100.0   |

**Table 4.26: Famine in community of origin**

|                | Frequency | Percent |
|----------------|-----------|---------|
| Strongly Agree | 15        | 10.0    |
| Agree          | 127       | 84.7    |
| Neutral        | 1         | .7      |
| Disagree       | 7         | 4.7     |
| Total          | 150       | 100.0   |

**Table 4.27: Chieftaincy disputes in community of origin**

|                | Frequency | Percent |
|----------------|-----------|---------|
| Strongly Agree | 5         | 3.3     |
| Agree          | 10        | 6.7     |
| Neutral        | 3         | 2.0     |
| Disagree       | 20        | 13.3    |
| Strongly Agree | 112       | 74.7    |
| Total          | 150       | 100.0   |

**Table 4.28: Poor Health services in community of origin**

|                   | Frequency | Percent |
|-------------------|-----------|---------|
| Strongly Agree    | 16        | 10.7    |
| Agree             | 121       | 80.7    |
| Neutral           | 3         | 2.0     |
| Disagree          | 9         | 6.0     |
| Strongly Disagree | 1         | .7      |
| Total             | 150       | 100.0   |

**Table 4.11: Poor educational system**

|                | Frequency | Percent |
|----------------|-----------|---------|
| Strongly Agree | 32        | 21.3    |
| Agree          | 108       | 72.0    |
| Neutral        | 2         | 1.3     |
| Disagree       | 8         | 5.3     |
| Total          | 150       | 100.0   |

**Table 4.29: Poor Housing facilities**

|                | Frequency | Percent |
|----------------|-----------|---------|
| Strongly Agree | 6         | 4.0     |
| Agree          | 135       | 90.0    |
| Neutral        | 3         | 2.0     |
| Disagree       | 6         | 4.0     |
| Total          | 150       | 100.0   |

**Table 4.30: Poor crop yield**

|                   | Frequency | Percent |
|-------------------|-----------|---------|
| Strongly Agree    | 7         | 4.7     |
| Agree             | 138       | 92.0    |
| Neutral           | 1         | .7      |
| Disagree          | 2         | 1.3     |
| Strongly Disagree | 2         | 1.3     |
| Total             | 150       | 100.0   |

**Table 4.31: High formal unemployment**

|                | Frequency | Percent |
|----------------|-----------|---------|
| Strongly Agree | 112       | 74.7    |
| Agree          | 31        | 20.7    |
| Neutral        | 3         | 2.0     |

|                   |     |       |
|-------------------|-----|-------|
| Disagree          | 2   | 1.3   |
| Strongly Disagree | 2   | 1.3   |
| Total             | 150 | 100.0 |

**Table 4.32: Long drought/Poor rainfall patterns**

|                   | Frequency | Percent |
|-------------------|-----------|---------|
| Strongly Agree    | 72        | 48.0    |
| Agree             | 71        | 47.3    |
| Neutral           | 3         | 2.0     |
| Disagree          | 2         | 1.3     |
| Strongly Disagree | 2         | 1.3     |
| Total             | 150       | 100.0   |

**Table 4.33: Poor soils for farming**

|                   | Frequency | Percent |
|-------------------|-----------|---------|
| Strongly Agree    | 10        | 6.7     |
| Agree             | 131       | 87.3    |
| Neutral           | 1         | .7      |
| Disagree          | 5         | 3.3     |
| Strongly Disagree | 3         | 2.0     |
| Total             | 150       | 100.0   |

**Table 4.34: Lack of readily market for produce**

|                   | Frequency | Percent |
|-------------------|-----------|---------|
| Strongly Agree    | 1         | .7      |
| Agree             | 16        | 10.7    |
| Disagree          | 2         | 1.3     |
| Disagree          | 90        | 60.0    |
| Strongly Disagree | 41        | 27.3    |
| Total             | 150       | 100.0   |

**Table 4.35: Traditional abuses in community of origin**

|       |                   | Frequency | Percent |
|-------|-------------------|-----------|---------|
| Valid | Strongly Agree    | 1         | .7      |
|       | Agree             | 8         | 5.3     |
|       | Neutral           | 2         | 1.3     |
|       | Disagree          | 66        | 44.0    |
|       | Strongly Disagree | 73        | 48.7    |
|       | Total             | 150       | 100.0   |

**Table 4.36: Family re-union (married couples)**

|  |                   | Frequency | Percent |
|--|-------------------|-----------|---------|
|  | Agree             | 132       | 88.0    |
|  | Neutral           | 4         | 2.7     |
|  | Disagree          | 11        | 7.3     |
|  | Strongly Disagree | 3         | 2.0     |
|  | Total             | 150       | 100.0   |

**Table 4.37: Poor Road networks in community of origin**

|  |                   | Frequency | Percent |
|--|-------------------|-----------|---------|
|  | Strongly Agree    | 3         | 2.0     |
|  | Agree             | 126       | 84.0    |
|  | Neutral           | 3         | 2.0     |
|  | Disagree          | 15        | 10.0    |
|  | Strongly Disagree | 3         | 2.0     |
|  | Total             | 150       | 100.0   |

**Table 4.38: Out-migration reduces farm labour**

|  |          | Frequency | Percent |
|--|----------|-----------|---------|
|  | Agree    | 1         | .7      |
|  | Neutral  | 1         | .7      |
|  | Disagree | 139       | 92.7    |

|                   |     |       |
|-------------------|-----|-------|
| Strongly Disagree | 9   | 6.0   |
| Total             | 150 | 100.0 |

**Table 4.39: Majority of out-migrants from this community are youth**

|                   | Frequency | Percent |
|-------------------|-----------|---------|
| Neutral           | 1         | .7      |
| Disagree          | 12        | 8.0     |
| Strongly Disagree | 137       | 91.3    |
| Total             | 150       | 100.0   |

**Table 4.40: Migrant relatives serve a source for big market**

|                | Frequency | Percent |
|----------------|-----------|---------|
| Strongly Agree | 40        | 26.7    |
| Agree          | 106       | 70.7    |
| Neutral        | 2         | 1.3     |



|          |     |       |
|----------|-----|-------|
| Disagree | 2   | 1.3   |
| Total    | 150 | 100.0 |

**Table 4.41: Out-migration promotes investment in agro-chemical businesses locally**

|                | Frequency | Percent |
|----------------|-----------|---------|
| Strongly Agree | 13        | 8.7     |
| Agree          | 132       | 88.0    |
| Neutral        | 2         | 1.3     |
| Disagree       | 3         | 2.0     |
| Total          | 150       | 100.0   |

**Table 4.42: Out-migrants are source of improved technology to farming in this community**

|                   | Frequency | Percent |
|-------------------|-----------|---------|
| Strongly Agree    | 2         | 1.3     |
| Agree             | 11        | 7.3     |
| Neutral           | 4         | 2.7     |
| Disagree          | 73        | 48.7    |
| Strongly Disagree | 60        | 40.0    |
| Total             | 150       | 100.0   |

**Table 4.43: Links with community members and out-migrants promotes diversification in business**

|                         | Frequency | Percent |
|-------------------------|-----------|---------|
| Valid Agree             | 135       | 90.0    |
| Valid Neutral           | 6         | 4.0     |
| Valid Disagree          | 8         | 5.3     |
| Valid Strongly Disagree | 1         | .7      |
| Total                   | 150       | 100.0   |

**Table 4.44: Living standards of community members have improved significantly due to remittances from out-migrants**

|                   | Frequency | Percent |
|-------------------|-----------|---------|
| Agree             | 6         | 4.0     |
| Neutral           | 3         | 2.0     |
| Disagree          | 127       | 84.7    |
| Strongly Disagree | 14        | 9.3     |
| Total             | 150       | 100.0   |

**Table 4.45: Out-migration have led to respect for women in this community**

|                   | Frequency | Percent |
|-------------------|-----------|---------|
| Strongly Agree    | 1         | .7      |
| Agree             | 10        | 6.7     |
| Neutral           | 3         | 2.0     |
| Disagree          | 113       | 75.3    |
| Strongly Disagree | 23        | 15.3    |
| Total             | 150       | 100.0   |

**Table 4.46: Out-migration have increased women access to farmlands.**

|                   | Frequency | Percent |
|-------------------|-----------|---------|
| Agree             | 32        | 21.3    |
| Neutral           | 1         | .7      |
| Disagree          | 91        | 60.7    |
| Strongly Disagree | 26        | 17.3    |
| Total             | 150       | 100.0   |

**Table 4.47: Do you think rural-urban migration is positive or negative to this community**

|          | Frequency | Percent |
|----------|-----------|---------|
| Positive | 76        | 50.7    |
| Negative | 10        | 6.7     |

|       |     |       |
|-------|-----|-------|
| Both  | 64  | 42.7  |
| Total | 150 | 100.0 |

**Table 4.48: Would encourage your relative to out-migrate?**

|       | Frequency | Percent |
|-------|-----------|---------|
| Yes   | 30        | 20.0    |
| No    | 120       | 80.0    |
| Total | 150       | 100.0   |

**Table 4.49: Out-migration reduces farm labour**

|                   | Frequency | Percent |
|-------------------|-----------|---------|
| Agree             | 1         | .7      |
| Neutral           | 1         | .7      |
| Disagree          | 139       | 92.7    |
| Strongly Disagree | 9         | 6.0     |
| Total             | 150       | 100.0   |

**Table 4.50: Out-migration have improved girl child education in the community**

|                   | Frequency | Percent |
|-------------------|-----------|---------|
| Strongly Agree    | 1         | .7      |
| Agree             | 25        | 16.7    |
| Neutral           | 7         | 4.7     |
| Disagree          | 84        | 56.0    |
| Strongly Disagree | 33        | 22.0    |

|       |     |       |
|-------|-----|-------|
| Total | 150 | 100.0 |
|-------|-----|-------|

Table 4.51: Availability of agricultural input shops

### Are there agrochemical shops in this community owned by former out-migrants?

| Response | Number or Frequency | Percentage |
|----------|---------------------|------------|
| Yes      | 6                   | 4.0%       |
| No       | 144                 | 96.0%      |
| Total    | 150                 | 100        |

Table 4.52: Availability of improved seedlings and agro-chemicals

| How available are improved seedlings and agro-chemicals to support farmers? |           |            |
|-----------------------------------------------------------------------------|-----------|------------|
| Response                                                                    | Frequency | Percentage |
| Available                                                                   | 1         | 0.7%       |
| Somehow available                                                           | 3         | 2.0%       |
| Not at all available                                                        | 146       | 97.3%      |
| Total                                                                       | 150       | 100.0      |

Table 4.53: Affordability of improved seedlings and agro-chemicals

| Do you think improved seedlings and chemicals for agriculture are affordable? |                     |            |
|-------------------------------------------------------------------------------|---------------------|------------|
| Response                                                                      | Number or Frequency | Percentage |
| Affordable                                                                    | 1                   | 0.7%       |
| Not affordable                                                                | 118                 | 78.7%      |
| Not at all affordable                                                         | 31                  | 20.7%      |
| Total                                                                         | 150                 | 100        |

**Table 4.54: Ownership of agro-chemical shops in study communities**

| Do out-migrant relatives send you seedlings and other agro-chemicals |                     |            |
|----------------------------------------------------------------------|---------------------|------------|
| Variable                                                             | Number or Frequency | Percentage |
| Yes                                                                  | 20                  | 13.3%      |
| No                                                                   | 130                 | 86.7%      |
| Total                                                                | 150                 | 100        |



