**CLIMATE CHANGE AND SUSTAINABLE DEVELOPMENT**

**UNIVERSITY OF GHANA**

**LEGON**


# THE ROLE OF REMITTANCES ON THE ADAPTIVE CAPACITY OF SMALLHOLDER FARMERS IN THE LAWRA DISTRICT OF THE UPPER WEST REGION OF GHANA.

**BY**

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**THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MPHIL CLIMATE CHANGE AND SUSTAINABLE DEVELOPMENT DEGREE**

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## DECLARATION

I, Alex Biney do hereby declare that except for the references cited, which have been duly acknowledged, this thesis titled, "**The Role of Remittances on the Adaptive Capacity of Smallholder Farmers in Lawra District of Upper West Region of Ghana"** is the product of my own research work in the Centre for Climate Change and Sustainable Development, University of Ghana, Legon. This thesis has never been published or submitted either in part or whole for another degree in this institution or elsewhere.

…… ……..

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(STUDENT)

## CERTIFICATION

I hereby certify that the preparation and presentation of the dissertation were supervised in accordance with the guidelines on supervision of dissertation laid done by the University of Ghana, Legon.

…….. …….

DR. ADELINA MENSAH DATE

(PRINCIPAL SUPERVISOR)

……. …….

DR. ROSINA KYEREMATEN DATE

(CO-SUPERVISOR)

## DEDICATION

I dedicate this thesis to my mentor, Mr. Mike Dokosi, Editor of Daily Post News Paper and my parents; my father, Mr. Kennedy Biney and my mother, Miss Beatrice Godzo.

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| | |
|---|---|
| ASSAR | Adaptation at Scale in Semi-Arid Regions project |
| EPA | Environmental Protection Agency |
| FDG | Focus Group Discussion |
| GSS | Ghana Statistical Service |
| HH | Household |
| IPCC | Intergovernmental Panel on Climate Change |
| MESTI | Ministry of Environment, Science, Technology and Innovation |
| MoFA | Ministry of Food and Agriculture |
| NGO | Non-governmental organization |
| PNDCL | Provisional National Defense Council Law |
| SLF | Sustainable Livelihood Framework |
| SSA | Sub-Saharan Africa |

## ABSTRACT

The changing climate pattern in the Northern Regions of Ghana has influenced the movement of people, especially the youth, out of the Lawra District in the Upper West Region. Smallholder farmers that still live in the District tend to rely on remittances sent by their migrant relatives to support their livelihoods, however, little is known about how these remittances influence their adaptation processes. This study assesses smallholder farmers' perception on climate change and its impacts; examines the income generated from smallholders' farming activities, the expenditure patterns and how it contributes to adaptation strategies; and evaluates the various forms of support to smallholder farmers including remittances and how they contribute to their adaptation strategies. In addition, migrant's perceptions of the use of their remittances to their origin households was examine. This mainly descriptive study adopted the mixed methods approach, using data from household surveys and Focused Group Discussions (FGDs). The Conceptual Framework was adapted from the Sustainable Livelihood Framework (SLF) and was used to assess the adaptive capacity of the farmers with respect to use of remittances. A sample size of 98 smallholder farm households in the Lawra District that receive remittances were specifically selected and interviewed. Five (5) migrants who reside outside the District and remit home were also interviewed for qualitative understanding of their motive and perception for remitting. This study found that 98 percent of smallholder farmers and all interviewed migrants have some knowledge of climate change. Annually, the majority of farmers (87.2%) earn less than GH¢300 (US$69) from farming activities and less than GH¢300 from remittances, both in the previous farming season. Only 21.4 percent of farmers received external support from government and NGOs for their farming activities. Overall, 85 percent of farmers spent remittances on consumables such as food and not on available adaptation options as those require

substantial capital input. The migrants perceived remitting home as a responsibility but understand that it does not meet the needs of the household. It is recommended that a formal system is put in place that will improve the medium of remitting home.

# CHAPTER ONE: INTRODUCTION

## 1.0 Introduction

This chapter presents a general background of the study, the problem statement, the research questions, the objectives, the justification of the study and how the study report is organized.

## 1.1 Background

The United Nations Framework Convention on Climate Change (UNFCC) defines climate change as a change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods. It has become increasingly clear that the concentration of greenhouse gases (GHGs) in the atmosphere through human activities is changing the global climate and ecosystems in a manner that may not be reversible. The debate over the occurrence of climate change has come to an end and it is 90 percent certain that the "net effect of human activities since 1750 has been one of warming" (IPCC 2007).

Climate change presents severe threats and erodes essential livelihoods of the poor and marginalized (Aniah *et al.*, 2016). Climate change effects include more severe drought, desertification, changing ecosystems, reduced crop yields, flooding and storms, increased vector diseases and sea level rise (NCCP 2013). Some scholars posit that climate change impacts, which include the depletion of soil nutrient, depletion of water reservoirs and drinking water, flooding and erosion will eventually exacerbate food insecurity and negatively affect the well-being of impoverished populations living in less developed areas in several African, Asian and Latin American countries (IPCC 2014; OECD 2016).

Although Africa is the least responsible for the build-up greenhouse gas (GHG) in the earth's atmosphere, research has revealed that Africa will be the hardest hit by the impact of climate change because of the vulnerability of the continent and its low adaptive capacity (MESTI, 2013). In Sub-Saharan (SSA), agricultural activities serve as the main source of livelihood of the rural dwellers and employs above 60 percent of the population (Aniah et al., 2016). The worst impact of climate change is experienced by smallholder farmers who produce about 80 percent of food in developing countries and provide livelihood for about 2.5 billion people (IFAD, 2012; IFPRI 2015). Smallholder farmers usually depend on rain-fed agriculture and therefore have a limited farming period during the year. In addition, increasing incidences of floods and droughts affect productivity of crops, coupled with other non-climatic issues, such as poor soil fertility and poverty.

Smallholder farmers have adopted in various ways to respond to the impact of climate change. The Intergovernmental Panel on Climate Change IPCC (2014) defines adaptation as 'adjustments in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities'. Adaptive capacity is the ability to adjust, to take advantage of opportunities, or to cope with the consequences (IPCC 2014). It is determined by the complex interplay of social, political, economic, technological, and institutional factors (Adger 2003; Pelling and High 2005; Yohe and Tol 2002) whose interactions vary depending on the scale of analysis (Vincent, 2007). Smallholder farmers adapt by incorporating trees into farms, planting resilient trees to feed animals, inter-cropping, mixed cropping, indigenous water capture technology, among others.

Migration is also understood as an adaptation option by individuals and households. It reduces vulnerability and increases livelihood security when perceived as response to poverty and environmental change (Black et al., 2011; Scheffram et al., 2012; Tacoli 2009). Migration from, to and between rural areas, is a component of internal migration. It decreases labour in less productive areas to more productive areas. There are drivers that induce migration flow at different levels. In the case of rural-urban migration, migration is driven by unequal opportunities. According to FAO (2018), low yield and the corresponding income gap between agriculture and other sectors of the economy, such as manufacturing and services, is one driver of rural-urban migration. Demographic factors, environmental differentials also affect migration flow from rural areas to urban areas. Out-migration has a profound impact which can be felt at different levels, such as rural development, nutrition, and food security. Labour migration is also seen by many as an adaptation strategy and is a response mostly relied on by individuals and households (Rademachar-Schulz, 2014).

According to OECD (2016) and World Bank (2015), remittances from private sources are important in adaptation financing. Some scholars (e.g., Bentzold, 2015; Couharde and Generoso, 2015) have indicated that some households solely depended on remittances during catastrophic climatic perturbations. For example, Banerjee *et al*. (2011) investigated the impact of foreign remittance on households that were affected by floods in India and found that the contribution of financial remittance was significant to household's ability to deal with water hazards. The study also found that remittances received by households supported basic needs such as food, health and education of receiving households, contributed to disaster preparedness and helped families to recover from after disasters. Bendadi and Pauw (2016) emphasized on

the importance of remittances and argued that remittances as a financial asset extends directly to households that are most vulnerable.

In Ghana, there are a few studies that investigate the contribution of remittances in closing the climate change adaptation financing gap in areas where people are vulnerable (e.g. Musah Surugu et al., 2018). However, the extent to which local remittances play a role on the adaptive capacity of the smallholder farmer's household is largely unknown, especially in the socio-political environment of Ghana in the semi-arid regions, and forms the basis for this research. The semi-arid region of Ghana, which includes the northern part of Ghana is the most vulnerable to climate change and its impact. This has resulted in the increasing rate of migration among the youth from those regions to the southern part of Ghana. It is therefore important to estimate how remittances contribute to the adaptive capacity of those that remain, and their overall welfare.

### 1.2 Problem Statement

Rural livelihoods are vulnerable to many social, economic, political and environmental stressors and shocks, some of which are induced by globally transforming processes such as climate change, globalization and demographic processes (Banerjee *et al.*, 2017). Empirical studies reveal that the climate has changed in Ghana in the past (four decades), recording increases in temperature by 1˚C, decline in surface runoff by 30 percent and a reduction in precipitation by 20 percent (Agyeman Bonsu *et al.*, 2008; EPA 2000; MESTI, 2013)). Future projections for climate change in Ghana indicate that the mean annual temperature will increase by 1.0 to 3.0 degrees Celsius by the 2060s and up to 5.2 degrees by the 2090s (World Bank, 2011). This will

lead to climatic perturbations such as decreased rainfall, extremely hot weather, increased incidences of floods which can lead to food insecurity and poverty (Figure 1.1). This poses serious threats to the Agenda 2030 on Sustainable Development Goal 1, which calls for an end to poverty in all its manifestations, and Goal 2, which seeks sustainable solutions to end hunger in all its forms.

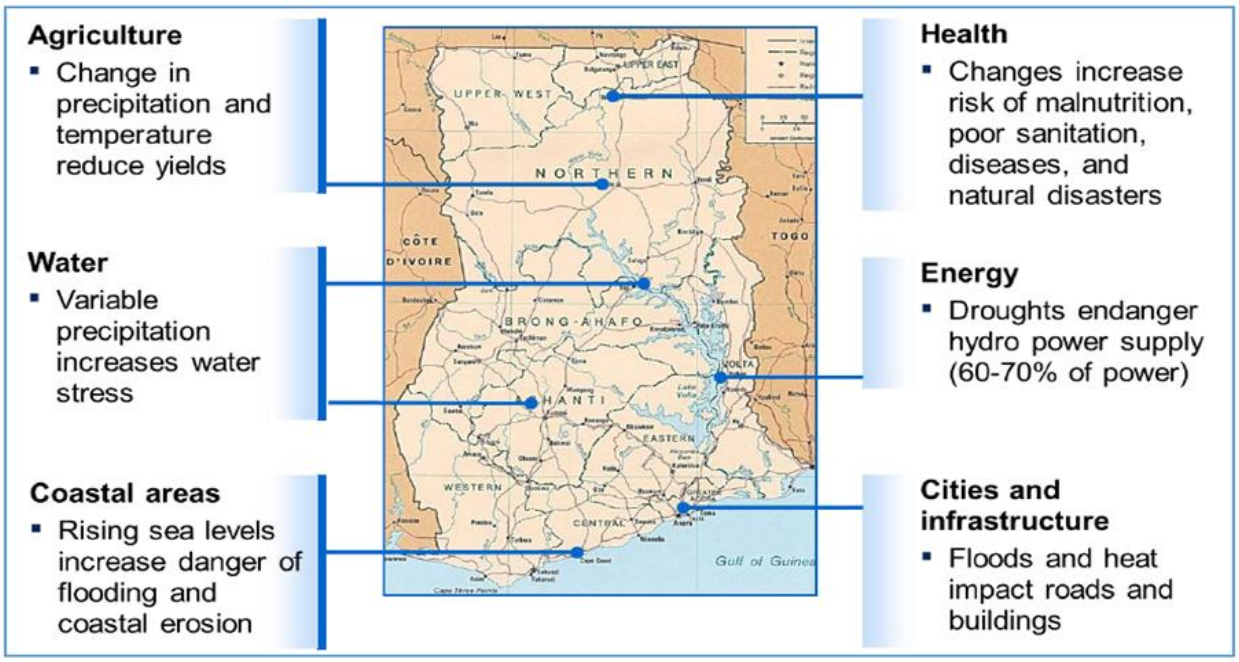


Figure 1.1 Map of Ghana Indicating Impact of Climate Change

**Source: (EPA Ghana)**

In Ghana, most farms (90%) are less than two hectares in size and are largely dependent on rainfall (MoFA, 2013). These farmers who farm on a small scale serve as engine of the country's economy since agriculture forms the backbone of Ghana's economic development. Smallholder farmers are therefore very important in the agricultural sector although they generally belong to the poorest segment of Ghana's economy.

Climate change and its impacts are highest in northern, semi-arid regions of Ghana such as the Upper West Region of Ghana, with projections for low annual rainfall. Agriculture dependent communities are especially vulnerable, seeking various measures to maintain and secure their livelihoods and improve their economic and food security. Poverty continues to increase, especially in rural areas that depend on traditional means of agriculture. The local agricultural sector is already confronted with depleting soil fertility, unreliable rainfall pattern, limited investment capital and skills, pests and diseases, inadequate access to extension service and low access to markets. The reliance on outmoded methods of farming is also a contributing factor. Farmers struggle to improve yields, there is an increase in epidemic diseases that affect animals and humans as well, and malnutrition is still a challenge.

Barnet and Webber (2009) have indicated that the ability of a smallholder farmer household to adapt to the changing climate is revolved around many factors. This includes infrastructure, access and availability of information, financial resources, social resources and human capital (Adams *et al.,* 2008). According to Rademacher-Schulz *et al*. (2014), dry season irrigation and migration are the most common coping adaptation mechanisms in the Upper West Region of Ghana. They observed that many people moved out of their communities to places outside the region to find employment that enabled them feed their household members during the dry season. Van der Geest (2011) also suggests that migration from the North to the South of Ghana is based on environmental challenges and residents migrate to the more fertile land of Brong Ahafo Region in Ghana to support their relatives back home in terms of food security and their well-being. Both international and local remittances from migrants are a significant element in reducing the poverty level among households (Quartey, 2006).

Even though migration itself is seen as a form of adaptation, the remittances by migrants frequently has implications for supporting their households who are still faced with the impacts of climate change. Remittances serve as the visible link between moving out to work and building adaptive capacity of households to adjust to climatic perturbation (Banerjee *et al*., 2017). Migrant households rely on different forms of remittances (cash/kind) to adapt to climate change impacts. These may be used to support mechanisation of agriculture, acquire chemicals to prevent pest and insect infestation, or purchase fertilizers and other agro-chemicals to support fragile and nutrient poor soils. Some farmers may use remittances to invest in alternative livelihoods such as trading and kente weaving. Migration and remittances, specifically migration networks that contribute significantly to the livelihood of those who receive remittances, are therefore especially important responses that enable smallholder farmer households to adjust to the climatic perturbation.

Studies undertaken in Ghana so far have looked at foreign remittances and the impact on the economy (Quartey 2006; Musah-Surugu *et al*., 2018). A few on remittances and adaptation focused on both foreign and internal remittances. For instance, Musah-Surugu *et al.,* (2018), examined the contribution of remittances in closing the adaptation gap in Greater Accra, Brong Ahafo and Northern Region of Ghana. The study found that remittances are used to finance household infrastructure and consumption needs as well as other adaptation measures to the impact of climate change. However, very little is known about the relative contribution of remittances to the building of smallholder farmers' adaptive capacity. Using the Lawra District of Upper West Region as a case study, this research seeks to fill the research gap on how local remittances are used by local smallholder farmer households and the role it plays in their

adaptive capacity. It also provides contextual information on how migrants perceive the use of their support to their households.

## 1.3 Research Questions

### 1.3.1 Main Research Question

What is the contribution of migrant remittances to the adaptive capacity of smallholder farmer households in the Lawra District?

### 1.3.2 Specific Research Questions

The following were the key research questions of the study:

- What are farmers' perceptions of climate change, and its impact on their livelihoods?
- How much revenue is generated from farming activities, what is the expenditure pattern and the contribution to adaptation activities?
- What are the various forms of support to smallholder farmers that contribute towards their adaptation strategies?
- How do migrants perceive the use of their remittances to their origin households**?**

## 1.4 Research Objectives

### 1.4.1 General Research Objective

The general research objective is to determine the contribution of migrant remittances to the adaptive capacity of smallholder farmer households in the Lawra District of the Upper West Region of Ghana.

### 1.4.2 Specific Research Objectives

The research seeks to;

- Identify smallholder farmers' perceptions of climate change and its impacts.
- Examine the income generated from smallholder farming activities, the expenditure patterns and how it contributes to adaptation strategies.
- Evaluate the various forms of support to smallholder farmers including remittances and how they contribute to their adaptation strategies.
- Examine migrant's perceptions of the use of their remittances to their origin households.

## 1.5 Justification of Study

Remittances are significant in supporting farmers' adaptation to the advent of climate change and its impact, either directly or indirectly. The results will serve as an academic resource for researchers and students by contributing empirical evidence to the global discourse on migration and adaptation. This will also inform policy makers with regards to the role of remittances in the adaptive capacity of farmers in the semi-arid northern regions of Ghana. This will support actionable recommendations for local government institutions, non-government organizations, and international development agencies. The findings of this study also serve as a baseline document for NGOs and Civil Society Organizations in the designing and implementation of programs and projects that seek to build smallholder farmers' adaptive capacities such as improving on the medium of sending remittances.

### 1.6 Organisation of Study

This study is organised into five (5) chapters. The Chapter One (1) consists of the background to the study, research problem, research questions, objectives and justification of the study. Chapter Two (2) concentrates mainly on the review of literature relevant to the study. While Chapter Three (3) also consists of methods and materials for data collection and data management. Specific concepts include; the study design, sampling size, techniques and research instruments, ethical issues and data analysis. Chapter Four (4) presents the results of the study. Chapter Five (5) discusses key findings, while Chapter Six (6) presents a summary of findings, followed by conclusions and recommendations.

# CHAPTER TWO: LITERATURE REVIEW

## 2.0 Introduction

This chapter reviews the relevant theoretical and empirical literature on climate change and vulnerability, migration, adaptation and remittances and the role of remittances in building adaptive capacities of smallholder farmers. The literature is a vital stage in every research to avoid duplication of research, to understand works in the field and to be updated with current works. The literature review process is defined as sequential steps to collect, know, comprehend, apply, analyse, synthesise, and evaluate quality literature in order to provide a firm foundation to a topic and research method. Literature was reviewed on climate change and rural vulnerability, adaptation and adaptive capacity, current trends of migration in the Ghana, the decision to migrate, remittances and its importance, remitting and climate change adaptation, remitting (exploring remitters motivation, relevance of support to farmers), and the theoretical and conceptual framework.

## 2.1 Climate Change and Rural Vulnerability

The United Nations Framework Convention on Climate Change (UNFCC) defines climate change as a change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability observed to over comparable time periods. Africa is one of the most vulnerable continents to climate change due to its exposure and low adaptive capacity (IPCC 2013) This is because in rural areas in sub-Saharan Africa, rain-fed agriculture is the instrument for securing income and livelihood (Boko *et al.*, 2007). While a smaller percentage of population in the developed

world's livelihood revolves around farming, two-thirds of people living in developing countries depend directly and indirectly on agriculture for their livelihood.

Precipitation and its variability lead to drought and floods in the tropics and subtropics (Zwiers *et al.*, 2013; Giorgi *et al.*, 2014). The impact of climate change in the region are gradual land degradation, leading to loss of croplands and ecosystems, and increased water stress and scarcity (Leh *et al.*, 2013; Carney *et al.*, 2014; Schewe *et al.*, 2014). This condition is expected to be exacerbated in the future which pose significant threats to agriculture and livelihoods (Lobell *et al.*, 2011; Anyamba *et al.*, 2014). The long-term effect of these is hunger, coupled with poverty, which increases the vulnerability among people living in rural areas. People in rural dwellings lack purchasing power to acquire fundamental needs such as food, which then leads to increased poverty, malnutrition, exposure to diseases and decreasing educational standards. Poverty is increasing among the impoverished because of the lack of infrastructure, social amenities and limited opportunities. Unfortunately, those who are impoverished are usually discriminated against. In summary, the poor lack capability to adjust to environmental stress. Therefore, reliable adaptation methods are needed to address the negative impacts of climate change.

### 2.2 Adaptation: Building Adaptive Capacity

Understanding the adaptation process of farmers is essential in the determination and development of well-grounded adaptation policies for farmers. There are many definitions of adaptation, but the most commonly accepted is that of the Intergovernmental Panel on Climate Change (IPCC), which defines adaptation as the process of adjustment to actual or expected

climate and its effects (IPCC 2014). In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. This means coping with the impacts of climate change cannot be avoided. However, other scholars have classified adaptation as anticipatory or reactive, autonomous or planned, structural or non-structural, *in situ* or *ex situ*, and incremental or transformational (e.g., McCarthy *et al.*, 2001; Bardsley and Hugo 2010).

Some researchers have attempted to assess adaptive capacities at various scales, such as communities (Smit and Wandel 2006) and districts (Sharma and Patwardhan 2008). They tried assessing adaptive capacity at the community level and district levels. Studies such as Chapin *et al*. (2006) indicate that the building of adaptive capacity is to some extent dependent on resources such as financial capital. Bebbington (1999) argues that tangible resources such as natural, human and social capital can help expand the adaptive capacity of households to improve livelihoods. Smit and Wandel (2006) also argue that adaptive capacity is shaped by joining together policy and institution, resources and assets. On the other hand, Abdul-Razak and Kruse (2017) indicate that economic resources, awareness and training, as well as technological capacities, are the most relevant and critical for smallholder farmers' adaptive capacity. Interestingly, they found that infrastructure, social capital, and institutions were ranked least important to smallholder farmer's adaptive capacity in the Northern region of Ghana. A study by Below *et al.* (2012) found out that to improve adaptive capacity of farmers, gender equality, the availability of technical support and expansion infrastructure must be considered while providing adequate farm inputs. Other factors such as past experiences in environmental stress such as floods and drought guides and builds capacity of vulnerable individuals to prepare for future climatic occurrences (Eagle 2011).

The most common strategies employed by farmers to cope with climate change impact in sub-Saharan Africa include irrigation, crop rotation, and use of improved seeds, timely planting and soil conservation (e.g., Deressa *et al.,* 2009). Results from the same studies indicates that wealth of a household head, level of education, gender, access to extension services and information, temperature, credit facilities and geographical location of farmers have impact on the strategies of farmers to adapt. The availability and access to information largely affect adaptation strategies. According to Cannon and Mu¨ller-Mahn (2010), the meaning of responsive adaptation in the local dwellings is the routine reaction of farmers to impact of climate change through activities such as planting crop varieties, soil conservation and trees planting.

**2.3 Migration Trends in Ghana**

GSS (2014) has classified migration in Ghana into four main types; namely, rural-urban, rural-rural, urban-urban, and urban-rural. Migration can also be analysed in the context of intra and inter movements. Inter-regional migration is the movement of people between different regions of a country while inter-regional migration is the movement of people within the localities of an administrative region of a country. In developing countries especially Africa, individuals and households migrate in pursuit of a better living standard. Migrants move from poor and less resource areas to rich resource area to look for greener pastures.

Anarfi and Kwakye (2005) support the argument that people are mainly migrating from rural areas to urban areas. According to Van der Geest (2011), one out of every five people born in the semi-arid regions is living in southern part of Ghana. Climatic perturbation is severe in the three Northern part of Ghana. As a result, every year, people from the Northern part of Ghana

move to other areas of the country for various reasons. A study conducted by Van der Geest (2011), for example, indicates that most of the migrants migrate due to unavailability of fertile land, challenges with crop yield and food security in the northern part of Ghana. It also states that one of the pull factors in the southern part of Ghana is the availability of fertile land. GLSS (2014) has established that an estimated four percent of internal migration is influenced by climate change impacts. These internal migrants usually migrate from rural areas that have less fertile lands to areas with a more fertile land with more opportunities. Climate change impact on any individual is dependent on the type of economic activity one is engaged in. In effect, most rural Ghanaians are affected by climate change impact based on their geographical location, gender, occupation level and poverty level. As a result, the vulnerability of the geographical area makes the farmer more susceptible to climate perturbation. The assertion that climate change impact is dependent largely on the geographical location confirms the vulnerability of those living in the Northern part of Ghana.

### 2.4 Decision to Migrate

According to Awumbila *et al*. (2011), migration in Ghana is response to socio-economic factors influencing the decision to migrate, such as household income, amount of household land holdings (proxy for household wealth), education and the dependency ratio, age, environmental and political factors. Smallholder farmers are particularly susceptible to environmental impact since they lack the financial capacity and other social amenities like good roads, electricity and market among others to cope with environmental challenges. In addition, Anarfi and Kwankye, (2005) have stated that impoverishment and unemployment are the contributing factors for

many youths to engage in rural-urban migration. This implies that migration is also influenced by lack of development.

Also, migration is seen as adaptation strategy in the face of climatic perturbation. According to Stark (1991), the decision to migrate is not only a consequence of income gaps but response to other individual or familial incentives as well. People migrate to maximize income and support relatives at home. Another important determinant of the likelihood to migrate may include a link at the destination of the migrant. This is because information about the destination and accommodation structure is usually aided by a friend or a relative at the destination. Migration therefore provides an opportunity to enhance the welfare of the migrant and the household of the migrant back home. Boakye-Yiadom (2008), support this assertion that although rural-urban migration has its disadvantage, it enhances the welfare of migrants and their household.

Seasonal migration is common in Ghana especially the Northern part of Ghana, and plays important roles in a migrant's household (Ellis 2000). It provides employment during the dry season, improves food security on the households, increases the income of the migrant and provide supports the household in term of other needs. It is also an additional income earning opportunity for migrants. Seasonal migration is embarked based on the kind of activity that someone is engaged in. Farmers in the northern part of Ghana experience a long dry season. So, the youth use that period to travel down-south to engage in revenue generating activities.

**2.5 Remittance and its importance**

Remittances are usually considered as private financial inflows into the hands of households directly (Quartey 2006). They are a significant source of income that aide poor and the vulnerable households to supplement their income and consumption. In recent years, literatures on migration such as Faist (2000) and Adams and Page (2005), have given considerable coverage to international migration while limited attention is given to local remittances. A survey by Abbas *et al*. (2014) in Pakistan on remittances and household welfare revealed that the income and education of household heads, foreign remittances contributed to the welfare improvement of households while household size and marital status negatively influence the welfare of households.

Quartey (2006) conducted a study looking at households' welfare and the influence of International migrant remittances in Ghana. The study revealed that remittances are important to the improvement of household welfare and increases the households' resilience to climatic perturbation. Other authors (Fletcher and Taylor 1992; Musah-Surugu *et al.*, 2018) reveal in a study conducted in Mexico that remittances are used by households to increase production and improve the use of farm inputs like hiring of labour, tractors and land, increase the acquisition of improved seed, increase household consumption level and improvement of education while increasing income of households.

Quartey (2006) asserts that remittances from migrants have been significant to the increasing of income of Ghanaians who receive them, especially during economic challenges. The growth of money transfer institutions is an indication that remittances are increasing in Ghana. It also

indicates the significant contribution of migrant remittances to Ghana's economy. Internally, Mobile Money has dominated among local money transfer institutions in Ghana. This Mobile Money are managed by the Telecommunications. It is a very convenient way of sending money through phones.

### 2.6 Remitting and Climate Change Adaptation

Remittances are seen as complement to avert the negative impact of climatic variations. Households' ability to adapt to climate change and its impact, according to Barbett and Webber (2009), revolves around so many factors which include social capital, access to finance, human capital and infrastructure. Couharde and Generoso (2015) have indicated that remittances from migrants can contribute to both short term adaptation investments such as acquisition of irrigation facilities and long-term agenda such as funding of education and investment in healthcare. For example, a study conducted in Hindu Kush-Himalayan region by Banerjee *et al.* (2011) on households in communities exposed to water hazards indicates that remittances are a main source of income helping households to adapt to water hazards (Banerjee *et al.*, 2011). Remittance contributes to household income, funding of basic needs, investment in health and basic needs, provides an income stream that is not disrupted by natural disasters, provides immediate relief for households during floods and droughts, helps households recover after disasters, contributes to disaster preparedness and improves access to healthcare. The study again points out that majority of those who receive remittances (72 %) spent a larger portion of their remittances in procuring items and services. It further revealed that remittances received by the households were not invested in local business and infrastructure because of the low volume of remittances received.

The study by Banerjee *et al.* (2017) in flood affected area in India reveals that remittances are mostly spent on consumptions such as food, healthcare, and education. For instance, majority (91.5%) spent about US$220.6 on food while few respondents spent their remittances on other things such as savings, farm activities and adaptation preparedness. This can be as a result of the amount received as remittances or the exigency of the time. According to the findings of the study of Banerjee *et al.* (2017), the time and amount of remittances received by individual households has some level on influence on the choice of adaptation strategies of households. Belal (2010) found out in his survey migrants usually remit once in a year. Other studies have, however, shown that remittances contribute to building of infrastructure, increasing the consumption needs and also finance investment of adaptation methods towards current and expected climate change impacts (Musah-Surugu *et al.*, 2018).

Other research findings (e.g., Betzold, 2015; Couharde and Generoso, 2015) reveal that during catastrophic climatic shocks, households mostly depended only on remittances to survive for decades. A research conducted by Nwaru (2015) in South Eastern Nigeria reveal that migration and hence, remittances supports livelihoods and help save lives and improves on the adaptive capacities of communities during climatic and economic crises. Barnnet and Webber (2009) support the argument that remittances increases the accessibility of financial resources by the vulnerable to cope with environmental stress. Evidence from research indicates that remittances have contributed to the resilience of the poor people in Sub-Saharan Africa (Couharde and Generoso, 2015; World Bank; 2015).

### 2.7 Remitting Home: Exploring Remitters Motivation

Even though studies on migration suggest that the motive for migration is directly related to the motive of migrating itself, there is a need to interrogate the motive of sending remittance. This is due to that fact that migration and remittances are separate phenomena although they are interdependent and connected. First, it is important to establish that all migrants do not remit. Secondly, not all migrants who remit tend to remit the same way, although they may have migrated from the same geographical and economic areas. A study by Funkhouser (1995) on the household and migrant characteristics reveal that despite the similarities of migrants in age, education, gender and even the during of migration, there are sharp differences in remitting behaviour of migrants. Migrants may have migrated based on similar circumstances but the circumstances that influence their determination to remit can be different and unrelated. According to Belal (2010), most commonly cited ideas on motivation are altruism and self-interest. Altruism holds that the migrants' utility is dependent on the utility of the origin household, and thus the increased utility of the household provides incentive for remittance. Typically, this theory characterises strong ties between the migrant and the household. Self-interest as a motivation for remittance implies that the migrant remits to secure investments within the home country for an expected return, such as inheritance or maintenance of his possessions by the household in his/her absence (Belal, 2010).

### 2.8 The Relevance of Support to Farmers

Farmers are faced with various constraints in coping with the impact of climate change, including financial constraints, lack of information on climate variability, institutional constraints, socio-cultural constraints, technological constraints and lack of infrastructural

development. Antwi-Agyei *et al.* (2012) and Bryan *et al*. (2009) indicate that financial constraint is a crucial barrier to adaptation by smallholder farmers in Sub-Saharan Africa, especially in accessing credit facilities. Dasgupta and Baschieri (2010) also observed that poor farming households have limited capital assets that are required to reduce the adverse effects on their livelihoods. Also, availability of information is an essential tool in the adaptation process. MoFA (2013) noted that smallholder farms in Ghana who are engaged rain-fed agriculture, need data on climate features and forecast that are beneficial to long-term agriculture planning. This is not different from what Adger *et al*. (2009) observed that knowledge on climate change and its characteristics could be a barrier to the choices of adaptation strategies. Interestingly, Antwi-Agyei *et al*. (2013) noted that farmers forecast the weather based on their past farm experiences, which usually fails them.

Institutions play significant role in climate change adaptation. Lamb and Davis (2003) define an institution as a social bonding agent that interconnects stakeholders from access to capital of various kinds to the means of exercising power. In Ghana, the government establishes institutions to provide mechanisms that help the farmer to adapt to climatic perturbation. According to Biesbroek *et al.* (2013), climate change adaptation policies in many Sub-Saharan Africa countries tend to be made by few people in authority rather than the smallholder farmers who are affected. Policies made by institutions either do not impact on the farmers directly or are poorly implemented.

Adger *et al*. (2012) have suggested that deep value systems, beliefs, cultural practices, and the perception of group of people greatly affect their attitudes toward climate change and adaptation

strategies and that people's response to risk might be greatly influenced by their pre-existing belief systems, values, and norms. Culture is basically defined as the way a group of people live and behave. Culture and tradition could influence people's choice of adaptation strategies. Technology is essential to agricultural activities in recent times. Also, improvement in technology, example, the discovery of improved varieties of crops, access to climate information, building irrigation system are very crucial to adaptation to climate change and its impact.

Finally, lack of infrastructure is a hindrance to smallholder farmers in Ghana as it affects the value chain of agricultural activity from production through to the market. Antwi-Agyei *et al*. (2013) noted that the lack of market for farm produce is interconnected with the lack of appropriate storage facilities in most Sub-Saharan African countries.

Indeed, there has been some assistance to farmers in sub-Saharan Africa over years and recent times Community Based Organizations, NGOs and other government institutions are important agents that provide farm management techniques and climate information that are necessary support to smallholder farmers in climate change adaptation and mitigation processes (Nhemachena and Hassan 2007).

**2.9 Theoretical Framework**

The New Economics of Labour Migration (NELM) theory treats migration as a risk-sharing or environmental risk management behavior of families or households. According to Brettell and Hollifield (2014), the New Economics Theorist maintains that the household sends workers

abroad not only to improve income in absolute terms but to also increase the income of the household. A household that needs extra income either for consumption or investment, or that needs to insure itself against risk, decides that this can be achieved through the migration of a family member. The central premise of the NELM approach is that migration decisions are made not by isolated individual actors but by families or households. The theory, therefore, contends that family members implicitly enter into a contractual arrangement which occurs, perhaps, through the sharing of the cost related to the entire processes of migrating. As the theory notes, there are instances where migrant overhead costs for education, housing, and other prefunding costs are entirely bonded by family members. In effect, the migrant is psychologically bonded to remit back home when duly employed. In effect, migrants adhere to the contract and remit home.

According to this theory, migration leads to economic gain by creating opportunity for labour diversification, risk pooling and sharing. Indeed, household member's decision to migrate is considered as pareto-superior strategy. As empirically argued by Lucas and Stark (1985) and other recent writers like Musah-Surugu *et al*. (2018), Lucas & Stark, (1985) migration is basically a means of risk sharing and investment in access to higher earnings streams. New Economics of Labour Migration theorist concludes that given the potential of migrants to remit, they create resources pool that can be used for absorbing uncertainties and shocks such as climate change impacts. It is on this basis that this study adopts the theory that though migration has a detrimental effect on the availability of labour for supporting the local economy, it provides opportunities to adapt to climate shocks and general environmental perturbations. For example, Musah-Surugu *et al.* (2018) noted that one of the importance of remittance is that it

serves as a source of financing adaptation to climate change in Ghana. The study further states that remittances are largely spent on consumption as compared to investment in adaptation infrastructure in Ghana. Interestingly, the study by (Musah-Surugu *et al.* (2018) observed that those who spend their remittances on consumption would continue to be exposed to climate risk for a long time as compared to households that invest their remittances in climate resilient activities. Similarly, (Lucas and Stark, 1985) noted that remittance is significant in bridging the financial gap of poor and vulnerable households. Further studies by Tacoli (2011) and Adams and Page (2005) provide evidence that remittances contribute to the reduction of poverty in many countries. 8

## 2.10 Conceptual Framework

The conceptual framework for the study is adapted from the Sustainable Livelihoods Framework (SLF) Serrat (2017) that identifies remittances as an important component that supports livelihood assets (Figure 2.1). The SLF assumes that peoples' livelihoods revolve around the following five livelihood assets/capitals and the compromise of any of these assets or variables affects the entire livelihood structure and consequent outcomes:

**Human capital**, which represents the skills, knowledge, ability to labour and good health that together enable people to pursue different livelihood strategies and achieve their livelihood objectives (Sayer and Campbell 2003). Human capital should must be seen as a keystone within the SLA, for the reason that the other capitals are, at the least, partly based on the human capital as a basic requirement.

**Social capital**, which implicates social resources, including informal networks, membership of formalised groups and relationships of trust that facilitate co-operation (Clark and Carney 2008, Sayer and Campbell 2003).

**Physical Capital** is a measure for the existence of physical requirements needed to support livelihood in terms of infrastructure. The role of this asset can be seen in the context of opportunity costs, where existing accessible infrastructure releases either labour or provides time as a resource, for example, education.

**Natural capital** describes, especially for resource dependent communities, the stock that all livelihood activities are built on. This capital represents in particular for rural communities, with a high proportion for poor stakeholders, an essential value which is prone to disasters that are caused by natural processes e.g. floods, fires, seasonal storms, and earthquakes.

**Financial capital** can be accumulated from two different sources; one source is represented by available stock in the form of cash or equivalent available assets as livestock, the other source is characterised by the external inflow of money which originates of labour income, pensions, remittances or other types of financial liabilities. Within the five capitals, the financial capital enables people to adapt to different livelihood strategies. It sets the precondition for the creation or improvement of other capitals than financial capital. Credit, savings and remittances are examples of natural resources.

Indeed, the capital/assets are considered in this study as assets that constitute the adaptive capacities of smallholder farmers. The capacity of a smallholder farmer household to adapt to climate perturbations is based on several factors, including financial resources, access to information, social resources, human capital, and infrastructure (Barnett and Webber 2009). Though many factors may affect these assets, this study hypothesises that remittances have a vital role to play in maximising the potential of these assets in building smallholder farmers' adaptive capacity. The framework demonstrates that these assets are affected by climate change which eventually induces migration, however, the outcome of migration–remittances reinforces these assets to building the capacity of smallholder farmers.

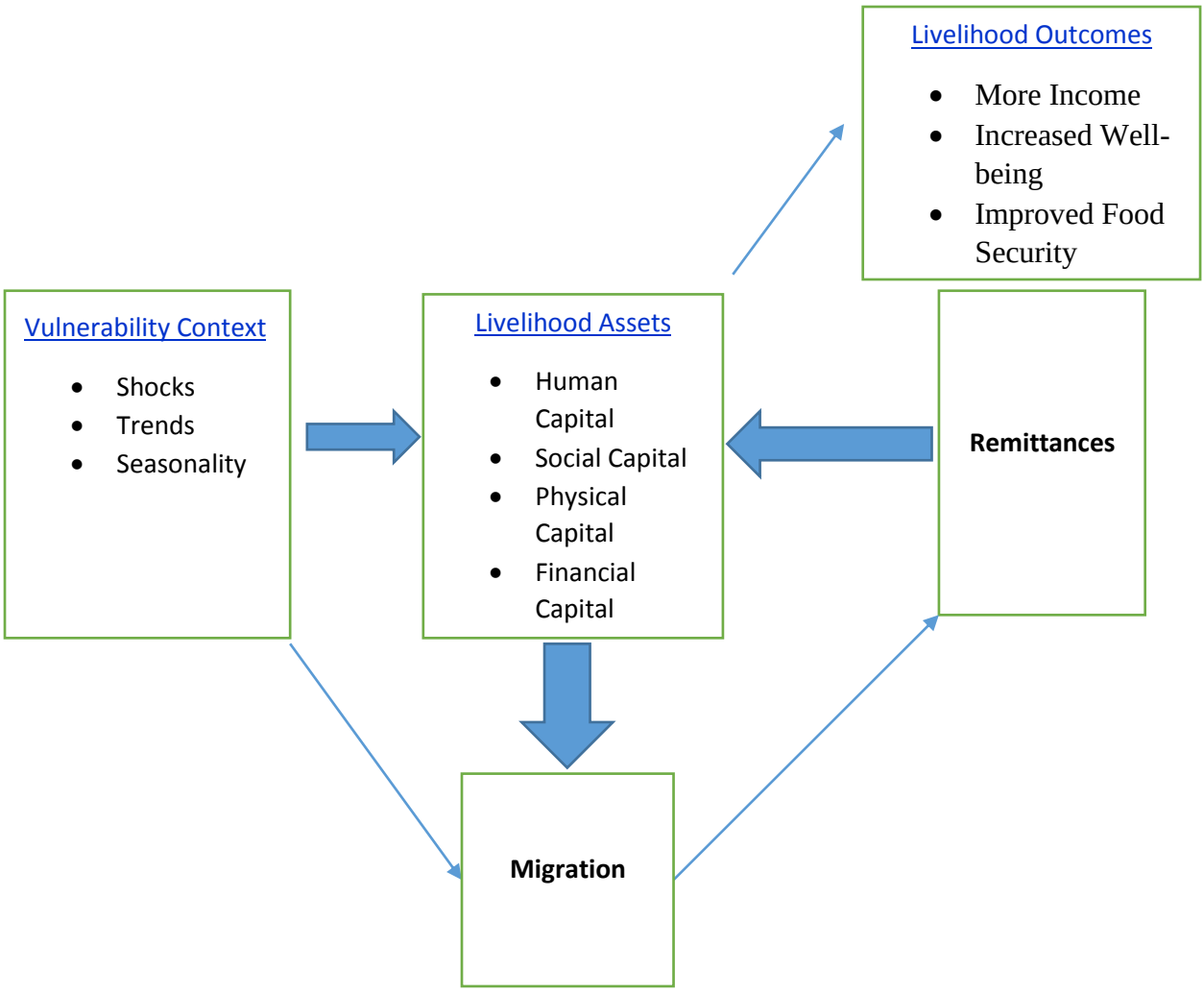


**Figure 2.1 Conceptual Framework**

**Source: Adapted from Sustainable Livelihood Framework (July, 2018)**

## 2.10 Summary

This chapter reviewed relevant literatures on the study, including climate change and rural vulnerability, adaptation; building adaptive capacity migration trends in Ghana and the decision to migrate. It also touched on, a remittance and its impact. The chapter further looked at remittance and climate change adaptation, remitting home; exploring remitter's motivation. The relevance of various types of support to farmers was also looked at. The literature reveals that

among the four main types of migration in Ghana, rural urban migration is the most common. Most of the migration from the Northern part of Ghana is due to environmental challenges. Additionally, the decision to migrate is a response to socio-economic factors. The literature further indicates that hunger and poverty is the main cause of vulnerability of among people living in rural areas. Building adaptive capacity is dependent on resources. When natural, human, social and physical capitals are strengthened, it helps essentially to build adaptive capacity of farmers. Remittances contribute to livelihood assets to minimise the harm cause by climate change but households spend their remittances on food rather than other things such as farm activities, savings and adaptation preparedness. This study adopted the New Economics of Labour Migration (NELM) while the Conceptual Framework was adapted from the Sustainable Livelihood Framework. The conceptual framework assesses the contribution of remittances to the five livelihood assets.

# CHAPTER THREE: METHODOLOGY

## 3.0 Introduction

This chapter outlines the methodology used in addressing the specific objectives, the study area, target population, the sampling technique, data collection procedures, and data analysis. According to Schwandt (2001), methodology is a theory of how inquiry should proceed. It is a coherent set of rules and procedures which is used to investigate a phenomenon or situation (Kitchin and Tate, 2000). The chapter presents a summary of the profile of the study district, the research design, target population, the sample and sampling technique, types of data and data collection methods, ethical considerations and methods of data analysis.

## 3.1 Study Area

### 3.1.1 Location of study area

The Lawra District is one of the eleven districts that make up the Upper West Region of Ghana and derives its legal existence from Legislative Instrument (L.I) 1434 of 1988 (PNDCL 207, Act 462). It lies in the north-western corner of the Upper West Region and bounded to the north by Nandom District, to the east by Lambussie-Karni District, to the south-west and west by the Republic of Burkina Faso. It lies between Latitude 10˚ 35˚ - 10˚ 40 North and 2˚ 50-2˚ 50-2˚ 53 West (Fig. 3.1). The Lawra District has a total area of 527.37 square kilometres. This constitutes about 2.8 percent of the total area land of Upper West Region of the country, which is estimated at 18,476 square kilometres. The Lawra District has over 80.0 percent of the inhabitants living in the rural areas. The population density of the district is 104.1 per square kilometre (GSS, 2014).


**Figure 3.1 Map of Lawra District**

**Source: CERSGIS University of Ghana, Legon**

### 3.1.2 Climate and Vegetation

The climate of the district is the tropical continental type with the mean annual temperature ranging between 27°C and 36°C. The district is a semi-arid environment with mean annual rainfall range between 1016mm and 1270mm and is concentrated in one season - April to October (Lawra District Assembly, 2014). The period between February and April is the hottest. Between April and October, the Tropical Maritime air mass blows over the area which gives the only wet season in the year (GSS 2014).

The district lies within the Guinea Savannah Zone which is characterised by short grasses and few woody plants. The vegetation is very congenial for livestock production, which contributes significantly to the income of many local households. The greatest influence on the vegetation is the prolonged dry season usually between November and March. During this period, the grass becomes dry and the subsequent bush burning leaves the area patchy and mostly bare of vegetation. Bush burning reduces the vegetative cover and transpiration; and this affects average annual total rainfall resulting in low agricultural yields as farmers depend mostly on rain-fed agriculture (GSS 2014). Consequently, the torrential early rains cause excessive soil erosion.

### 3.1.3 Natural Environment

The Lawra District has a total of 127 hectares of forest reserves, out of which 39.5 hectares have been converted into a protected area with an overall perimeter of 5.2 kilometres (GSS 2014). The Lawra Station Forest Reserve, situated in the north-eastern part, is currently the only reserve in the district. The environment has undergone considerable degradation largely attributed to human activities. This has resulted in the dwindling of the vegetative cover and

poorer soil fertility. The degrading human activities span from felling of trees for fuel wood and charcoal production, bush burning, inappropriate farming practices, soil erosion, to overgrazing by livestock. The reasons for these practices range from cultural beliefs to sustenance and the search for sustainable livelihoods.

### 3.1.4 Agriculture

The major economic activity in the Lawra District is agriculture. It employs about 98 percent of the working population (Lawra District Assembly, 2014). Around 80 percent of the farmers are into subsistence agriculture, producing mainly maize, millet, groundnuts, soya bean and cowpea. Animal production is a major agricultural activity to supplement incomes from crop farming. The local agricultural sector is confronted with depleting soil fertility, unreliable rainfall pattern, limited investment capital and skills, pests and diseases, inadequate access to extension service and low access to market. These challenges have resulted in very low agricultural productivity in the District. Majority of the active population therefore, migrate to other parts of the country to farm or search for other opportunities (GSS 2014).

### 3.1.5. Household size, composition and structure

The Lawra District has 53,753 as household population. It has 9,200 households and average house size of six (6) persons (GSS 2014). Children account for 44.0 percent and constitutes the largest population.

### 3.1.6 Employment and Economic Status

The economically active population is about 79 percent of the population with ages of 15 years and above (GSS 2014). While 21 percent are not active economically, about 98.4 percent are

employed out of the economically active population, while 1.6 percent remained unemployed. A large percentage of those who are not economically active are students (37.9%), while 24.1 are into household duties and 24.3 percent are either too young or old. Again, about 41.5 percent of those who are unemployed are searching for work and are willing to work for the first time. About 82.4 of those who are unemployed are occupied with forestry, fishery and skilled agricultural works, 7.8 percent are engaged in craft and trade and 3.6 percent in sale and service.

### 3.2 Livelihood Assets

The human capital in Lawra is composed of knowledge and skills of sustainable farming and the health of the farmers. The social capital social organisation in Lawra is an association of women that support themselves during occasions such as funerals. It also includes participation in farmer-based organisations which enhances social networking and increases social capital, participation in gender-based organisation enhances social networking and increases social capital and more access to family/household labour enhances the social capital of the farmers.

For this study, the physical capital is considered as agriculture implements and infrastructure. The infrastructure includes irrigation systems, buildings and road networks. It also includes farmer's access to tractors and ploughing infrastructure, other farming activities, access to irrigation infrastructure which build farmers capacity to adapt to drought. Natural capital is soil fertility and grazing resources. The financial capital in the form of cash enables farmers to divert their livelihood and also enhance the other livelihood assets. The five capitals when enhanced, lead to a more improved livelihood.

### 3.3 Research Design

The research is mainly a descriptive study that combined qualitative and quantitative data in order to enable a rigorous investigation. According to Tashakkori and Creswell (2007), the combination of qualitative and quantitative methods enables the researcher conduct a thorough investigation without omission of important details. Tashakkori and Creswell (2007) define mixed methods research as a research in which the researcher collects and analyses data, integrates the findings and draws inferences using both qualitative and quantitative approaches and method in a single study.

The qualitative aspect of the research helps to explain and explore the experiences, attitudes and life circumstances of the people in the context of the phenomena under study (Bryman, 2001). The quantitative part uses statistical techniques to analyse quantifiable aspect of the research problem and make prediction and generalization (Teye, 2012). This study adopted a survey approach using questionnaires and structured interviews. A survey collects views and opinions of a representative sample of a population for generalization.

### 3.4 Reconnaissance survey

A scoping visit was made to the study area in August 2017. The aim of the scoping visit was to enable the researcher familiarise with the study area and establish rapport with the study participants and relevant organizations. The visit was also aimed at shaping the research objectives and questions.

### 3.5 Data Collection Methods

In each selected village, a questionnaire was administered to smallholder farmer households that receive remittances, either by one or more members of that household. The survey interviewed 26 respondents from Furo, 16 from Lawra Zongo, 35 from Zambo Nawayele and 21 from Kunyukuo Zongo. Information was collected on the socio-demographic variables, which include the level of education and age of members of household, type of household and the size of the household, socio-economic characteristics of the household, the number of migrants per household, the type of migration embarked on, the different sources of income and the household remittances and its sources.

Following the questionnaire administration, a total of two (2) FGDs were conducted during the study. The first FGD was held in Zambo Nawayelle and the second in Kunyukuo Zongo. In all, a total of two FGDs were held. Each FGD consisted of between 10 and 15 selected individuals irrespective of any social, religious or economic considerations. The FGD in Zambo Nawayelle consisted of 17 participants and lasted for 1 hour 9 minutes while that of Kunyunkuo Zongo consisted of 11 participants and lasted for 30 minutes.

Five migrants living in the Greater Accra, Ashanti and Brong Ahafo regions, who remit to their families in the Lawra District of Upper West region, were also interviewed to understand their perception and motives for remitting. According to Creswell (1998), five to twenty-five respondents for a qualitative research is adequate for data saturation. The questionnaire for the migrants who remit home obtained information on their demographic data, the livelihood

activities, reasons for remittance and their perceptions about climate change and its impacts on the environment.

### 3.6 Sampling Technique and Sample Size

Multi-stage sampling procedure was adopted. The researcher stratified the district into rural and urban areas. Communities that were not more than five kilometers from Lawra and those within Lawra were considered urban communities. This was based on the infrastructure and the opportunities that are within Lawra that can be easily accessed by communities within and close to Lawra Township. Simple random sample technique was used to select two communities from each of the stratified areas. Lawra Zongo and Furo were selected from urban area while Zambo Nawayelle and Kunyukuo Zongo were selected from rural areas randomly. Due to the limited data on migrant households, it was difficult to obtain representative surveys in many instances. It was more complicated to determine the sample size when there is limited data on the migrant households that receive remittances. It is on this basis that the research employed the snowballing method as recommended by McKenzie and Mistiaen (2009), who designed an experiment to compare the performances of three alternative survey methods (random, snowball and intercept point survey methods) on Japanese-Brazilian families. The paper revealed that the snowball and intercept point survey methods tend to sample individuals better than random sampling.

The first contacts in the various communities in Lawra District were therefore established through the chiefs and the Assembly members during the scoping visit. The snowball approach was used to identify the households and individuals who are smallholder farmers and receive

remittance. Snowballing was also used to identify migrants who remit back home. In addition to that, the researcher visited all the households to confirm whether the houses were migrant households that receive remittances from migrants. The researcher surveyed every household in the various communities to identify respondents. The size of the sample was arrived at after every household was visited.

Table 3.1 describes the Total Number of Households (HH) in the various study communities. This was extracted from Ghana National Household Registry (2016). The table also shows the number of Households interviewed by the researcher while indicating the Number of Households where the researcher did not meet anyone who could be interviewed. Also, the Remaining Households were households that were identified either as not farmer households or farmer households that did not have any migrants. Also, there were instances where some homes contained more than one household but were considered as being under one household head, due to the structure of the sub-households.

**Table 3.1 Household Statistics**

| Community | Total No of HH | HH Interviewed | HH not Met | Remaining HH |
|---|---|---|---|---|
| Furo | 64 | 26 | 7 | 31 |
| Lawra Zongo | 239 | 16 | 16 | 207 |
| Zambo Nawayele | 145 | 35 | 21 | 89 |
| Kunyukuo Zongo | 62 | 21 | 15 | 26 |
| **Total** | **510** | **98** | **59** | **353** |

**Field Work, 2018**

### 3.7 Study Population

The Lawra District was chosen purposively for this study because of its agrarian nature and with evidence which shows that it is one of the districts that is susceptible to climate change impact and variability in Ghana (GSS 2014). The Ghana Statistical Service report indicated that the rainfall pattern is the main cause of youth migration in the Lawra District and that is affecting the human resource base of the district. The population of the study is smallholder farmer households in the Lawra District whose relatives have migrated and send back remittances as well as selected migrants, who live outside the Lawra District, who were related to those interviewed in the district.

### 3.8 Type and Sources of Data

Quantitative and qualitative data were both collected from primary and secondary data sources. Primary quantitative and qualitative were collected from smallholder farmer households that

receive remittances and selected migrants who live outside the district whose remit to their relatives in the Lawra District. The primary data was obtained using individual questionnaires and focus group discussions (FGDs). The primary data was collected with the help of a local research assistant. This was because the researcher was not familiar with language spoken in the study area and also the communities in the study area. The research assistant acted as translator in areas where English was not spoken, especially during the FGDs. The assembly member for Zombo Nawayelle electoral area was also helpful with the interpretation of the languages and the community entering. The research assistant also acted as translator during the individual questionnaire administration. Semi-structured questionnaire was used to gather quantitative data from smallholder farmers in the district and migrants outside the district. The survey was conducted in the Dagaaba and English languages. The household questionnaire obtained information on demographic and socio-economic data, adaptation methods and forms, forms of remittances, usage of remittances and knowledge of participant about climate change and its impacts. Qualitative data was gathered through the FGDs to complement data obtained using individual questionnaire survey.

The source of secondary data are Ghana Statistical Service and published climate change and migration journals, review papers and documents in order to check the conformity, reliability and consistency of the results obtained from the study. A pretest was done to validate the reliability, suitability and appropriateness of the household questionnaire as well as the expected responses by the respondents. The questionnaire was then reviewed to correct the errors detected and omitted information from the survey.

### 3.9 Data Analysis

The quantitative data was cleaned, edited and entered into Statistical Package for Social Scientists (SPSS) for analysis. The SPSS version 21 software was used to analyse data by running descriptive statistics; mainly frequencies and crosstabs. The analyses from the SPSS Version 21 software were then imported into Microsoft Excel version 2010 to generate statistical computations such as frequency tables and charts. Inferential statistics in the form of chi-square test were used to analyse relationship place of resident (rural/urban) of farmers and farmers' annual income from farming.

Qualitative data from FGD was transcribed manually. Both the FGD and the migrant interviews were categorised into themes and interpreted in line with the research objectives.

### 3.10 Ethical Clearance

Ethical clearance was sought from University of Ghana Centre for Climate Change and Sustainable Development Studies before the study was embarked on. Community entering was taken into consideration. In the study area, permission was sought from chiefs, Assembly members and other relevant authorities before commencing this study. Permission was sought from participants before administering the questionnaire and the Focus Group Discussion. The study took also take into account the issues of informed consent, anonymity and confidentiality. Participants were not forced to participate in the research, participation must be voluntary at all times. The rationale behind the research ethics is to protect the participants, researcher's integrity and also to ensure trust in future research.

### 3.11 Summary

This chapter outlines the description of the research design used for the study. The survey design was employed using the quantitative and qualitative instruments. The population of the study was composed of individual migrants who have migrated out of the district and households that receive remittances. A sample total of 98 migrant household who receive remittances were interviewed in the district using questionnaire while five migrants outside the district were also interviewed qualitatively. Data collected from the respondents were analyzed using the Statistical Package for Social Sciences (SPSS).

# CHAPTER FOUR: RESULTS

## 4.0 Introduction

This chapter presents the results and findings of the study by comparing four communities that were categorised into two urban and two rural areas of the Lawra District. It also presents the description of demographic and socioeconomic characteristics of the interviewed smallholder farmer households. The chapter further shows their knowledge on changes in the weather pattern and the impact on their farms, annual income of farmers and their expenditure pattern, alternative sources of livelihood, remittances; frequency and mode of receiving and form. It presents the amounts received by the farmers and usage of remittance and the contribution to the economic status of households as according to respondents. Finally, it presents on migrants' perception of the use of their remittances to their origin home.

## 4.1 Socio-Demographic Characteristic of surveyed smallholder farmers

This section describes the demographic characteristics of the respondents under study. These characteristics include, sex, age, level of education, religious affiliation, ethnic distribution, marital status, type of household, type of house and disability status of respondents. The section also includes farming experience, respondent's income and expenditure pattern.

**Table 4.1: Socio-Demographic Data of Respondents**

| | Sex of Respondents | | |
|---|---|---|---|
| | **Male** | **Female** | **Total** |
| | **N (%)** | **N (%)** | **N (%)** |
| Urban | 28 (28.6) | 14 (14.3) | 42 (42.9) |
| Rural | 20 (20.4) | 36 (36.7) | 56 (57.1) |
| **Total** | **48 (49.0)** | **50 (51.0)** | **98 (100)** |

**Categorical Age of Respondents**

| | **22-32** | **33-43** | **44-54** | **55-65** | **66-75** | **77-100** | **Total** |
|---|---|---|---|---|---|---|---|
| | **N (%)** | **N (%)** | **N (%)** | **N (%)** | **N (%)** | **N (%)** | **N (%)** |
| Urban | 10 (10.4) | 10 (10.4) | 9 (9.4) | 3 (3.1) | 6 (6.2) | 2 (2.1) | 40 (41.7) |
| Rural | 22 (22.9) | 14 (14.6) | 10 (10.4) | 6 (6.2) | 4 (4.2) | 0 (0.0) | 56 (58.3) |
| **Total** | **32 (33.3)** | **24 (25.0)** | **19 (19.8)** | **9 (9.4)** | **10 (10.4)** | **2 (2.1)** | **96 (100)** |

**Religion of Respondents**

| | **Christian** | **Islam** | **Traditionalis t** | **Others** | **Total** |
|---|---|---|---|---|---|
| | **N (%)** | **N (%)** | **N (%)** | **N (%)** | **N (%)** |
| Urban | 22 (22.4) | 8 (8.2) | 8 (8.2) | 4 (4.1) | 42 (42.9) |
| Rural | 35 (35.7) | 20 (20.4) | 1 (1.0) | 0 (0.0) | 56 (57.1) |
| **Total** | **57 (58.2)** | **28 (28.6)** | **9 (9.2)** | **4 (4.1)** | **98 (100)** |

**Ethnicity of Respondents**

| | **Dagaaba** **N (%)** | **Other** **N (%)** | **Total** **N (%)** |
|---|---|---|---|
| Urban | 39 (39.8) | 3 (3.1) | 4 (42.9) |
| Rural | 52 (53.1) | 4 (4.1) | 56 (57.1) |
| **Total** | **91 (92.9)** | **7 (7.10** | **98 (100)** |

**Marital Status of Respondents**

| | **Single** **N (%)** | **Married** **N (%)** | **Divorce** **N (%)** | **Widowed** **N (%)** | **Total** **N (%)** |
|---|---|---|---|---|---|
| Urban | 3 (3.1) | 35 (35.7) | 0 (0.0) | 4 (4.1) | 42 (42.9) |
| Rural | 7 (7.1) | 43 (43.9) | 1 (1.00 | 5 (5.1) | 56 (57.1) |
| **Total** | **10 (10.2)** | **78 (79.6)** | **1 (1.0)** | **9 (9.2)** | **98 (100)** |

**Type of Household**

| | **Male headed household with single wife N (%)** | **Male headed household with multiple wives N (%)** | **Male headed household divorced, widowed, single N (%)** | **Female headed divorced, widowed or single N (%)** | **Total N (%)** |
|---|---|---|---|---|---|
| Urban | 32 (32.7) | 6 (6.1) | 1 (1.0) | 3 (3.1) | 42 (42.9) |
| Rural | 44 (44.9) | 5 (5.1) | 0 (0.0) | 7 (7.1) | 56 (57.1) |
| **Total** | **76 (77.6)** | **11 (11.2)** | **1 (1.0)** | **10 (10.2)** | **98 (100)** |

**Household Size**

| | 1-5 N (%) | 6-10 N (%) | 11-15 N (%) | 16-20 N (%) | 21-25 N (%) | Total N (%) |
|---|---|---|---|---|---|---|
| Urban | 16 (16.3) | 21 (21.4) | 4 (4.1) | 1 (1.0) | 0 (0.0) | 42 (42.9) |
| Rural | 14 (14.3) | 27 (27.6) | 12 (12.2) | 2 (2.0) | 1 (1.0) | 56 (57.1) |
| **Total** | **30 (30.6)** | **48 (49.0)** | **16 (16.3)** | **3 (3.1)** | **1 (1.0)** | **98 (100)** |

**Type of House**

| | Block N (%) | Bricks N (%) | Mud N (%) | Total N (%) |
|---|---|---|---|---|
| Urban | 17 (17.3) | 13 (13.3) | 12 (12.2) | 42 (42.9) |
| Rural | 23 (23.5) | 16 (16.3) | 17 (17.3) | 56 (57.1) |
| **Total** | **40 (40.8)** | **29 (29.6)** | **29 (29.6)** | **98 (100)** |

**House Ownership**

| | Family House N (%) | Self-Built N (%) | Total N (%) |
|---|---|---|---|
| Urban | 29 (29.6) | 13 (13.30) | 42 (42.9) |
| Rural | 49 (50.0) | 7 (7.1) | 56 (57.1) |
| **Total** | **78 (79.6)** | **20 (20.4)** | **98 (100)** |

| | Forms of Disability | | |
|---|---|---|---|
| | **Yes** | **No** | **Total** |
| | **N (%)** | **N (%)** | **N (%)** |
| Urban | 2 (2.0) | 40 (40.8) | 42 (42.9) |
| Rural | 1 (1.00 | 55 (56.1) | 56 (57.1) |
| **Total** | **3 (3.1)** | **95 (96.9)** | **98 (100)** |

**Source: Field Work, 2018**

### 4.1.1 Sex of Respondents

Table 4.1 indicates that out of the study sample, 51.0 percent of the respondents were females, whereas the males constituted 49 percent. Also, there were more male respondents (28.6%) in the urban areas than in the rural areas (20.4%). Females were more in rural area (36.7%) than urban area (14.3%).

### 4.1.2 Age of respondents

Out of the study sample, more than 50 percent of the respondents were in the age bracket of 22-43 years while those in the age bracket of 44-77 years were less than 30 percent. Meanwhile, the respondents within the age bracket of 22-43 years are more in the rural areas than the urban areas.

### 4.1.3 Level of Education of Respondents

The Table 4.2 presents information on educational status of the respondents. Significant proportion (42.9%) had no formal education. More of the respondent who had no formal education were from the rural area. This constitutes 25.5 percent while 17.3 percent were from the urban area.

**Table 4.2 Level of Education of Respondents**

| | **Level of Education** | | | | |
|---|---|---|---|---|---|
| | **No formal Education** | **Primary** | **JHS/Middle School** | **SSSCE/WASSCE/ GCE** | **Total** |
| **Urban** | 17 (17.3) | 9 (9.2) | 14 (14.3) | 2 (2.0) | 42 (42.9) |
| **Rural** | 25 (25.5) | 11 (11.2) | 11 (11.2) | 9 (9.2) | 56 (57.1) |
| Total | 42 (42.9) | 20 (20.4) | 25 (25.5) | 11 (11.2) | 98 (100) |

**Source: Field Work, 2018**

### 4.1.4 Religious Affiliation of Respondents

Christians form the majority (58.2%) of religions in the study area. Comparing urban area to rural area, the Christians were still in the majority. The Moslem population is also quite significant and represented more than a quarter of the group (28.6%). Traditional religion still maintains its influence in the study area and it is evident like the shrines that were scattered all over the study area. Non-believers who constitute 4.1 percent were all from the urban area.

### 4.1.5 Ethnic Distribution

The ethnic distribution of the respondents shows that 92.9 percent are Dagaaba while 7.1 percent consist of other ethnic group which are Gushie and Hausa. This shows a homogenous pattern in the distribution of ethnic groups.

### 4.1.6 Marital Status of Respondents

Out of the 98 respondents, majority (79.6%) were married, the rest of the respondents who were single, divorced and widowed were less than 20 percent. Only 1 percent of the respondents is divorced. This came from rural area. Meanwhile, there are more widowed in the rural area than urban area.

### 4.1.7 Type of House

The head of household is basically the person identified by members of the household as the one responsible for the upkeep and maintenance of the household, including the exercise of authority over household resources (GSS, 2014). Most of the households interviewed are male headed households with a single wife (77.6%) and male headed households with multiple wives constituted 11.2 percent, while 1.0 percent were Male headed households divorced, widowed or single. Female headed household divorced, widowed or single constituted 10.2 percent. The male headed household with multiple wives is more (6.1%) in the urban area than rural area (5.1%) because of the dominance of Muslims especially Lawra Zongo.

### 4.1.8 House Type and Ownership

In terms of the types of houses, 40.8 percent of the respondents live in houses built with cement, while the remaining have homes constructed from mud (29.8%) and brick (29.6%). Also, majority of the respondents live in family houses (79.6%) while few live in their own houses (20.4%).

### 4.1.9 Disability Status of Respondents

About 99% of the respondents are without any form of disability, with the remaining 1% have disability, mainly being physically challenged.

### 4.2.1 Farming Experience

From the Table 4.3, most of the respondents have between 11-20 years farming experience and this is represented by 33 percent of the sample size. This was followed by those who have between 21-30 years farming experience (28.6%), 31-40 years farming experience (14.4%), 41-50 years farming experience representing 10.3 percent, and 61-60 years farming experience representing 7.2 percent. Only, 6.2 percent of the sample size have 1-10 years farming experience. One of the respondents could not tell the number of years she has been farming. The respondents indicated that they started farming since their childhood. This means that their experience in farming depends on their age, with the exception of those who were engaged in other occupations before becoming farmers.

**Table 4.3 Farming Experience of Farmers**

| | Farming Experience | | | | | | |
|---|---|---|---|---|---|---|---|
| | **1-10** | **11-20** | **21-30** | **31-40** | **41-50** | **51-60** | **Total** |
| | **N (%)** | **N (%)** | **N (%)** | **N (%)** | **N (%)** | **N (%)** | **N (%)** |
| Urban | 1 (1.0) | 13 (13.4) | 14 (14.4) | 7 (7.2) | 2 (2.1) | 4 (4.1) | 41 (42.3) |
| Rural | 5 (5.2) | 19 (19.6) | 14 (14.4) | 7 (7.2) | 8 (8.2) | 3 (3.1) | 56 (57.7) |
| **Total** | **6 (6.2)** | **32 (33.0)** | **28 (28.9)** | **14 (14.4)** | **10 (10.3)** | **7 (7.2)** | **97 (100)** |

**Source: Field Work, 2018**

### 4.2.2 Types of Farming

The most grown crop in the district is Millet (27.1%). Groundnut is the second most grown and constitutes 18.1 percent of those engage in farming. Other crops grown are maize, beans, yam, soya beans, potatoes and cowpea. Animals are reared to complement the crops that are grown. Goat is the most commonly reared animal (10.3%), followed by poultry (6.8%). Other reared animals are sheep, pigs, Guinea fowl and cattle. It is observed that animals are mostly reared in the urban areas than the rural areas. This may be due to the availability of land for farming activities. The rearing of animals does not need large size of land to engage in. The animals are usually kept close to homes.

### 4.3 Knowledge of Changes in Weather Pattern for 10 years

Almost all the respondents have noticed changes in the local weather patterns within the past ten-year period (98%), mainly observed as long drought (41.8%) unpredictable rainfall (40.8%) and reduced rainfall (15.3%).

As to whether the changes in the weather pattern have affected their farms, all respondents (98 %) were affirmative. The impact of climate change was emphasized by a male participant during the FGD that;

*"We used to start farming in May but now we cannot tell when the rain will begin. So we wait for the rain to start before we start planting. When the rain starts and we will sow the things, the rain will stop about two or three weeks and all the things will die. So, we have to re-sow the seeds. Also, because of lack of rain, there is no water for the animals to drink. So, the animals move far to look for water and grass. And when they go far like that that is when thieves come in to steal them. For the crops if there is a long drought, you know crops need water, it affects them. They don't grow the way they are supposed to grow."*

However, only 2 percent have not noticed any changes in weather pattern but admitted their yield continued to decrease every farming season.

More respondents (60%) in the urban area have observed reduced rainfall as of the changes in the weather pattern in the past 10 years as compared to 40 percent of those in the rural area. However more respondents in the rural area have observed long drought (65.9%) and unpredicted rainfall (57.3%) as compared those in the urban areas.

**Table 4.4 Knowledge of Changes in Weather Pattern over the past 10 years**

| | Have you noticed any changes in the weather pattern | | |
|---|---|---|---|
| | **Yes N (%)** | **No N (%)** | **Total N (%)** |
| Urban | 4 (41.8) | 1 (1.0) | 42 (42.9) |
| Rural | 55 (56.1) | 1 (1.0) | 56 (57.1) |
| **Total** | **96 (98)** | **2 (2.0)** | **98 (100)** |

**Source: Field Work: 2018**

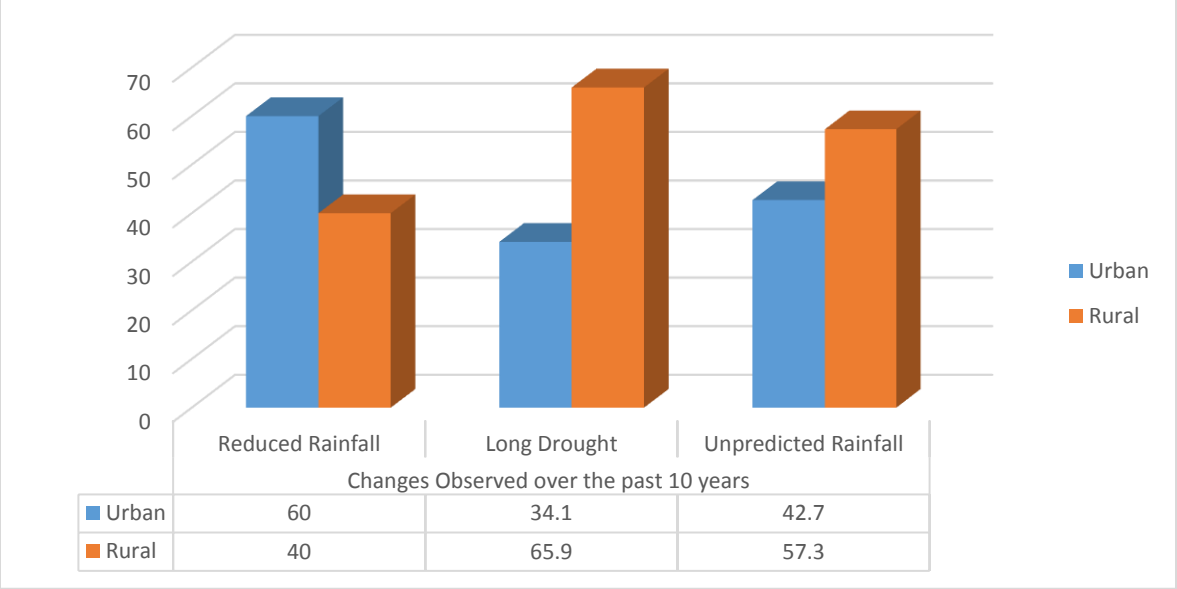


**Figure 4.1 Changes observed over the past 10 years**

**Source: Field Work, 2018**

On the adaptation to the above impact of climate change, farmers indicated in the Focus Group Discussion that they used fertilizer to nourish the soil, relied on improved seeds to plant, walked long distance with animal to feed them and access some water. Aside these, the most common form of adaptation is migration to southern part of Ghana mainly farming communities in Brong Ahafo to labour during the dry season. The youth mostly adopted this measure after having a low crop yield during the farming season.

### 4.4.1 Annual Income from Farming

As indicated in Table 4.5, most of the respondents made less than GH¢100 from the previous farming season. This represents 46.8 percent of those who earn income from farming. Out of those who earn less than GH¢100, 16 percent are from the urban communities and 30.9 percent from the rural communities. Those who made more than GH¢1000 from the last farming season were all from the urban area. None of the respondents in the rural communities made GH¢1000 or more. The results from the Table 4.5 shows that most (46.8%) of the respondents made less than GH¢100 from the previous season. Majority (87.2%) of respondents made not more than GH¢300 or less from the previous season. It is evident from the chi-square test that there is a statistical relationship between place of residence (urban and rural) and income earned from farming.

**Table 4.5 Annual Income from Farming GH¢**

| | Annual Income from Farming | | | | | |
|---|---|---|---|---|---|---|
| | **<100** | **100-300** | **400-600** | **700-900** | **>1000** | **Total** |
| | **N (%)** | **N (%)** | **N (%)** | **N (%)** | **N (%)** | **N (%)** |
| **Urban** | 15 (16.0) | 16 (17.0) | 4 (4.3) | 2 (2.1) | 4 (4.3) | 41 (43.6%) |
| **Rural** | 29 (30.9) | 22 (23.4) | 0 (0.0) | 2 (2.1) | 0 (0.0) | 53 (56.4%) |
| **Total** | **44 (46.8%)** | **38 (40.4%)** | **4 (4.3%)** | **4 (4.3%)** | **4 (4.3%)** | **94 (100%)** |

**($\chi 2 = 12.067$, df = 4 and p-value = 0.017<0.05)**

**Source: Field Work, 2018**

### 4.4.2 Income Expenditure Pattern

The expenditure pattern of the income from farming indicates that respondents spend more (34.1%) on school fees than other expenditures (Table 4.6). The school fees here encompass schooling items such bags, footwear, books and other associated expenses. Respondents give same priority to healthcare, farming activities and others (i.e. expenditure on consumption). These constitute 18.2 percent each. Analysing the expenditure within the urban and rural community's context, those in the rural communities spend their income on school fees and healthcare more than those in urban communities, while those in the urban areas tend to invest their income into farming activities more than those in the rural areas. The chi-square test in Table 4.6 indicates that there is no statistical relationship between place of resident and expenditure pattern.

**Table 4.6 Income Expenditure Pattern**

**What do you use greater part of your income from farming for?**

| | **Pay Fees N (%)** | **Healthcare N (%)** | **Building N (%)** | **Business N (%)** | **Farm Activities N (%)** | **Other N (%)** | **Total** |
|---|---|---|---|---|---|---|---|
| Urban | 13 (14.8) | 5 (5.7) | 1 (1.1) | 2 (2.3) | 11 (12.5) | 6 (6.8) | 38 (43.2) |
| Rural | 17 (19.3) | 11 (12.5) | 3 (3.4) | 4 (4.5) | 5 (5.7) | 10 (11.4) | 50 (56.8) |
| **Total** | **30 (34.1)** | **16 (18.2)** | **4 (4.5)** | **6 (6.8)** | **16 (18.2)** | **16 (18.2)** | **88 (100)** |

**($\chi 2 = 6.179$, df = 5 and p-value = 0.289 > 0.05)**

### 4.4.3 Other Livelihoods Apart from Farming

Table 4.7 indicates that Agriculture is the only source of livelihood for the majority of the respondents (73.5%), with the remaining population (26.5%) having other income generating ventures to augment their farming livelihood, including provision store owner, carpenter, school feeding cook, grinding mill operator, National Lotteries operator, 'Pito' (locally brewed alcohol) seller, motor bike repairer, smock weaver, seamstress/tailor, and soap maker. Interestingly, all non-farming respondents indicated that the additional income generating activities generate more income than farming, corroborating statements in the Ghana Statistical Report (2014) that farming considered to as no more attractive to the youth in the district. Those who are engaged in other livelihoods apart from farming are more in the rural communities (18.4%) than urban communities (8.2%). It was observed that respondents in the urban communities especially Lawra Zongo usually ignore farming in totality when they identify an alternative livelihood while those in rural areas combine farming with other livelihoods.

**Table 4.7 Alternative Source of Livelihood**

| | **Is farming your only source of livelihood?** | | |
|---|---|---|---|
| | **Yes** | **No** | **Total** |
| | **N (%)** | **N (%)** | **N (%)** |
| Urban | 34 (34.7) | 8 (8.2) | 42 (42.9) |
| Rural | 38 (38.8) | 18 (18.4) | 56 (57.1) |
| **Total** | **72 (73.5)** | **26 (26.5)** | **98 (100)** |

**Source: Field Work, 2018**

### 4.5. External Support to Farmers

The study identified whether farmers obtain support from other organizations and bodies in their farming activities. According to 21 percent of the respondent, they receive external support for their farming activities, while the majority of the farmers. (78.6%) do not (Table 4.8). Out of the 21.4 percent that receive external support, 7.1 percent are from urban communities while 24.4 were from the rural communities.

On the needs of the respondents, 11.2 percent of the respondents claim the external support meets their needs while 9.2 percent claim otherwise. Also, only 5 percent of the respondents who receive external support in the urban areas claim that the external support meets their needs while 50 percent of those who receive external support in the rural areas admitted the supports meet their needs. This was confirmed with the Chi-square test that shows a causal relationship between place of residence and the satisfaction of respondents needs.

Most of the support obtained by farmers was in the form of items or goods (20.4%) such as subsidized fertilizer, improved seeds, young female goat and sheep, and animal feed. Only 1 percent received financial support and that was from the urban community. The government provides the majority of support received by farmers (56.5%) mainly through subsidized fertilizer. Only one person claimed he had obtained government loan to support his farming. Indeed, the respondent revealed that he was given the loan because he is an influential member of the ruling party in Ghana. The support from the NGOs, according to 39 percent of the respondents who received support, provided seed for planting, animal feed and young female goat and sheep.

**Table 4.8 External support to farmers**

**Do you receive external support**

| | **Yes N (%)** | **No N (%)** | Total **N (%)** |
|---|---|---|---|
| **Urban** | 7 (7.1%) | 35 (35.7) | 42 (42.9%) |
| **Rural** | 14 (24.4%) | 42 (42.9%) | 56 (57.1%) |
| **Total** | **21 (21.4%)** | **77 (78.6%)** | **98 (100%)** |

**What kind of external support do you receive**

| | **Financial N (%)** | **Items N (%)** | Total **N (%)** |
|---|---|---|---|
| **Urban** | 1 (4.8) | 6 (28.6) | 7 (33.3) |
| **Rural** | 0 (0.0) | 14 (66.7) | 44(66.7) |
| **Total** | **1 (4.8)** | **20 (95.2)** | **21 (100)** |

**Sources of External Support**

| | **Family and Friends N (%)** | **NGO N (%)** | **Government N (%)** | **Total N (%)** |
|---|---|---|---|---|
| Urban | 1 (4.3) | 2 (8.7) | 5 (21.7) | 8 (34.8) |
| Rural | 0 (0.0) | 7 (30.4) | 8 (34.8) | 15 (65.2) |
| **Total** | **1 (4.3)** | **9 (39.1)** | **13 (56.5)** | **23 (100)** |

**Does the external support meet your needs**

| | **Yes N (%)** | **No N (%)** | **Total N (%)** |
|---|---|---|---|
| Urban | 1 (5.0) | 6 (30.0) | 7 (35.0) |
| Rural | 10 (50.0) | 3 (15.0) | 13 (65.0) |
| **Total** | **11 (55.0)** | **9 (45.0)** | **20 (100)** |

**($\chi 2 = 7.213$, df = 1 and p-value = 0.007 $>$ 0.05)**

**Source: Field Word, 2018**

### 4.6.1 Remittances, frequency at which they were received, mode of receiving and form

According to 41.8 percent of the respondents, cash is the main form of remittance received. Of these respondents, 22.4 percent received remittances in the form of good/items (Table 4.9). Both urban and rural dwellers equally receive both kind and cash as remittance. This constitute 11.2 percent each. As presented in Table 4.9, majority of the respondent who receive cash as

remittances, received them through Mobile Money. This constitutes 54.1 percent of the population. The money receive through mobile money is directly received by the respondent at home. Out of those who receive cash as remittance, 23.5 percent have indicated that migrants bring the cash during their visits.

With regards to frequency at which remittances is received in a year, most respondents receive remittances once a year. This constitutes 48 percent of the sample size. Those who receive remittances twice a year constitute 30.6 percent while those who receive it thrice constitute 17.3 percent. Those who receive remittances more than thrice constitute other (4.1%).

**Table: 4.9 Frequency, mode and forms of Remittances**

| | Number of times remittance was received last year | | | | |
|---|---|---|---|---|---|
| | **Once N (%)** | **Twice N (%)** | **Thrice N (%)** | **More than Thrice N (%)** | **Total N (%)** |
| Urban | 23(23.5) | 13 (13.3) | 5 (5.1) | 1 (1.0) | 42 (42.9) |
| Rural | 24 (24.5) | 17 (17.3) | 12 (12.2) | 3 (3.1) | 56 (57.1) |
| **Total** | **47 (48.0)** | **30 (30.6)** | **17 (17.3)** | **4 (4.1)** | **98 (100)** |

| | What forms of remittances | | | |
|---|---|---|---|---|
| | **Cash N (%)** | **Kind N (%)** | **Both N (%)** | **Total N (%)** |
| Urban | 16 (16.3) | 11 (11.2) | 15 (15.3) | 42 (42.9) |
| Rural | 25 (23.5) | 11 (11.2) | 20 (20.4) | 56 (57.1) |
| **Total** | **41 (41.8)** | **22 (22.4)** | **35 (35.7)** | **90 (100)** |

| | How Remittances are Received | | | |
|---|---|---|---|---|
| | **Mobile Money N (%)** | **Migrant brings it home during visits N (%)** | **Through a friend/relative coming home N (%)** | **Total N (%)** |
| Urban | 21 (27.3) | 9 (11.7) | 1 (1.3) | 31 (40.3) |
| Rural | 32 (41.6) | 14 (18.2) | 0 (0.0) | 46 (59.7) |
| **Total** | **53 (68.8)** | **23 (29.9)** | **1 (1.3)** | **77 (100)** |

**Source: Field Work, 2018**

### 4.6.2The amount of remittances received

Majority of the respondents (76%) received less than GH¢300 as remittances in a year. Out of that, 11.4 percent from the urban communities received less than GH¢100 while 19 percent of respondents from rural communities also receive less than GH¢100. Most of the respondents receive between GH¢100-300. The respondents from the urban communities who received between GH¢100-300 constituted 17.7 percent while those from the rural communities constitutes 27.8 percent. Few respondents receive between GH¢700-900. This constitutes 2.5 percent each from urban and rural communities. The respondents who receive GH¢1000 and above were from only rural communities. No respondent from any of the urban communities

received GH¢1000 and above. Those who receive more than GH¢1000 may be those who receive their remittances purposely for building of houses.

**Table 4.10 Amount of remittances received during the previous farming season**

| | **What much did you receive as remittance in the last season** | | | | | |
|---|---|---|---|---|---|---|
| | **<100** | **100-300** | **400-600** | **700-900** | **>1000** | **Total** |
| | **N (%)** | **N (%)** | **N (%)** | **N (%)** | **N (%)** | **N (%)** |
| Urban | 9 (11.4) | 14 (17.7) | 7 (8.9) | 2 (2.5) | 0 (0.0) | 32 (40.5) |
| Rural | 15 (19.0) | 22 (27.8) | 6 (7.6) | 2 (2.5) | 2 (2.2) | 47 (59.5) |
| **Total** | **24 (30.4)** | **36 (45.6)** | **13 (16.5)** | **4 (2.5)** | **2 (2.5)** | **79 (100)** |

**Source: Field Work, 2018**

### 4.6.3 The Use of remittances

This research explored how remittances are used by the smallholder farmers. From Table 4.14 remittances are spent on consumption such as food. This constitutes 85.7 percent of the sample size. This is followed by the expenditure on school fees and heath representing 54.9 percent each. Interestingly, only 33.7 percent of the respondents invest their remittances into agriculture. Less attention is given to clothing where only 12.2 percent spend their remittances on clothing.

Respondents in both urban and rural areas spend more of their remittances they receive on consumption. This constitute 35.7 percent and 50.0 percent respectively. The respondents in urban areas then spend their remittances on school fees and agriculture. This represent 16.3

percent each. Meanwhile, those in rural areas after consumption, they spend their remittances on school fees and healthcare. This constitute 45.9 percent each.

**Table 4.11 Use of Remittance**

| | What do you spend your remittances on? | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Consumption N (%)** | **Clothing N (%)** | **School Fees N (%)** | **Health care N (%)** | **Agriculture N (%)** | **Other Things N (%)** | **Total N (%)** |
| Urban | 35 (35.7) | 3 (3.1) | 16 (16.3) | 7 (7.1) | 16 (16.3) | 2 (2.0) | 42(42.9) |
| Rural | 49 (50.0) | 9 (9.2) | 29 (29.6) | 29 (29.6) | 17 (17.3) | 3 (3.1) | 56(57.1) |
| **Total** | **84 (85.7)** | **12 (12.2)** | **45(45.9)** | **45(45.9)** | **33 (33.7)** | **5 (5.1)** | **98(100)** |

***Multiple Responses**

**Source: Field Work, 2018**

### 4.6.4 Remittances and the economic status of the household

Majority (93.9%) of the respondents indicated that remittances have improved on the economic status of the household. Only 6.1 percent of the respondents think that remittances have not improved on the economic status of the household. This might be the case that those respondents are not direct beneficiaries of the remittances received by the household. A 69-year woman (Zambo Nawayele) noted in the FGD discussion that:

> "*When they go and come, they only spend what they have on their children leaving other family members*"

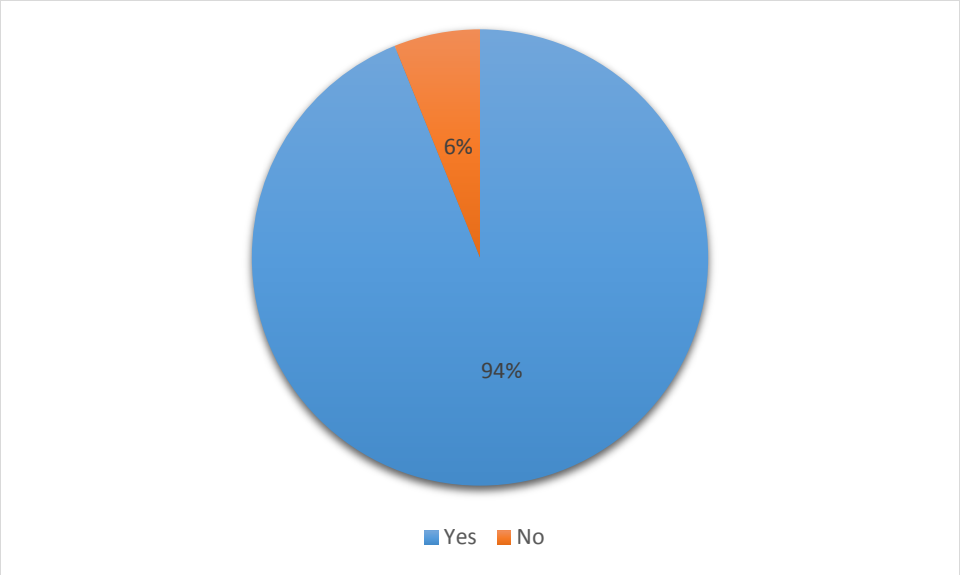


**Figure 4.2 Perception of Remittances and Improvement of Economic status of Household**

**Source: Field Work, 2018**

### 4.6.5 The contribution of remittances to the economic status of the household

Respondents feel that remittances have improved the economic status of the household. In terms of ranking, food and clothing came first (Table 4.12). Meanwhile, 35.7 percent of the respondents believe that family is able to meet food and clothing needs. This is followed by 19.9 percent of the respondents that believe that the family was able to pay for school fees. Households spend their remittances on healthcare representing 17.6 percent. Respondents also admitted that remittances are vital in building economic status of the household.

**Table 4.12 The Perception of Remittances to the Economic Status of Household**

| | **Frequency** | **Percentage (%)** |
|---|---|---|
| Family is able to meet their basic needs such as adequate food and clothing | 79 | 35.7 |
| Family can pay healthcare services | 39 | 17.6 |
| Family can pay for school fees | 44 | 19.9 |
| Family upgraded their house | 7 | 3.2 |
| Family can afford luxury items | 4 | 1.8 |
| Alternative livelihood | 8 | 3.6 |
| Improve access to farm input (fertilizer, irrigation, etc.) | 29 | 13.1 |
| Family has improved on farming activities | 11 | 5.0 |
| **Total** | **221** | **100** |

***Multiple Responses**

**Source: Field Work, 2018**

### 4.7.1 Socio-demographic Characteristics of Migrants who remit Home

**Table 4.13 Socio-demographic Characteristic of Migrants who remit Home**

| Respondents | Sex | Occupation | Migrant Destination | Type of Migration | Reason for migrating | Frequency of remitting home |
|---|---|---|---|---|---|---|
| R 1 | Female | Procurement Officer | Adenta (Greater Accra Region) | Permanent | Education | Monthly |
| R 2 | Male | Research Assistant | Madina (Greater Accra Region) | Permanent | Education | Monthly |
| R 3 | Male | Public Servant | East Legon (Greater Accra Region) | Permanent | Employment | Monthly |
| R 4 | Male | Farming and Business | New Dorma (Bono Region) | Permanent | Employment | When the need arises |
| R 5 | Male | National Lottery Agent | Kumasi (Ashanti Region) | Permanent | Employment | Yearly |

### 4.7.2 Motive and Perception of Migrants who remit Home

It was observed that those who migrated to seek for education ended up working especially those who live in Accra. The respondents admitted that migrating to their destination has been beneficial to them with opportunities available to them. Interestingly, two out of the five migrants did not have the intention of moving back to their home district permanently. One of reason given by one of the migrants is that she had no choice than to follow her husband everywhere he goes. The other reason is that the migrant's nuclear family had also migrated to live with him. Three respondents have the intention of going back to their home district to live

there. This is because some respondents migrated basically to raise capital to set themselves up back at home while others had already built at home towards their pension.

Additionally, migrants remit every month and yearly but they all claim they also remit when the need arises. The means of remitting is through Mobile Money and buses if they are goods. With the reason for remitting home, the respondents basically, remit home to support the upkeep of their relative at home and also support agricultural activities. All the respondents claim the remittances they sent home were used for the intended purpose except one respondent who does not know and does not want to know. The respondents see remitting home as a responsibility that only needs to be fulfilled. This point was emphasized by Gina, a 33-year lady staying in Accra, reveal that:

> *"I am a social investment because family people put their money together to get me transport fare to travel to the city. This invariable put on me a sense of family belonging where I have to reciprocate their benevolence."*

Again, more of the respondents believed that their remittance does not meet the needs of their household at home while few believe that it does. This reason is based on the belief that the respondent sends what the relatives request for. In terms of knowledge on changes in weather pattern, all the respondents admitted noticing some changes in the climate. They observed extreme hot weather and also unpredictability of the rain back at home. Those who engaged in agriculture before migrating had low yield and heat and disease attack their animals. Respondents who were not directly engaged in agriculture before migrating could not really express much knowledge on the impact of climate change on their activities. Interestingly, all

respondent rejected the notion that environmental changes influenced their migration to their destination.

### 4.8 Summary

The chapter presents the result of the study. It presents firstly on the socio-demographic characteristics of the respondents. There were more male respondents (28.6%) in the urban areas than in the rural areas while the rural areas present more female (36.7%) than men (20.4%). Most of the respondents who had no formal education were from the rural area. Majority of the respondents were Dagaaba (92.9%) while few (7.1%) were Gushie and Hausa. Majority of farmers had between 11 to 30 years farming experience.

It also presents a description on the knowledge of respondents on climate variability. The majority (98%) of the respondents exhibited some knowledge on climate variability. The respondents, both in rural and urban areas further stated reduced rainfall, long drought and unpredicted as some of the effects of climate change on their farming activities. On the income from farming, most respondents made less that GH¢300 previous farming season. The chapter further presents of remittances, frequency at which they were received, mode of receiving and forms. It also presents the amount of remittances received. Therefore, respondents in both urban and rural areas spend their remittances more on consumption. Migrants who remit home see it as a responsibility to remit home. Therefore, even if the remittances is not used for the intended purpose, they will continue to remit home.

# CHAPTER FIVE: DISCUSSION

## 5.0 Introduction

This chapter discusses key findings of the research to address the objectives. It addresses the aim of this research which is to examine the role of remittances on the adaptive capacity of smallholder farmers in the Lawra District of Upper West region. It discusses the socio-demographic characteristics of the respondents, their perception of climate change and its impacts. The chapter further presents the income smallholder made from the previous farming season and their expenditure pattern. The chapter also discussed the various supports smallholder farmers received including remittances and how they contribute to their adaptive process. Finally, the chapter discusses migrant's perception of the use of their remittances to their origin households.

## 5.1 Socio-demographic and Economic Characteristic

In the Lawra District, both males and females are smallholder farmers. There is a male dominance in farming in the urban areas possibly due to available infrastructure such as markets, whilst the female engages more in trading activities. On the other hand, the rural areas lack the commercial opportunities that are in urban areas and females may farm more for household subsistence in the rural area.

Age plays a significant role when it comes to one's occupation. The farming population is generally youthful in nature which can translate into abundance food production and at the same time susceptible to migration (GSS 210). The majority (85.8%) of the farmers in the district between are 22 and 65 years old as confirmed in census reports (GSS 2010) that majority of the

population are economically active. Meanwhile, more of the youth between 22 and 43 years old in the rural areas are engaged in agricultural activities as compared to the urban areas while they migrate during the dry season on temporal basis to the southern part of Ghana.

According to Deressa *et al.* (2009), the educational level of the head of household influence farmer's choice of adaptation. Lack of formal education could be the hindrance to adaptation in agriculture in terms of access to information and technology adoption. With a little over two-third of the respondents not formally educated, their adaptation capacities are limited, especially for using modern technologies for farming. However, those who had education up to JHS/ Middle school level are better placed to adapt to modern complexities associated with farming. Most of the respondents who did not have formal education were located in the rural area.

### 5.2 Farmers' Perception on Climate Change

Adger *et al.* (2009) indicate that knowledge about climate change and its characteristics could be a barrier to the choices of adaptation strategies, understanding farmer's knowledge on climate change is very important this study. In the Lawra District, the smallholder farmers, both in the urban and areas are more observant of reduced rainfall, long droughts and unpredicted as the changes in the weather patterns as this has more implications on their crops, than temperature.

Reduced rainfall, long drought and unpredicted rainfall have been the dominant changes that occur over time that has been observed by other researchers (e.g., Müller Kuckelberg, 2012; MacCarthy, *et al*., 2013). Reduced rainfall affects the growth of their crops while long drought affects both their crop and animal. This was confirmed during the FGD.

### 5.3 Revenue Generated from Farming and Expenditure

Based on the amount of revenue generated from the previous farming season, it is obvious the farmers do not earn substantial revenue from their farming activities. Abdul-Razak and Kruse (2017) show that economic resources, awareness and training as well as technological capacities are the most relevant and critical for smallholder farmers' adaptive capacity. MoFA (2013) also noted that smallholder farmers in Ghana who engage in rain-fed agriculture need data on climate feature and forecast for long term agricultural planning. Place of residence (urban/rural) has significant link to income from farming, with urban areas having higher income from farming than those in the rural areas. This may be influenced by availability of information on agricultural methods and its uses in urban areas.

Majority of farmers (87.2%) earned less than GH¢300 (US$69) from previous farming season. Comparatively, urban farmers made more than GH¢1000 (US$227) from previous season. The causal relationship between the place of resident of farmers and the amount generated from farming may be due to the opportunities available in the urban areas more than the rural areas. For example, proximity to a market reduces cost of transportation and quick sale of farm produce. Also, most farmers in the urban areas are engaged in animal rearing such as goat and sheep. The price of two or more goats and sheep is about GH¢1,000 (US$227) or more. This probably led to the income difference between urban and rural areas.

In addition, more of the respondent in the urban area re-invest some of their revenue from farming into agricultural activities than those in the rural areas.

Farmers in both urban and rural areas prioritized schooling in the expenditure of annual income from farming, and spent more on schooling materials such as books, school footwear and uniforms. The place of residence (urban and rural) does not have any effect on the expenditure pattern of farmers. Smallholder farmers in urban areas consider re-investing their income into farm activities while those in rural areas consider healthcare.

### 5.4 Support to Farmers

It is observed that revenue from farming activity is insufficient to support farmers in their adaptation process. Therefore the need to rely on all forms of support including remittances support their adaptation processes. Poor farming households are believed to have limited amount of capital assets that may be needed to adopt a climate change strategy to reduce the adverse effects on their livelihoods (Dasgupta and Baschieri, 2010). Contrary to the perception that NGOs are more visible in the Northern part of Ghana, government support (56.5%) is the greatest in the Lawra District. Almost all the support received were in kind/items (95.2%). The support from government and NGOs to farmers in Lawra District corroborates with the argument by Nhemachena and Hassan (2007) that NGOs and government institution are important agents that provide necessary support to smallholder farmers in climate change adaptation and mitigation process. Although, Antwi-Agyei *et al.* (2012) and Bryan *et al*. (2009) have argued that financial constraint is a crucial barrier to adaptation to climate change and its impact by smallholder farmers in Sub-Saharan Africa, government support smallholder farmers in Lawra District was basically subsidize fertilize to the farmers in Lawra District. Financial support to farmers is scares in the district.

In the district, rural communities received more support, which was in the form of kind from government than those in urban communities. The rural communities are significantly satisfied than the urban communities from external support provided by various organizations.

### 5.5 How Remittances support the various forms of adaptation

Remittances were mostly received once a year by farmers in the Lawra District. Belal (2010), also finds that a large majority of migrants remit at least once a year. Most of the remittances received were in the form of cash. Quartey (2006) confirms that the proliferation of money transfer institutions in Ghana (both formal and informal) and the rapid growth in the volume of such remittances makes remittances important to Ghana's economy. Cash is easily transferred especially with the introduction of Mobile Money by the Telecommunications in Ghana. Sending or receiving remittances through Mobile Money may be due to the convenience, cost and safety of sending and receiving cash. Migrants transfer money from the wallet on their phones to the wallets of their relatives. The money is withdrawn from Mobile Money vendors in communities and any financial institution that engages in Mobile Money transaction. The comfort and security with Mobile Money were explained by a respondent as follows;

*"First, it used to happen that they send things home but now due to mistrust and the cost of transport, they no more send it down to us. Sometimes due to the nature of our roads nowadays, armed robbery and all those things, it is safer to come with them but sometimes when they are coming, they attack them and take everything away. So now it is not safe. So, they don't send them anymore but send money rather. If there is the need send items, they rather come with them, whatever they have"*

Remittances received by both urban and rural smallholder farmers are considered inadequate for embarking on adaptation strategies that require investments. It is observed that some farmers in rural areas received GH¢1000 or more as remittances as compared to farmers in urban areas. No the farmer in the urban areas received remittances worth GH¢1000. Meanwhile the analysis of the income of farmers indicates that some farmers in the urban areas made more than GH¢1000 as compared to farmers in rural areas who did not make up to the GH¢1000.

Just like the revenue from farming, majority of respondents receive GH¢300 or less as remittance. It is the same issue with the urban and rural areas. Majority of those in both urban and rural areas received GH¢300 as remittances.

Adaptive capacity is considered using the five livelihood assets namely; Human, Social, Physical, Natural and Financial capitals. The expenditure pattern of remittances was used to examine adaptive capacity using the five livelihood assets. The building of adaptive capacity is greatly dependent on resources as stated by Chhetri and Sturm (2014). The argument by Bebbington (1999) that building of adaptive capacity of a household is by expending its assets base applies in this study. The asset includes tangible assets such as natural capital, social, natural and productive resources used to maintain livelihood.

### 5.4.1 Human Capital

According to Banerjee et al. (2017) based on a study in a flood affected area in India, remittances are mostly used for consumptions such as food and healthcare. In Lawra District, 85.7% of respondents spend their remittances on consumption while 45.9% invest in their healthcare. However, in terms of ranking, healthcare which includes the acquisition of Health Insurance Card, is the third priority of the farmers. According Sayer and Campbell (2003),

Human capital includes healthcare. Comparatively, in terms of ranking, healthcare is the third priority of farmers in urban areas while it is the second priority of farmers in the rural areas.

### 5.4.2 Social Capital

Social Capital according to Clark and Carney (2008) basically includes membership of formalised group, information networks and relationships of trust that facilitate cooperation. These social groups provide opportunity for the farmers to access support for their activities. For example, the Ghana government's programme on agriculture called "Planting for Food and Agriculture" requires that support to farmers must be done in a group and not individually. In the Lawra District, community members belong to groups that usually receive external support from government and other private organization especially NGOs. Part of the remittances received are contributed to the welfare of the group. An example is formalised groups in Zambo Nawayelle that received improved groundnut seed from an NGO. Others part of their remittances on funeral donations. The funeral donation which is usually contributed based on the membership of social groups. This corroborates with the reasons migrants in the various destination gave for sending remittances home. Some revealed that they sometimes sent remittances home for funeral contribution and welfare dues of groups their relatives belong to.

### 5.4.3 Physical Capital

The physical capital includes infrastructure that facilitate farming activities. Road networks that connect farming communities to markets and other places. It also includes irrigation facilities in farms. In the Lawra District, remittances are considered insufficient to be invested in capital-intensive projects such as irrigation schemes. Farmers rather invested in other related farm

inputs such as cutlasses, hoes, fertilizer and agrochemicals. Abdul-Razak & Kruse (2017) in Northern region of Ghana, found that infrastructure was ranked least important to smallholder farmer's adaptive capacity. This study corroborates with the finding of Banerjee *et al* (2011) where remittances were not invested in infrastructure because of the volume received.

### 5.4.4 Natural Capital

Natural Capitals are the impact of natural environment perturbation that affect agricultural activities. Farmers do not have control of these natural calamities such as flood, drought and soil infertility but can only respond. Fletcher and Taylor 1992; Musah-Surugu have all found out their study that remittances are used by households to increase production and improve the use of farm inputs like hiring of labour, tractors and land and increase the acquisition of improved seeds. In Lawra District, remittances are invested in agricultural activities which includes the acquisition of fertilizer to nourish the soil. An example is the support received from government in the form of subsidized fertilizer. The small amount of remittances supports farmers to access the subsidized fertilizer.

### 5.4.5 Financial Capital

Financial Capital lays the foundation for building and improvement of other four (4) capitals. Credit, savings and remittances are examples of natural resources. Poor farmers need some financial resources to facilitate the building assets in order to adapt to environmental impacts. Financial capital helps people to diversity and embark on alternative livelihood. Contrarily to the finding of Barnett and Webber, (2009), this study found that farmers did not indicate that they assessed credit through financial asset, but they have admitted they have diversified their

livelihood using remittances. In Lawra District, 36 percent of farmers have admitted that remittances have helped them to diversify livelihood. The alternative livelihood engaged in includes trading and apprenticeship. Quartey (2016) asserts that remittances from migrants have been significant to the increasing of income of Ghanaians who receive them, especially during economic challenges.

The IPCC (2014) definition of adaptation as the process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. Tacoli (2011) that indeed remittances reduce poverty levels and improve resilience. Remittances have contributed to the building of the farmers' adaptive capacity in the Lawra District. However, this is not to suggest that adaptation strategies were successful.

### 5.4 The Motive and Perception of Migrants

Migrants migrated to their various destinations because of educational and job opportunities. Another reason why migrants migrated includes a link at the destination of migrants. This agrees with Caldwell (1968) that another important determinant of the likelihood to migrate includes availability of contact of friends or relatives at the destination. According to Boakye-Yiadom (2008), although rural-urban migration has its disadvantage, it enhances the welfare of migrants and their households. Migrants have seen migration as beneficial to them and their family. This may because of the available opportunities in their destinations.

Gilbert, a migrant in New Dorman said

*"Yes, I have benefited in so many ways when I decided to move here. I gain more knowledge because I meet people from diverse background. It has given my family so much respect at home. Those who migrate during dry season use me as a contact point to labour for three months and go back. Those who migrate here temporary even learn different languages. That makes them different from those at home."*

The revelation from Gina corroborates with the New Economic Labour Migration theory that family members implicitly enter into a contractual arrangement which occurs, perhaps, through the sharing of the cost related to the entire processes of migrating. As the theory notes, there as instances where migrant overhead costs for education, housing, and other prefunding are entirely bonded by family members. The migrant is thus psychologically bonded to remit back home when duly employed. In effect, migrants adhere to the contract and remit home. This confirms Stark (1991) assertion that the decision to migrate is not only as a consequence of income gap but responds as well to other individual or familial incentives.

On the motive of remitting home, almost all the migrants remit home to support the upkeep of their relatives at home. Gilbert, a migrant in New Dorman in the Brong Ahafo Region was the only one that remitted home to support farming activities of his relatives. This might because he has relocated his parents to his destination. He indicated that he supports only agricultural activities with farming tools and agro-chemical products. Apart from Gilbert, all the remittances from migrants go into consumption and other activities that are not directly on agriculture.

The results from the qualitative study of the migrants reveal that most migrants assume that their remittances are used for the intended purposes. Only one of the respondents admitted that he doesn't know how his remittances are being used but it is basically for upkeep of his relative. Migrants affirm their commitment to remit home even if the remittances are not used for intended purpose. One of the respondents said;

*"Even if they don't use it for intended purpose, I will continue to remit because they need it. I will still support because I see it as a responsibility to support."*

This study found out that four out of the five migrants perceived that their remittances do not meet the needs of their household back at home. Only one assumed that their remittances meet the needs of their household. When asked whether they think their remittances sent home meet the needs of the household, one of the respondents said:

"*Yes, because I send what they request for. No one calls that he/she needs money for food, they request for money and goods to support their farming. And I know the season too."*

It was observed that the migrant who perceived that his remittances meet the needs of the household remits purposely for agricultural and other activities apart from upkeep of the household. Those migrants who remit on the purpose of upkeep of their households admit that their remittances do not meet the needs of their households.

# CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

## 6.0 Introduction

This chapter presents a summary of the study. It also presents the conclusion and recommendation of the study.

## 6.1 Summary and Conclusion

The impact of climate change is evident in Ghana. It is severe in the Northern part of Ghana. This has exacerbated the poverty in the northern part of Ghana including Lawra District. As stated by the GSS report (2014) that environmental factor is the cause of migration of the youth from the district, migration is seen as a coping strategy in the Lawra District.

The study revealed that smallholder farmers in both rural and urban areas have demonstrated clear knowledge on climate change and the impact on their farming activities. Reduced rainfall, long drought and unpredicted rainfall were some of the changes that were observed by farmers in urban and rural areas.

It was observed that the farmers do not make enough revenue from farming activities. Majority (87.2%) of farmers made GH¢300 (US$69) or less in the previous farming season. Farmers in urban area made more income than those in the rural area. Some farmers in the urban area made more than GH¢1,000 (US$227) while none of the farmers in the rural areas made more than GH¢1,000 (US$227). The expenditure pattern of the revenue revealed that farmers prioritized education. Farmers in urban area give some attention to agriculture as compared to those in the rural area.

It was also revealed that farmers received some forms of support mostly from government of Ghana and NGOs in the form of items. Remittances received by farmers even though not enough contribute to the adaptation capacity of farmers. Majority (76%) of farmers receive less than GH¢300 (US$69) as remittances. Respondent who received GH¢1,000 (US$227) or more were from the rural area. No respondent received GH¢1,000 or more from urban area.

The study reveal that remittances sent by migrants to relatives in the Lawra District contribute to the adaptive capacity of smallholder farmers. The study considered adaptive capacity in the context of five capital assets of farmers namely; Human, Social, Physical, Natural and Financial. Remittances contribute to the five livelihood capitals of farmers which resulted in more income, increase well-being and improved food security. This supports the Agenda 2030 which is the Sustainable Development Goals 1, 2 and 3.

Again, the analysis of the expenditure pattern and the discussions from the FGD indicate that farmers in the Lawra District are engaged in reactive or responsive adaptation.

Migrants migrate out of the district in search of opportunities which were not available in the Lawra District. Migrants mostly remit cash to their households. Remittances are sent home to improve the welfare of their households. The migrants who remit home also believe that remittances sent home are used for intended purpose and meets their household needs. Remittance provides so many opportunities for farmers. It builds the local economy and the adaptive capacity of smallholder farmers no matter how small it is in the Lawra District of the Upper West region.

## 6.2 Recommendation

Based on the findings of this study, the following recommendations are proposed;

- Since farmers have some knowledge on climate change and its impact, there is the need to assist farmers, especially those in rural areas with some education with technical and scientific information on climate change and adaptation. This will improve their farm management activities. E.g. Information on climate forecast
- Even though NGOs have supported the farmers in the district, the smallholder farmers still need support. Individuals, organizations and institutions should canvas for more support for the farmers in the district. There should be follow-ups on and monitoring of support that is given to farmers. This will help in assessing the impact of the support on the farmers and their activities.
- It was clear from the study that apart from lack of funds to support the farmers' adaptation, farmers also lack the technical knowhow to engage in sustainable agricultures and adaptation. For example, some farmers lost their crops because they lacked the technical knowhow to apply fertilizer. Therefore, accurate and timely technical support of extension officers is very important to the farmers to educate them to consider prioritizing some of their revenue into farm activities. Technical support to the farmer will help strengthen their adaptive capacity.
- Dams must be constructed with irrigational facilities attached to it. This will give opportunity to the youth to farm throughout the year and will limit the out-migration in the district.
- The population who migrate down-south to labour are mostly youth. There is no Technical and Vocational Institutes in the Lawra District. Government should

consider establishing Technical and Vocational school in the district. The Technical and Vocational school will give young men and women skills that can earn them income apart from farming.

- The complaints on the insecurity of the roads to the Northern part of Ghana where there were incidents of robbery should be addressed. This makes remitting kind home very difficult because of the fear of armed robbers. If not, there should be a vigorous campaign to encourage remitting cash as remittance.
- Finally, the Ghana National Climate Change Master Plan Action Programmes for Implementation: 2015–2020 must be strictly adhered to and implemented swiftly in the Lawra District. The document contains feasible action plans that can alleviate the plight of farmers in the face of the challenges of climate change.
- The issue of migration and remittances is a very important issue that should be looked at thoroughly. A further research should be conducted where both receivers and non-receivers of remittance can be studies.

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# APPENDICES

## Appendix A1: Questionnaire for Migrant Household that Receive Remittances

### QUESTIONNAIRE

### UNIVERSITY OF GHANA

### CLIMATE CHANGE AND SUSTAINABLE DEVELOPMENT

This questionnaire is designed to solicit information to undertake academic research on the topic: ***the role of remittances on the adaptive capacity of smallholder farmers in the Lawra district of the upper west region***. I therefore seek for your consent and corporation to participate in this survey. Please your participation in this survey is necessary but voluntary. You are at liberty to decline your participation in this survey without any penalty. You are assured that all information provided will be handled with strict confidentiality in compliance with research ethics and good practice.

**This questionnaire is to be answered by smallholder farmer households that receive remittances.**

Respondent phone number: Community:

…… ……

Name of Interviewer: Date of Interview:

…… ……..

### SECTION A: DEMOGRAPHIC DATA

**Please, Select Appropriate Option(s) by Ticking *(√)***

1. Sex: 01=Male [ ] 02=Female [ ]
2. Age

   01= 16-25[ ] 04= 46-55 [ ] 07= 76-85 [ ]

   02= 26-35[ ] 05= 56-65 [ ] 08= Others…….

   03= 36-45[ ] 06= 66-75 [ ]
3. Level of Education

01= No formal Education [ ] 05=SSSCE/WASSSCE/GCE 'O'LEVEL [ ]

02=Primary [ ] 06=Tertiary [ ]

03=JHS/Middle [ ]

04=Technical/Vocational [ ] 07= Other (please specify) ……..

4. Religion: 01= Christian [ ] 02= Islam [ ] 03= Traditionalist [ ] 04= Others, specify ……..
5. Ethnicity:

   01= Dagaaba [ ] 04= Lobi [ ]

   02= Sisala [ ] 05= Others, specify ……

   03= Waala [ ]

6. Any form of disability?

   01= Yes [ ] 02=No [ ]

7. If yes to Q6, please indicate

   01= Sight [ ] 04= Speech [ ]

   02= Hearing [ ] 05= Other (Please Specify) …….

   03= Movement [ ]

8. Marital Status: 01=Single [ ] 02=Married [ ] 03=Divorced [ ] 04=Widowed [ ]
9. Type of household

   01= Male headed household with single wife [ ]

   02= Male headed household with multiple wives [ ]

   03= Male headed household divorced widowed, single [ ]

   04= Female headed household divorced, widowed or single [ ]

10. Size of household …….
11. How long (in years) have you been in the district?……years
12. Were you staying somewhere before moving to the district?

    01=Yes [ ] 02=No [ ]

13. If yes to Q13, where were you staying? …….
14. What type of house do you live in?

    01= Block [ ]

02= Bricks [ ]

03= Mud [ ]

04= Wooden [ ]

05= Others (specify) …….

15. What type of household do you live in?

01= Family house [ ]

02= Rented house [ ]

03= Self built [ ]

04= Caretaker [ ]

## SECTION B: FARMING INFORMATION

1. How long have you been farming? …… months/years
2. What type farming do you engage in? Tick (√) as many applied by indicating the following

| **Crop Grown** | **Purpose for Farming (D=Domestic S=Sale)** | **Farm Size (acres)** | **Animals** | **Domestic/Sale (D=Domestic S=Sale)** | **Number of Animals** |
|---|---|---|---|---|---|
| Yam | | | Goat | | |
| Millet | | | Sheep | | |
| Maize | | | Poultry | | |
| Soya Beans | | | Guinea fowl | | |
| Groundnut | | | Cattle | | |
| Potatoes | | | | | |
| Cowpea | | | | | |
| Beans | | | | | |
| Others | | | | | |

3. Is Farming your only source of livelihood?

   01= Yes [ ]
   02= No [ ]

4. If no, what other form(s) of livelihood do you engage in?
   ……

5. Between the livelihood activities mentioned in Q(3) and Q (4) above, which one gives you more income? ……..

6. Apart from your activities mentioned above, do you have any other source of income?

   01= Yes [ ]

   02= No [ ]

7. If yes, what is the source of the income? ……

8. Estimate your annual income from farming from the last year's farming season?

   01= < GH¢100 [ ]

   02= GH¢100-300 [ ]

   03= GH¢400-600 [ ]

   04= GH¢700-900 [ ]

   05= >1 GH¢1000 [ ]

9. What do you use the greater part of the money you make from farming for?

   01= Pay Fees [ ]

   02= Health care [ ]

   03= Building [ ]

   04= Business [ ]

   05= Utilities [ ]

   06= Farm Activities [ ]

   07= Others, specify ……

**SECTION C: SOURCES OF SUPPORT TO FAMERS**

1. Do you receive external support for your farming activities?

   01=Yes [ ]

   02= No [ ]

2. Which kind of support do you receive?

   01= Financial [ ]

   02= Items [ ]

   03= Technical support [ ]

   04= Others ……..

3. Does the support meet your needs?

   01=Yes [ ]

   02=No [ ]

   03=Somehow [ ]

4. What are the sources of the external support (s)? *State all that apply*

| **Source** | **Type of Support** | **Frequency at which it comes** | **Adequate/Inadequate** |
|---|---|---|---|
| Family and Friends | | | |
| NGO | | | |
| Government | | | |
| Cooperatives societies | | | |

## SECTION D: FORMS OF REMITTANCES

1. Who has/have migrated from the household? *Tick as apply (√)*

   01= Husband [ ]

   02= Wife [ ]

   03= Daughter/Son [ ]

   04= Sibling

   05= Others, specify…….

2. How many people migrated from the household? ……..

   Please answer the following questions

| **3.Name of Migrant** | **4.What Reason for Migrating** | **5.The kind of activity the migrant is engaged in. (Type of work, school etc)** | **6.The destination of the migrant** | **7.How long has the migrant migrated ?** | **8. Does the migrant intent stay long?** |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |

9. How would you describe the migration of the migrant one (1)?

   01 = Permanent Migration [ ]

   02 = Migrates once or twice a year depending on the season [ ]

   03= Migrates often for short period [ ]

   04= Other, specify …….

10. How would you describe the migration of the migrant two (2) if any?

    01 = Permanent Migration [ ]

02 = Migrates once or twice a year depending on the season [ ]

03= Migrates often for short period [ ]

04= Other, specify …….

11. Which form of remittances do you receive?

01=Cash

02=Kind

03=Both

12. If cash, how much have you received in the form of remittance from last farming season till now?

01= <GH¢100 [ ]

02= GH¢100-300 [ ]

03= GH¢400-600 [ ]

04= GH¢700-900 [ ]

05= > GH¢1000 [ ]

13. How do you receive it?

01= Mobile money [ ]

02= Drivers [ ]

04= Migrant brings it when he/she visits home [ ]

05= A friend or relative coming home [ ]

06=Other, specify ……

14. If Kind, how do you receive it?

…….

15. If Kind, which items do you receive? State all that apply

…….

## SECTION E: THE USAGE OF REMITTANCES

1. Who usually receive the remittances?

   01=Father [ ]

   02= Mother [ ]

   03= Siblings [ ]

   04= Wife [ ]

   05= Husband [ ]

   06= Others, specify …….

2. How many times do you receive remittances in a year?

   01= Once [ ]

   02= Twice [ ]

   03= Three times [ ]

   04= Other, specify ……..

3. What are the major things you spend your remittances on? *Tick as apply (√)*

   01=Consumption items such as food [ ]

   02=Clothing [ ]

   03=School fees for children [ ]

   04=Health or medical care needs [ ]

   05=Investment in agriculture [ ]

   06= Other, specify ……

4. If your remittances going into your agricultural activity, what specific farming activities did you spend your remittances on?

   ……

5. Who ensures the remittance received serve its purpose?

   01= Household head [ ]

   02= The migrant [ ]

   03= Anyone in the household [ ]

6. Have the remittances received over the past one year used for the intended purpose?

   01=Yes [ ]

   02=No [ ]

7. If no, why? ……

## SECTION F: ROLE OF REMITTANCE ON ADAPTIVE CAPACITY

1. Have you noticed any changes in the weather pattern?

   01= Yes [ ] 02= No [ ]

2. What have you noticed about the weather pattern? Tick all that apply

   01= Reduced rainfall [ ]

   02= Long drought [ ]

   03= Unpredicted rainfall pattern [ ]

3. If yes, do you think it has affected your farm?

   01=Yes [ ] 02= No [ ]

4. If Yes, how did it affect your farm?

   ……

   ……..

5. How have remittances helped to minimize the impact on your farm?

   ……..

6. Do you think remittances have improved the economic status of the household?

   01= Yes [ ]

   02= No [ ]

7. If yes, please explain. *Tick as apply (√)*

   01=Family is able to meet their basic needs such as adequate food and clothing ( )

   02=Family can pay for health care services [ ]

   03=Family can pay for school fees of children [ ]

   04=Family upgraded their house [ ]

   05=Family can afford a few luxury items [ ]

   06= Alternative livelihood [ ]

   07= Improve access to farm input (eg fertilizer, irrigation etc) [ ]

   08= Family has improved on farming activities [ ]

   09=other (Specify)……

8. Were there occasions you didn't receive remittance?

   01= Yes [ ]

   02= No [ ]

9. If Yes, how did you support your activities?

   ……..

10. Comparing the seasons you did not receive remittance and the seasons you received, how were your activities been affected?

    01= Improved [ ]

    02= Still the same [ ]

    03= Deteriorated [ ]

    04= Worsen [ ]

## Appendix A2: Migrant's Questionnaire

### QUESTIONNAIARE FOR MIGRANTS

**University of Ghana**

**Climate Change and Sustainable Development**

This questionnaire is designed to solicit information to undertake academic research on the topic: ***the role of remittances on the adaptive capacity of smallholder farmers in the Lawra district of the upper west region***. I therefore seek for your consent and corporation to participate in this survey. Please your participation in this survey is necessary but voluntary. You are at liberty to decline your participation in this survey without any penalty. You are assured that all information provided will be handled with strict confidentiality in compliance with research ethics and good practice.

This questionnaire to be answered by migrants who send remittance home

Respondent Phone number: Community:

…… ……

Name of Interviewer: Date of Interview:

…… ……..

### SECTION A: DEMOGRAPHIC DATA

***Please, Select Appropriate Option(s) by Ticking (√)***

16. Sex 01=Male [ ] 02=Female [ ]
17. Age

    01= 16-25[ ] 04= 46-55 [ ] 07= 76-85 [ ]

    02= 26-35[ ] 05= 56-65 [ ] 08= Others…….

    03= 36-45[ ] 06= 66-75 [ ]
18. Level of Education

    01= No Education [ ] 05=SSSCE/WASSSCE/GCE 'O'LEVEL [ ]

    02=Primary [ ] 06=Post-Secondary [ ]

    03=JHS/Middle [ ] 07=Tertiary [ ]

    04=Technical/Vocational [ ]

19. What type of migration have you embarked on?

    01= Temporal [ ]

    02= Permanent [ ]

    03= Not certain [ ]

20. What is the reason for migrating? Tick as apply

    01= Seeking employment [ ]

    02= Seeking education [ ]

    03=To join spouse/ marriage [ ]

    04= Environmental degradation (i.e. drought, erosion) [ ]

    05= Health care [ ]

    06= Extreme event (ie flooding, cyclone) [ ]

    07= Forced due to land acquisition or development project [ ]

    08= Loss of income one season [ ]

    09= Loss of income multiple seasons [ ]

    10= Other (please specify)……

**21.** Why did you migrate to this particular destination? *Tick **(√)** all that apply*

01= Family members here

02= Friends here

03= Middlemen there to help set up work or shelter

04= Employment opportunities here

05= Health services available here

06= Education opportunities available here

07= Other? Please specify

22. As a migrant, has migration benefited you?

    01= Yes [ ]

    02= No [ ]

    Please explain ……

    ……

    ……

23. What work were you doing at home before you migrated?

…….

24. Do you have any business at home?

    01= Yes [ ]

    02= No [ ]

25. If yes, how has migration benefited your business at home?

    01= Positive

    02= Negative

    Please explain……..

    …….

26. What kind of work are you doing as a migrant?

    ……

27. Do you have other source of income apart from your work you are doing?

    01=Yes 02=No

28. If yes, please state the source of the income…….

29. Do you have any other source of income apart from the work you are doing here?

    Please state ……..

30. Do you intern returning home permanently?

    01=Yes [ ] 02= No [ ]

    Why?

    ……

    ……

31. Do you have plans of moving to another place?

    01=Yes [ ] 02= No [ ]

32. If yes, where and why?

    ……

    ……

    ……

    ….

## SECTION B

## MIGRANT'S PERCEPTION ON REMITTANCES

1. How often to you remit home? *(Tick all that apply)*

   01= Every month [ ]

   02= Every four months [ ]

   03=Every six months [ ]

   04= yearly [ ]

   05= When the need arises [ ]

   06= Other, please specify …….

2. How do you send remittances home?

   01= Mobile money [ ]

   02= Drivers [ ]

   04= Migrants who visit home [ ]

   05= A friend or relative coming home [ ]

   06= When you visit home [ ]

   07=Others, specify ……

3. Who usually receive the remittances you send home?

   01=Father

   02= Mother

   03= Siblings

   04= Wife

   05= Husband

   06= Others, specify ……

4. Who is responsible for the disbursement of the remittances you send home?

   ……

5. What is the reason for sending remittance to your household?

   ……

   ……

6. Do you think your remit is being used for the intended purpose?

   01= Yes [ ]

   02= No [ ]

7. If No, will you continue to remit home?

   01= Yes [ ]

   02= No [ ]

8. Please explain…….

   …….

9. Do you think the remittances you send home meets the needs of your household?

   01= Yes [ ]

   02= No [ ]

   03= Don't know [ ]

10. Have you noticed any changes in the weather pattern back at home?

    Yes [ ] No [ ]

11. If yes to Q 10, what have you noticed?

    ……..

12. How has the changes in the environment affected your livelihood?

    …….

13. Is the environmental impact part of the reason why you migrated?

    …….

## Appendix A3: Focus Group Discussion Interview Guide

**UNIVERSITY OF GHANA**

**CLIMATE CHANGE AND SUSTAINABLE DEVELOPMENT**

**Interview Guide for Focus Group Discussion with Smallholder Farmers who receive remittances in the Lawra District**

***To identify the role remittances play in the adaptive capacity of smallholder farmer households.***

**Community: ……..**

**Number of Participants: ……..**

**Gender: …….**

**Duration …….**

**Section A: Perceptions and Impacts of Climate Change**

1. What challenges/problems do you face in your farm activities?

3. Explain how these challenges affect your food production.

**Section B: Forms of Support to farmers**

4. Do you receive any external support? Eg Government, NGO etc

**Section C: Perception of Migration**

5. Do you support the idea of relatives migrating outside the district?

6. If yes or no, why do you support it?

7. Do you think migrants are better off over there than home?

**Section D: Remittance and adaptation**

8. What forms of remittances do you receive?

9. What do you remittances for?

10. How does the usage of remittance help to address the challenges you stated in Q1 above?