

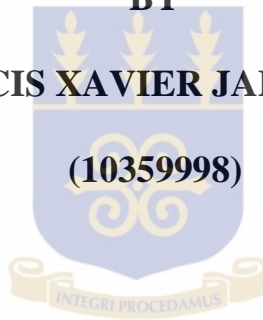
UNIVERSITY OF GHANA
CENTRE FOR MIGRATION STUDIES

DROUGHT AND MIGRATION IN NORTHERN GHANA

BY

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**THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA,
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DECLARATION

I, Francis Xavier Jarawura hereby declare that except for references to other people's works which have been duly acknowledged, this thesis is the result of my independent research conducted at the Centre for Migration Studies, University of Ghana, Legon, under the joint supervision of Prof. Samuel Nii Ardey Codjoe, Dr. Lothar Smith, Prof. Dzodzi Tsikata and Prof. Thomas Akabzaa. I also declare that as far as I know, this thesis has neither in part or in whole been published nor presented to any other institution for an academic award.

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ABSTRACT

Drought is one of the leading environmental challenges to farmers worldwide. Research has shown several response strategies to this challenge but little is known of its relationship to migration. Moreso studies have had little to say of the mediating circumstances leading to drought-induced migration. The research investigates the relationship between drought and migration and how migration decisions are mediated and reflected under drought-induced conditions among households in the villages of Kpalung, Laligu, Tunaayili, Libga and Zaazi in the Savelugu/ Nanton district in northern Ghana. The study does this by examining farmer's perception of drought, the reasons for migration, and the various manifestations of drought-related migration and the processes involved in the decision to migrate under drought-vulnerability circumstances. Results show that farmers perceive drought as generally the lack of rain accompanied by heat which together last long enough to constrain plant growth and result in lower yields or total crop failure. Farmers attributed drought to three main factors; human activities, natural causes and super natural reasons. Generally, farmers see drought as the most important constraining factor to agricultural production. The perception of the phenomenon is therefore largely contingent on the economic, social and cultural circumstances within which people experience it. Farmers' perceptions of drought influence the adoption of migration as a livelihood strategy. The study finds a significant relationship between drought and migration. About fifty one percent of the people who have experienced migration at one time or another mentioned drought as a reason for their migrations. In addition, through a binary logistic regression, the study finds out that drought-related migration is generally determined by sex, availability of irrigation facility in the village and having more land in drought prone area. Males other than females, people whose villages do not have irrigation schemes and people from households with

more land in drought prone area are more likely to migrate because of drought. Migration is used as a coping and adaptation strategy to drought. The study also found that in addition to out-migration, drought also influences return migration. Furthermore, migration experiences may result in immobility during subsequent droughts. Migration responses to drought-vulnerability, however, are mediated by a multiplicity of non drought-related factors. Multiple migration decision-making pathways are encountered by households that consider the general socio-economic and environmental conditions of both sending and destination areas. Drought vulnerability is therefore not a sufficient condition for migration. The study recommends that policies ensure rural farmers have multiple response capabilities to drought vulnerability. Livelihood adaptation or diversification through irrigation schemes is one of the best options to consider given the agrarian nature of the rural communities in northern Ghana. It is also important to enhance the ability of rural communities to conduct agricultural extensification (bush-farming) as it is one of the effective response strategies to recurrent drought. Enhancing bush-farming will involve improvement in transportation between rural villages and also the construction of roads connecting major interior farm-settlements to the nearest villages. Enhancing local coping and adaptation abilities of rural people will remove or reduce the possibilities of households being compelled to rely on migration and make the strategy a choice. It is also imperative to enhance the benefits of migration as a livelihood strategy by ensuring the safe flow of remittances to the origin through establishment of more rural banks for example. The revelations from the study villages of the importance of rural-rural migration as a strategy to deal with drought suggest that rural-rural migration deserves some more attention particularly from migration scholars. This is imperative as farm-livelihood systems are still dominant contrary to the expectations of some scholars in the 1980s and early 1990s.

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CHAPTER ONE

INTRODUCTION TO THE STUDY

1.0 Introduction

Drought has long been an impediment to farmers worldwide albeit in varying degrees. The occurrence and intensity of the phenomenon, according to the Intergovernmental Panel on Climate Change (IPCC) (2007), is being exacerbated by climate change. The IPCC (2007) also points out that although the exacerbation of drought by climate change has and will continue to have both detrimental and positive effects on society poorer regions are experiencing largely negative consequences. Developing countries are the most vulnerable to drought due to growing incidence of poverty and continuous high reliance on rain-fed agriculture (IPCC, 2007; Burroughs, 2007). In Africa, the poorest continent in the world, agriculture comprises the central element of the livelihood portfolios of a large majority of people. It is also a major driver of economic growth (Dalby, 2009). This situation is compounded by vulnerability to multiple shocks and stresses that further diminish the adaptive capacity of farmers to drought (IOM 2007; IPCC, 2007; Leichenko & O'Brien, 2008; Dalby, 2009). Migration is often one of the many strategies adopted by farmers in Africa in response to drought perturbations (Hunter, 2005; Warner et al., 2008; IOM, 2007; IPCC, 2007).

There is an intricate relationship between drought and human migration patterns (Hugo, 1996; Myers, 2002; Hunter, 2005; McLeman & Smit 2006; Burroughs, 2007; Brown, 2008; Foresight, 2011). In 1990, the IPCC already noted that the exacerbation of drought could result in changes in migration patterns (Houghton, et al. 1990). In 2002, Myers estimated that the world could experience 200 million climate migrants by 2050 (Myers,

2002). Although estimates of migration flows from climate change such as Myer's have generally been met with fierce scepticism, they nonetheless, coupled with the general acceptance that climate change is occurring, fuelled the long standing debate on environment and migration (Brown, 2008). This has inevitably contributed to a rising literature on climate refuges, but there is yet a paucity of research on the environment-migration relations (IOM, 2007; Foresight, 2011; Van der Geest, 2011).

Migration is very closely related to environmental factors such as drought but this has yet to be comprehensively established mainly due to the range and complexity of the interactions between the drivers involved; economic, environmental, social and political. (Ezra & Kiros, 2001; Brown, 2008; Foresight, 2011). As a result there exist little studies on the relations between the environment and migration and how environmental related migration is mediated by other drivers (IPCC 2007; Van der Geest, 2011). This study seeks to contribute to the debate by investigating the relation between drought and migration and unravel how migration decisions are mediated under drought conditions among households in the Savelugu-Nanton district in northern Ghana.

1.2 Problem Statement

Drought is a common phenomenon in northern Ghana (Van der Geest, 2004). The region suffers high unpredictable rainfall patterns imposing drought conditions with consequences on crop yield variability and food security (Dietz et al., 2004; Yaro 2004; Laube et al., 2008; Van de Giesen et al. 2010). It is also the region most prone to drought in the country yet its agriculture, which is the main source of livelihood, is largely dependent on rainfall (UNDP, 1997; CIDA, 1999). In addition, the occurrence and

intensity of drought in northern Ghana has been on the rise due to climate change (Environmental Protection Agency (EPA), 2000, Van de Giesen et al., 2010).

In northern Ghana, coping and adaptation to drought take place amidst widespread poverty. The trends of poverty indicate that it has been significantly more widespread and more persistent in the northern part of the country than in the south (Dickson, 1968; Rodney, 1972; Plange, 1979; Bening, 1975; Goody, 1980; Konings, 1984; Rimmer, 1992; Songsore & Denkabe, 1995; GSS, 2000, 2007). Northern Ghana makes up 21% of Ghana's population and stands for as much as 45% of the national poverty in 2006 (GSS, 2007). Northern Ghana has the highest incidence of food insecurity and chronic poverty, largely due to environmental and political disadvantages (UNDP, 1997; CIDA, 1999; GSS, 2000; Hesselberg & Yaro, 2006). Poverty in rural northern Ghana is also more widespread and austere than in the rural south (GSS, 2007). Over the last decade northern Ghana has experienced less growth in the agricultural sector compared to the south (GSS, 2007). Poverty in the region has been attributed to a myriad of factors including agro-ecological, economic, structural and political disadvantages (Songsore, 1992; Yaro, 2006).

Thus, locally-specific strategies in northern Ghana have not been sufficient in rural peoples bid to overcome livelihood constraints as those induced by drought conditions. The agricultural and rural economies seem to provide insufficient opportunities to move people out of poverty (Songsore, 1992; Yaro, 2006). The unreliable agrarian economy in northern Ghana, development neglect, and the failure to successfully adapt locally due to widespread poverty have led to increasing reliance on migration as a livelihood strategy (Abdulai, 1999; Yaro, 2004; Van der Geest, 2004; Awumbila & Ardayfio-Schandorf, 2008). Remittances from migrants are a crucial means of survival during times of

environmental stress (Obeng, 2005; Van der Geest, 2010). Rural farmers from northern Ghana have over the years been attracted to areas of more opportunities particularly areas in southern Ghana. Places of popular attraction include the transition zone, where northerners mainly go to farm (Caldwell 1968; Codjoe, 2006) and other major towns in the south to conduct a multiplicity of farm and non-farm activities (Songsore, 1992; Van der Geest, 2004). Currently, out-migration from northern Ghana is rapidly rising with city locations such as Accra, Kumasi and Takoradi becoming more attractive to migrants (Awumbila, & Ardayfio-Schandorf, 2008) but the role of environmental factors in these movements has yet to be comprehensively established. As stated earlier in the introduction of this chapter, migration is related to a wide range of drivers making it difficult to establish the role of environment factors such as drought yet very little attention is given to it in the literature on human migration. Also little is known of the very nature of the interaction of these drivers particularly those acting in the background. The question of interest here is therefore; what is the role of drought in the process and how are migration decisions mediated under drought conditions among households in the Savelugu-Nanton district in northern Ghana.

1.3 Research Questions

The main research question is: *What is the relationship between drought and migration in the study area and how is it mediated and reflected among households?* In order to achieve this, a number of sub research questions have been set. These are;

- (a) How do farmers in the study area perceive drought?
- (b) What are the patterns of migration in the study area and how is migration related to drought?

- (c) What are the coping and adaptation strategies to drought and how are they related to migration?
- (d) How are migration decisions mediated under drought-related vulnerability circumstances, as in coping and adapting to drought?

The first research question seeks to understand the perceptions of the rural farmers on drought. This is an important step in understanding their responses to the phenomenon as generally, people's perceptions influence their actions (Slegers, 2008). Exploring perceptions of drought is therefore crucial to understanding the relationship between drought and migration. The second question seeks to explore how migration is related to drought. To answer this question, the patterns of migration in the study area are identified and described. Stern (2007) argues that exploring the relations between climate variability and migration in Africa could be done by identifying the existing migration patterns and how climate affects the drivers of these migrations. The impact of environmental change on migration is manifested in existing migration patterns. These The patterns of migration depict among many things the direction, duration, reasons and the importance of capital assets and other factors which facilitate or constrain migration triggered by changes in the environment (De Haan, 1999, 2002). Ascertaining the patterns of migration thus provides a platform to ascertain the relationship between drought and migration in the study area. Knowledge of the relationship between drought and migration ultimately helps to investigate the manifestations of migration as coping and adaptation strategies to drought and the mediation processes involved in the decision to migrate which are the concern of the third and fourth research questions.

The third and fourth research questions seek to understand the extent to which migration is a result of responses to drought vulnerability and the mechanisms resulting in migration as a coping and adaptation strategy to drought perturbations, respectively. Coping strategies are short-term responses to existing perturbations (Davies, 1993). Adaptation strategies on the other hand are long-term responses to expected perturbations which are intended either at improving existing security and wealth or reducing vulnerability (Davies & Hossain, 1997). It is asserted that environmental factors cannot be easily disentangled from the myriad of social, economic and political factors and processes leading to out-migration (Krokkfors, 1995; Lonergan, 1998; Gray, 2009; Van der Geest, 2011). There exist synergistic relations between climate change and climate variability on the one hand and social, ecological, political and economic factors on the other, thus rendering it difficult in singling out climate events as drivers of migration (Haug, 2002; McLeman & Smit, 2006; Morton, 2007; Adamo, 2010; Gray, 2011; Foresight, 2011) and livelihood change as a whole (Yaro, 2006). The effects of an environmental event such as drought on livelihood decisions, including migration, largely depend on the socio-economic situation of the people concerned. The complex interaction of the drivers of migration is the reason why there exist little empirical studies on the environment-migration relations (Van der Geest, 2011). This challenge has culminated in suggestions that livelihood changes in relation to human–environmental systems may be best understood by considering the co-evolution of diverse driving forces (Yaro, 2004; Nielsen & Reenberg, 2009). Thus vulnerability and ability to survive and respond appropriately to the impacts of climate extremes including droughts is dependent on the socio-economic circumstances including the strengths and weaknesses of households as defined by idiosyncratic dynamics and wider processes of change which define wellbeing in general. This way, vulnerability can be seen as one of the best approaches to the study of environment-migration nexus (McLeman & Smit,

2006). Households that are vulnerable to drought respond based on their socio-economic situations. This includes their asset status. The third and fourth research questions are therefore designed to understand how drought as a trigger condition is mediated by non-drought factors to induce or influence migration. The questions also help to investigate the nature of drought-related migration as in coping and adaptation. Here, knowledge on the patterns of migration becomes important point of call as they will be crucial in understanding the manifestations of the migrations. The research questions discussed above are expected to achieve the following objectives at the end of the study.

1.4 Research Objectives

- (a) To explore the perceptions of drought in the study area
- (b) To ascertain the relationship between drought and migration
- (c) To understand the mediation processes involved in the decision to migrate when confronted with drought-related vulnerability circumstances.

1.5 Justification for the Study

Migration is increasingly playing a key role in livelihood change in northern Ghana (Van der Geest, 2004; Awumbila & Ardayfio-Schandorf, 2008) but little empirical research has been carried out to establish its linkages with the environment including drought which is a major impediment to agrarian livelihood in this part of the country. Empirical studies on the environment-migration relations are generally lacking (Van der Geest, 2011). Thus research into the relationship between drought and migration thus becomes a crucial topic to consider in relation to rural livelihoods.

Furthermore, it is postulated that agriculture will remain the main source of livelihood in Africa in the near future. Although many scholars from the mid-1980s have predicted a trend towards deagrarianisation in Sub-Saharan Africa, subsistence farming is still the central element of the livelihood portfolios of the majority of its population, which is largely rural (Ellis, 2000; Yaro, 2006; Morton, 2007). Agriculture is the dominant sector in Ghana's economy and it is dominated largely by subsistence or small scale farmers concentrated in rural areas. More so, in terms of contribution to the Gross Domestic Product, the agricultural sector is principal (Institute of Statistical, Social and Economic Research (ISSER), (2004). Subsistence agriculture is increasingly being perceived as the future rather than an erstwhile model for agricultural development in Africa in times of severe ecological, political and economic changes and challenges (Toulmin & Gueye, 2005). It is therefore crucial to improve our understanding of the challenges to this sector and the strategies adopted by farmers as a way of securing their future.

Outline of Chapters

Chapter one sets the perspective of the study. It provides the background for undertaking the study. The objectives, questions and relevance of the study are explained. Chapter two discusses the literature and theoretical orientation of the study. Literature on drought and migration and the theory of vulnerability are discussed. The chapter ends by presenting a framework for the analysis of drought-vulnerability and migration. Chapter three provides copious information about the study area and also presents the methodology of the research.

Chapter four discusses farmers' perception of drought. Farmers' perception of drought offers an understanding of the peoples' understanding of drought as an environmental phenomenon which inevitably provides a platform to investigate their responses to it. Chapter five discusses the patterns of migration and the relationship between drought and migration in the study area are shown. Drought-related migrations are expressed in existing patterns of migration. This makes it important to investigate the patterns of migration as a means to examining the relationship between drought and migration. Chapter six discusses the mediation processes involved in the decision to migrate and the manifestation of migration as a coping strategy under drought-related vulnerability circumstances. The chapter begins by taking a broader but brief look at coping strategies which is then followed by a focus on migration. The chapter demonstrates the myriad decision making pathways of households and individuals when confronted with drought vulnerability and also the various manifestations of migration. Chapter seven is similar to chapter six in that it also talks about the mediation circumstances resulting in the decision to migrate under drought vulnerability circumstances and the manifestations of migration. However, chapter seven differs from six, in that it presents the mediation processes leading to migration from drought vulnerability circumstances in relation to adaptation. Coping and adaptation although related are different concepts and deserve specific attention in order to obtain in-depth knowledge of them. Chapter eight provides conclusions of the study. It gives a summary of the key findings of the work and also offers some suggestions for policy formulation and further research.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter provides a review of literature. The aim of the chapter is to provide a conceptual and theoretical platform for exploring the research questions of the study. The section enables the adoption of a framework that helps to capture the real circumstances in which people construct and reconstruct their livelihoods in the context of drought in relation to migration.

2.1 Drought

Rainfall variability is the climatic factor that precipitates drought. Generally, drought is a climate condition characterised by temporal deficiency of rainfall significantly below the normal or expected amount in a year, season or month (Van Schaik & Reitsma, 1992). The higher the rainfall variability the more the chances of the occurrence of significant below-average rainfall therefore the risk of meteorological drought evolving into an agricultural drought becomes higher. Meteorological drought is based on the degree of and length of the dry period in the atmosphere. It is a temporary deficiency of rainfall significantly below the average or expected within a specific period such as year, season or month. Agricultural drought is a condition of lack of sufficient water for full plant and animal growth and living which may cause losses in production. Different plants require different amounts of moisture for full growth. This way agricultural drought is relative to specific plants and is more difficult to investigate than the former (Van der Geest, 2004).

Therefore the total amount of precipitation in an area although crucial is considered less important as its distribution within the rainfall season. Thus according to Dietz et al., (2001, 2004), the most pertinent production constrain encountered by farmers engaged in rain-fed agriculture in dry areas is not the low rainfall and the concomitant average low yields, but the large variations in rainfall in terms of its spatial and time elements. That is, between different places and different years and within the rainy season. This is particularly the case in geographical locations where rain-fed agriculture is dominant with little or no irrigation. There are broadly three types of rainfall variation (Van Schaik & Reitsma, 1992). These include spatial, inter-annual and intra-annual variations.

Spatial variability: This has to do with the differences in rainfall from place to place, structurally or proximately (in a given year). Spatial variability occurs when significant differences occur between two places relatively close to each other. When the natural terrain such as a mountain separates two villages, one can expect structural difference in precipitation hence high spatial variability. The village on the weather side may receive more rainfall than the one located on the lee side. In absence of significant physical differentiation between places as the mountain in the example above, rainfall amounts can still vary significantly over short distances resulting in differential annual risk of drought between places relatively close to each other (Van der Geest, 2004).

Inter-annual variability: This concerns the deviation from a long term average or the differences in rainfall between the years. The inter-annual variability of rainfall in a particular year is the standard deviation of annual rainfall divided by average annual rainfall multiplied by 100%. A wide difference in inter-annual rainfall is indicative of wide variability in yields of farmers. The lower the inter-annual variation, the lower the

risk for farmers and the higher it is, the higher the risk of reduced yields. Inter-annual variation then exposes farmers to uncertainty as the occurrence of rainfall year after year is not certain and poses possibilities of drought (Dietz et al., 2001, 2004).

Intra-annual variability: This refers to the seasonal concentration of rainfall or the distribution of rainfall within a year. In the same year or season there are variations in the number of months with sufficient rainfall for plant growth. In most of the semi-arid and sub-humid areas of sub-Saharan West Africa, rainfall is concentrated in one season thus limiting crop cultivation (which is largely dependent on rain) to once a year. In northern Ghana, risk is concentrated in one cropping season. This is the opposite in southern Ghana of where rainfall is mono-modal such that risk is spread between the two seasons. Of all the aspects of climate variation in semi-arid and sub humid areas, drought is the most common consequence (Wilhite & Glantz 1985). The impacts of drought are more generally more pronounced in Africa because agriculture is the main economic activity of the majority of people especially rural dwellers.

Agriculture provides food, income, power, stability and resilience to rural livelihoods (Chambers & Conway, 1992; Mortimore, 1998; Ellis, 2000). The most immediate impacts of droughts on rural livelihoods are therefore felt in the area of crop production and farm yields; national harvests are undermined, thereby reducing household and national food security (Devereux, 2000). Also, livestock are easily lost causing extreme suffering. Droughts and the resultant shortage of water and food insecurity although slow in their realisation can be very detrimental to rural livelihoods (Devereux, 2000). Besides the high reliance rain-fed agriculture, a third of Africa's population reside in drought prone areas and is vulnerable to the impacts of droughts (IPCC 2007). During the mid-1980s,

economic losses from droughts alone amounted to several hundred million U.S. dollars in Africa with serious consequences for especially rural households (Tarhule & Lamb, 2003).

Coleen et al. (2006) classify the impacts of droughts broadly into physical (environmental), economic and social impacts. The physical impacts include damage to natural habitats, plant scorching, increased fire hazards, crop withering and drying, and lack of feeding and drinking water. The destruction of natural habitats by drought according to the IPCC (2001, 2007) can even result in plant and animal extinction (IPCC, 2007). The economic losses generally concern losses resulting from the environmental impacts and include increase prices for farming commodities, expensive imports/subsidies and sale of livestock at reduced market price. The environmental and economic losses, according to Coleen et al., (2006) can have immense social ramifications such as malnutrition and famine, civil strikes and conflict increased conflict among water users and urbanisation arising from migration responses to drought and the move to the non-farm sector by people dependent on rainfall for their livelihoods.

2.3 Drought and Migration

The impacts of drought on migration are myriad in nature but the first general concern by scholars seems to be on whether drought increases migration or not. Generally, there is consensus that drought increases migration both as an immediate (coping strategy) and as a long-term (adaptation) response to the threats of recurrent drought (Findley, 1994; Krokfors, 1995; Mensah-Bonsu, 2003; Obeng, 2005). The severe droughts of 1969-1974 for example resulted in marked population redistribution from the more arid zones bordering the Sahara to cities in and nearer the Sahel. Bryceson (2000) corroborates this observation by noting that rural economies in the drought-prone regions of the sub-

Saharan Sahel have a strong tradition of labour migration which is partly a result of drought. Cleveland (1991) notes that drought is an important push factor responsible for the increasing out-migration of people from the savannah of northern Ghana. The relative abundance of work in commercial agriculture and the manufacturing and service industries acted as pull factors (Adepoju, 2003). In a study of the relationship between the environment and migration in northern Ghana, Mensah-Bonsu (2003) found drought to be the second most important factor responsible for rural out-migration. This is not surprising as the region is generally prone to drought yet rain-fed agriculture proves the source of livelihood for majority of its people.

On the contrary, other studies have shown that drought does not always increase migration. Using longitudinal data, Findley (1994) found that the 1983-1985 droughts in Mali did not increase the level of migration. Even then, more than a half of the families surveyed depended on remittances from members of their families that had already migrated. This is not much of a surprise as migration has long been an adaptation strategy to various constraints including recurrent drought in the Sahel. Remittances from migrants help sustain and improve local livelihoods (Brown, 2008). Similarly, Geets van der (2010) in his study of migration in Ghana found that the droughts in the early 80s did not lead to an increase in migration. Rather there was a decline in interregional migration particularly that of people from the north to the south of Ghana which was and still is the dominant pattern of migration. In addition, as drought does not always present the same conditions or occur under same conditions all the time, it is possible to imagine changes in migration as a response. The droughts in the 1980s in Ghana for example, were a nationwide phenomenon rather than the usual situation where the north experiences a drought while the south does not (Songsore & Denkabe, 1995). As migrants from the north at the time

largely engaged in agricultural labour in the south, one would have logically expected a reduction in migration flow to the south and the return of those who migrated earlier to that region. More generally, it seems unlikely that migration (excluding return) flow between two typically agrarian geographical locations would increase in any direction during severe droughts covering both places.

Drought has also been found to result in other changes in the patterns of migration. Temporal rather than permanent migration is the most common outcome of drought-related migration (Findley, 1994). Findley (1994), in his study in rural Mali during the 1983-85 drought, reported a reduction in permanent migration (i.e, staying away for more than six months), and a general increase in circulation (i.e, staying away between one and six months). However, there was a shift from long-cycle migration (involving long distances and long duration) to short-cycle circulation (which involves shorter distances and shorter duration of stay). The lower cost involved in conducting the latter made it more feasible. The main benefit of increased circulation during drought is that it ensures an increased supply of remittances to the origin. It also allows migrants to participate in the economic and social life of the household as regular members. In contrast, long-cycle migration involves more expenditure and also generally requires a long time planning horizon. For this reason, long-cycle migrations are seen as impractical spontaneous reactions to drought-induced crop failure in rural areas (Findley, 1994). Findley therefore argues from the case of rural Mali that rather than an increase in numbers, it was more likely to see an increase in circulation particularly among women during drought periods (Findley, 1994). Also, studies in Burkina Faso by Schoumaker and Beauchemin (2004) show that long-distance migration reduced during the droughts in the 1970s and 1980s. They, however, found an increase in short distance migration.

Drought-related migration is not a gender exclusive phenomenon. Surveys carried out in Bamako, Mali, show that women migrants were almost equal to that of the male (PUM, 1984, in Findley, 1994). Findley (1994) found out that there was a rise in the migration of women during the drought of 1983-85 in Mali although generally there was not an increase in the level of migration. The explanation follows that households were more in favour of marrying their daughters away as a means of reducing the family's food demand. Families also encouraged women and children to go on culturally accepted visits for the same reason. More so, children were sent to residential koranic schools in other villages.

Drought may also influence the destination dynamics of migration. Findley (1994), reports that migration destinations of Malian migrants shifted during the 1983-85 drought. Prior to the drought, most Malian migrants went to France and the remainder went to places within Mali and other African countries. However, during the drought migrants shifted their main destinations to places within Mali itself. This was primarily in response to the reduced or lack of capital to embark on long-distance migration (Findley, 1994).

2.4 Theoretical Approach

In their influential review of migration theories, Massey et al., (1993) make no mention of the environmental causes of migration out-flow (Van der Geest, 2011). The authors, however, warn that explaining the environmental causes of migration is an extremely complex subject (Van der Geest, 2011). According to the Foresight report (2011), this is the very reason why there is so little empirical work on this matter. An approach that has been very influential in explaining a complexity of this nature is that of vulnerability. Theorisations on the concept of vulnerability therefore become a point of call. The concept of vulnerability has been traced to earlier studies on hunger and famine. The entitlement

approach of vulnerability is said to have set the agenda for research on social vulnerability to famine and extreme events such as floods and drought throughout the 1980s (Bohle et al., 1994). The approach was principally expounded by Sen in the 1980s and argues that societal structural conditions create the entitlement sets of individuals, hence the mediating role of institutions – local and state are the key determinants of vulnerability. Sen translated this notion to explain the causes of food insecurity and famine. To this end the entitlement approach theory essentially displaced the ‘food production failure’ theory as the cause of famine by putting emphasis on the effective demand for food and the social and economic means of securing it (Sen, 1981; Dreze & Sen, 1989).

The amount of food available to a person or household is dependent on their own production, exchange income, gathering of wild foods, community support systems, assets and migration (Frankenberger, 1990, 1992). Inequality in access to resources results in unequal distribution of food and opportunities. Famine is thus determined by the ‘entitlements’ of a person or household (Sen, 1981, 1989). Entitlements are the set of alternative commodity bundles that a person can command in a society using the totality of existing rights and opportunities (Sen, 1984). Entitlements are actual resources or calls on resources within the reach of an individual or household based on either their own production, the assets they own or on reciprocal and non-reciprocal arrangements (Adger, 2003). Individuals and households have endowments which include their own wealth, calls on national social security and reliance on neighbours and kin. They also have exchange entitlement from their labour or income from their labour. The endowment set of a person is then the combinations of all the resources legally owned. These include both tangible assets as land, equipment, labour power, membership of a group etc and intangible assets including skills and knowledge (educational levels) (Osmani, 1993). An

entitlement set thus constitutes all the possible combinations of goods and services that a person can legally acquire by using his or her endowment set. Essentially, vulnerability occurs when there is a lack of sufficient real income and wealth, and when there is a breakdown in other endowments (Adger, 2006). An entitlement set may secure or fail to secure food security for a person or household. If an entitlement set fails to secure adequate quantities of food then an entitlement failure has occurred (Yaro, 2004).

The merit of the entitlement approach is its ability to explain why people have been vulnerable to famine in situations where there are no absolute shortages or no external factors apparently present. This theory therefore places emphasis on the demand side of food rather than on the supply side. According to Dreze and Sen: “Starvation is the characteristics of people not having enough food to eat and not there not being enough food to eat.” (Dreze & Sen 1999, p 1). Thus entitlement failure is the cause of famine rather than the availability of food in totality. The uniqueness of the entitlement approach is thus its robust nature that gives it the capability of capturing social causes of famine, during times of apparent boom and during times of climate catastrophe. Indeed, Adger (1999) explains that many major famines in the last two centuries can be attributed to entitlement failure emanating from government policies or policy failures, sometimes, but not always, in the presence of a natural hazard.

2.4.1 Vulnerability

In general systemic terms, vulnerability refers to the degree to which a system may adversely react to the occurrence of a hazard (Timmerman 1991 in Watts and Bohle, 1993). The causes of vulnerability are myriad spanning from social, economic, political, environmental and historical and structural forces that shape present day livelihood

outcomes (Watts & Bohle, 1993). Hence, the processes of population growth, surplus production, hierarchical appropriation and environmental fluctuation for example are important in shaping the vulnerability. Vulnerability can then be seen as the properties of households that give them away in the advent of a hazard. This way, a natural hazard only becomes a disaster when it hits vulnerable people (Blaikie et al., 1994). The natural event such as drought is a trigger event while the underlying causes of the disaster are to be found in people's vulnerability. The most elaborate discussion of vulnerability according to Watts and Bohle (1993) is provided by Chambers (1989) who lays emphasises on the properties of the system which provide the vents for the emergence of vulnerability rather than the specific empirical forms they assume. According to Chambers:

“Vulnerability though is not the same as poverty. It means not lack or want, but defencelessness, insecurity, and exposure to risk, shocks and stress...Vulnerability here refers to exposure to contingencies and stress, and the difficulty in coping with them. Vulnerability has thus two sides: an external side of risks, shocks, and stress to which an individual or household is subject: and an internal side which is defencelessness, meaning a lack of means to cope without damaging loss.” (Chambers, 1989, 1)

This definition has three main coordinates:

1. The risk of exposure to risks, shocks and stress
2. The risk of inability to adequately cope with risk, shocks and stress
3. ‘The risk of severe consequences of limited capacity to recover’ (Watts & Bohle 1993, 45)

This way, the most vulnerable are those individuals and households who are most exposed to perturbations and also characterised by, the most limited coping capability, the most suffering from the crisis and the least capacity for recovery (Watts & Bohle, 1993). It is to an extent true to say that the poor are those who largely suffer from famine, hunger and

malnutrition (Hunger, 1992 in Watts and Bohle, 1993). However, not all who are considered poor are equally vulnerable to hunger and it is not necessarily the poorest who encounter the greatest risk (Bohle et al., 1994). Income is but one of the factors that determine if an individual will experience hunger or not; this is the heart of Sen's notion of commodity bundles (Watts & Bohle, 1993). The processes which seek to account for why some rather than others are more likely to experience hunger or starvation, defines vulnerability (Bohle et al., 1994). Although poor people are usually among the most vulnerable by definition, a nuanced understanding of vulnerability rest on the disaggregation of the structure of poverty itself (Swift, 1989). Thus poverty cannot be equated to vulnerability. The two are related but not interchangeable. But the close relation makes it prudent to consider vulnerability reduction as fundamental an objective as reducing poverty and might be easier to achieve (Chambers, 1989). Vulnerability thus denotes a negative condition that limits the capacities of people and households to resist certain debilitating events and processes.

Swift (1989) reformulated the entitlement framework by placing at the centre stage the role of investment, stores and social claims in determining the vulnerability of households. The theory postulates that households convert surplus production into investment, stores and social insurance as a buffer for periods of stress. He also places emphasis on reciprocal gestures in the community that help to ensure food security. Household assets play a key role in determining its vulnerability to famine (Longhurst, 1986). Hence the fewer the assets of a household, the more vulnerable it is, than a household with more reserves of assets. Entitlements are now increasingly recognised as outcomes of various negotiations at different levels (local, national and international) among social actors through power relations and debates over meaning (Gore, 1993). Resources such as land

and the rights associated with it are negotiated through the power relations within a society. This stretches from macro and micro policies and laws to intra-household power dynamics. Endowments which include household assets are thus a key determinant of vulnerability. Reciprocal exchange especially in times of crises is also fundamental in the survivability of households (Ellis 2000).

Vulnerability to drought likewise vulnerability to famine, is a prior condition, intricately linked to the social and economic conditions of households. Poverty and vulnerability are thus inextricably linked (Adger, 1999). A summary of the key insight of entitlement approach is that climate extremes such as drought can trigger famine but they will not necessarily do so due to the socio-economic factors that play also a role in determining vulnerability to drought. This way, the physical occurrence of drought will not necessarily translate into difficult and unbearable stress as other variables (social and economic) do play key roles in mediating the prior vulnerability and consequences of it. Responses to droughts such as migration are outcomes of the vulnerability context of households.

Davies (1996) in analysing Chambers' definition of vulnerability differentiates between structural and proximate vulnerability. The former is the result of past proximate vulnerability or conditions while the latter represents the contemporary trends and shocks that individuals and households face. More so these contingencies are experienced in varying ways and degrees by different members and households of the affected population. Swift (1989) uses the term differential vulnerability to capture the notion of asymmetric impacts and the diversity within communities, intra-household, inter-household and inter-regional vulnerability. Similar to this is Adgers' (1999) distinction between collective and individual vulnerability. The former refers to the wider context

where all members of the society are potentially exposed to risks or events or processes by virtue of been part of the group. The latter, refers to specific characteristics of a person or household that may or not render him vulnerable to risks, events and processes. Hence all members of a population may not be equally affected. Those who are negatively affected and find it difficult to recover are said to be vulnerable to those particular events and processes.

stone for the definition of vulnerability does not take away the consequences of the differential use of the term over the years. The landscape of studies of food insecurity and famine reflect generally two strands in the differential usage of the concept of vulnerability resulting mainly from the failure to distinguish between cause and effect (Cutter, 1996). One group prefer to analyse vulnerability of entities to outcomes such as food insecurity and poverty while the causes or shocks that bring about the negative outcome are relegated to the background (De Waal, 1989; Taal, 1989; Swift, 1993; Gerry, 1999; Devereux, 1996). A second group views vulnerability in terms of an external contingency that inhibits the ability of persons or households to maintain or increase wellbeing (Blaikie et al., 1994; Davies, 1996). Getting around this confusion, the International Federation of Red Crescent Societies (IFRC) defined vulnerability as follows:

“Vulnerability is defined as the characteristics of a person or a group in terms of their capacity to anticipate, cope with, resist and recover from the impact of natural or man made hazards. Vulnerability cannot be described without reference to a specific hazard or shock. So the question must always be: vulnerability to what?” (IFRC, 1999, 11).

Explicit in the statement above is the need to discuss vulnerability with reference to a specific hazard or shock. In other words vulnerability has to have a referent indicating the contingencies faced or likely to be faced. Contingencies such as drought may affect everyone within the affected area but not all may be classified as vulnerable as some might not be negatively affected. Also the extent to which different people or households are affected will differ. Vulnerability analysis should then focus on both the internal capacity and the external contingency as a holistic concept encapsulating the difficulty and inability of a unit of analysis in coping or adapting.

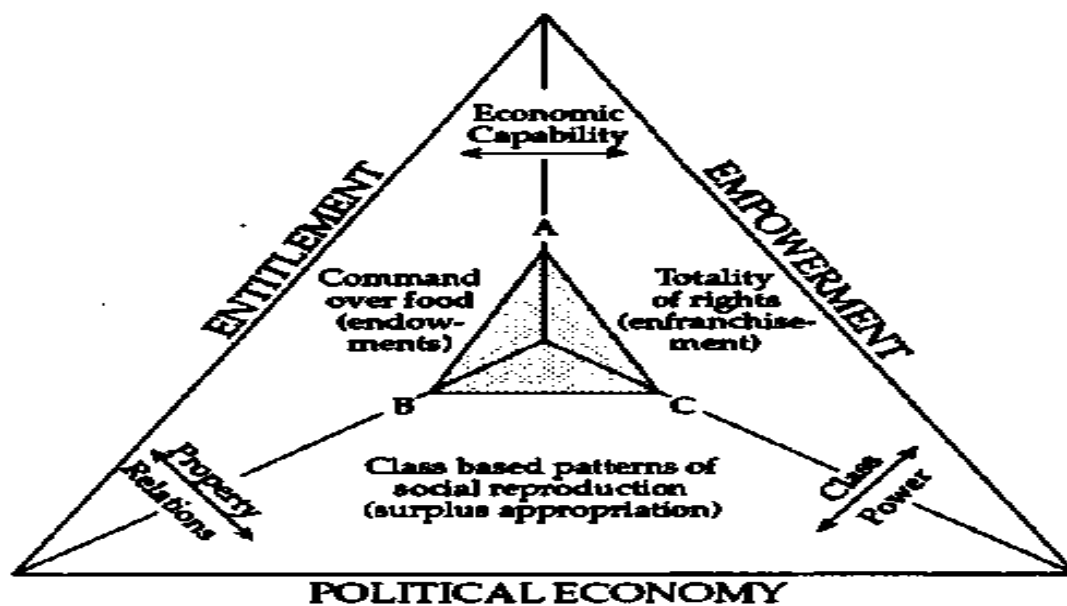
The causes of vulnerability as entitlement failure (Sen, 1981) has been extended by Watts and Bohle (1993) in theorising the ‘the causal structure of vulnerability’. They argue that locally and historically specific configuration of poverty, hunger and famine define what they term ‘the space of vulnerability’ (Watts & Bohle, 1993). They further contend that while Dreze and Sen see entitlements in a wider sense to include not only food intake (biology) but also access to health care and education (the social environment-wellbeing and advantage), they have less to say about capability and the totality of rights that enable people to secure basic needs. Watts and Bohle then conclude that entitlements must be radically extended not only in a social and class sense but politically and structurally (Ribot, 1995). They summarise their argument by stating that for an analysis of vulnerability to go beyond a conjectural analysis, it must encompass the following:

1. ‘the particular distribution of entitlements and how they are reproduced under specific circumstances’;

2. 'the larger canvass of rights by which entitlements are defined, fought over, contested, and won and lost (in other words empowerment and enfranchisement) and;
3. 'the structural properties (crisis proneness) of the political economy which precipitates entitlement crises.'

The totality of these processes summarised above define the space of vulnerability. Thus the mutually constituted triad of entitlements, empowerment and political economy configure vulnerability (Watts & Bohle, 1993). Based on these three complementary approaches, Watts and Bohle diagrammatically present a causal structure of vulnerability as shown in figure 2.1.

Figure 2.3: The Causal Structure of Vulnerability



△ Space of Vulnerability

A Vulnerability by Lack of POTENTIALITY

B Vulnerability by EXPOSURE

C Vulnerability by lack of CAPACITY

Source: Watts and Bohle (1993).

The first of the triad, the entitlement approach draws its inspiration from Sen and Dreze's work which has just been discussed above. The empowerment approach emphasizes that failure to command enough food is a result of limited rights and power from three political domains. These include the domestic domain (intra-household politics); the work domain (production politics) and; the public civil sphere (state politics). The political economy approach employs the notion of class in explaining the historical patterns of entitlement and empowerment in a society. Thus colonialism, commercialisation, proletarianisation and marginalisation are processes that increase and perpetuate vulnerability (Watts & Bohle, 1993). The space of vulnerability is then intersection where these three causal powers determine risk exposure, coping capacity and recovery potential.

A seemingly indispensable insight of the entitlements explication of vulnerability is put forward by Swift (1989). Swift's conception of the role of assets in entitlement analysis is useful in exploring the relationship between drought and migration as responses of rural people need to be examined and these are partly based on their assets. By placing emphasis on the role of assets in entitlements, he throws light on understanding of the complex and dynamic nature of individual and household vulnerability. He assembled assets into two groups: tangible and intangible stores of value or claim, which are categorised into stores, investment and claims. The use of assets in entitlement analysis improves our understanding of vulnerability; that vulnerability analysis must go beyond the notions that production and exchange failures constitute the main pillars of vulnerability. Swifts framework reflects the mitigating role of assets in production and exchange. Rising vulnerability can therefore be seen as synonymous to falling entitlement sets. Scoones and Carney (1998) also extended the earlier understanding of the entitlements approach to formulate the sustainable livelihood approach (SLA) to

vulnerability. Although their explanation comes with a range of sub-concepts, two key concepts can be identified in the SLA. These are 'livelihood' and 'sustainability'. A livelihood comprises the capabilities, assets and the activities necessary for acquiring a means of living. Capabilities imply the ability to bring to realisation one's potential as human being in two ways: 'being', implying for example, adequate nourishment, free of illness and ; 'doing' which include the ability to exercise choices, develop skills and experience among others (Ellis, 2000). Assets refer to capitals that enable individuals and households to conduct livelihood activities. Livelihood assets include human, natural, social, physical and financial capitals. According to Carney (1998), human capital refers to the labour available to the household not only characterised by the number but its education, skills and health. Knowledge, skill, good health and physical capability are all necessary ingredients to the ability to labour and the effectiveness or efficiency that is realised by household labour. The human capital composition of households is dynamic and can be affected by demographic reasons including birth, death, marriage, divorce and migration as well as restructuring in times of unexpected changes to livelihoods (Ellis, 2000). Natural capital comprises natural resource stock including land, water and biological resources that are controlled and utilised by people in the realisation of various livelihood strategies. Social capital refers to social resources (networks, social claims, social relations, affiliations, associations) that people rely upon in their daily tidings and in times of trouble. Physical capital comprises capital that is realised through economic production processes and regarded as a producer good (as an input for production).

A livelihood is sustainable when it is able to cope with and recover from stress and shocks yet maintaining or increasing its capabilities and assets as well as the natural resource base (Chambers & Conway, 1992). Sustainability is defined as the ability of a system to

maintain productivity in face of major adversities, such as that emanating from intensive stress or a large perturbation (Ahmed & Lipton, 1997). In the context of SLA, sustainability not only includes poverty reduction but among others, environmental, social, economic and institutional sustainability. The concept of sustainability is inseparable from vulnerability. The central aspect of vulnerability analysis is the recognition that the extent to which a person or a group suffers from a shock or stress is related to their socio-economic circumstances (Adger, 1999; Glantz, 2000; Dilley & Boudreau, 2001; Adger, 2003, 2006). This is the internal aspect of vulnerability which is referred to as resilience.

Resilience is the ability of a system in anticipating, adapting and coping with unanticipated extreme events yet maintaining its stability, performance and regenerative ability (Ellis, 2000). In essence, a resilient system is one that is not sensitive to climate change and variability (Ostrom, 1998). Sensitivity refers to the extent of socio-economic fragility of a social system. Sensitivity therefore has to do with the intensity of shocks on people. The flip side of sensitivity is resilience. Ability to cope and adapt to shocks and stresses are the central aspects of resilience.

Coping may be defined “as a short-term response to an immediate and un-habitual decline in access to food” (Davies, 1993:60). Coping strategies are *ex post* consumption strategies in the wake of a crisis (Carter, 1997). Ellis (2000) defines coping strategies as the sequence of responses that enable survival when confronted by a crisis or disaster. Common to these definitions is the element of employing interim measures in response to unexpected adversity. These include the strategies for maintaining consumption in the face of disaster such as resort to savings, borrowing, and sale of livestock. Another crucial element common to the explanations following the definitions and explanations of these

authors is that coping is not only geared at ensuring current consumption but future sustainability. Coping is geared at maintaining the varied objectives of individuals and households including livelihood security, consumption, health and status. Typically, coping strategies seek to ensure survival of a person or household yet maintaining ability to generate income in the future (Ellis, 2000). Hence, when confronted with severe difficulty a person or household may compromise present consumption for the sake of future income generation capability. Thus, selling or abandoning assets critical for future survival is embarked upon as a last resort to avoid starvation (Ellis, 2000).

In spite of possessing a sort of sequential adoption, coping strategies are said to be non-discrete stages of responses to crisis. A common trait of earlier works on coping is the assumption that coping strategies were sequential in application. This assumption of sequential uptake suggests discrete stages of responses for dealing with food deficits in the short-run (Van der Geest, 2004). Devereux (1999) asserts that coping strategies are not sequential but overlapping in adoption. According to Devereux (1999), sequential adoption of strategies is not real as the various strategies are characterised by different time relevance. Van der Geest (2004) supports this critique by acknowledging that although there may be some kind of order in how people respond to a crisis but the different responses occur simultaneously as parallel process rather than as sequential events. However, the fact that households are not homogenous entities, imply that at least theoretically it is not possible to completely rule out the possibility of the existence of sequential coping among households.

Another important feature of coping worth noting is that it is not always positive for sustainability of household and pool resources. According to Davies (1993: 61), although coping may be positive or negative it is unfortunately too often seen as “inherently good thing”. Coping may have unintended negative consequences on the sustainability of a households resources. Coping may eventually result in adaptation, that is, a long term response to a perturbation.

Livelihood adaptation is an enduring ‘process of changes to livelihoods intended either at improving existing security and wealth or reducing vulnerability and poverty’ (Davies and Hossain, 1997: 5). This way, adaptation strategies as opposed to coping strategies can be seen as long term strategies embarked upon to either improve security and wealth accumulation or, avoid or reduce adversity from anticipated hazards. Adaptation may either be positive or negative. It is positive if it is voluntary and can be reversed and normally results in increased security and sometimes wealth. Adaptation is negative if it is forced, irreversible and rarely results to a lasting reduction of vulnerability usually among poor people (Davies & Hossain 1997).

Perhaps the major link between coping and adaptation is that coping strategies may evolve into adaption strategies over time. According to Davies coping strategies can eventually become absorbed into the normal cycle of activities thus rendering them adaptation strategies (Davies, 1993). Migration is one of the coping strategies of rural people that have overtime evolved into an adaptation strategy (Carney, 1998). A critical feature of livelihood adaptation is livelihood diversification.

“Rural livelihood diversification is defined as the process by which rural households construct an increasingly diverse portfolio of activities and assets in order to survive and to improve their standard of living.” (Ellis, 2000: 15)

Diversification can thus be an outcome of failure of previous livelihood strategies or a bid to enhance the accumulation of wealth or fortified security against threats (Swift & Kate, 2001). Diversification is an important potential outcome of adaptation. A rural farmer obtaining a salaried job as a watchman in a nearby town as a means to increase his income and ability to ensure food security for his household is an example of livelihood diversification. This certainly increases dissimilarity in his sources of income and reduces reliance on own production. Adaptation diversification, however, does not necessarily signify an end to crisis. Although the salary of the watchman may reduce his vulnerability to own production failure it may increase his vulnerability to inflation through hikes in food prices. But the striking feature about this scenario is that the farmer is likely not to experience total failure in terms of returns from both sources at same time. Thus he is better insulated against food insecurity resulting from drought and consequently failure of own production than a fellow farmer relying only on own production farming.

According to Barrett et al., (2001) diversification of assets, activities and income is an outcome of responses to ‘push and pull factors’. The ‘push factors’ comprise of risk reduction, diminishing returns to capital (example, family labour supply in the presence of land scarcity due to population pressure and land fragmentation), liquidity constraints and high transaction cost in rural economies. The ‘pull factors’ include the realisation of: strategic complementary benefits of two or more activities such as those arising from the integration of crop and livestock, specialisation warranted by comparative advantage and aided by superior technology, skills or endowments. The postulation of push and pull

factors can be likened to Davies (1996) categorisation of survival and choice as they clearly denote necessity and choice as factors responsible for diversification efforts. These two categories signify risk management and coping strategies. Coping strategies have already been discussed earlier in this section as *ex post* strategies to shocks. Risk management denote *ex ante* responses arising from the bid to spread risk to anticipated failures (Ellis, 2000).

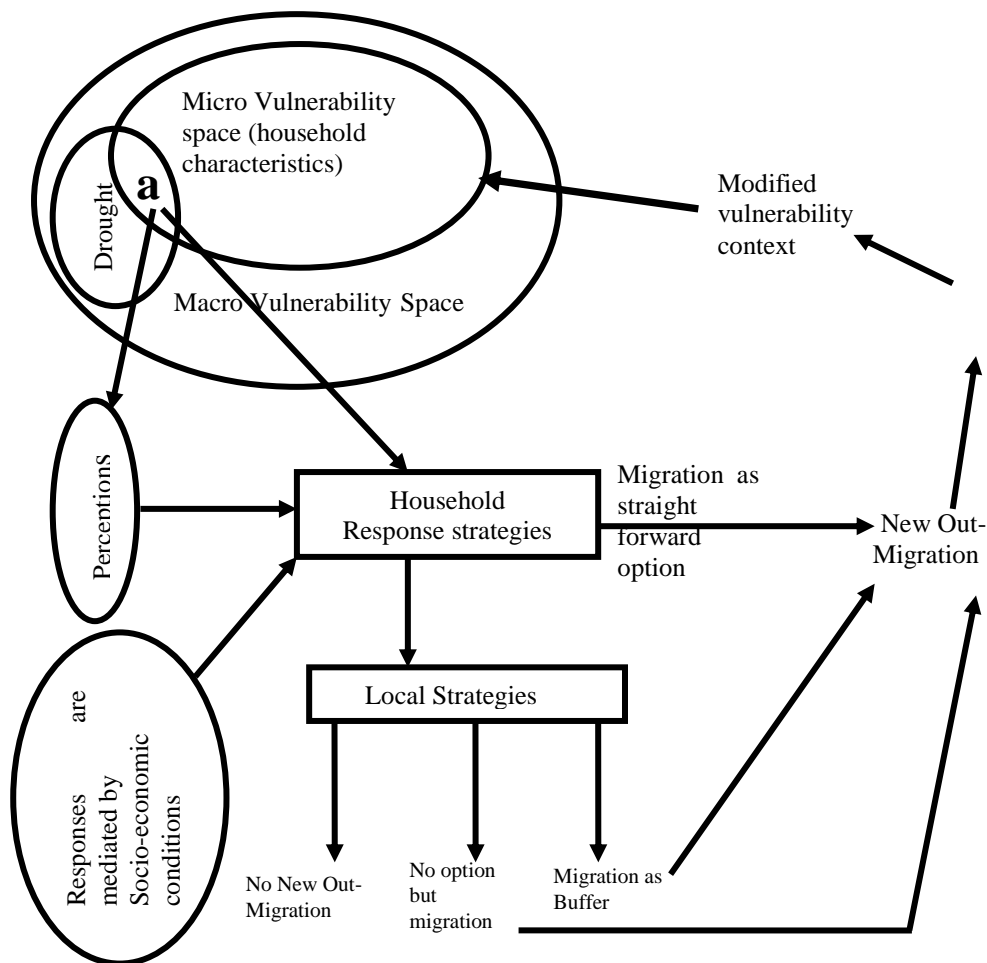
2.5 Conceptual Framework

These foregoing discussions have centred on key aspects vulnerability. Major ideas from all the discussions are put together in a conceptual framework to guide the research process. Figure 2.2 outlines the conceptual framework guiding the investigation into the relationship between drought and migration. As shown in the framework households construct their livelihoods on the basis of vulnerability, the shocks, trends and seasonality and assets available to them and in the context of transforming structures and processes: broader socio-economic and physical factors that represent insecurity to which poor people and their assets are vulnerable (Scoones, 1998).

Although the main manifestations of climate change as in climate extremes are of a physical nature, their consequences transcend ecological, social, cultural, political and economic impacts (Adger & Kelly, 1999; Mendelsohn et al., 2006) which are crucial in shaping prospects for livelihood outcomes including food security, health security and population mobility. Analysis of responses to vulnerability to droughts must therefore make room to identify a range of possible associated factors in the decision to migrate.

The framework is the fusion of the main ideas from the foregoing theoretical discussion and those of McLeman and Smit (2006) which were mentioned in chapter one. Drought vulnerability is conceived as a consequence of ecological factors, climate change and social and economic and political factors operating at different levels which may cause undesirable changes to entitlement sets of households thereby rendering them vulnerable to drought.

Figure 2.2 Conceptual framework: Drought Vulnerability and Migration



Source: Author's construct

Vulnerability to drought is bound to generate responses from households as actors who seek to secure sustainable livelihoods. Population migration is among the many possible

responses rural people may choose or be forced to adopt. These responses may be geared at either coping or adapting to drought. Thus by this the research hopes to identify the extent to which migration is a response to drought induced perturbation as well as the processes involved.

The framework depicted in figure 2.2 starts off depicting the interaction of forces that give rise to vulnerability. Vulnerability consists of two spaces, the macro space and the micro space. Historical factors, political factors, contemporary policies, macro-economic conditions, terms of trade, climate, demographic trends and social differentiation are all important aspects of the macro vulnerability context of a household (Scoones and Carney 1998; Swift & Kate, 2001). These are trends and events that everyone is exposed to but some are more exposed than others. The macro space of vulnerability is best identified and described rather than measured (Adger, 1999). Hence, the study only describes some elements of the macro space including drought. The current state of households in terms of their assets and capabilities, that is their endowments, and their entitlements consist of the micro space of vulnerability. This space is influenced by the macro space to which everyone is subject albeit in varying ways and degrees. The context of vulnerability, that is, the trends, shocks and seasonality (macro level factors) and household assets (micro level factors such as age, sex and land size) together define the opportunities and constraints at any one time (IFRC, 1993; Scoones, 1998). This is what creates vulnerability to drought at some point in time which command responses from affected people. The responses to drought vulnerability are however the major point of interest. The study does not intend to measure vulnerability. Rather, it seeks to qualitatively understand the vulnerability context which prompts migration responses. The study assumes that the vulnerability context of a household is the point of departure to

understand how migration decisions are mediated. Drought vulnerability circumstances are mediated by various socio-economic factors such as perceptions and asset status to determine the strategies that households and their individuals adopt. Also, the research looks into the experiences of households and it is not necessary to measure previous vulnerability in order to understand migration responses to droughts in the past.

The framework assumes that vulnerable households are not passive but active actors in society and do respond to drought induced perturbation in various ways including migration. In the framework drought vulnerability (**a**) emerges from the intersection between droughts (an external threat within the macro space of vulnerability) and the internal space of vulnerability, that is, household characteristics (which are relevant in mediating the threats from droughts). The framework indicates two main ways in which the responses to drought-related vulnerability may result in migration. It may be a straight forward choice or an outcome of performance of sedentary or local coping and adaptation strategies. If migration is seen as a viable strategy then it may be a straight forward choice and may be the main source or a buffer to household income and food alongside other strategies. Conversely migration may be as a result of the outcomes of local coping or adaptation strategies. Local strategies may or not be enough to deal with drought-related vulnerabilities. The community for example may be able to cope or adapt with local resources (McLeman & Smit, 2006). In this case, there may not be new-out migration. It may also be that local strategies are insufficient but the household and its members are constrained to migrate. A failure or insufficiency of local strategies at ameliorating vulnerabilities to drought may result in migration of members of or an entire household temporally or permanently. Migration may also be adopted as a buffer or as a last resort with 'no option but migration'.

The module also holds that migrating members may return. The out-migration and return of members is assumed to result in a modification of the vulnerability contexts of households in community. However the consequences of these processes on the community are not a priority to this research but may be briefly visited in order to help give a holistic picture of relationships.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter presents first, the characteristics of the study area and second, the methodologies used in the study. The study was conducted in the Savelugu/Nanton District and involved five villages. These are, Kpalung, Laligu, Libga, Zaazi and Tunaayili. The Rural Participatory Appraisal technique and the quantitative technique of survey were used in the data collection process.

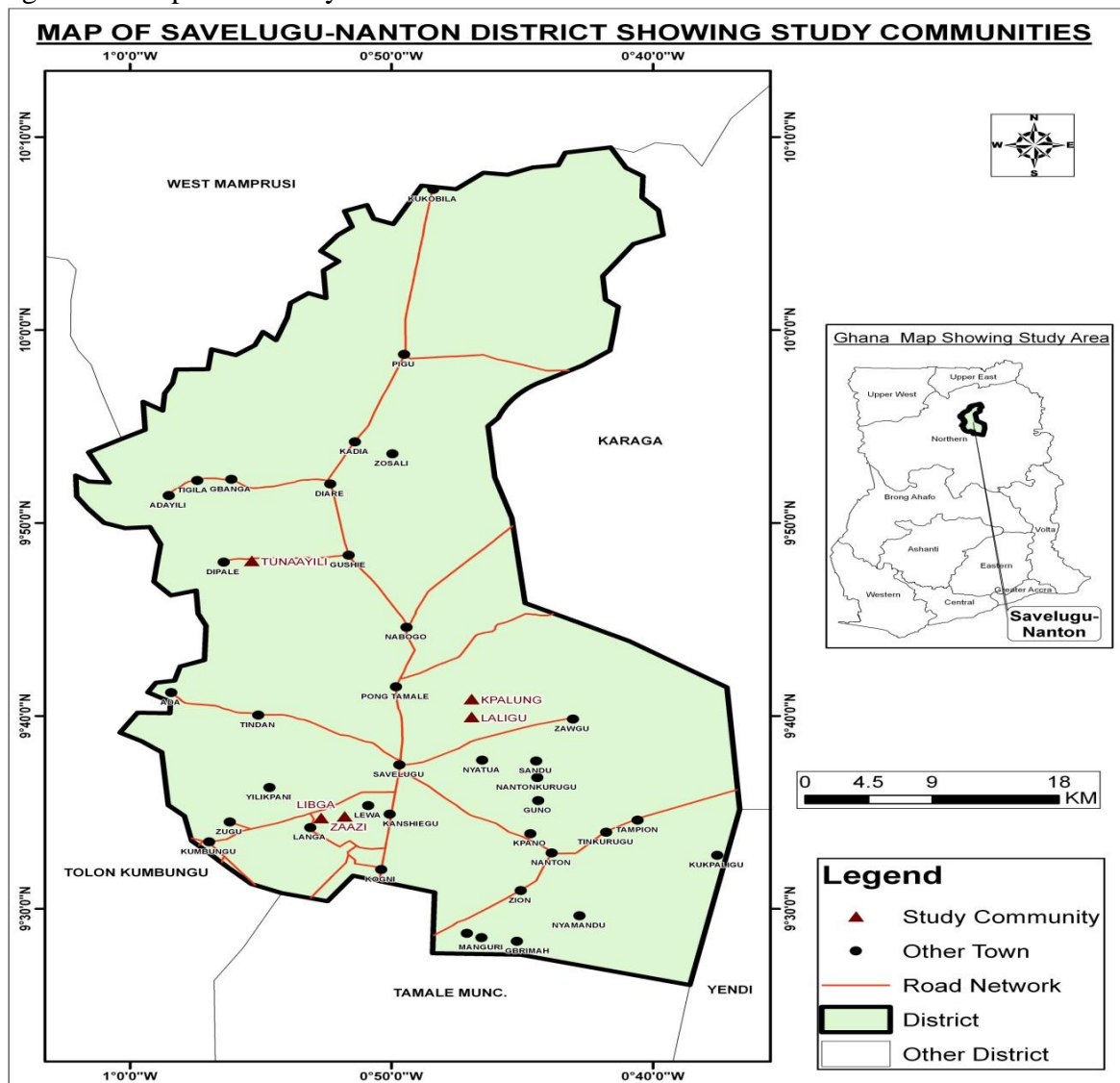
3.1 The Geography of the Savelugu District

3.1.1 Physical Features

Location

The Savelugu/Nanton district is located in the northern part of the Ghana as shown in figure 3.1. It is part of the Northern Region and is situated 16 km to the north of the regional capital, Tamale. The district covers an area of 1790.70 square kilometres. The district borders the West Mamprusi district to the north, Karaga district to the east, the Tolon-Kumbungu District to the west and the Tamale Metropolitan to the south. The study villages are highlighted in red colour in figure 3.

Figure 3.1 Map of the study area



Relief and Geology

Generally, the district is flat with gentle undulating landscape. The southern part is slightly hilly and slopes towards the north. The altitude of the landscape ranges between 400 to 800 feet above sea level (SNDA, 2010).

The district falls within two groups of rock formation. That is, the Middle and Upper Voltaian formations. The northern part of the area is part of the Middle Voltaian sedimentary rock formation underlain by sandstone, shale, and siltstone. The southern part

of the district forms part of the Upper Voltaian rock formation and comprises of shale and mudstone. The rock formation of the northern part is expected to have a higher underground water potential than that of the southern part (SNDA, 2010).

Drainage

The drainage of the district mainly consists of the White Volta and its tributaries. The effect of these water bodies are however significantly felt in the areas between Nabogu and Kukoubilla in the northern part of the district. There is periodic flooding during the rainy season thereby ensuring that this part of the district is more suitable for rice cultivation. The flooding also results in parts of the roads linking the communities in this area such as Tunaayili being washed away making transport very difficult.

Vegetation

The district is part of the Guinea Savannah vegetation type (SNDA, 2010). The vegetation generally consists of drought and fire resistant trees. The trees partially shed their leaves during the dry season. Some of these trees are of great economic and nutritional value. Three trees are, however, distinguishable. These are the shea tree (whose nuts are used to make shea butter), the *dawadawa* tree that provides seeds used for condimental purposes and the mango tree, a source of fruit and income. Except for mango, these trees are still not being cultivated. The northern part of the district which has a sparsely populated has relatively thicker vegetation with secondary forest. The southern part is relatively more populated has experienced rapid depletion of its forest through human activities including compound and bush farming, bush burning, charcoal burning and firewood cutting (SNDA, 2010).

The vegetation is also made of short shrubs and grasses that support livestock farming. This vegetation and the generally flat landscape gives the district the potential to support large scale livestock farming, as well as the cultivation of staples like rice, groundnuts, yams, cowpea, cassava, maize, and sorghum. Some of the grasses are also harvested for roofing of houses and basket weaving (SNDA, 2010).

Climate

Dickson and Benneh (1988) place the district within the tropical continental climatic. A key feature of the climate is that its pronounced wet and dry seasons which result from the influence of two oscillating air masses. These are the North East Trade winds and the South West Monsoon winds (Yaro, 2004). The former blows from the Sahara desert and are dry, dusty and cold. They therefore cause dry conditions to the area. The latter, on the other hand, blow from across the Atlantic Ocean bringing along moisture that helps to bring about wet conditions to the area. This air mass reaches its northernmost extent in August bringing rainy conditions to the areas it crosses. This ensures that the Savelugu district experiences a single rain season ranging from April to August or September. The area receives an annual average rainfall of 1000 mm (SNDA 2010).

Temperatures in the area are considerably high. The minimum and maximum mean monthly temperature ranges between 18 and 38 Degrees Celsius respectively (SNDA, 2010). Average maximum temperatures are usually highest in March and April and lowest in August. The lowest of the average minimum temperatures are usually recorded in the month of December due to the influence of the harmattan. During the Harmattan, diurnal temperatures are usually highly variable with the nights being cooler while the days are hotter as a result of the absence of clouds. These high temperatures coupled with the low

humidity during the day enable high rates of evaporation and transpiration, leading to water deficiencies in water bodies and in plants (SNDA, 2010). During the peak of the harmattan, the high evaporation and transpiration assisted by the single maxima rainfall pattern causes most streams and rivers to dry up. As a result most rivers and streams in the study areas are seasonal. This limits the use of rivers for irrigation purposes.

3.1.2 Human Activities

Agriculture is the main economic activity in the district with about 97% of the population engaged mostly in both crop and animal farming (SNDA, 2010). Other economic activities in the district include trading, sand wining, fishing, sheanut picking and processing, fire wood cutting and charcoal burning. Fishing is the preserve of men and predominantly carried out by settler fishermen and their families from the Volta region. Sheanut picking and its processing, fire wood cutting and charcoal burning are the preserve of females.

The crops cultivated include maize, millemmt, cassava, yam, sorghum, rice, groundnuts, bambara beans, soya bean and cotton. Crop cultivation is done alongside animal rearing. As the district has one season of rainfall, crop farming is largely limited once a year. Although the rain season starts from April to October, crop farming activities particularly the raising of yam mounts and the clearing of new bush farms are conducted all year round. The dry season, (November to April) is generally a period of rest with few non-farm activities such as grass weaving and firewood cutting. Migration is largely practised during this period in which migrants try to get extra income from working in other areas mainly in the south. Migration is especially common among the youth. Also, irrigation farming has become an important stage in the district during the dry season although a smaller population are engaged in it. Three completed and operational irrigation schemes

exist in the district. These are those of Bunglung, Kukobila and Libga. Others are under construction include those of Diplale, Nyeko, Sogu-Tampia and Chab-chab (SNDA, 2010).

The animals kept include cattle, goat, sheep, donkey and the pig. Poultry including hens and guinea fowls are also kept. Guinea fowls are probably the most liquid of all livestock and are very crucial in mediating the effects of environmental hazards on food security. The rearing of livestock has however, remained at a subsistence level inspite of the presence and actions of the Pong Tamale Veterinary College.

3.1.3 Profile of the Study Villages

Kpalung

Kpalung is located north-eastern of the district capital, Savelugu. It has a gently undulating terrain. The village is comprised one cluster of compound houses that share close boundaries and are separated by backyard farms on most occasions. This settlement style is characteristic of the other villages. The total population of Kpalung is about 819 (SNDA, 2000).

The people of Kpalung engage in crop and animal farming as the main sources of livelihood. Bush farming is very common in this village. Among other reasons, this is made possible by the possession of at least eight tractors by members of the village. These act as transport to and from the farm mostly without any fees charged to other households. There exist reciprocal arrangements both in the farm and at home which ensures that this strategy goes on well. For example, the owners of tractors often receive more voluntary labour to sow their seeds than those who do not.

The village has a primary school and an improvised day care. A building for a new Junior High is currently under construction and nearing completion.

Laligu

Laligu is located in the north – eastern part of the district capital, Savelugu. It has a relatively flat and gently sloping landscape. The village is only a kilometre away from Kpalung, its nearest neighbour. Its population is about 572. Crop cultivation and animal rearing are the main pivots of livelihoods in this village. The farming systems in the village is characterised by compound farming and bush fallow systems. Other income activities including trading, weaving of local sleeping mats, shea butter picking and processing and groundnut oil extraction act to support the farm livelihood system.

Generally, the village has a poor infrastructure base. There is only a day care and a primary school. A Junior High School is however, almost at completion point. The village has no electricity. At night, its central point as well as the chief's palace is lit with three solar lamps all together providing a place for young men to chat. School children also use this source of light for studying.

Libga

The village of Libga is located in the western section of the district. Its distance to the district capital, Savelugu, is about 3km. Its topography is generally low-lying. It is however surrounded by higher areas making it a recipient of run-off water from rain. This physical characteristic was harnessed to build a dam for irrigation purposes in the early 1990s.

The village is known for its dry season irrigation farming where a range of vegetables including pepper, tomato, okra, spinach (*aleevu*), cabbage, onions and carrots are grown. Crops, particularly as rice and maize are also grown. Nearly every household has a small piece of land in the irrigated area. The estimated average area cultivated by a household is half of an acre. Irrigation farming has made Libga unique from the rest of the villages in this research except Zaazi which also has large shares in the Libga irrigation project. As a result of the extra income making opportunity besides engaging in rain-fed, the village is comparatively less vulnerable to drought.

The village has a primary school located in the heart of the settlement. But for its proximity to the district capital, children at a higher level of education are able to commute to and from school on a daily basis using bicycles. Although the road linking the village to the district capital is a third class feeder road, it is well maintained thereby ensuring the in and out-flow of goods and services.

Zaazi

This village is located to the west of the district capital, Savelugu, approximately 1km further from Libga. Like Libga, it has a relatively low-lying surface. The village settlement is located on the highest ground. The soils in this village are generally sandy and clay.

Like the other villages, agriculture is the main source of livelihood with crop farming being the main component of this livelihood system. Maize, yam and groundnuts are the main crops grown. Meanwhile, dry-season farming is also made possible by the Libga irrigation project located between the two villages. The project is made up of fragments of lands belonging to either village.

The village has only a day care centre hence children have to commute daily to nearby villages or the district capital to attend school. Proximity of the village to the district capital makes it possible to commute easily with bicycles. A portion of the road linking the village up the district capital, however, is in a bad state with too much sand and too many pot holes making transportation of goods difficult.

Tunaayili

Tunaayili is about 20 km from the district capital, Savelugu. The village is generally low lying. It is largely made up of sandy and clay soils. The low lying characteristic ensures that it receives a great amount of run-off water from the relatively higher topography of surrounding villages. The clay soils also ensure that water is retained for much longer creating large reservoirs for animal and man use.

Rice seems to be the main crop in Tunaayili as the soil provides excellent conditions for its cultivation. As a result of its comparatively fertile and vast lands, this village attracts immigrants from surrounding villages. Mango farming has recently become part of the activity portfolios of several households in the village courtesy of Integrated Tamale Fruit Company (ITFC), a mango growing company. The out grower model is used where farmers are assisted to start their own farms and then sell the produce to the supporting company. This has provided an additional source of employment for the inhabitants of the village mostly in the dry-season. This is likely to have consequences on dry-season migration.

The village is said to be very popular in Dagbon for its history as the old capital of Dagbon. It is from here that the capital was moved to Yen (Yendi). It is explained that

some of the most powerful gods of Dagbon still reside in this village. Accordingly, this is responsible for the existence of great magical powers and medicine in the village.

Tunaayili is poorly endowed in terms of modern facilities. In terms of education, it has a primary school and a day-care centre which also acts as a food supplementary centre. The approximately 5km feeder road joining the village to the class one Bolgatanga, is not tarred and is subject to perennial flooding making it difficult for food stuff to be transported out of the village.

3.2 Methodology

3.2.1 Research Design

The research employs the household as the unit of analysis. The study equates the household as a unit of analysis to the concept of social actor (Devereux, 1996). This implies that the household is not an isolated entity with independence in reproduction and productive activities thus the need to study the household in relation to wider processes of change both in the community and national levels. This therefore necessitates the need for the acquisition of both macro and micro level data in order to effectively conceptualise social relations and the dynamics therein and its effects on endowments and or entitlements and the utilisation of strategies for coping and adapting to drought. The study, however, gives particular attention to the fact that not all decisions are collectively taken within the household. The head of the household may take the decision on behalf of the rest. Moreso members of households may not necessarily act on collective decisions but on their personal choices which may be geared at ameliorating a household stress, crisis or aid the sustenance and progress of the household. This ensured that households and individual experiences that did not arise from the bid to achieve a collective goal are captured and understood in relation to the wider household and community context.

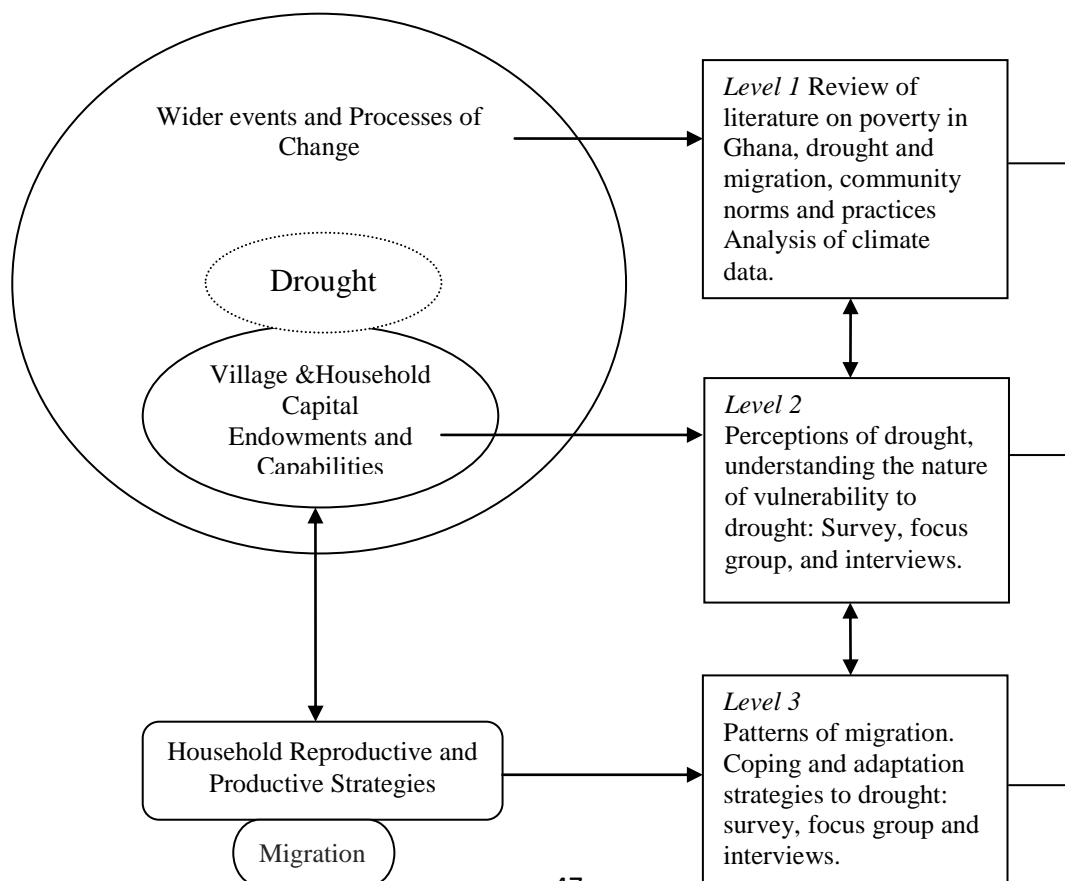
The research attained its secondary data through a review of existing literature. Both quantitative and qualitative methods were used in collecting the primary data. Secondary data gathered from literature reviews and government data are used for macro analysis such as economic and political parameters, physical characteristics and historical and contemporary development strategies. Two groups of techniques were used in gathering the primary data. One group involved the survey technique which was used to gather both quantitative and qualitative data to aid a broader understanding of issues relating to drought and migration. The other group included observation, individual interviews and focus group discussions. The investigation employed this group of techniques in a Participatory Rural Appraisal fashion to generate qualitative data. The Participatory Rural Approach allows for rural people to unravel their own situation other than the researcher doing so. The technique, however, yet allows for an active participation of the researcher thus the researcher does not become a passive entity but one who carefully facilitates the process of recall and analyses (Chambers, 1992). The case study method was also used. Case studies are research projects that seek to explain holistically the dynamics of a particular period of a particular social unit (Stoecker, 1991). This enabled the collection of detailed data from one fellow or household. Case studies enables the examination of a range of variables and their interrelations through an in-depth analysis of one or few objects or cases (Yin, 1994; Brockington & Sullivan, 2007).

Figure 3.2 outlines the research design of the study. Drought is seen as a threat to livelihoods by affecting reproductive and productive strategies thereby household capital endowments and capabilities. Meanwhile the household is influenced by other wider community events and processes. Thus the capital endowments and capabilities of a household are also influenced by community, national and wider events and processes of

change. It is in this context of external contingencies (drought and wider events and processes of change) and internal conditions of endowments and capabilities that households choose or are forced to undertake livelihood strategies which may include mobility strategies.

The research design therefore involved three broad levels. The first, macro vulnerability space included a review of literature on past development efforts and migration and on climate change and variability. The second level included analysis of the micro space of vulnerability which focused on social relations and household capital endowments and on drought perceptions. This was done through focus group, interviews and survey. This helped to understand the context of drought vulnerability. The third level investigated household livelihood strategies, patterns of migration and response strategies to drought-vulnerability.

Figure 3.2. Research Design



3.2.2 Choice of the Study Area

In the year 2005, colleagues at the University for Development Studies through the sharing of field research experiences and knowledge drew my attention to the high rate of rural out-migration in the Savelugu Nanton-District. The experiences and knowledge related were very fascinating. Not only was the out-migration high but children and married women were involved. The independent migration of women and children is a relatively new phenomenon. This knowledge of the area led to its choice for my master's degree research which centred on the consequences of out-migration. As a result of the knowledge gained from the research leading to my master's degree, the area was chosen for this research. This provides an opportunity to use my earlier findings as one platform to facilitate this research. Prior knowledge also helps enormously to conduct business in places. This proved to be true as knowledge of the culture and familiarity with some key people of the area proved to be vital in obtaining in-depth knowledge which otherwise wouldn't be easily obtained.

3.2.3 The Household as Unit of Analysis

The household is defined as a group that ensures its maintenance and reproduction by generating and expending a collective income fund and making pertinent decisions for collective welfare (Yanagisako, 1979). This definition serves as a point of departure to contextualise the concept of household. The trajectory of the conception of the concept of the household is littered with cat and mouse actions and reactions. Generally, definitions likewise the one above have come under intense criticism particularly for assuming that the unit generates collective funds and makes collective decisions which are perceived by critics as not capturing the reality of households. It is an established fact that not all income and decisions are collectively generated. Moreso, collectivism may not imply a

general consensus but the power dynamics which exist within these units determine to a large extent who and how decisions that require household action are realised. This research shall attempt to synthesize to a certain level suitable to the context of the study, the conception and so called misconceptions of the concept.

The household has spatial, structural and functional features. Spatially, it occupies a distinct dwelling unit having its own resource base from the rest of the community. Structurally, the household has to do with issues of production, division of labour and has a mode of conducting inter-household exchange. Structurally, the household also has patterns of authority and power. Functionally, the household is a platform where production, transmission, distribution and co-residence take place (Reyes, 1992, Yaro 2004). These various dimensions of the household make it an appropriate unit for the analysis of phenomena that deal with social process (Yaro, 2004). In rural societies where there still exist a high level of collectivism including collective ownership of resources and collective responsibility, the household as a unit of analysis provides an invaluable lens through which to view and understand livelihood strategies. For example, the households in all the villages in this research had a common kitchen and a collective responsibility at ensuring supply of food. As a first measure, the members shared a common farm controlled by the head. This is the first point of call of food supply and priority is given to this farm against individual farms which are subject to individual control. However, the impression gotten from interviews point to a practice where the produce of the individual's farm is usually sold for personal use only when there is enough harvest from the collective farm. This imperative further makes the household a point of call for ascertaining the strategies employed to deal with drought perturbation.

The study conceives the household in the context of the concept of social actor (Devereux, 1996). By social actor is meant a group of people who share certain sets of characteristics regarded as important for a particular entitlement mapping. However, individual dynamics in relation to the household influenced by various factors such as gender, age, autonomy which may impinge on or enable entitlements will be given attention. Such an approach has the capacity to unpack the situations faced by households and to better understand the causal relations within and out of the unit which ultimately affects the entire household in diverse ways.

Hence, this investigation defines the household as a group of related people that have a collective orientation towards the group and contribute to the maintenance, reproduction and advancement of the unit by generating both individual and a collective decisions and income and headed by a headman or headwoman who may be the oldest male or female within the unit. The livelihood activities of household reflect the ways in which households are affected by forces that lie within and beyond the community (Ellis, 2000). Rural farmers largely depend on their farm produce to sustain and ensure progress of their households. Changes in productivity such as crop and animal failure or increase in harvest and income manifest within the household in a multiplicity of ways. This makes it possible to locate and understand how and when changes in productivity or losses occur and how they affect a household, its level of resilience and responses.

The definition of a household adopted by this research takes cognisance of the fact that households (regards entitlements and choices) are not collective in every sense. This notwithstanding, the choices and actions of individuals may have effects for the household. Individuals may make decisions and embark on certain activities on their own

and the income accruing may as well be controlled by her or him alone yet it may be intended for household sustenance or progress. Even where it is not intended for household's sustenance and or reproduction, there are bound to be externalities or spill over effects on the household resulting from individual motives and actions. For example, the migration of one member by his or her own decision may result to a reducing labour effect which may in turn result in changes to division of labour which might affect the entitlement set of the unit. Hence, although decisions and actions of individuals in response to household situations or individual motives may not be collectively taken or decided by the head, they nonetheless have intricate relations with the sustenance and progress of the unit. Although knowing who or how decisions are made may be useful for recognising certain causal relations and also for explanatory purposes, the central issue to consider is how all kinds of activities or responses of household members affect the entire unit irrespective of decision making processes.

Thus the household is an appropriate unit for this study as subsistence farmers reside and operate in the context of households (and then the wider units of clan, community and so on) and individuals do not live by themselves but as a group that see its welfare in collective terms. Moreso, the rural settings chosen for this investigation still have a high degree of collectivism as opposed to individualism, beginning with the household to the wider community and surrounding villages. Thus the consequences of external shocks are bound to be captured within the household and the actions they undertake in response is more than less likely to be reflected in household sustenance strategies and other issues important to the unit.

3.2.4 Secondary Data Collection

The research makes use of secondary data sources to conceptualise and contextualise the study. Secondary data collection involved the review of relevant scholarly literature and government, international and national reports largely concerning the linkages between migration and environmental events and processes. These not only provided a background to the study but a means to compare the study to other studies.

3.2.5 Primary Data Collection at the local level

The field investigation made use of a combination of quantitative and qualitative methods of data collection. The quantitative enables generalisations, predictions and comparism (Holland & Campbell, 2005) while the qualitative method enables deeper understanding of phenomena (Bryman, 2012). The survey method, involving both open ended and closed ended questions, was used to gather both quantitative and qualitative data. The qualitative approach employed the Participatory Rural Appraisal technique.

Two surveys were conducted, a household and an individual survey, involving the same selected households. The surveys were however not concurrent. The household survey preceded the individual survey. However, unlike the household survey which was limited to household heads or their representatives, the second survey was open to any individual of the same household and may include the head and his or her representative.

The surveys involved about 70% of the total number of households in the study villages. The total number of households in each village was decided by focus group discussions. The entire number of households for the study villages is 279. The total number of households in Laligu, Kpalung and Libga is 72, 85 and 50 respectively. That of Zaazi and

Tunaayili is 30 and 42 respectively. Two hundred questionnaires were administered for each survey. Although less than 200 questionnaires were required to achieve fifty percent of the total number of households, the researcher arbitrarily decided to administer 200 of them in both surveys to improve the chances of a fair representation. The questionnaires of both surveys were distributed proportionally among villages according to their total number of households. The simple random sampling method was used for both surveys. In each village the list of all household heads and their house numbers were written in small sheets of paper and rapped. These were then placed on a large table and mixed up. Then the number of households needed for a particular village was divided by the number three to produce the number that each of the three people who helped collect the quantitative data were asked to randomly select from the lot. The selected households then formed the sample of the research.

The household survey was intended to offer historical and useful general insights of livelihood resources and strategies within households and within the various villages. The household survey was also designed to provide data on household coping and adaptation to drought as well as on migration. The questionnaire was administered to household heads or the next in command in the household available at the time of the survey. This is important because both historical and contemporary information about the households and their interactions with climate trends was needed. It is assumed that the head or the most senior is usually more knowledgeable about household issues and trends in climate than the other members of the household particularly the younger ones.

The second survey involved 200 questionnaires and was intended to investigate the patterns of migration in the study area in addition to other relevant specific information from individuals. It was necessary to have a second questionnaire which did not apply exclusively to household heads or their representatives because it was important to have some representation from people of different socio-economic categories particularly considering status in household, age, gender and marital status. For example this would help capture migration experiences of different generations and eliminate the chances of gathering largely data on migrations of older folks as most household heads are usually old people. Also, the heads and next in commands are mostly males. Thus the female composition of the survey would have likely been compromised. In addition household heads are usually married. Hence, if the questions specific to migration experiences were asked to household heads or their representatives, it could have jeopardise the chances of the likelihood of capturing people of different socio-economic categories. But it was necessary to gain household data of which household heads are the most appropriate sources, in order to understand the context of the migration of household members. The preliminary study to this research indicated that some members of the households were not knowledgeable enough on past events and the constellations of these in household strategies and were therefore incapable or less suitable in providing household data thus the need for interviewing the head or someone who considers himself or herself knowledgeable enough. For example newly married women had less if not nothing to say about household livelihood strategies as consequences of various constrains and opportunities over time and space. Their inability to descend such evolution of livelihood strategies and nature and trends of constrains such as drought and land tenure, make them inappropriate persons to solicit household data. These women were however important for the second or individual survey as some of them were involved in migration strategies

already established as part of the normal cycle of activities in the household. Also the migration of such people is important to the research as they may have been precipitated by non-drought factors which are relevant to this research in pointing out the role of drought as a driver of out-migration in the midst of other drivers. Also recent migration literature point to the rise in independent child migration and this makes it imperative to include children in the survey rather than limiting it to household heads. The study however arbitrarily considered children of nine years and above in the sample. Considering children in the survey in an era of independent child migration is crucial as in capturing the age specificity of migration in an unbiased manner. Also, it helps to capture varied migration experiences of people of different ages. However, since children often have little knowledge of household strategies due to their relatively less experience and capacity to comprehend complex linkages in intra and inter household relations, climate events and trends in environmental events and processes, and the evolution of household strategies, it was necessary to solicit household information from household heads to provide a context to understand the various forms of their migration. The data produced by the two surveys involving the same households were treated as belonging to one entity representing one household on the data sheet. Individual migration actions and decisions were linked with certain characteristics of their households in the analysis.

The qualitative investigation used the Participatory Rural Appraisal (PRA) method. This approach emphasises a reorientation of the relationship between the outsider (researcher) and the insider (the subjects of various events, development processes and research) (Chambers, 1992; Silverman, 2005). The PRA approach as opposed to the erstwhile Rapid Rural Appraisal (which duelled on the transfer of know-how to rural people), is seen as a learning process which allows rural people the opportunity to unravel and

analyse their own situations and in optimal cases plan and act on their own premises (Chambers & Conway, 1992). Thus the roles of the teacher and learner are reversed.

The tools of PRA include diagrams, observation and interviews and discussions. These techniques are crucial in facilitating communication between the researcher and the subject. This research used observation, interviews and discussion. Observation involves noting down important elements of once personal or visual experience. This may include the conditions of objects, types of crops, gender relations and dressing codes. This technique was particularly useful where certain things were either difficult to verbalise or not presented during conversations and dialogue because they may have been thought to be less relevant when indeed they were. Interviews and discussions, according to Brockington & Sullivan (2007) is a semi-structured, guided and flexible interaction between the researcher and the subject. Only few but crucial questions are predetermined while new questions emerge during the interaction. The research used both open-ended and closed ended questions for interviews. As expected, besides generating relevant data the open questions that were used also generated new questions which helped in the realisation of crucial data for a deeper understanding of internal dynamics of households.

In the context of PRA, the research has also to be wary of the context of the interview as it has great potential to influence responses. Examples include the lurking around of curious members of the household and the grimaces and diction of the researcher. Thus interview in the context of PRA can be an unexpectedly difficult exercise as the researcher must first develop a rapport with the people and learn very quickly the prevailing norms in the community. In this regard, help was sought from a famous native of the district who went around with the researcher for the first week which helped to establish a good

acquaintance with the study villages. The research employed individual interviews and focus group discussions.

The focus group discussions involved household heads and their spouses dealt on general and specific trends in the villages. This included village constraints and opportunities and household survival and accumulative strategies. Central to the discussions was the reasons or motivations for migration and to what extent it was been used by households. Individual interviews were also used to generate data of migration among households. These were particularly useful in unveiling household and personal experiences of migration and how they related to drought.

3.2.6 Data Analysis

Analysis of qualitative data can be very cumbersome due to the large unstructured textual material generated (Bryman, 2012). The qualitative data collected was large with long winning sentences which in some cases made it difficult to comprehend. All qualitative interviews were transcribed and the analyses done manually. The names assigned to the respondents in the work are pseudonyms and not actual names.

The Statistical package for the Social Sciences (SPSS) and Stata were used to analyse the quantitative data. SPSS was used among others to generate frequencies and cross tabulations. Stata was also used for Chi-square and logistics regression models to analyse the relationship between drought and migration. The logit model was employed due to the nature of the decision variable; whether rural people migrated as a result of drought or otherwise. For such a dichotomous outcome, the logit model is the most appropriate tool of analysis. The logistic model considers the relationship between a binary dependent

variable and a set of independent variables, whether binary or continuous. The logistic model examines the relationship between a binary dependent variable and a set of independent variables. The logistic model for 'k' independent variables ($x_1, x_2, x_3, \dots, x_k$) is given by:

$$\text{Logit } P(x) = \alpha + \sum_{i=1}^k \beta_i X_i$$

$\exp(\beta_i)$ shows the odds ratio for a person or village having characteristics i as compared to not having i , while β_i is the regression coefficient, and α is a constant.

3.2.7 Characteristics of Respondents

Table 3.1 and 3.2 show the characteristics of the respondents of the household and individual surveys respectively. The sex, age, educational and marital status characteristics of the respondents of both surveys are similar. Males comprise a higher percentage of both surveys. Also, in both surveys, people within the ages of 15-29 are the dominant group. Most of the respondents of both surveys have no education and a higher number of them are married.

Table 3.1. Socio-demographic characteristics of respondents of household survey

| Socio-demographic Characteristics | Frequency | Percentage |
|--|------------|--------------|
| Age | | |
| 15-29 | 71% | 36% |
| 30-44 | 70% | 35% |
| 45-59 | 34% | 17% |
| 60 and above | 25% | 12% |
| Sex | | |
| Female | 76 | 38 % |
| Male | 124 | 62 % |
| Marital status | | |
| Married | 154 | 77 % |
| Not married | 35 | 18 % |
| Divorced | 8 | 4 % |
| Widowed | 3 | 1% |
| Level of Education | | |
| None | 168 | 84 % |
| Primary | 18 | 9 % |
| JHS | 9 | 4 % |
| SHS | 5 | 3 % |
| Position of respondent in Household | | |
| Wife | 31 | 15 % |
| Son | 36 | 18 % |
| Daughter | 10 | 5 % |
| Nephew | 6 | 3 % |
| Mother | 15 | 8 % |
| Head | 102 | 51 % |
| Total | 200 | 100 % |

Table 3.2. Socio-demographic characteristics of respondents of individual survey

| Socio-demographic Characteristics | Frequency | Percentage |
|--|------------------|-------------------|
| Age | | |
| 0-14 | 20 | 10% |
| 15-29 | 81 | 41 % |
| 30-44 | 52 | 26 % |
| 45-59 | 30 | 15% |
| 60 and above | 15 | 8 |
| Sex | | |
| Female | 81 | 41 % |
| Male | 117 | 59 % |
| Marital status | | |
| Married | 136 | 68 % |
| Not married | 52 | 26 % |
| Divorced | 8 | 4 % |
| Widowed | 4 | 2% |
| Level of Education Completed | | |
| None | 81 | 41 % |
| Primary | 50 | 25% |
| JHS | 32 | 16 % |
| SHS | 23 | 12% |
| Tertiary | 12 | 6% |
| Total | 200 | 100 % |

CHAPTER FOUR

PERCEPTIONS OF DROUGHT IN THE STUDY AREA

4.0 Introduction

This chapter investigates the perceptions of drought in the study area. The recognition and interpretation of environmental phenomena influence human responses to their impacts and expectation of their occurrence (Adger, 1999; Patt & Schröter, 2008). The study of perceptions is therefore considered an important approach to understanding human decisions and choices in response to drought (Slegers, 2008; Weber, 2010). Investigating rural people's responses to drought forms a major part of this thesis. It is therefore invaluable to endeavour to understand rural farmer's perceptions of drought to aid the comprehension of farmers' responses which is the central theme in this thesis.

4.1 Farmer's Definition of Drought

According to focus group discussion drought is not the mere lack of rainfall and water or moisture deficiency. Rather, drought (*sanzali*) occurs when the lack of rain is accompanied by deficiency in water and moisture which last long enough to significantly adversely affect plant and animal growth. One of the statements that stood up so strongly without any contradiction from one focus group discussion that helped to capture this definition of drought is cited below.

Look my son let me make this simpler. It is just like too much rain and flooding; there can be so much rain that we can't go to farm but it is not called flooding when the water is not so much high on the ground and does not last enough to damage our crops. This one ...we call it Kochogu (excess water) and the one that eats (destroys) the crops we call kodili (flood). You see? (Mba (father) Wulana (chief linguist), 74, Zaazi, focus group).

By drawing a distinction between a state of insufficient rainfall which does not harm crops and that where the insufficient rainfall leads to negative consequences on the growth of crops (and other plants), the local peoples understanding is generally consistent with the scientific explanation of drought.

Focus group discussions also pointed out that although drought is simply when water deficiency affects crop and animal performance not all droughts will lead to poor or bad harvest as a 55 year old woman, *mma* (mother) Azara, from Tunaayili pointed out during a focus group discussion “...drought is not always bad...sometimes the drought is a gift from God to help our crops do better. Also, it is not always that crops need water.” The consequences of drought on crop yield as explained by *mma* Azara will not necessarily be negative even under conditions of crop wilting. This is seen as mainly dependent on the will of God. It is explained that different crops have different water requirements at different stages. It is believed that at certain stages of growth of staple crops when there is more than enough water, God may bring drought to aid the growth of these crops thereby ensuring a better harvest for the people. Also, crop yield may depend on the stage of growth at the time drought sets in. The example is given of maize. If drought occurred at the flowering stage of maize then there would be poor or bad harvest. Conversely, if the drought occurred when the maize was at the stage just before flowering then the chances of occurrence of poor or bad harvest would be less as the rains could return before the critical stage of flowering and cop formation.

Another key element of the definition of drought is the identification of its on-set. There were three opinions on the identification of drought. First, drought is said to have began when rainfall deficiency accompanied by excess heat begin to have visible negative effects

on crops. The visible negative effects include wilting and poor flowering or total failure to flower by crops. The explanation has it that it may take up to two weeks for a drought to set in after rainfall deficiency depending on the type of soil and the type of crop.

Others, however, were of the opinion that drought began at the time when the soil had no more moisture for plants in the presence of extreme heat. This opinion therefore holds that it is not the visible effects of drought on crops that signify its beginning but the commencement of conditions that bring those effects. It is explained that one of the earliest signs of a drought is when the upper soil at the very root of a plant can be picked up by the hand and blown into dust by air from one's mouth. This group of people, however, point out that the existence of these conditions does not necessarily imply a drought has come to being. Rather, it is the persistence of these conditions and the realisation of their effects that defines the existence of a drought. It is explained that having the knowledge to identify the beginning of a drought is very helpful as one begins to plan what to do when the fears of a drought became real as mba Zaku explains:

Look, it is not all the time you see these signs and there actually will be drought but we old people begin to think of what to do...so if it actually happens you won't just raise your head and look at God but you will also by then had put something in your head about what to do. When you do like this you will be better than the household head who just sits there until it is here, just one time! And that is the time he begins to think of what to do. This kind of household head is like a boy who has no wife. (Mba Zaku, 55, Tunaayili, focus group).

In furtherance of the above explanation the 40 year old *mba* Nayim from Zaazi says: “when you see the signs that bring drought you don’t start fighting it, you have to think and plan... and wait and be sure that it is drought otherwise you will do something that will hurt you.” The explanation follows that resources are scarce and must be allocated wisely and based on real circumstances.

The third opinion held that only God knows when drought actually started and that farmers only realised it when it had already started to have visible negative effects on crops. “If God is going to punish you, why would he let you know...so that you can find another way to get food for the year?...no, he wouldn’t let you know” says the seventy year old *mba* Alhassan from Laligu village during an interview. Although the above quote relates drought to just punishment from God, generally the people that hold the opinion that only God knows when drought sets in believed that it is the intention of the Supernatural to make the future uncertain to mankind and impossible to identify precisely when a drought started and that one could only prepare for the possibility of occurrence of drought as *mba* Lookman explains:

we know that drought is something that will always come as long as the world is still there but you can’t tell when it will come or when it has started...you just see it only when it is already there...you can only save some money, food or keep animals well and just wait to see what God decides...Those who are strong also find work in the dry season to raise money...some work here, but others migrate to Accra to find work. (Mba Lookman, 65, Zaazi, interview).

The recognition of drought as a recurrent phenomenon is a shared perception. Focus group discussions and interviews point out that this perception is fundamental to the adoption of long term measures to deal with drought as evident in the above statement. This is consistent with the literature on adaptation which generally views people's perception of climate hazards and their own vulnerability to climate variability as an important dimension of the choice of strategies for coping and adaptation (Hunter, 2005; Patt & Schröter, 2008). Focus group discussions indicate that household heads prefer to adapt to drought by changing farming strategies such as growing maize early in the year in flood prone areas instead of on highland areas that are usually prone to drought.

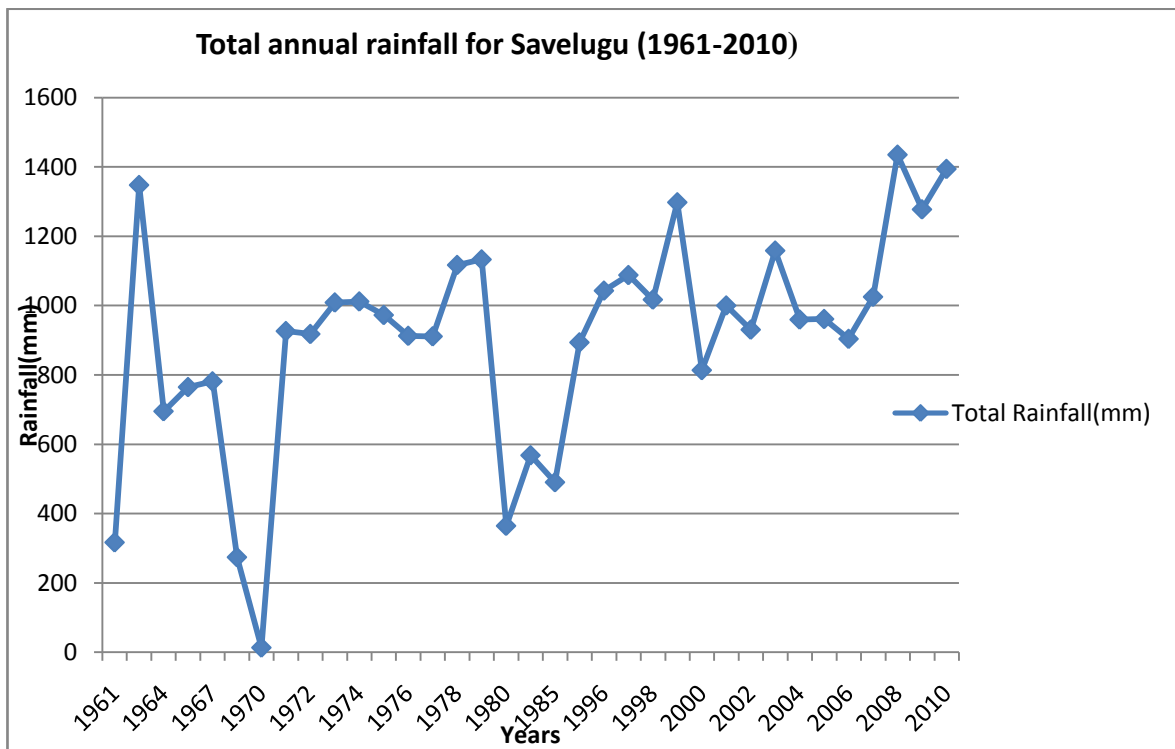
The identification of the presence of drought is, however, said to be presently confused with the end of the rainy-season by some farmers. It was generally agreed that there was a shortening of the rainy-season. Not only did the rains start late but ended earlier than usual. The chief Fulani herdsman resident in the village of Kpalung for more than two decades now had this to say in corroboration of this assertion:

Drought is when there is not enough rain for crops and grasses to grow their normal growth during the rainy-season. But the rainfall pattern is changing. The rains now start late and stop early so the Dagombas confuse drought with the change in rainfall pattern...if you don't know this then you will always farm late and the rains will stop early...and you will say it is drought. (Mba Seidu Fulani, 55, Kpalung, focus group discussion).

The above statement is succinct and self explanatory. It seeks to draw a distinction between drought and changes in the rainfall pattern. There was easy consensus about the aptness of this statement at the focus group. Some explanations as the one above linked

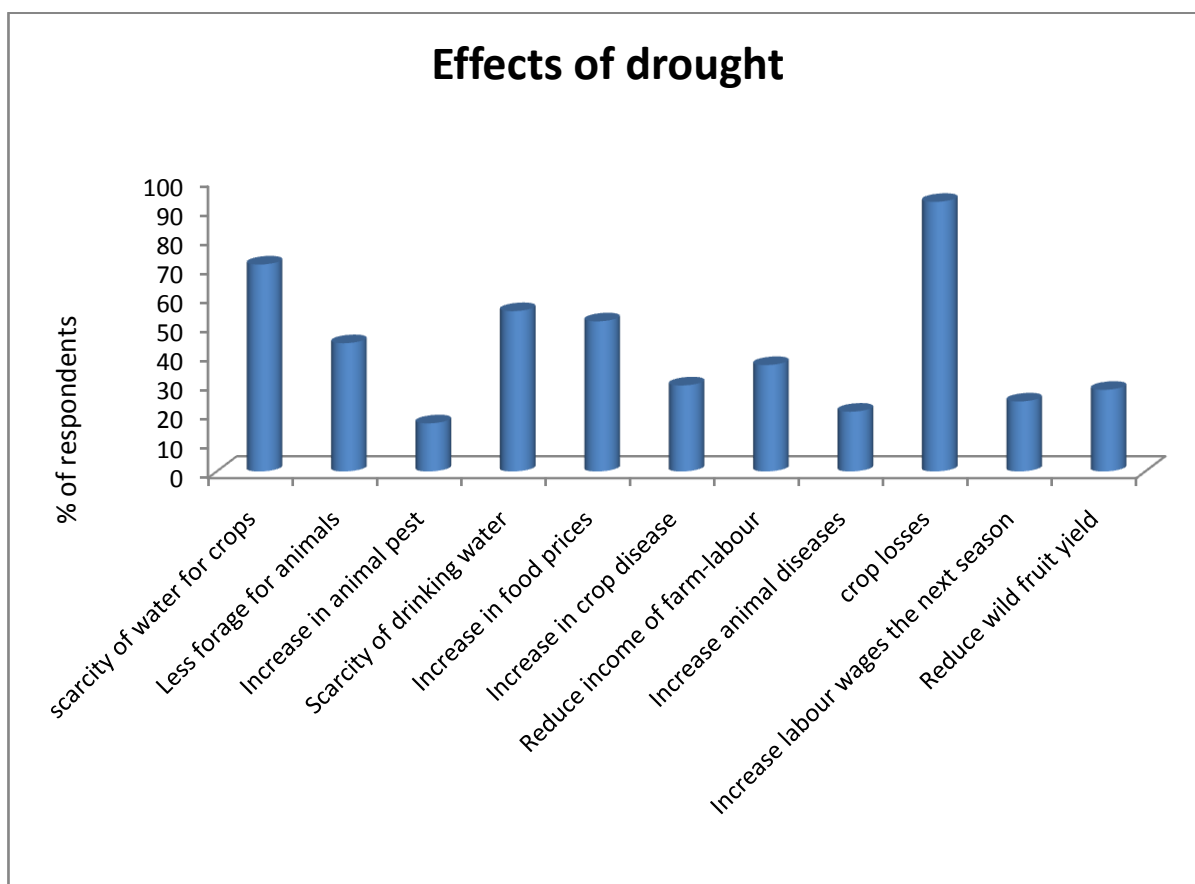
drought to climate change. This does not seem surprising as rainfall and crop performance are very important factors in their understanding of their climate. Temperature, rainfall, wind and relative humidity are all vital components of the climate of an area but, rainfall is the most important of all particularly in regions characterised by rain-fed agriculture (Burroughs, 2009; FitzRoy & Papyrakis, 2010).

Farmers in the study area generally perceive drought as a common feature of the climate of the area. Rainfall data from 1961-2010, as shown in figure 4.1, show that the study area experienced many drought risk years. These are indicated by those years registering less than a 1000mm which is the average rainfall for the area. The figure shows variations in total annual rainfall between years and does not tell whether there was a drought or not. Total rainfall only gives us an indication of drought risk. Between 1970 and 2010, rainfall amounts for Savelugu have gone through higher variations in the 1960s to less variation in the 1970s. The period between 1970 and 1978 saw relatively favourable rainfall. This was followed by relatively unfavourable rainfall conditions from 1980-1985. The poor rainfall in this period coincided with nationwide droughts from 1980-1983. The drought of 1980-83 was one of the most devastating droughts in the history of Ghana (Obeng, 2005). The period 1996-2010 reflects relative recovery in rainfall with all the yearly totals above 800mm. The variable nature of the rainfall has implications for drought. Generally, rainfall below average is a potent condition for drought (Wilhite & Glantz, 1985; Burroughs, 2007). The study did not find any classification of drought years for the study area. The droughts of the 1970s and 1980-83 are exceptions as they are widely captured by literature mainly for their relatively extreme devastating properties (Van der Geest, 2004). The study therefore relies on farmers' perceptions of the trends in droughts.

Figure 4.1. Total annual rainfall for Savelugu (1961-2010)

Source: Compiled from Ghana Meteorological Services data sheets

It is not the experience of drought per se that the farmers are so concerned about when explaining drought. Rather, the consequences of droughts are the main concern. The consequences of previous droughts are therefore instrumental in their perceptions of the phenomenon and how they deal with it as in coping and adaptation. Farmers experience a wide range of effects of drought on their livelihoods. Figure 4.2 shows the effects of drought on households as mentioned by household heads. The figure shows several effects ranging from scarcity of water for crops to the reduction of bush fruit yield. However, respondents generally focused on consequences or outcomes of drought such as low yields and food scarcity. This is because of the agrarian nature of the villages. Also indicates that the consequences of drought are largely related to food security and incomes of household.

Figure 4.4. Effects of drought

Source: Field Data

Low crop yield is the commonest effect of drought. This was mentioned by more than a third of the respondents. This is followed by increase in prices of food stuff and reduced income of farm labourers.

4.2 What Factors are Responsible for Drought?

Perceptions of the existence and manifestations of a phenomenon somewhat goes along with curiosity for causality which might affect how people react. Table 4.1 presents attributed causes of drought and how they are claimed to cause drought according to household heads. The reasons for drought ranged from religious to 'natural normality

causes'. Table 4.1 also shows the sources of the knowledge of these causes as mentioned by household heads.

Table 4.1. Perceived causes of drought

| Causes | How? | Source |
|--|--|--|
| The Supernatural (God, ancestors and the gods) | <ul style="list-style-type: none"> • As punishment from the Supernatural for the too many immoral behaviours these days | <ul style="list-style-type: none"> • Generational knowledge transfer • Muslim Imam • Fetish priest |
| | <ul style="list-style-type: none"> • As punishment by God for failure to give alms | <ul style="list-style-type: none"> • Muslim Imam |
| | <ul style="list-style-type: none"> • As punishment from the ancestors for failure to perform final funeral rites of chiefs | <ul style="list-style-type: none"> • Generational knowledge transfer • Fetish priest |
| | <ul style="list-style-type: none"> • As punishment for failure to offer sacrifices to ancestors or gods | <ul style="list-style-type: none"> • Generational knowledge transfer • Fetish priest |
| | <ul style="list-style-type: none"> • As test of faith in God • As a gift from the Supernatural to help crops do well | <ul style="list-style-type: none"> • Generational knowledge transfer • Muslim Imam • Fetish priest |
| | <ul style="list-style-type: none"> • As substitution for even more hazardous events by the Supernatural themselves or when asked by the fetish priest, ancestors or Muslim <i>afa</i> | <ul style="list-style-type: none"> • Generational knowledge transfer • Muslim Imam (Islamic priest) • Fetish priest |

Continuation of Table 4.1 (perceived causes of drought)

| Causes | How? | Source |
|--|---|---|
| Magic men | | • |
| | • Distortion of nature: Preventing rainfall to allow for the celebration of funerals | • Generational knowledge transfer • Magic men • Fetish priest • Islamic priest |
| | • Distortion of nature: Magic men and Islamic priest calling for rains when drought is from God; God will bring the drought back at a later date with more intensity or twofold occurrence | • Generational knowledge transfer • Fetish priest |
| Zeal for money by business men who are wizards | • ‘Some market men’ that posses witchcraft sometimes use their powers to bring drought so that they make more profits from the resulting shortage of food | • Generational knowledge transfer |
| Deforestation | • Deforestation increases wind speeds and takes away rain clouds | • Generational knowledge transfer |
| | • Trees help to bring rain. Deforestation reduces rain and increases drought occurrence; the trees hold moisture for the clouds | • Generational knowledge transfer |
| | • Results in too much smoke in the atmosphere which destroys rain clouds | • Radio, NGOs, Government |
| | • Deforestation exposes the soil to the sun which makes it unable to hold much moisture | • Radio, NGOs, Government |
| ‘White men’ | • Too much manufacturing that put plenty of smoke in the atmosphere that finds its way here • They have aeroplanes that fly all the time that adds more smoke to the skies that finds its way here | • Radio, NGOs, Government |
| Bush and charcoal burning | • Put plenty smoke in the skies and reduce rainfall occurrences | • Radio, NGOs, Government |
| Natural order | • ‘The world is always changing, that is how it is, good things come and bad things also have their time to come even if no one sins, unless God decides to change things’ | • Generational knowledge transfer |

Source: Field Data

The results show that farmers have generally two sides of attributed causes; those influenced from within and those influenced from outside. However, these are not entirely distinguishable in the pattern of explanation clearly indicating the existence of a local and scientific *hybrid perception*. In this case, the understandings of traditional attributed causes are extended by scientific knowledge and seemed to be common among those with at least basic education. It also appeared that those farmers who emphasised scientific causes were community leaders or had been engaged in some NGO or government farming work before. Explanations, however, generally had a strong leaning on the social and cultural realms.

The Supernatural as a cause of drought, as indicated by Table 8 below, is perhaps the most important. God, the ancestors and the smaller deities are regarded by the people as the most important cause of drought. Indeed, God is seen as the main provider of good and bad weather. This is evidenced by the sayings; '*sanzali n-nyela Naawuni tuma*' (drought is the work of God) and '*Nawuni n su sanzali*' (God owns drought) which are common strings of speech on the topic of drought in all the study villages. The ancestors and the gods are claimed to also have the power to unleash drought upon the people when deemed necessary.

The Supernatural may bring drought upon the people for several reasons. As can be seen from Table 8, immoral conduct may draw the wrath of God which may result in a drought as punishment. Such immoral conducts are said to include stealing, adultery, having sex in the bush and blood spillage through wars. The statement below offers a locally succinct explanation of relationship between immorality and drought:

Do you know why life is on the wrong path? These days the children don't fear anything. They have sex before marriage...they don't sacrifice to the gods yet they desecrate the land. Young married women now have boyfriends. Why won't drought fall on us. (Mba (father) Moro, 95, Laligu village, focus group discussion). When asked how immoral acts of one village could result in a drought that affected other villages that were not responsible for the acts, the respondent above answered; “...*these days life is on the wrong path everywhere! But some villages obey God better and normally get less impact of the drought.*”

When the attention of the focus group discussion was drawn to earlier claims that spatial differences in soil and drainage were partly responsible for differential impact of drought, and asked to relate it to the above statement, the consensus answer was that ‘*God can do all he wants*’. The conclusion therefore was that, in terms of drought punishment, spatial disproportionate impact was decided by the Supernatural according to the extent of immorality.

The failure to give alms as a religious duty is also seen as a factor that may cause the Supernatural to bring drought upon the people. *Zakat* is a muslim tradition of giving alms to the needy at least once a year. For the study villages, this is more important after the harvest. A percentage of the harvest is expected to be given to the poor in appreciation to God. It is claimed that the practice of *zakart* has dwindled in the study area and this is said to draw the wrath of God. Punishment from God may be in the form of drought. In addition, failure to perform final funeral rites of dead chiefs and fetish priests, and failure to offer usual sacrifices to the Supernatural may bring drought as punishment from the ancestors and the gods. Moreso, the need to test the faith of people by God is said to bring drought. This is referred to in the local language as *dahimbu* and perceived to be inevitable. God is said to impose drought on the people to test their faith and also to draw

them closer to him. By bringing suffering on the people through drought, God is said to restore their faith in him as they once again look up to him for salvage. This element of test of faith is captured in the statement below.

When we are faced by a problem like drought that goes beyond our control, we always turn to God. God has an agogo (time scale). There are times of good harvest and times of bad harvest, times of good rain and times of bad rain. When the time of bad rain occurs on the clock, there is nothing God can do but to let it happen...so drought is an instrument that God uses to remind us to obey him and make us faithful to him. (Baako, 45, focus group, Kpalung)

Gods bid to help his subjects and to provide for them is also assigned as a cause of drought. It is explained that other than being a punishment, drought may also be a gift from the Supernatural. Accordingly, drought is sometimes very useful to crops as they do not require much moisture at certain stages of their growth particularly when their fruits are ready. Drought as a gift from God is said to bring bumper harvest. Lastly, the Supernatural may bring drought in substitution with a more hazardous event. This may be unilateral or human induced. An instance of human induced hazard substitution is captured in the statement below.

There was a bad warrior called Sam-Moro (Samori) who raided for slaves. The Dagbon king at the time asked his fetish priests to make charms and get ready to defend the kingdom but he was advised by them the only way was to deflect the war to Gonjaland and rather get a severe drought in its place. The king agreed...Gojaland was attacked...lots of people were killed and captured, while a severe drought came on Dagbon. (Yussif, 78, focus group, Laligu)

Besides the supernatural, the other reasons claimed to cause drought included the exploits of magic men, the zeal for money by wizards, deforestation, bush burning, firewood and charcoal burning, deforestation, activities by white men and the *natural order*. All these factors but magic men and wizards, deforestation and *natural order* are said to release smoke into the atmosphere which does not augur well for rainfall. The smoke is said to dissipate *rain-clouds* thereby resulting in the lack of rain which causes drought. Magic men are said to be capable of preventing rainfall to allow for smooth celebration of funerals of deceased older folks. It is explained that if there were several of such funerals then the concurrent prevention of rain could bring drought. Some business men who possess magical powers and have a zeal for money are said to use their powers to prevent rainfall and cause drought. Accordingly, these businessmen then benefit from the concomitant scarcity of food through higher food prices. They are said to buy the food stuffs and stock them until food becomes very scarce such that they can sell it for bigger profits.

Deforestation is said to reduce the amount of moisture in the atmosphere that brings rain. This may then result in drought. Also, deforestation is said to expose the top soil to the sun which destroys its moisture holding capacity and makes it possible for drought to easily set in when the rains stop for a while. This idea which is said to have been gotten from radio and NGOs as well as government workers only extends the traditional notion that deforestation causes drought through the lack of trees to capture atmospheric moisture to form rain clouds. The last and perhaps most intriguing attributed cause of drought by the people as shown in the table is that of *natural order*. *Natural order* is meant the cycle of natural changes that occur in the earth across time and space including ‘eras of droughts, eras of enough rainfall and eras of too much rain’. “God is not a fool...he can’t allow

mankind to have an easy life...he has to challenge you by making the world such that things keep changing” says the *tindana* (the land chief) of the village of Laligu. These changes are seen as inevitable and each could run for ‘*many many years*’ (Lansa, 50, focus group, Laligu village).

The conversation from which the statement above is taken was one of the most striking explanations for drought as it linked up the explanation for drought with climate change. As mentioned earlier, some of the perceptions of drought by the local farmers are further translated into perceptions of global climate change. However, there are no direct translations for the term climate change in the local language. This has led to the use of a variety of similar terms which can never mean exactly the same thing. Probably the most appropriate of these which is receiving much usage is *saa zemani lebgimsim* directly meaning ‘rainfall pattern change’. For example the chief’s linguist at the village of Libga describes this ‘rainfall pattern change’ as one with less and more erratic rainfall characteristics accompanied by more frequent droughts and floods. Others translated the term as *pukparigu lubbu sahaa* meaning ‘the era of losses for farmers’. Fundamentally, the experience of the weather elements over time informs their perceptions of climate change.

The explanations that surround *natural order* as a cause of drought has two elements that are crucial in perceptions of climate change by the people. These are the nature of the order and its time element. First, eras of good years are followed by eras of bad years and vice versa. Bad era’s years could comprise drought, severe sunshine, flood and strong winds while good years could comprise good rainfall, ‘enough sunshine and enough wind’. Responding to the question, *So what era are we now?* (interviewer), an elderly man had this to say: “*do you want me to tell you? No one should tell you these are bad*

times...Look, if it is not drought then it is flood...but the droughts are now more frequent but lesser in intensity...for many years running...since about 1981. (Lingundoo, 50, focus group, Laligu village). By referring to eras and not just years, and permanent changes for a particular era, as well as considering this era a bad one with more incidence of drought, the expression suggest that locals perceive the existence of climate change. Their idea of permanent change generally conforms to the science of climate change. The *tindana* (land chief) of the village of Laligu explained the *natural order* in the following words.

There are good eras and bad eras, eras of droughts, eras of enough rainfall and eras of too much rain...this is the era of drought and bad rain...how long does an era last? many many years...God is not a fool...he can't allow mankind to have an easy life...he has to challenge you...so he made the world to constantly turn around after some time. (Yakubu, 91, Laligu focus group).

Focus group discussions, however, point out that God can change this natural order if he thought that his people couldn't survive it. This was, however, thought to be rare and that those who prayed well and obeyed him and were at the same time not lazy would always survive the challenges posed by the *natural order*. 'God and the ancestors or smaller deities help these people to do things that give them food and wealth during drought but those that who God intends to punish will be less successful and suffer much.'

When drought occurs, first we check to see its origin, if it is from God or the gods and ancestors then we first perform sacrifices...otherwise everything we do will not work...If someone does everything during a drought year and still does not get enough to feed then he goes to the oracle to see what he has done wrong or whether a bad person has done something to him...if it is that he or his family or village has done something wrong, he uses the little money he has to make sacrifices and if it is that it is a spell from a bad

person he also does sacrifices to ask God to clear the bad things...if it is natural you still have to ask the spirits what sacrifice to offer to make you survive...if you are a smart old man you will always start the fight with drought by making sacrifices...(Sandoo, 48, focus group, Libga).

Coping with drought has a spiritual dimension as is reflected in the statement above. Successful coping is considered by some as a blessing from the Supernatural while unsuccessful coping is seen as a punishment for sins or a result of magic spells of one's enemies. For these reasons, some people consult the magic men or the oracle to show them how to cope, 'what to do or to look into the future and see whether what one intends doing will be successful or not. 'Those who are serious check out these things with the magic men before doing anything'. The consultation leads in some cases to sacrifices which is explained to make meat more available during drought years than in non-drought years as an elder man in Tunaayili remarked: "look, in drought times there may be less food but if you go round and greet people in the morning you will eat a lot of meat because everyone is sacrificing to ask for God's help" (Mahaman, 65, focus group Tunaayili).

"During drought those who want to migrate...normally check to see how things are and perform some sacrifices before they migrate, if your migration will not help you, they will see it and help you with some charms or you don't migrate and try another thing" says the twenty five year old Illiasu of Kpalung village during an interview. Illiasu further points out that, he and his best friend usually consult the magic men before migrating seasonally but in drought years they intensified their spiritual consultation by seeing two or more magic men. If the magic man saw that their migration wasn't going to be worthwhile, then they either performed sacrifices to make it good or they abandoned the option and went off to the yam farms in the bush near the village to labour for income. On the other hand if the

magic man saw that their migration would be worthwhile then they performed sacrifices to improve their chances of success. Focus groups emphasized that increasingly more females as compared to males are getting charms from magic men to help with their migration. This is said to amplify during drought years. Generally, coping strategies to drought by the people are partly determined through consultation with the Supernatural which is based on the spiritual aspects of their perception of drought. However, the influence of drought perception on migration responses is not the central theme in this chapter. This chapter only provides a platform to understand how migration responses are mediated in chapter six and seven.

The perception of drought is therefore largely contingent on the economic, cultural and social circumstances within which people experience the risk. While perceptions of drought are influenced by scientific knowledge gained from the media, NGOs, and government personnel, locals were more skewed towards the traditional or religious understandings of drought with some, particularly older folk expressing some disbelief at the scientific causes. Several reasons explain this. First and perhaps most relevant is the observation that the local people are still largely conservative. This is backed by prediction failures of seasonal rainfall and drought by the Ghana Meteorological Service over the years as the 80 year *mba* Liman argues; *they are all liars, they say there will be drought or no rain in a particular month or season, then you change your planting time or invest less money and then the rain doesn't fail...just look at that?* It seems that a lot of the local people do not understand that there are limitations to how accurate a forecast might be. Also, there is poor understanding of the idea of average weather conditions. For example, there might be rainfall some kilometres away which is part of the expected rainfall for a particular week but once the rains did not fall in their villages, then the forecaster is

thought to be wrong. Also, a larger proportion of the local population has no education which limits their understanding of scientific phenomena except those that are in consonance with local knowledge for example, deforestation as a cause of drought. This will definitely also make it difficult to comprehend lectures on radio and at workshops and forums. Hence, although farmers admitted being influenced by radio and NGOs about the causes of drought and did mention reasons that are somewhat consistent with the scientific explication of the causes, they were categorical about the more aptness of the locally attributed causes.

4.3 Conclusion

Farmers in the study area are very sensitive to drought as a topic. This is mainly because their main economic activity, agriculture, is largely dependent on rainfall. Farmer's perception on drought can be said to be very rich. The perception of farmers of drought is affected by a range of influences and experiences. The background characteristics, degree of exposure to NGOs, media and extension officers are all significant in defining the knowledge of farmers on drought. However, these factors can be distinguished as primary and secondary. Primarily, the experiences of drought by the people alongside background characteristics such as religion are found to be very crucial elements. Secondary factors influencing drought perceptions include education, NGOs, extension officers and the media. The primary factors generally foster largely non-scientific traditional perceptions while the secondary factors generally bring scientific explanations to bear. The primary and secondary factors are in some cases mutually enforcing. Farmers perceive drought as generally the lack of rain accompanied by heat sufficient enough to cause havoc to plant growth. Generally, farmers perceive drought as the main constrain to agricultural production. Farmers attributed drought to three main factors including the super natural,

human activities and natural normality. The pattern of drought is said to have changed as droughts are seen to have become more frequent but less intense over the last two decades. Also, some perceptions of drought by the local farmers further translate into perceptions of global climate change. More so the perceptions of drought by farmers are crucial to their responses. For example, when drought is perceived to be caused by the Supernatural, then there must be an appeasing sacrifice before coping strategies are employed. Also, the identification of drought may influence how speedy coping actions are deployed while the understanding of drought as a recurrent phenomenon has resulted in the adoption of some adaptation strategies to deal with it which include migration. Chapters six and seven will demonstrate how some of these perceptions influence migration responses to drought as in coping and adaptation respectively. But before that, chapter five takes a look at migration in the study area and its association with drought using largely quantitative material.

CHAPTER FIVE

MIGRATION IN THE STUDY AREA AND ITS RELATIONSHIP WITH DROUGHT

5.0 Introduction

This chapter discusses the patterns of migration and the relationship between drought and migration in the study area. Investigating the patterns of migration in the study area helps not only to understand the current dynamics of the phenomena and its relationship with drought but serves as an indispensable platform to understand the specific forms of migration in relation to coping and adapting to drought in the following chapters.

5.1 Migration Patterns in the Study Area

Forms of Migration

In the study area it is common to speak of migration in terms of local categorisation. This research has benefited immensely from the use of these terms. When asked about migration, villagers were so keen to talk about north-south migration of females. Focus groups explained that villagers have the impression that researchers are only interested in hearing about female migrants. The proclamation of a 54 year old man from Kpalung during a focus group discussion that: “you people always talk about only the girls and you want to stop them from migrating and help them to do tailoring and other things...we support you very well” demonstrates this perception of (migration) researchers by the people. This is certainly one of the most visible footprints of the many researchers particularly NGO workers who have traversed the length and breadth of the Savelugu district in pursuit of information on or educating villagers about the dangers of north-south female migration. This paper therefore finds it useful to start the discussions on migration

in this study area by explaining the various categorisations of the phenomenon provided by villagers. It must however, be stated that these are in some cases problematic as some migration movements do not fit into the general categories. This is no problem for this research as the categorisations are simply used to understand the context of the migrations. Eight forms of migrations are identified and classified through focus group discussions. These include *dogkana* (or *dogchan*), *kanako*, *kayayo* (or *kayaye*), *djoa*, *ayugba*, *kohimma*, *peringa*, and *amariya* (marriage) forms of migration.

The culture of *dogkana* is a practice where a woman migrates temporally back to her family of orientation after delivery. This is said to occur only in the first and second or third deliveries. The purpose is to introduce the new born to his or her grandparents and also to get help from the grandmother in nursing the new born. The time frame involved in this practice is not only a subject of controversy but varies across households. It is explained a woman could stay in her parents' home for up to two or more years. However, a *dogkana* (the nursing mother involved) is generally expected to stay for at least six months before returning to her husband's home. Her return is largely determined by her husband.

Kanako which translates, 'come and farm' is a form of temporal re-settlement for farming purposes. This involves seeking agricultural land elsewhere from one's permanent residence. In this system of farming the entire household or a part of it changes residence seasonally. The farm residences are inhabited at the beginning of the rainy-season and deserted after harvest. If only a part of the household moves to the new farm, a multi-spatial household situation is temporally created. The part of the household that migrates usually consists of a husband, a (first) wife and other adults and children.

Kayayo (or *kayaye*) initially referred to female migration where the migrants worked as head porters in the cities and towns. However, in the study area, the term has grown to include all females and males who migrate to the city and engage in non-farm jobs. For example girls who perform the job of sales girls are referred to as *kayayo* migrants. *Djoa* refers to the migration of males to rural communities to perform agricultural labour task for cash payments. It is mostly embarked upon by the youth. This can be conducted all year round as it also involves clearing of vegetation for new farms and the making of yam mounts which are mostly off-season activities. The *Ayugba* form of migration refers to that in which females migrate to other villages to labour during harvesting for in-kind payments. Traditionally, this form of migration involved the harvesting of groundnuts. It has, however, expanded to include other crops such as maize, soya and rice. *Kohimma* refers to migration for the purpose of trading. It is understood through focus groups that women traders usually do not stay long enough to qualify as migrants. Rather, their male counterparts particularly the younger ones who engage in trading of metal scraps usually stay longer and mostly satisfy the conditions to be referred to as a migrant. This type of migration is now being conflated with *kayayo* as some respondents also refer to male migrants who engage in trading of scrap metals as *kayayos*. The *periba/peringa* form of migration is a cultural practice where a man gives his first daughter to his sister for fostering. Marriage migration refers to movement to join one's husband in the making of a new family.

The perceived state of out-migration in the study area

Table 5.1 indicates the perceived state of out-migration among households as perceived by household heads in the study villages. Generally, respondents of the household survey stated that migration was increasing in their households. On the contrary, a smaller

number of respondents reported that migration was decreasing among their households. Almost the same number of respondents who stated migration was decreasing mentioned that the phenomenon was stable among their households. The general position of respondents that out-migration is on the rise is generally consistent with the literature. The census report of Ghana (2010) has recently pointed to the rising out-migration within villages in northern Ghana. World trends in population also point to an increasing trend in migration particularly from rural to urban areas (Castles & Miller, 1993).

Table 5.1. Perceived State of out-migration in the study area

| State of migration | Frequency | Percent |
|--------------------|-----------|---------|
| Increasing | 79 | 46 |
| Decreasing | 44 | 26 |
| Stable | 48 | 28 |
| Total | 171 | 100 |

Source: Computed from field work data, household survey

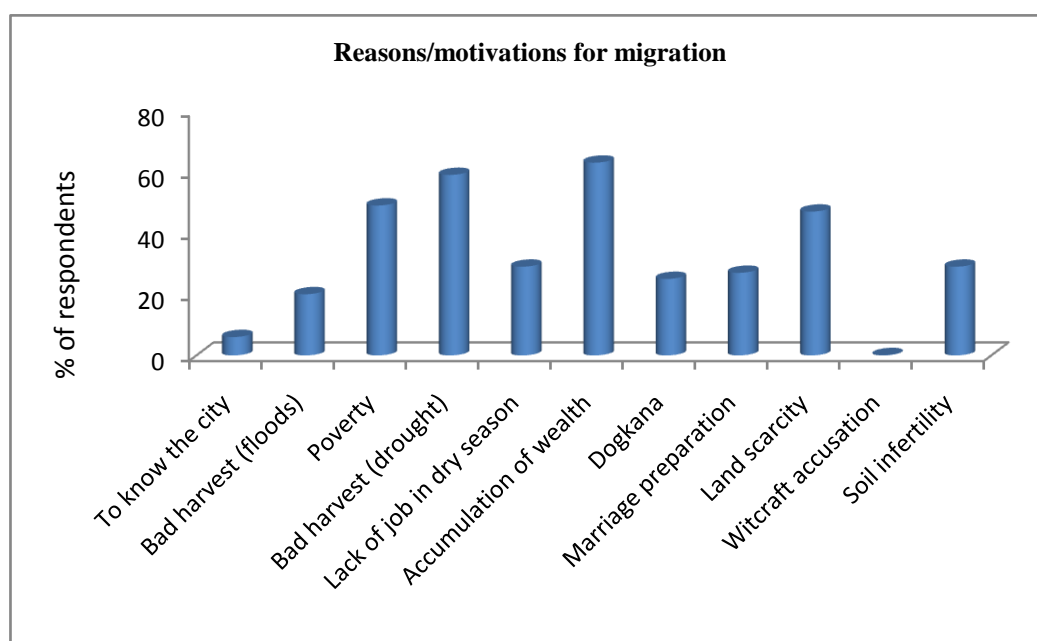
Temporal migration is the commonest form of migration in the study area. Permanent migration, a situation where a migrant is currently permanently non-resident in the source village, is a rare phenomenon. About 17 percent of household heads stated that one or more members of their households had migrated permanently within the last twenty years. On the other hand, about 94 % of household heads reported temporal or circular migration of one or more of their members.

Reasons/Motivations for Migration

Respondents of the second or individual survey who had migrated before (sixty percent) were asked the reasons and motivations behind their migration. Figure 5.1 shows the reasons given. The reasons for migration range from knowing the city to soil infertility. More than fifty percent but less than three quarters of respondents mentioned wealth

accumulation as a reason for their migration (s). Bad harvest as a result of drought is the second highest reason for migration mentioned by a little more than half of respondents. Poverty, land scarcity and soil infertility are also mentioned by a good number of respondents.

Figure 5.1 Reasons/motivations for migration



Source: Computed from field work data, Individual survey

Influence on Migration Decision

The study finds three sources of influence on migration decisions among people who have migrated before (individual survey). These include self (the individual), relatives and friends. As shown in Table 5.2 the individual (self) has the greatest influence followed by relations and friends. Focus group discussions further reveal that the decision to migrate was previously dominated by relatives as migration was more of a family decision than an individual one as Iddirisu recounts; *“those days when there was a drought and no food to eat people were chosen to migrate...one time there was a drought, our father called a meeting and we chose two brothers to migrate and look for food but today before you even*

call a meeting they have already gone...not only because they want to help us all but they also have their own aims, they want more wealth.” (Iddirisu, Kpalung, 67, focus group).

Table 5.2. Influence on migration decision

| Source of influence | Frequency | Percent |
|---------------------|-----------|---------|
| Self | 127 | 79 |
| Relations | 57 | 35 |
| Friends | 53 | 33 |

Source: Field Data, Individual Survey

The dominance of the *self* on the decision to migrate is, however, opposed to the finding of Mensah-Bonsu (2003) who claims that the decision to migrate in the Upper East and the Northern Region parts of northern Ghana is a family affair. In the study area of this research migration as a family affair is most applicable to the cultural influences on migration including the *dogkana* and the *periba* cultures. Also focus group discussions suggest that migration in the form of *kanako* (seasonal migration of part or the entire family to cultivate crops in other places) is seen largely as a family affair. However, other modes of migration such as those propelled by wealth accumulation or the search for money to prepare for marriage are largely more influenced by the individual. Even in some cases where the family did not allow, the potential migrant simply got away through the help of friends.

5.2 What Factors influence Drought-Related Migration in the Study area?

The framework of the study in Chapter Two proposes that drought vulnerability circumstances are mediated by various socio-economic factors which make up the micro space of vulnerability and include asset status to determine migration decisions that

households and their individual make. Some of these socio-economic characteristics include age, gender, and educational attainment, sources of income, land, and type of land, occupation and marital status. Villages and households are differentiated by the nature of these characteristics. As a result the framework assumes that the effects of drought on migration will also be differentiated in respect to different households and individuals. Consequently, a bivariate and multivariate analysis was done to test the association between the dependent variable and selected demographic and socio-economic variables. The Chi-square test of association was used in performing the analysis to determine the association between type of migration, the dependent variable; drought-related migration and non-drought related migration, and the independent variables which are categorised into individual, household and village variables. The individual variables are the age of respondent, education of respondent, marital status of respondent. The household variables include minor income of household head (which may be farm or non-farm strategies), age of household head, having land in flood prone area, land size in flood prone area, land size in drought prone, farm size in irrigation facility. The village or community variable is the availability of irrigation facility in the village.

The dependent variable was measured by asking respondents of the second survey to indicate whether their migration was drought-related or not. One member of 200 randomly selected households was randomly selected and interviewed about his or her migration history and status. Out of the 200 individuals from 200 different households interviewed, 119 (60%) of them had engaged in migration at one point in time or another. Forty eight percent of the 119 individual were currently engaged in seasonal migration with intentions to migrate at the end of the rainy-season or the following year in the rainy-season. Sixty one people (51%) mentioned drought as a reason for their migration as shown earlier in

figure 5.1. The selection of the independent variables was based on the literature on migration and on earlier qualitative information gotten through interviews and focus group discussions. It is asserted that the socio-economic conditions of households including the gender, age, income sources, education, and marital characteristics have an influence on their tendency to migrate during drought (Findley, 1994; Haug, 2002; Obeng, 2005). Females are less likely to migrate because of drought. Unmarried women are more likely to also migrate than unmarried women (Findley, 1994; Haug, 2002; Obeng, 2005). In terms of age, people within the active ages are more likely to migrate than older people and children when faced by environmental events (Adepoju, 2003; Castles & Miller, 1993). Also, households with a high dependence on rain-fed agriculture as a livelihood source are more likely to experience migration precipitated by drought (IPCC, 2007; Brown, 2008; Dalby, 2009; Foresight, 2011). In addition educated or skilled people are more likely to migrate than uneducated or unskilled people (Castles & Miller, 1993). Focus group discussions revealed that the availability of irrigation in ones village, the size of land in the irrigation area, size of land in drought prone area and size of land in flood prone area are important household characteristics that influence drought-related migration.

Table 5.3 shows the selected characteristics of the 119 people who stated they had migrated at one time or another. People between the ages of 30-44 and 45-59 are the dominant. They also consisted of more males and a little more than half of them were in a marital union. More so, most of the respondents did not have formal education. A little less than a quarter of them had completed primary school, nine percent completed the Junior High School or Middle School and 3% completed the Senior High School or Senior Secondary School. The heads of the households of group of people largely consisted of the

age range of 30-44, 45-60 and 60 and above. The minor income of their households was largely made up of farm-related activities such as charcoal burning and shea-nut picking.

Table 5.3. Univariate analysis of independent variables

| Socio-demographic Characteristics | Frequency | Percentage |
|--|------------------|-------------------|
| Sex | | |
| Female | 42 | 35 % |
| Male | 76 | 65 % |
| Total | 118 | 100 % |
| Marital status | | |
| Not married | 52 | 44 % |
| In Union | 67 | 56 % |
| Total | 119 | 100 % |
| Level of education of respondents | | |
| None | 73 | 62 % |
| Primary | 31 | 26% |
| JHS/Middle School | 10 | 9 % |
| SHS/SSS | 3 | 3 % |
| Total | 117 | 100 % |
| Age of respondent | | |
| 0-14 | 6 | 5 % |
| 15-29 | 43 | 37 % |
| 30-44 | 43 | 37 % |
| 45-59 | 13 | 11 % |
| 60 and above | 12 | 10 |
| Total | 117 | 100 % |
| Age of household head | | |
| 15-29 | 9 | 8 % |
| 30-44 | 45 | 39 % |
| 45-59 | 30 | 26 % |
| 60 and above | 32 | 27 % |
| Total | 118 | 100 % |
| Minor Income | | |
| Farm | 70 | 60 % |
| Non-Farm | 47 | 40 % |
| Total | 117 | 100 % |
| Availability of Irrigation in village | | |
| No | 80 | 68 % |
| Yes | 38 | 32 % |
| Total | 118 | 100 % |
| Land size in Irrigation facility | | |

| | | |
|--|------------|--------------|
| Less than 1 acre | 21 | 58 |
| More than 1 acre | 15 | 42 |
| Total | 36 | 100 % |
| Land in flood prone area | | |
| No | 65 | 45 % |
| Yes | 53 | 55 % |
| Total | 118 | 100 % |
| More land in drought prone area | | |
| No | 48 | 40 % |
| Yes | 71 | 60 % |
| Total | 119 | 100 % |
| More land in Flood prone area | | |
| No | 70 | 59 % |
| Yes | 48 | 41 % |
| Total | 118 | 100 % |

Source: Computed from field work data, Individual Survey

Furthermore, a little more than half had lands in flood prone areas. About 60% had more than 50% of their land in drought-prone areas while about 40% had more than 50% of their lands in flood-prone areas. In respect of irrigation farming, only about a quarter of their households had access to such facilities with about 6 out of ten having less than an acre each. The average land owned in the irrigation facility in Libga and Zaazi is one acre.

Table 5.4 shows a cross-tabulation of the Dependent variable (drought-related migration and non-drought related migration) and the independent variables. Though there is no significant relationship between the age group and the type of migration, a higher proportion of the individuals in the 0-14 age group (66.7 %) had experienced drought-related migration. However, there is a significant relationship between sex and the type of migration. Whilst a higher proportion of the females (61.9 %) had non drought-related migration, a little over half of the males experienced drought-related migration. This is consistent with the assertions of focus group discussion that males are those who normally

migrate most in drought years. Results from the household survey also indicate that 70% of respondents state that drought normally increases migration among the males in their households. There is no significant relationship between level of education and the type of migration, and the same applies to the marital status

Table 5.4. Percentage distribution of Individual characteristics by Type of migration

| Age | Type of migration | | Total % | N |
|-----------------------|-------------------------------|---------------------------|---------|-----|
| | Non Drought-related migration | Drought related migration | | |
| 0-14 | 33.3 | 66.7 | 100.0 | 6 |
| 15-29 | 48.8 | 51.2 | 100.0 | 43 |
| 30-44 | 53.5 | 46.5 | 100.0 | 43 |
| 45-59 | 53.8 | 46.2 | 100.0 | 13 |
| 60 and above | 50.0 | 50.0 | 100.0 | 12 |
| Total N | 59 | 58 | - | 117 |
| | $\chi^2=0.968$ p=0.915 | | | |
| Sex | | | | |
| Female | 61.9 | 38.1 | 100.0 | 42 |
| Male | 43.4 | 56.6 | 100.0 | 76 |
| Total N | 59 | 59 | - | 118 |
| | $\chi^2=3.697$ p=0.041* | | | |
| Education | | | | |
| None | 52.1 | 47.9 | 100.0 | 73 |
| Primary | 45.2 | 54.8 | 100.0 | 31 |
| JHS | 50.0 | 50.0 | 100.0 | 10 |
| SHS | 33.3 | 66.7 | 100.0 | 3 |
| Total N | 58 | 59 | - | 117 |
| | $\chi^2=0.738$ p=0.864 | | | |
| Marital status | | | | |
| Not in union | 46.2 | 53.8 | 100.0 | 52 |

| | | | | |
|--------------------------|------|------|-------|-----|
| Currently in union | 52.2 | 47.8 | 100.0 | 67 |
| Total N | 59 | 60 | - | 119 |
| $\chi^2=0.434$ $p=0.318$ | | | | |

Source: Computed from field work data, 2013

Table 5.5 shows a cross-tabulation of household characteristics and Type of migration. Regarding the household characteristics, there was no significant relationship between the age of household head and the type of migration. The same applies to the source of minor income, having land in flood-prone areas, having more of land in flood-prone areas and how much land the household has in the irrigation facility. However, having more land in drought-prone area is significantly related to the type of migration. Whilst a higher proportion of household with no land in drought-prone (60.4 %) experienced non drought-related migration, more than half of households with more land in drought-prone areas (57.7 %) had experienced drought-related migration.

Table 5.5. Percentage distribution of Household characteristics by Type of migration

| Age of household head | Type of migration | | Total % | N |
|--|-------------------------------|---------------------------|---------|-----|
| | Non Drought-related migration | Drought related migration | | |
| 15-29 | 33.3 | 66.7 | 100.0 | 9 |
| 30-44 | 48.9 | 51.1 | 100.0 | 45 |
| 45-59 | 56.7 | 43.3 | 100.0 | 30 |
| 60 and above | 46.9 | 53.1 | 100.0 | 32 |
| Total N | 57 | 59 | 116 | |
| | $\chi^2=1.647$ p=0.649 | | | |
| Minor Income | | | | |
| Farm | 54.3 | 45.7 | 100.0 | 70 |
| Non-farm | 42.6 | 57.4 | 100.0 | 47 |
| Total N | 58 | 59 | - | 117 |
| | $\chi^2=1.540$ p=0.146 | | | |
| Do you have land in flood prone areas | | | | |
| No | 45.3 | 54.7 | 100.0 | 53 |
| Yes | 52.3 | 47.7 | 100.0 | 65 |
| Total N | 58 | 60 | - | 118 |
| | $\chi^2=0.576$ p=0.283 | | | |
| Do you have more of your land in drought prone area | | | | |
| No | 60.4 | 39.6 | 100.0 | 48 |
| Yes | 42.3 | 57.7 | 100.0 | 71 |
| Total N | 59 | 60 | - | 119 |
| | $\chi^2=0.3.779$ p=0.039* | | | |
| Do you have more of your land in flood prone area | | | | |
| No | 48.6 | 51.4 | 100.0 | 70 |
| Yes | 50.0 | 50.0 | 100.0 | 48 |
| Total N | 58 | 60 | - | 118 |
| | $\chi^2=0.023$ p=0.514 | | | |

How much land does your household have in the irrigation facility

| | | | | |
|------------------|------|------|-------|----|
| Less than 1 acre | 61.9 | 38.1 | 100.0 | 21 |
| 1 acre and more | 73.3 | 26.7 | 100.0 | 15 |
| Total N | 24 | 12 | - | 36 |

$$\chi^2=0.514 \quad p=0.363$$

Source: Computed from field work data, 2013

At the community level, there is a significant relationship between availability of irrigation farming in a village and type of migration as shown in Table 5.6. Whereas over half of the respondents from villages with no irrigation farming (57.5 %) were inclined to drought-related migration, a higher proportion of the respondents from villages with irrigation farming (64.1 %) were inclined towards non drought-related migration.

Table 5.6: Percentage distribution of Community characteristics by Type of migration

| | Type of migration | | | N |
|----------------------------|-------------------------------|---------------------------|---------|----|
| | Non Drought-related migration | Drought-related migration | Total % | |
| Village irrigation farming | | | | |
| No | 42.5% | 57.5% | 100.0% | 80 |
| Yes | 64.1% | 35.9% | 100.0% | 39 |
| Total N | 59 | 60 | 119 | |

$$\chi^2=4.895 \quad p=0.022^*$$

Source: Field Data

The results of the Chi-square relating to sex and drought-related migration is consistent with the assertions of focus group discussion that males are those who normally migrate most in drought years. The reason given for this is that it is the role of the male to provide

food and also cater for the basic needs of the household. Results from the household survey also indicate that 70 percent of respondents state that drought normally increases migration among the males in their households.

About 8 out of 10 of those whose migration is drought-related did not have access to irrigation farming. Irrigation is available in the villages of Zaazi and Libga only. This enables them cultivate crops all year round. Focus group discussions in these villages reveal that the impact of drought is usually limited to rain-fed farming. Forty percent of drought-related migrants also came from households with more of their land in flood prone areas suggesting the mediating role of the characteristic in the drought-related migrations of such households. Flood prone areas are important means of adapting to drought as they are less prone to drought. Furthermore about 60 percent of drought-related migrants had more of their household land located in drought-prone areas. This suggests that households with more of their lands located in drought prone areas are more likely to experience drought-related migration.

Logistic Regression

A binary logistic regression was performed through Stata to assess prediction of type of migration (dependent variable) as a function of the independent variables. Table 5.7 shows the model involving the individual characteristics and type of migration. The model parameters indicate that none of the variables is significantly associated with the type of migration at 95 percent confidence level. However, sex related with type of migration at 90 percent confidence level, where the males were 2.186 times as likely as females to have drought-related migration. The influence of sex on drought-related migration as shown by the logistic regression is corroborated by focus groups and household heads. Focus groups and household interviews indicated that males are more susceptible to migration under

drought-vulnerability circumstances. This gender disparity is a result of the gender roles in these villages. As mentioned earlier in the interpretation of the chi-square analysis, men are primarily responsible for providing food for the household while women are expected to cook for the household. Males are therefore expected to migrate in search of income to procure food for the household. On the other hand, the migration of females is said to be largely unrelated to drought. Migration among un-married females is seen as a ('fashion') norm that has come to being in recent decades. The gender dimensions of drought-related migration are consistent with the findings of Findley (1994) from Mali and Ezra (2001) from Ethiopia. Obeng (2005) also found similar results in the north-eastern part of Ghana.

Model 1 explains only 3.7 percent of the variation in the type of migration which means that about 96.3 percent of the variation was not explained by the variables in the model.

Table 5.7: Binary Logistic regression Parameter estimates of the model on individual characteristics and Type of Migration

| Variables | Model 1 | | | |
|---------------------------|---------------------|----------------|--------------|----------------------|
| | Coefficients (Beta) | Standard Error | Significance | Odds Ratio {Exp (B)} |
| Age | | | | |
| 0-14 (RC) | | | 0.311 | 1.000 |
| 15-29 | -0.829 | 0.895 | 0.355 | 0.436 |
| 30-44 | -0.903 | 0.897 | 0.314 | 0.405 |
| 45-59 | -0.886 | 1.012 | 0.381 | 0.412 |
| 60 and above | -0.625 | 1.028 | 0.543 | 0.535 |
| Sex | | | | |
| Female (RC) | | | | 1.000 |
| Male | 0.782 | 0.410 | 0.056 | 2.186 |
| Level of Education | | | | |
| None (RC) | | | | 1.000 |
| Primary | 0.357 | 0.456 | 0.434 | 1.429 |
| JHS | 0.071 | 0.677 | 0.916 | 1.074 |
| SHS | 1.081 | 1.177 | 0.358 | 2.948 |
| Marital status | | | | |
| Not in union (RC) | | | | 1.000 |
| Currently in union | -0.063 | 0.411 | 0.879 | 0.939 |
| Constant | 0.172 | 0.891 | 0.847 | |
| Model R ² | 0.037 | | | |

Source: Computed from field work data, 2013

With the introduction of the household variables as shown in Table 5.8, the model explains 15.8 percent of the variation in the type of migration; an improvement of Model 1 which included only the individual characteristics. The sex of the individual is significantly associated with the type of migration. Males are 2.662 times as likely as females to experience drought-related migration.

Table 5.8: Binary Logistic Regression Parameter estimates of the model on household characteristics and Type of migration

| Model 2 | | | | |
|---|---------------------|----------------|--------------|----------------------|
| Variables | Coefficients (Beta) | Standard Error | Significance | Odds Ratio {Exp (B)} |
| Age | | | | |
| 0-14 (RC) | | | | 1.000 |
| 15-29 | -0.667 | 1.171 | 0.569 | 1.948 |
| 30-44 | -1.018 | 1.151 | 0.376 | 0.361 |
| 45-59 | -0.093 | 1.313 | 0.943 | 0.911 |
| 60 and above | -1.203 | 1.218 | 0.323 | 0.300 |
| Sex | | | | |
| Female (RC) | | | | 1.000 |
| Male | 0.979 | 0.479 | 0.041* | 2.662 |
| Level of Education | | | | |
| None (RC) | | | | 1.000 |
| Primary | 0.522 | 0.511 | 0.307 | 1.685 |
| JHS | -0.139 | 0.707 | 0.844 | 0.870 |
| SHS | 1.472 | 1.172 | 0.209 | 4.358 |
| Marital status | | | | |
| Not in union (RC) | | | | 1.000 |
| Currently in union | -0.334 | 0.465 | 0.472 | 0.716 |
| Age of household head | | | | |
| 15-29 (RC) | | | | 1.000 |
| 30-44 | -1.621 | 0.886 | 0.067 | 0.198 |
| 45-59 | -2.251 | 0.888 | 0.011* | 0.105 |
| 60 and above | -0.948 | 0.886 | 0.285 | 0.388 |
| Minor income | | | | |
| Farm (RC) | | | | 1.000 |
| Non-farm | 0.999 | 0.515 | 0.052 | 2.716 |
| Land in flood-prone area | | | | |
| No (RC) | | | | 1.000 |
| Yes | -1.017 | 0.561 | 0.070 | 0.362 |
| More of land in drought-prone area | | | | |
| No (RC) | | | | 1.000 |
| Yes | 1.577 | 0.591 | 0.008* | 4.840 |

More of land in flood-prone area

| | | | | |
|---------|-------|-------|-------|-------|
| No (RC) | | | | 1.000 |
| Yes | 0.291 | 0.621 | 0.640 | 1.338 |

Household land in irrigation facility

| | | | | |
|------------------------|---------|-------|-------|-------|
| One acre and less (RC) | | | | 1.000 |
| More than one acre | -0.0587 | 0.630 | 0.351 | 0.943 |

| | | | | |
|----------|-------|-------|-------|--|
| Constant | 0.826 | 1.502 | 0.582 | |
|----------|-------|-------|-------|--|

| | | | | |
|----------------------|-------|--|--|--|
| Model R ² | 0.158 | | | |
|----------------------|-------|--|--|--|

Source: Computed from field work data, 2013

Model 3 shown in Table 5.9 is the complete model for the study which included the individual characteristics as well as the household and community characteristics. The model explained 21.5 percent of the variation in type of migration, which is an improvement of both Models 1 and 2. This means that the more variables were added, the better the variation in the dependent variable was explained by the model. Though the age of the respondent was significantly associated with type of migration only at 90 percent confidence level, respondents within the 30-44 ages were 0.138 times as likely as those in the reference category (0-14) to experience drought-related migration.

There was also a significant association between sex of the respondent and type of migration. The males were 3.083 times as likely as the females to have drought-related migration. In addition, there was a significant association between the source of minor income and type of migration, where respondents with non-farm minor income were 3.442 times as likely as those on farm income to have drought related migration. Also respondents from communities with land available in drought-prone areas were 4.870 times as likely as those without land in drought-prone areas to have drought-related migration.

Another thing worth noting is that households with more than one acre of land in irrigation facility were 9.621 times more than those with less than one acre of land in the irrigation facility to experience drought-related migration. The size of a household's irrigated land therefore has an inverse relation with drought-related migration of its members. Also, respondents whose household heads were between the 45-59 age group were 0.090 times as likely as those in the 15-29 age group to experience drought-related migration. Finally household involved in irrigation farming were 0.028 times less likely than those not involved in village irrigation farming to experience drought-related migration. Level of education, marital status and having land in flood-prone areas were not significantly associated with migration type in the model.

Table 5.9: Binary Logistics Regression Parameter estimation of the model on individual, household and community characteristics and Type of migration

| Variables | Model 3 | | | |
|---------------------------|---------------------|----------------|--------------|----------------------|
| | Coefficients (Beta) | Standard Error | Significance | Odds Ratio {Exp (B)} |
| Age | | | | |
| 0-14 (RC) | | | 0.077 | 1.000 |
| 15-29 | -1.763 | 1.011 | 0.081 | 0.171 |
| 30-44 | -1.975 | 0.982 | 0.044 | 0.138 |
| 45-59 | -1.203 | 1.167 | 0.303 | 0.300 |
| 60 and above | -1.917 | 1.150 | 0.096 | 0.147 |
| Sex | | | | |
| Female (RC) | | | | 1.000 |
| Male | 1.126 | 0.484 | 0.020* | 3.083 |
| Level of Education | | | | |
| None (RC) | | | 0.356 | 1.000 |
| Primary | -1.467 | 0.540 | 0.577 | 0.231 |
| JHS | -2.410 | 0.733 | 0.598 | 0.090 |
| SHS | 1.208 | 1.090 | 0.268 | 3.347 |
| Marital status | | | | |
| Not in union (RC) | | | | 1.000 |
| Currently in union | -0.462 | 0.481 | 0.337 | 0.630 |

| | | | | |
|--|--------|-------|--------|-------|
| Age of household head | | | | |
| 15-29 | | | 0.087 | 1.000 |
| 30-44 | -1.467 | 0.872 | 0.092 | 0.231 |
| 45-59 | -2.410 | 0.875 | 0.006 | 0.090 |
| 60 and above | -0.812 | 0.898 | 0.366 | 0.444 |
| Minor income | | | | |
| Farm (RC) | | | | 1.000 |
| Non-farm | 1.236 | 0.545 | 0.023* | 3.442 |
| Land in flood-prone area | | | | |
| No (RC) | | | | 1.000 |
| Yes | -0.810 | 0.564 | 0.151 | 0.445 |
| More of land in drought-prone area | | | | |
| No (RC) | | | | 1.000 |
| Yes | 1.583 | 0.616 | 0.010* | 4.870 |
| More of land in flood-prone area | | | | |
| No (RC) | | | | 1.000 |
| Yes | 0.915 | 0.735 | 0.213 | 2.497 |
| Household land in irrigation facility | | | | |
| One acre and less (RC) | | | | 1.000 |
| More than one acre | 2.264 | 1.111 | 0.042* | 9.621 |
| Village irrigation farming | | | | |
| No (RC) | | | | 1.000 |
| Yes | -3.587 | 1.169 | 0.002* | 0.028 |
| Constant | 1.734 | 1.304 | 0.184 | |
| <hr/> | | | | |
| Model R ² | 0.215 | | | |

Source: Computed from field work data

The relationship between age and the dependent variable, type of migration, is intriguing. Focus group discussions pointed out that children of the ages 0-14 experience drought-related migration mainly for two reasons. First they are either taken along by their

household heads to bush-farms or opt to do so themselves. Second, children who complete high school usually migrate to find jobs elsewhere when there is a drought as farm work becomes scarce or non-existent.

The significance of availability of irrigation scheme in a village is understandable as irrigation enables the people in such villages to cultivate crops all year round. As a result some old men in Libga claim that 'there is no drought in their village'. Amazingly, all the households in Libga and Zaazi have access to a land in the facility. It is asserted that land in the irrigation scheme is not released on individual but on household basis. Focus group discussions pointed out that farming in the irrigation is tedious because tractors are not allowed in. Accordingly, this has ensured that household heads restrict young people who wish to migrate. More so, there are claims that young people generally find the returns from pepper farming in this area more rewarding than returns from migration. The significance of one having more land in drought-prone area is explained by the relatively high susceptibility of such areas to drought. Focus group discussions reveal that such areas are poor in holding moisture and dry up easily under drought conditions.

The complete model in Table 5.9 reveals a rather unexpected result of the relationship between the size of irrigated land and drought-related migration. A follow up qualitative data collection revealed that at the time of land distribution at the irrigation facility, households with more matured males were given one acre or more while those with lesser males were given less than an acre. Focus group discussions reveal that although some households were several times larger than the average household size, they were given no more than two acres of land. This is said to have resulted in some cases to the situation where smaller households that were given one or less than an acre practically got more

land per person. The explanation follows that most of the larger households have increased in their sizes overtime resulting in pressure on their lands in the irrigation fields. This has led some of their males to find alternative income sources. Besides, proceeds from the irrigated farms are said to be largely controlled by the household heads and used for household needs. This is explained to be contrary to the aspirations of particularly younger men and women who have aims to acquire modern wares and also to accumulate some wealth. This situation is said to be more intense in larger households. Meanwhile, focus groups state that the pattern of growth of population in larger and smaller households at the time of land allocation until now is unchanged. The larger households are increasing faster in size than the smaller ones although marginally. Further, rivalries among particularly step sibling males in some larger households that were allocated one acre or more (but less than two acres) have also led to the search of alternative sources of income by some of their males. It is explained that such rivalries are usually triggered by earlier rivalries between rival wives.

5.3 Conclusion

This chapter has investigated the patterns of migration in the study villages. Migration is found to be a common phenomenon in the study area. The discussions in the chapter also indicate that most migration is temporal and largely seasonal. Meanwhile, the decision to migrate is found to be largely influenced by the individual. This chapter has also investigated the relationship between drought and migration. Drought is a major reason for migration in the study area. About 51% of respondents mentioned bad harvest which they attributed to drought for their migration. A Chi-square test of association between drought-related migration on one hand and selected variables as independent variables showed that at 0.05 significance level, there is a significant association between sex, the availability of

irrigation in a village, more land in drought-prone area and drought-related migration. Males other than females, and people whose villages have irrigation schemes, and households with more land in drought-prone areas are more likely to migrate because of drought. Through the means of a Binary logistic regression analysis the study finds out that drought-related migration is largely determined by availability of irrigation in ones village and having more land in drought-prone area. The relationship between drought and migration is expressed in coping and adapting to the impacts of drought. How drought affects migration and the nature of mediation of various factors can therefore be understood examining the processes leading to migration from drought vulnerability circumstances. The next two chapters will look at coping and adaptation to drought respectively.

CHAPTER SIX

MIGRATION AS A COPING STRATEGY TO DROUGHT IN THE STUDY AREA

6.0 Introduction

Coping strategies are means of surviving or restoring wellbeing to acceptable levels when confronted by unanticipated livelihood failure emanating from adverse events such as drought. The occurrence of drought in rural areas generally prompts myriad of coping strategies, of which includes migration. This chapter discusses the mediation processes involved in the decision to migrate as a coping strategy under drought-related vulnerability circumstances. The chapter begins by taking a broader but brief look at coping strategies which is then followed by a focus on migration.

6.1 Coping Strategies to drought

Table 6.1 illustrates the coping strategies to drought in the study communities according to household heads. The strategies range from the borrowing of money and food to weaving (of various items including roofing grass). The most commonly used strategy among households as shown in the frequencies is the selling of animals and poultry which is used by more than two-thirds of the households surveyed. The next common strategy is migration which is mentioned by nearly two-thirds of the respondents followed by borrowing money which is stated by a little less than half of the respondents. Hunting is the fourth commonest and employed by nearly a third of the households.

Table 6.1. Coping Strategies to Drought (N=200, multiple response)

| Coping Strategies | Frequency | Percent |
|--------------------------|-----------|---------|
| Borrow money/food | 93 | 47 |
| Sell food stuff | 23 | 12 |
| Labour Migration | 122 | 61 |
| Beg food | 4 | 2 |
| Sell animals and poultry | 142 | 71 |
| Re-harvest farms | 2 | 1 |
| Farm labour | 10 | 5 |
| Postpone funeral | 13 | 7 |
| Hunting | 59 | 30 |
| Selling of firewood | 11 | 6 |
| Weaving | 19 | 10 |

Source: Field Data, Household Survey

During focus groups, household heads or their representatives were asked to rank the most important strategies and only the four most important strategies were ranked. Table 6.2 illustrates the results of the exercises from the study villages. Stars were assigned to indicate different rankings or levels of importance of strategies as decided by the focus groups. The strategy with the most stars, that is four stars, shows the most important while lesser number of stars indicates less importance.

Table 6.2. Ranking of Coping Strategies

| Coping Strategies | Village Ranking of Most Important Strategy | | | | |
|-----------------------------|--|--------|-------|-------|-----------|
| | Kpalung | Laligu | Libga | Zaazi | Tunaayili |
| Selling animals and poultry | XXXX | XXXX | XXXX | XXXX | XXXX |
| Labour Migration | XXX | XXX | XX | XX | XXX |
| Farm labour at home | | | XXX | XXX | |
| Asking for remittances | | XX | | | XX |
| Sell food stuff | XX | | X | | X |
| Borrow food stuff | X | X | | X | |

Source: Field Data

According to the focus groups, the selling of animals and poultry is the most important coping strategy. Focus groups reveal that households usually start by selling poultry, goats, sheep and lastly cattle to help secure food and cater for other key expenditures of the household. Contrary to this explanation, individual interviews revealed that there are households whose animal selling behaviour or uptake of animal selling is inconsistent with the general order. For example some would prefer to start with sheep and goats and then proceed to poultry and cattle. An explanation for this behaviour is that prices of food stuff are usually cheaper during or immediately after the harvest. Despite the uncompetitive pricing during this period, it was still economically wise to sell them since the rise in animal prices were not as high as that of food during the off-season.

Furthermore, labour migration is ranked as the second most important coping strategy to drought by household heads in the villages of Laligu, Kpalung and Tunaayili. It is also the third most important strategy in Zaazi and Libga. Migration to the southern part of the country in search of jobs is said to be very common in times of drought. There is also migration to destinations within northern Ghana. Migrants usually send back remittances

in the form of food or money to support their households. Migration is also seen as helpful as the absence of some members of the household reduces pressure on insufficient food.

Exchange entitlements or exchanging ones labour on other people's farms for income is also considered an important source of income to households during drought years. As demonstrated in Table 6.2, farm labour is considered to be the second most important in the villages of Zaazi and Libga. Its importance is associated with the presence of an irrigation facility which provides an additional source of labour income. During drought, some villagers travel to unaffected areas to work on other peoples farms for a few days before returning. During the dry season following a drought, some people engage in farm activities such as clearing new fields for cultivation which involves removal of trees and shrubs, and making yam monts.

Borrowing money or food from family and friends is another means of coping with drought. Although borrowing money is a ranking strategy in the villages of Kpalung, Laligu, and Zaazi, it is said to be one of the last resorts. This is because borrowing is regarded as an act of desperation and it comes with a stigma which household heads try to avoid. Focus group discussions reveal that this option is usually employed when household food reserves and stock of animals are at a critical point. At this point a household may ask for a loan in cash or food from relations or friends both within and out of the village. These loans are usually due for payment in the following year.

Another strategy of coping with drought is the selling of food stuff. This is a ranking strategy in Kpalung, Libga and Tunaayili. From observation and interviews, one gets the impression that the villages of Kpalung and Tunaayili cultivate more cash crops than the

rest. This may account for their ranking of the strategy of selling food stuff. According to the chief of Tunaayili, the village has a large migrant community (including *kanako* migrants) whose interests he perceives is more of accumulation than of securing food for their households. In the village of Libga it is understood that in a bad year people prefer to even sell staples to earn income to invest in irrigation farming which is regarded as more lucrative than migration. One would have expected the village of Zaazi which shares the same irrigation facility to have also ranked the strategy of selling food stuff among the four most important strategies. Zaazi is understood to have a smaller portion of land in the irrigation facility compared to Libga. This is probably the reason for the difference in ranking.

Asking for remittances from relations in other places is a ranking strategy in the villages of Laligu and Tunaayili. This strategy includes asking for help from migrants who were already at the destinations before the drought struck. This therefore distinguishes the strategy from migration as strategy in coping with drought consequences. Other strategies in coping with drought include postponing funerals, replanting, re-harvesting farms or scavenging, selling firewood, hunting, weaving and appealing to government and NGOs. The appeal to government and NGOs did not receive any attention during the survey. Scavenging, selling firewood that have just been cut from the commons, hunting, and weaving may easily draw ones attention for one main reason: these strategies are gender specific. Scavenging and firewood cutting and selling are regarded as exclusively for women. Pictures 6.1 and 6.2 depict these strategies respectively. These pictures show only females.

Picture 6. 6: Scavenging in vegetable farms in Libga



Source: field work. March 2012, Libga Irrigation scheme

Picture 6. 7: Transporting firewood to the Savelugu market from Laligu village



Source: field work, January 2012, Laligu village

Scavenging provides income to those engaged in it and also food to their households. Income earned from selling firewood is used to buy ingredients for the household and settling some of the cost of education. Hunting and weaving roofing grass on the contrary is exclusively a male activity. The bush animals caught by hunters are either sold for income or eaten by the household. However, cultural norms disallow hunters from selling the entire catch. Typically, hunters are expected to bring home some of their catch for food. Weaving of roofing grass is common in the study areas but few people engage in the activity for income. Rather, it is mainly for the repair of their houses. Those who engage in this activity for an income are said to make good money due to the scarcity of such grass and the persistence of some urban dwellers to maintain the grass roofs of their homes instead of replacing them with metal sheets. This is depicted in picture 6. 3.

Picture 6. 8: Weaving of roofing grass in the dry-season



Source: Filed work, March 2012, Zaazi Village

6.2 Migration as a Strategy for Coping with Drought

That morning after prayers as I was sitting outside the house, my junior brother came to goodbye me, that he was travelling to Bimbilla. I asked why?...He answered that he had heard of the rain over there so he was going to labour at the yam farms. My brother complained that due to the drought he did not have a good harvest of his soya bean so he had to find money from elsewhere to invest in farming the coming season. When drought occurs a lot of the young men in this household migrate. But if there is a good harvest they rather stay home to rest and also crack their groundnuts, then they go to Savelugu every market day to enjoy the market. (Azindoo,63, Kpalung, interview).

The statement above is reflective of migration as a response to drought in the study area. It shows that the engagement and experiences of migration varies across space and time. There are spatial differences in migration in the study villages. Some household heads in the villages of Zaazi and Libga explained that some of those who migrate in the rainy-season (April-August) as a result of drought also return in time to engage in irrigation farming which effectively starts around November and December. On the contrary, focus group discussions in the other villages point out that people who migrate as a means to cope with drought did not return until the rains started the following year or until they accumulated enough money or food to last till the next harvest.

Furthermore, migration from northern to southern Ghana in times of difficulty in the colonial days was mainly to the rural areas in the south where largely cash-crop farms and some gold mines existed (Amin, 1974; Rodney, 1972; Songsore & Denkabe, 1995). However, interviews and focus groups asserted that in times of adversity as that provided by drought, most south-bound migrants go to urban rather than rural destinations. These changes have been facilitated by increasing concentration of manufacturing industries and

rise of service facilities in urban areas and improvement and transportation and communication between the home and the destination areas.

Migration outcomes during and after drought do not result directly from the effects of drought. Rather, they emerge from the interaction of the vulnerability with other factors. The most important of these according to focus groups and interviews is household needs. Focus groups, by what may be described as easy consensus pointed out that drought increases migration most among poor households that are vulnerable and food insecure. However, the picture can be somewhat complex as for example this varies in certain ways between poor and rich households as Yussif explains:

that doesn't matter...even if a household is very very rich, the young people will still migrate to cope with drought because the rich household heads will not let them sell animals during hard times to buy the heart desires. So a lot of young people migrate when there is drought...so you can see a lot of people in that house who migrate but that doesn't mean they don't have enough to eat. You see, it is not only food that people want, they have their own desires too...if you want to know the differences between a boy from a poor house and that from a rich house, then just go over there in Accra and see how they live and work....even the food they eat...how they spend their money...but when the jobs are not available or do not pay well you will see who will stay and will come home. Those from the rich households where food is not a problem will quickly come back home. (Yussif, 85, Tunaayili, focus group).

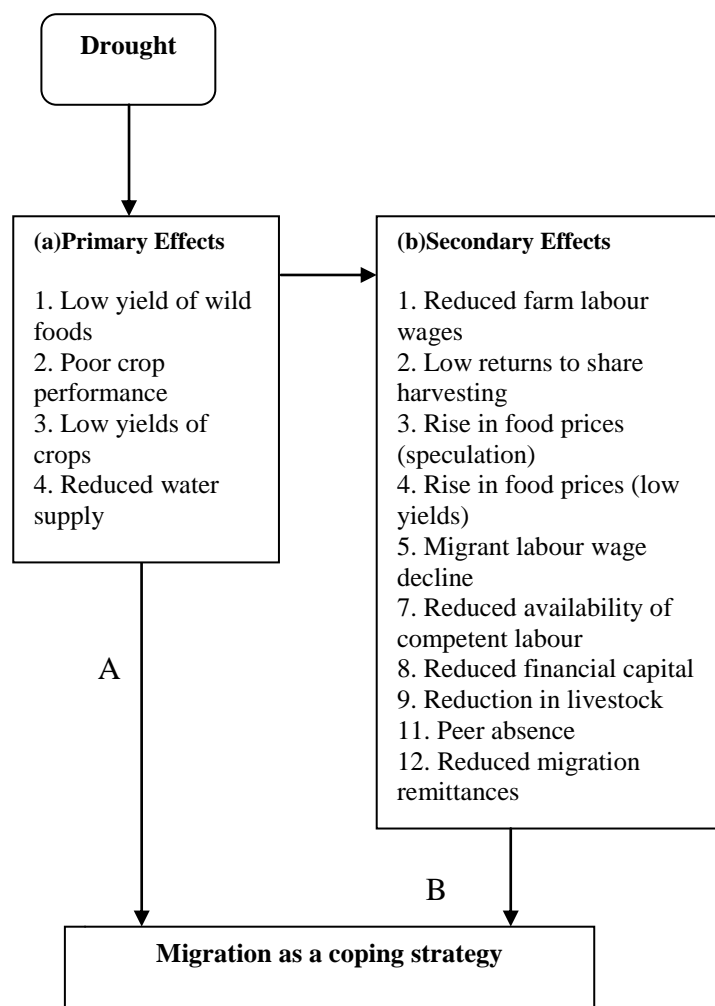
Yussif draws attention to the temporal dimensions of the rise in migration during drought years by referring to the internal dynamics of household resource allocation, and poverty or food. It seems logical for a migrant whose household can survive the consequences of

drought with existing resources to return home when life becomes ‘unbearable’. Yussif also throws light on the distinction between migration as a survival and as an accumulation strategy which are crucial in mediating migration outcomes during drought. Focus group discussions generally point out that it is usually poor households that employ migration as a survival strategy while rich households use it as an accumulation strategy. But this assignment is not exclusive as some households are said to combine both motives. Also, Yussif’s assertions and focus group discussions help to draw attention to the fact that food security is but one objective of households that are affected during droughts as opposed to Sen’s (1981) explanations of the entitlement approach to food security which assumes that food security is the only objective. Rather, households and their individuals have additional and varied objectives. These can have powerful mediation effects on migration outcomes during drought. Invariably, literature on coping strategies to drought has concentrated on how households procure food. This is likely due to the fact that food is a primary requirement for survival. Nonetheless, it is imperative to also pay attention to diverse objectives of households and their individuals as these too are important in mediating migration outcomes during drought and may produce different effects.

There are gender differentials in terms of the mediating circumstances leading to migration when faced by drought-vulnerability. It is explained that by the norms of the Dagomba ethnic group, men are responsible for providing food or at least the grains or tubers for making meals. Accordingly, this has largely resulted in more males migrating during drought. By this, gender roles can be seen as playing an important mediation role in migration outcomes during drought.

As a result of the mediation effects of different non-drought factors, migration from drought situations can emerge from many different ways. These different ways are referred to as channels of (drought-related) migration in this study. These can be broadly categorised as primary effects and secondary effects channels as related to coping strategies. These are depicted in figure 6.1.

Figure 6.1: Channels of Drought-related migration



Source: Author's construct

The primary effects channel (A) refers to the mediation of the initial effects of drought such as poor yield by non-drought factors to result in migration as a coping strategy. Similarly the secondary effects channel (B) refers to that which involves the mediation of

the derived consequences of a drought (such as reduced financial capital and rise in food prices) by non-drought factors such as witchcraft, marriage and funerals to result in migration as a coping strategy. This way, drought vulnerability is simply a precipitating factor. However, the sub-channels of drought-related migration are inexhaustible due to the endless interaction possibilities of the mediation factors. The study finds that the mediation of drought vulnerability instances by non-drought factors can have myriad of consequential effects on migration such as increase in particularly male migration, extended period of migration especially among seasonal migrants, change of destination and (unusual) return migration. The mediation modes and their effects on migration within the primary and secondary effects channels identified in the study are discussed below.

6.2.1 Migration precipitated by Vulnerability to the Primary Effects of Drought

This sub-section discusses migration in relation to vulnerability to the principal effects of drought. These are usually felt on wild foods, crops and animals, and on water supply.

Drought and wild foods: According to focus group discussions, when drought occurs particularly at the beginning of the wet-season the production of the shea fruit is hampered with consequences for income of women. Collecting and processing shea nuts is a main source of income for women in the study villages. In drought years, some females who normally depend on picking shea nuts or processing them for butter as a source of income particularly for procuring wares in preparation for marriage migrate mostly as an alternative to secure that income. Non-farm income sources in the area, as in the rest of northern Ghana, are scarce compared to the south.

Drought, crop performance and crop yields: The occurrence of drought and the extent of damage to crops is a crucial determinant of drought-related migration among households. Focus groups reveal that when drought hampers growth through temporal wilting and creates expectation of low yields, there is usually migration even before the harvest. This is said to be most common among the poor particularly those who usually find it difficult to survive the lean season. The explanation follows that those households with ‘enough’ animals do not migrate immediately and out of necessity. Rather they sell the animals to buy and stock food. Members of such households are said to mainly migrate to earn income for purposes other than food later in the dry season. This is in contrast with those from poor households who are said to mostly migrate in search of money to procure food and other basic needs. Hence, migration resulting from quick reaction to visible effects of drought on crop performance and anticipated poor yield is, however, said to be largely short-lived if the anticipated effects do not occur particularly for those who do not normally engage seasonal migration. This clearly demonstrates that drought (risk) perceptions influence migration outcomes. But this instance is particular of the advent of a drought but not its eventual impacts on crop yield.

Permanent wilting, a common sign of severe (or ‘big’) drought, is said to be a very strong factor influencing migration. However, the occurrence in time of this dreaded kind of wilting was very important in determining migration decisions. Respondents indicated that in the case of permanent wilting occurring at a point in the rainfall calendar when it was still possible to replant seeds and seedlings, there was usually ‘very less’ migration. This is opposed to the situation when drought occurred at a point when it was too late to replant or grow other crops. Here, permanent wilting is said to be convincingly indicative of

extremely poor harvest or total crop failure and migration is said to be more prominent particularly among the poorer ones.

It is important to note that drought is not the only factor causing wilting. Recently, farmers have adopted new pesticides and weedicides which are said to cause temporal wilting of plants particularly maize and soybeans. Drought is said to have the greatest wilting effects on those farms that were already experiencing such temporal wilting at its onset. Regarding the wilting effects of these chemicals on crops there were wide disagreements between two schools of thought- one claiming the chemical were either not good enough or fakes from China and another postulating their wrong usage by farmers; applying to wrong crops and wrong mixing with water. A follow up to the Pong-Tamale Agricultural Station of the Ministry of Agriculture and interview confirmed both views with no proportion of blame assigned.

One form in which drought induced or influenced migration which drew consensus so easily is through actual low yields and actual harvest losses. Drought is said to be the commonest means of experiencing low yields or losses in crop production in the study villages. This has several implications for migration. Some of these are discussed.

Focus group discussions revealed that the most important reason for migration after experiencing losses in crop production is to secure income for purchasing food for the household. This is considered the responsibility of the male. It is understood that the failure of social capital to deal with these outcomes and the lack of non-farm jobs often leave migration as the only option. This way, migration is seen as an opportunity to secure alternative income to cater for household food requirements in the absence of or failure of own production. Migrants may send back money, food or both.

Low yields or crop failure has consequences for the debt status of some households. Debt settlement becomes a pertinent perturbation for households that have for example; borrowed food during the lean season, borrowed money to invest in farming or engaged in 'contract farming'. Under conditions of low yields, borrowing once again increases a household's debt against the background of risk from rainfall variability, pest and disease among others. As a result, some households engage in migration to enable the payment of loans or redemption of farming contracts and to finance household expenditure. A means of obtaining capital for investment in farming which is said to be very common even in normal years is the growing industry of contract-farming. There are several variants of contract farming. The usual practice is for the lender to plough the field while the farmer takes responsibility for the rest of the activities and at harvest the lender rewarded with one bag (100 Kg) of the crop yield. Some lenders are said to have developed a "non Godly" (Zakaria, 60, Zaazi village) attitude towards reclaiming monies borrowed or returns from 'in-kind contract' arrangements. As a result some farmers have to sell livestock to pay back these loans in the event of total crop failure. Migration is said to help avoid this situation through remittances allowing the livestock to be saved for other purposes.

Low yields or crop failure from drought also has direct effects on marriage with consequences for migration. This particularly concerns young men who have already paid the bride prices of their fiancées and only now have to buy the wedding wares (*Talia*) and finance the wedding ceremony. Marriage of a wife can be both a household and individual priority. It was generally agreed at the focus groups that younger men had no 'real need' (*talahi*) to marry while 'older young men' (that is, those who were expected to be already married or are getting past the age they should normally have married a wife) did. It is

explained that if an older young man had started the marriage procedures before the drought set in, he and some other men (mostly, brothers) may migrate at the occurrence of permanent wilting to find alternative income to complete the rest of the marriage procedures while it is more likely that a young man with 'no real need' would migrate alone under the same circumstance. It is further explained that waiting too long before wedding a girl whose bride price has been paid could result in 'a change of mind' of the girl which may result in both the 'loss of a love' and the initial money spent.

Drought and water supply: By its nature as generally an outcome of rainfall deficiency, it is no surprise that drought has consequences on natural supply of water by influencing the volume of water available in water bodies and water tables. In the study areas, streams, ponds and a dam are the water bodies that are affected by drought. Drought may lead to severe decline in the volume of water in these bodies and the extent to which it last in the year thereby affecting animal and plant production. According to focus group, there are generally three ways of dealing with this situation in relation to animals especially in severe drought years. First, releasing once cattle to the Fulani who are seen as experts in finding food and water for animals even in times of dire scarcity partly due to their relatively high mobility propensity as against that of the local 'herd children' and herdsman. This method is said to be the most common as there are now fewer children to cater for cattle due to the need to enrol children in school. Also, it is understood that grownups are no longer willing to involve themselves in this activity due to a rise in individualistic values as cattle are mostly family property. Second, a household may sell a part of its animal stock to avoid the possible eventuality of total loss. This situation is said to release some of the children taking care of animals (particularly cattle) and in the dry season following the drought such children may be free to migrate. Third, a household

may resort to drawing water and food from afar for the animals. This may result in the need for more hands which may in turn reduce migration for a household particularly those in possession of or in custody of family or clan cattle. Besides, taking cattle far from the village in search of water and food requires more children as well as experienced and older young men to ensure security of the herd. Other animals as goats and sheep are often allowed free movements and only offered water and food on return.

Collective resources (excluding pool resources) at the family or clan level in the study villages are notorious for their indivisibility property and the difficulty at arriving at collective decisions about their usage. This leaves the household (or extended family) head little option than to protect family or clan cattle by assigning more members a role in their care until the family or clan send more people (usually one or more children) or make a decision to sell some of them to buy food. A typical traditional view emphasized that the selling of such collectively owned cattle is not preferred as they are needed for the final funerals rites of elderly men and without which those funerals could never be performed. The failure to perform the final funeral rites is believed to bring bad luck to the entire family. However, there are also families with Islamist traditions that do not see the need for funerals or final funeral rites to be performed with a bull or cow.

Responding to the question: does drought affect the water volume in the dam? An old man at Libga vividly explained; *“God is not human, he knows how to help you after testing your faith in him...sometimes there is also flooding in the same year, and the dam gets full again”*. (Abdul Rahiman 45, Libga Village, focus group). What if there was no flooding? I asked. This answer was again straight but three fold. First, an abnormal distribution of rainfall in the season resulting in drought did not necessarily result in a reduction in mean annual rainfall implying there could still be enough water for irrigation inspite of the

occurrence of drought. Second, sometimes there are ‘big’ rains during the dry season which helps to increase the water volume which may be enough for two times farming as usual. Third, when a drought resulted in reduction in volume of water in the dam, it was usually still possible to at least grow a crop once as against twice in a normal year. This discussion made it easier to understand earlier statements which suggested that reduced volume of water due to drought often did not lead to big increases in migration. Rather, such a situation called for increased efficiency in water management. This discussion also corroborates the stance of a 60 year old man in an earlier interview who stated that “*in this village there is no drought*” (Damba, Libga village). He was referring to the reliability of the dam even in drought years.

6.2.2 Migration precipitated by Vulnerability to the Secondary or Spill over Effects of Drought

Other than through the direct effects on wild fruits, crops and animal, drought also affects migration behaviour of among households through its secondary or spill over effects. The spills over effects of drought have the capacity to push households into states of ‘disequilibrium’. By ‘disequilibrium’ of a household is meant a departure from the normal functioning of the unit relating to unusual changes in their capital base. The effect of this is changes in household conditions including changes in consumption patterns and engagement in unusual income generating activities. Spill over effects of drought can contribute to migration outcomes even in subsequent years after the incidence of a drought. For example, interviews and focus groups reveal that prolonged drought, through its adverse effects on crop yields normally results in more than proportionate increases in migration against the jobs available at the major destination points and this is said to contribute significantly to big falls in wages and thus remittances which further

destabilises households that are vulnerable and or normally partly dependent on migrant remittances. This is said to result in increased and recurrent migration for such households in subsequent years in an attempt to gain stability. Migration resulting from such spill over effects of vulnerability to drought has tremendous implications for migration outcomes. Fifteen channels of drought-related migration from vulnerability to the secondary or spill over effects of drought are identified and discussed below.

Drought and farm labour wages: Drought is said to adversely affect local labour wages. It is explained that during drought weeds do not grow as much and their removal also exposes the soil to further sunshine which may result in loss of scarce moisture. As a result, weeding which is regarded by focus groups as the most important agricultural income earning activity comes to a halt until the rains fall again. This, accordingly, usually results in migration particularly for those households which normally have little or no stock of food during the lean season and depend largely on farm wages for sustenance until the harvest is ready. Some households which lack economic or financial capital to finance their farm activities are said to depend on such wages too. Hence when a drought is prolonged such that labour wages are adversely affected, some members of such households may migrate temporarily to earn income while the others stay behind. On the resurgence of the rain, these members may return or send down remittances to help with the farms at home and stay until harvest time. It must, however be made clear that this form of drought-related migration is dependent on the timing of the drought. If it occurs after much of the weeding has been done, some of the poorer farmers may be better equipped by the wages earned from the weeding and can thus survive the drought much longer without immediately resorting to migration. The reverse situation, however, is said to usually result to 'distress' migration among some households.

Drought and share harvesting: Another means through which the primary effects of drought spill-over is through share harvesting. Share-harvesting, a system of harvesting where the labourer gets a share of the produce in return instead of cash is an important means of income particularly for women. This is mostly used in harvesting of groundnuts and soya beans. Picture 6.4 illustrates share harvesting where a woman has divided her gross share of the harvested groundnuts into five equal parts or hips. The farmer takes four parts and the remaining one-fifth goes to the woman as ‘payment’ in kind.

Picture 6. 9: Share-harvesting in Kpalung village



Source: Field work, September, 2012. Tunaayili Village

The harvesting of groundnuts is mostly done by women and represents a major source of income for them. Women who have nieces or *Perinsi* living with them as a cultural practice are said to gain most from share harvesting. This is due to the combined labour of the woman (the aunt) and the niece (*peringa*). These women traditionally called *Periba* take charge of the proceeds from the harvest and use part of it to prepare their nieces for

marriage. It is explained that in drought years when groundnuts are affected women particularly older ones become poor or poorer and are unable to meet their needs including marriage wares (Talia) for their nieces, ingredients for cooking and clothes among others. Older women are said to react to this situation by encouraging or directly instructing their nieces or *perinsi* to migrate mostly to the south of Ghana in search of jobs. This situation, it is explained gives rise to both new members in the migration stream and an unusual period of migration (timing). That is, migrating during the rain-season instead of the dry-season.

Drought, anticipated low yields and food prices: The effects of drought on food prices are also claimed to have significant effects on migration outcomes. Anticipated losses during drought is said to lead to price speculation that usually causes food prices to shoot up even before the realisation of the ‘bad harvest’. This is partly blamed on market women who are said to be so much in love with money. One of the female participants of a focus group discussion at Laligu village explained this love for money in the following words: “The market women are here with us. They see our suffering but they even love money more than they love their husbands so how can they stop pushing prices when there is fear of losses...” Ayi (52, Laligu). Price increases in response to anticipated scarcity due to drought conditions is said to exacerbate food insecurity situation for households. Accordingly, under such a condition, migration becomes a key source of income. It is also revealed that when price hikes are accompanied by low prices in poultry and livestock, the poor particularly those who ‘creep the lean season’ are more susceptible to migration. This is partly due to their high dependence on off-farm wages as well as sale of poultry and livestock for food during that period.

Drought, low yields and food prices: Concomitant low yields in drought years is said to result in scarcity of food leading to price surges in the food market. This situation is said to be even more serious when drought occurs in neighbouring countries such as Burkina Faso and Niger and results in increased demand and the transportation of food out of Ghana's borders. This situation is said to often lead to increase in the waves of migration in search of jobs. When this is coupled with low prices of poultry and animals, migration is said to increase further.

Drought and social capital failure: Social capital is very crucial to the sustenance of livelihoods based subsistence agriculture as people tend to depend on each other not only to conduct their activities but to absorb frequent shocks (Bebbington, 1999). The case of the study area is no different. Social capital is an important means of coping with drought through food and monetary gifts, visits (that reduces pressure on available food) and hope (assurance of help during crisis) among others. It is said that when the severity and scope of drought are very high and wide respectively, it results to the failure or reduction of strength of one's social capital particularly in absorbing the concomitant food shortages and stresses within the zone. For example, getting gifts or borrowing food from relations and friends from other villages in other regions becomes difficult or impossible. The failure of these safety net mechanisms, it is reported, contributes to migration outflows as a way to off-set the negative changes in entitlements.

'Drought as a happy moment': Focus group discussion revealed that drought vulnerability also provides an opportunity for some of the people who are not allowed to migrate to do so. Drought is said to provide the impetus to migrate among people who otherwise are not allowed or expected to migrate. Children are not usually allowed to migrate. They may do so only in the company of an adult. Some parents have also put

migration restrictions on their sons and daughters as a way to keep them in school. The explanation follows that when young people migrate, they eventually develop such a big taste for seasonal migration which increases their chances of missing one or two terms (semesters) and eventually dropping out of school. It is understood from the interviews which brought up this issue that, even in poorer households children are usually not expected or allowed to migrate because they are not matured to work and also to face the dangers associated with living in the city.

The incidence of drought is said to be just enough an opportunity for some people particularly girls below fifteen years to migrate. Accordingly, children who initially are not allowed to migrate see a 'happy moment' in drought as it provides an opportunity to migrate under the pretext of helping to ameliorate adverse conditions from drought. This category of drought-related migrants are said to sometimes leave without permission with the chief aims of knowing Accra and finding girl lovers usually among the girls who have already migrated from the same village. This is said to have contributed to sexual promiscuity and teenage pregnancies. Again, it must be stated that the increasing migration of girls from these villages is also contributing to the rise in male migration as some of the boys are reported to 'just go after their girl friends and also to know Accra'.

In the dry-season you hardly see any girls here. The young boys used to play with them in the day time and at night during moon light with drums and dance. But where are they? They are gone...so the boys too go after them even if their parents don't allow, they just wait for a time of bad harvest, like drought. When there is drought anyone can migrate...Even the boys and girls who are too small to go, go without their parents notice but their parents don't pull their ears so much on return if they don't bring debts. (Damba,70, Kpalung, focus group).

This account in response to a request to clarify the ‘happy moment’ (*suh pelli saha*) leaves no stone unturned in vividly explaining how drought influences migration of children and other people who are not allowed to migrate. The following quote gives a similar but another dimension of the ‘happy moment’.

...some young men cannot migrate because they are household heads...everyone will blame you for leaving your wife and children alone. But when there is a drought some of those people can go and no one will talk...then they go and when they come back a lady comes after them sometimes with a pregnancy. Some people too are fed up with some situations in their houses like wives fighting every day, so when there is a drought, they just go away for some time even if they have many animals...yes sometimes they stay until the rains come...they work a little and go after the girls and stay away from the women troubles at home...hm sometimes even they go after peoples wives...oh yi, good question, sometimes mistakenly, other times they know but it is the lust. (Hamza, 37. Kpalung, focus group).

The explanation in the above quote is explicit in explaining the ‘happy moment’ with respect to household heads. It is generally considered an abnormal act for a head to migrate because he has to stay to ensure that the unit functions well and also meet its obligations to the rest of the village for example by attending to calls for village meetings, funerals, naming ceremonies among others. Nonetheless, when the effects of drought on livelihood sources are severe, a household head may migrate as Abu explains:

But if it is like a club coming from above (dire situation) the house head may travel but that will be a sign of hopelessness and you are not man enough. Look, if a household head

travels then know that it is a very serious situation. It also means that there are no young men or the young men are not serious guys. (Abu, 75, Zaazi, focus group).

Interestingly, none of the respondents or focus groups participants related the happy moment to women. When they were questioned about it, they claimed there were no linkages between the two. Rather, discussions on other topics suggested that during drought some married women migrate to find jobs which allowed for time to heal wounds between them and their rivals, and their husbands. This may be a happy moment for both the women migrating and the others at home.

Drought-related migration, wage decline and prolonged stay: It is asserted that during drought years, there is usually a reduction in remittances for households who already rely on migration as a source of income. Reduction in remittances through wage decline is said to easily affect the functioning of some households as they descend into disequilibrium. It is explained, when drought affects a wider area (such as several districts or all of the three northern regions) and yet is prolonged enough to affect much of the crops, it leads to crop failure or reduction in yields on a larger scale which then ensures a terrific rise in the volume of migration. The rise in volume of migration resulting from such droughts is said to reduce wages at the destinations thereby reducing the earnings of migrants and their remittances to their households at the source.

The explanation follows that some young men are relentless at satisfying their 'modern needs' including televisions, cassette players, motorcycles, telephones and having several girl friends before and or after marriage even during drought years. This is partly responsible for the inadequate remittances received by some households. Initially, the fall

in remittances may result in the migration of more members of some households who may misconstrue the reasons for the failure of migrants to send enough remittances. It is also revealed by respondents that for those households that have adapted seasonal migration as a livelihood strategy such a wage situation normally results to failure to secure the needed 'lean season money' thereby causing severe disequilibrium, and this is said to often result in prolonged stays among some migrants.

Drought-related migration, wage decline and change of destination: It is also asserted that wage declines due partly to increased migration may also lead to relocation of migrants, particularly those whose initial migration was related to the drought, from urban to rural areas. Focus group discussions in all the villages inspite of easily reaching consensus that emigrants, even in drought years, preferred city locations including Accra, Kumasi and Takoradi, also indicated that some out-migrants responded to wage declines by re-locating to rural destinations usually yam producing areas where the volume of migration is said to be less. These include rural areas in both the north and south of the country. It is explained that most migrants detest the harsh working conditions in 'thick forest or bushes' of parts of the south and will only engage in farm labour activities there as a last resort. The fear of snakes and the comparatively extra energy required for farm activities keep emigrants preferring urban areas since they already had been involved in the high energy demanding farm work at home.

Drought-related migration, wage decline and return migration: Closely related to the aforementioned point is the return of some migrants during periods of high competition for jobs and concomitant decline in labour wages. Focus groups identified that it is mostly the rich who are sensitive to such situations. One string of explanation follows that such

migrants are usually not engaged in migration as a coping mechanism but rather as a wealth accumulation venture. Thus they can afford to do without migration wages when the wages are less than proportionate to ‘energy exerted’ as mba Asana claims: “Look...they have nothing to lose, so they can return home and just sit and crack their groundnuts comfortably and enjoy their meals while those who have no food toil over there...” (Asana, 40, Kpalung interview).

Three of the people in picture 6. 5, the first two from the left and the first from the right had just returned from Agboglossi in Accra due to reduced wages and shortage of jobs. They had all migrated in the month of October 2011 as a result of a drought earlier in that season. One of them who returned in December 2011 went on to Bimbilla to raise yam mounts for close to three months. True to the assertion that such return migrants have ‘nothing to lose’, these three young men stated they had no problems with feeding in their households. They, however, were quick to say they could not sell their food stuff to cater for other needs and wants which included the intention to expand their farm sizes to increase their potential to earn more income. This is similar to the explanations of return migration in drought years.

Picture 6. 10: Groundnut cracking in the dry-season



Source: Field work, March 2012, kpalung village

Return of some migrants is also explained by the strategy to avoid using ones savings or incurring debt in the absence of jobs or poor wages from available jobs. Living in the city as in Accra requires, paying rent and tax, feeding and other cost. Hence in the face of high competition for jobs and low wages some migrants decide to return home with what they already have accumulated to avoid using these and also running into debt. Another reason given for return migration during drought years is the decision by some migrants to avoid exploitation in the cities by reverting to yam mounts farming at home which is another important means of earning money in the dry-season. These young men are said to then return home and re-migrate when they learn of rains in the yam growing areas. It is understood, such a return migrant may wait several months before migrating again. Also, some migrants who return home may engage in yam mount labour in nearby villages requiring no migration but constant commuting between work place and home.

Drought-related migration and availability and competence of labour: Late return and non return of migrants particularly males in the farming season following drought years, is said to have a reducing effect on labour available for farming. The effects of the reduced labour are felt both within the affected household and other households that usually rely partly on labour from other households to cultivate their fields. This way, some households are unable to cultivate their entire fields while some of those dependent on paid labour may not only experience scarcity of labour but also rise in wages limiting their ability to do their normal farm size or increase farm sizes. Moreso, in the absence of some of the stronger males and females, the onus falls on children to help out in more ways than usual. This is said to reduce the quality of work done on farms. It is also explained that the situation of prolonged stay of emigrants leaves much work to be done by few people and this results in rush work thus reducing quality which has a telling effect for plant growth and yields. One might initially be tempted to believe that remittances from migrants would cater for paid labour of households whose members do not return in time or at all during the wet season, but this is according to consensus at a focus group not feasible during the growing season that follows a 'big drought'. Due to the increased volume of migration and prolonged stay of some migrants, the price of labour is said to rise beyond the reach of most households. This way, remittances as agreed upon during a focus group, are usually not enough for paying the price of labour in a year following a 'severe' drought. This situation is said to sometimes lead to low productivity and production even under conditions of favourable rainfall thereby reintroducing or enforcing the conditions that lead to migration. That is, insufficient yields to satisfy food and other needs. This, it is explained, causes increased migration or its persistence among some households. Thus drought can result to migration not only during the particular year of its occurrence but in the years after.

Drought and cultural migration: Also, it is claimed that drought by its secondary effects affects the migration of women who have recently given birth through a practice called *dogkana*. This practice was already explained in the previous chapter. First, drought is said to facilitate the migration of women who have just given birth and are expected to return to their natal family for while (exceeding three months but with no precise maximum stay). According to some people during focus group and interviews, although the practice of *dogkana* is generally on the decline, it increases among households in drought years. This is said to result from the need to reduce the household food demand as the food requirements of the mother and the new born baby now become the responsibility of the woman's natal family. Although this was disputed by others during the focus groups, there was consensus that men would normally delay the return of their wives under situations of poor harvest as in drought years. Two reasons were cited for this. First the male's inability to bear the cost of the cultural processes involved in getting the woman back is hampered during drought. Second, prolonging the stay of women during hard times also reduces the number of people to feed thereby reducing pressure on insufficient food and other resources. An interesting aspect of this assertion is that while there are no precise limits for a *dogkana* to stay in her father's house, there is mention of prolonged stays. The explanation (according to focus group) follows that the general practice is not to stay beyond one year. Also, it is said to depend on the husband of the woman involved. This means that if there was a desire to get back ones wife at a certain time but which was met with inability, then we could discern a prolonged stay instance.

Diminished financial capital in drought years and investment in farming in subsequent years: Livestock are often sold in drought years to secure the needed food and other needs of the household. This diminishes capital available for farming in the next season as the

sale of animals is a main source of income for farming investment. Also, sometimes there are low prices of livestock during drought which results households to sell more animals than usual in order to meet household needs. The low prices of livestock during drought years are blamed on weight loss and diseases resulting from lack of enough pasture, plant residues and insufficient water. Accordingly, this leads to a situation where animals are sold lower than their potential worth. Some households, however, sell some of their animals earlier to buy and stock food while the animals are still in good shape and therefore do escape this situation. But some of those households who are caught up with selling livestock when they have already lost tremendous weight end up selling more of them in order to satisfy household needs thereby diminishing the livestock faster than usual. The reduction or in extreme cases complete depletion of livestock, may result in the inability to self-sponsor farming activities. This is said to normally cause households to seek farming investment capital elsewhere. One way of securing this capital in such a situation, according to focus group discussions, is to migrate in the months just before the rains to sell ones labour. The youth normally travel or migrate to Zabzugu, Chiriponi, Yendi, Bimbilla, Salaga, Saboba and other towns where yam farming is done on large scale to raise yam mounts. In other cases a household may borrow money from a local lender at an interest at the beginning of the season and then send the young men to the areas where weeding is profitable to earn the money needed to pay off the debt. It is explained that in some cases, when the wages are very good some young men decide to stay on as migrants until the end of the rain season while they send remittances to cater for hired labour on the farms back home. In some other cases households depend on crop harvest to pay back loans. However, failure to secure good harvest among such households is said to result in migration of their members to secure income to pay back borrowed monies.

‘Get them back’: Replacing livestock in post-drought years: Livestock is perhaps the most important means of saving or insurance among households in the study villages. In drought years livestock is usually sold to help survive the food scarcity situation and for other purposes. But these animals have to be replaced for the sake of the future. This in some cases results in migration by households to secure money to replace livestock for ‘next time’. This kind of migration is said to be particularly common when yields in the years immediately following the drought year were not enough to satisfy food requirements and yet buy new livestock. The ensuing discussion is captured more vividly in the following remark by an elderly man:

If you don't go and find money to buy other animals to take the place of those you sold, when there is another drought or a flood what will you do?...but if the losses are due to Fulani cows and you are lucky to see them, then the chief will make them pay more than you would have gotten from the harvest...No I have never migrated for that reason, at that time my elder brothers had to migrate because there was nothing here to do and they sent money to my father and he bought food and new animals. (Niendow, 55, Zaazi)

The statement highlights the significance of replacing livestock as an insurance strategy. Besides replacing animals for the sake of anticipated droughts and losses in crop production, it is also considered very important for the purposes of celebrating funerals which are also anticipated events in the villages.

“It's not easy to be rich because witches have their eyes on you” Witchcraft, drought vulnerability and migration: Witchcraft is cited as a factor that influences migration during drought. Mention is made of some witches taking opportunity of food shortages to kill or disease the souls of rich relations under the pretext of not receiving food gifts or having their request for food turned down by the relations as Mandogu argues:

Witches are always in search of opportunities to do harm to rich relations. During trouble times such as drought, everyone is careful with them. You just give them what they ask to keep them away. If you can't or don't want to, then you just go somewhere else for a while so that no old people see you to beg. (Mandogu, Laligu, 35).

The reason of witchcraft further complicates the picture pointing out clearly that drought is just one factor within a complex interaction of other factors causing people to migrate. A seemingly opposing view on the subject is that witches, inspite of being capable of doing many bad things are too often blamed for bad things that they have not done. One explanation for bad things happening to people in drought years is the failure to honour debts to ancestors or gods. This relates to the act of asking for gifts or assistance from the supernatural with the promise of giving something in return say an animal. In drought years, as is explained, the capability of people to honour these 'spiritual contracts' are diminished and failure to do so may attract a punishment. This explanation is not an entire deviation from the earlier one but only warns of over emphasis on witchcraft as the main cause of spiritually bad things during drought years.

Drought-related migration and the influence of peer absence and peer valour: Peer influence is an important element in the migration decisions in the study area. This does not fail to have its effect on the mediation processes leading to migration outcomes during drought as Alhassan explains:

At that time my grandfather had a lot of cows...and as for goats and sheep they were everywhere. We had a lot of food too from the previous year...people came to borrow. My grandfather was very generous too...and he gave friends and relations what they asked

for. But all my friends were gone, they had no food in their homes...I was left almost alone...how can I walk with smaller kids...so I followed just to be with them and also know Accra (Alhassan, 38, during a focus group at Kpalung).

In the above statement, Alhassan explains the reasons for his first migration. His description of the household situation during a drought in 1992 is clearly indicative of a comparatively greater resistance and far less difficulty if any in surviving the consequences of that drought. Alhassan's migration in that year was not related to vulnerability of his household to the drought but that of others. Having missed his peers coupled with the want of being designated a brave man (by knowing Accra) along with his friends, he decided to migrate. Alhassan ended up in Accra and joined his village mates as a metal scrap dealer. He, however, returned home earlier than most of his friends when the rains started bringing along a radio cassette player for himself and a radio for his grandfather. His grandfather became happy and was no longer angry with him for going on the 'journey' when he was needed to help weave grass for the worn out roofs. This story is reminiscent of an interview in Laligu with an 84 year old man who noted that: "some young people go because others go". (Ghanew, laligu). Similar to this is a statement by a 40 year old woman from Zaazi who confides: "We don't just go for nothing...but many young girls migrate because they see others go. They don't want to be the only ones not to know Accra. Their colleagues laugh at them if they don't try it". Although these statements are somewhat different from Alhassan's in terms of their relation to drought, they emphasize that Alhassan's story is not one of a kind: the migration of people does influence the decisions of others to migrate. It is therefore to be understood that drought-related migration of vulnerable people does influence the migration behaviour of others to a certain degree.

Funerals and migration in drought years: When there is not enough to eat and there are still funerals some people don't know that everybody did not harvest the same quantity. Some get enough; others fall and can't sleep well. So some young people just say they will go and come and if they don't get enough money they stay till the funerals are celebrated before you see him return to avoid using their small food stuff and few animals and no one can blame them...some people postpone funerals in drought years but that is not good. The spirits of the dead need to go home and they can't if you don't celebrate the funerals (Osman, 70, Tunaayili, focus group discussion).

The quote above by an elderly man from Tunaayili during a focus group explains how drought in the context of poor yields and inability to afford funeral costs induces or influences migration among young men. The main string of the presentation is that there exist differentials among households in terms of the consequences of drought on crop yields. This ensures that in drought years some households do not become vulnerable and also have the capability to perform or play their part in performing funerals within the village and of relations in other villages while other households are not. This can be partly attributed to the differential impact of drought on different households and also that households have different endowments and capabilities that may make them less vulnerable. According to Osman and other participants of the focus group, individuals from households which cannot afford to celebrate funerals due to poor harvest resulting from drought sometimes migrate to find jobs and earn income to help with the funerals. Right after this focus group discussed above, another one was held on the same day at the village of Kpalung. When the question "How do you meet funeral cost in drought years?" was asked Mr Osman who accidentally joined the researcher to kpalung on his own business jumped up narrating the same experience he had earlier told. One would have

expected similar narrations afterwards but there was an opposing view inspite of the fact that they generally agreed with his opinion as one side of a story. An elderly woman stated:

“...yes some people also migrate in the name of drought. Some people run away from responsibility when drought occurs. The apha’s (Islamic scholars) in this village are causing all this. Islam has destroyed our tradition...now they say we can’t celebrate final funeral rites...so some young men who agree with them just run away when they know the funerals are near...they already did not want to perform the funeral and now they have a way out. They prefer to sell their food to marry or buy motorcycles than to send the souls of their fathers to the ancestors. They just tell you they will go and find some money and come and that is it! They don’t come back until the funerals are over...” (Amina 65, Kpalung, focus group discussion)

This statement shows how the religious context of the village of Kpalung which is similar to the other villages, is influencing traditional beliefs and practices and also how this influence mediates migration outcomes in drought years. The rising domination and influence of Islam among the study villages is a common trend and point of concern among the older generation. When a group of young men were engaged in this discussion later in the day, some of them did agree Amina’s assertion was true. Others, however, disagreed explaining that the older folk were still in favour of spurious expenditure during funerals when there were other pressing needs such as buying roofing sheets made of zinc or aluminium and buying motor cycles. It therefore seems that some people are in favour of what the Islamic scholars preach not only because of their faith but in order to meet the needs of an increasing modernisation trend being experienced by the study villages as the

rest of Ghana. As a result, in drought years, when yields are unfavourable, this conflict becomes even more intense and leads to out-migration among some households.

Migration remittances in drought years and migration of the elderly: “We already have lots of difficulties, when drought happens it takes our problems beyond our management ability so some of the young men and sometimes myself travel to find a little money...If the boys and girls go first, I wait to see what they send or return with before I decide whether to go or not. If the remittances sent can ensure enough food and other problems such as funerals and naming ceremonies are settled I don't go anywhere.” (Iddirisu, 40, Tunaayili).

In the statement above, the eldest son of a household tells of a situation where the size of remittance flow relative household needs is crucial to the migration of the elderly. Interviews suggested that young males are those often sent out or expected to migrate during difficult times like those of drought. It is explained that their failure or inability to send enough remittances during periods of drought induces more out-migration which may include the elderly.

The research reveals that besides its effects on out-migration, drought vulnerability has effects on immobility. This concerns people who have previously experienced migration under drought conditions. Previous experience of unfavourable working conditions during drought is explained to result in immobility among some households during years. It is explained that there is often undue physical stress from jobs at the destinations during periods of drought. The incremental effect of drought on migration is said to result in a situation where the demand for jobs outweighs the supply. This is said to have a tremendous reduction effect on wages. This way, a migrant exerts more effort which is

seen as disproportionate to the wage. Also, avoiding what is understood as a drought migration 'debt crisis' during drought periods is another channel of drought-related immobility. This is also related to previous experience of coping with drought. It is understood from interviews increased migration during drought years ensures that some migrants do not get enough jobs and money to even cater for their stay. For some of these migrants lending from other migrants becomes the immediate alternative particularly when faced with sickness or the need to return home. This is said to sometimes result in a debt crisis when eventually one fails to earn enough money to pay back. In some cases such migrants have returned home only to sell scarce food and animals to pay back debts. In some cases, these debts are settled by their parents or guardians. Such unfavourable previous experiences of migrants is said to result in immobility of some seasonal or circular migrants during severe drought. Hence the experiences and expectations of those who have migrated before are crucial in influencing migration outcomes during periods of drought. Focus groups, however, emphasize those affected in this way are mostly those who migrate mainly to accumulate wealth rather than those who migrate out of necessity.

6.3 Case Studies

Three case studies (box 6. 1, 6. 2 and 6. 3) are presented below to demonstrate some of the effects of drought on migration of particular households.

Case one**Box 6. 1. Ashetu's household**

| | |
|---|--|
| <ul style="list-style-type: none"> ▪ <i>Drought in the late 80s or early 90s</i> | <p>In this house when there is drought we do many things to help ourselves...Look, my first drought in this house was before the year president J. J. took off his army uniform to contest the election of 1992...That year the household head sold animals till they were finished</p> |
| <ul style="list-style-type: none"> ▪ Livestock sold | <p>then one boy migrated to Bimbila to work in the yam farms and my rival went to Kayayo...these days when there is drought and the crops do not do well I quickly go to the irrigation and find a plot after they have harvested and also plant some vegetables. I sell some and we also eat some...My rival also migrated to Accra. When the household head realised there was nothing left in the house, he asked one of my rival's sons to follow his brother's footsteps and also work in the yam farm in Bimbila but he suggested going to Accra...the first one left after he saw the harvest with his own eyes. My husband did not agree because some times when young men go to Accra they forget why they went there and start working for their own useless things. We got some money from the two boys. The boys returned home when we were going to start farming here. But even my husband didn't have enough to start farming so when my rival returned from Accra I also went to Accra to see what I can get...Though my rival lent our household head some money from what she had brought it was not enough.</p> |
| <ul style="list-style-type: none"> ▪ <i>Rural-rural migration</i> | |
| <ul style="list-style-type: none"> ▪ <i>Drought in 2011</i> | |
| <ul style="list-style-type: none"> ▪ Sold animals, | |
| <ul style="list-style-type: none"> ▪ Sold firewood, | |
| <ul style="list-style-type: none"> ▪ Irrigation farming | |
| <ul style="list-style-type: none"> ▪ <i>Migration of two sons and two wives</i> | |

Source: *Field work, Ashetu, 41, Zaazi village*

Mma Ashetu, good afternoon. "Are you still in this village...then we will give you a wife so that you don't go home, you like our village isn't it. Good afternoon, welcome back, but the rain will beat you. Sorry I cut our conversation, the visitors were from afar." Don't mind the rain, I can sleep here and eat some of your nice vegetable soup. I am back again...I wanted to find out more about what you people in this house do to help the situation when there is a drought...You earlier mentioned some people migrated in the first

drought. What were the situations at the time right before they went? “Everything was gone...and there is nothing in this village. There is no work...the assembly man promised my husband a job but you know this politicians.” The answer provided by Ashetu demonstrates a situation where migration was not a straight forward choice but a result of failure of local strategies to satisfy basic needs as food. The sending off of Ashetu’s rival’s son to Bimbilla is also evident of this timing of migration. However, the first son didn’t wait for such a time before migration, he left when the harvest was completed and realised that it wouldn’t be enough. This was a straight forward move and likely based on limited opportunities at the home as suggested by Ashetu.

You earlier mentioned some young men go to Accra to do useless things. What do you mean by this? “...it is the girls and chicken, the nice food; they will eat every meal with meat... So my husband did not allow him go to Accra but sent him to Bimbila”. Mma Ashetu and her husband are not isolated by their opinion. Other older people in the study area generally prefer their sons migrating to rural destinations as they are seen as more likely to send remittances and also less likely to introduce norms that are inconsistent with those at home. The maintenance of traditional norms is understood to enhance remittance flow by migrants as they keep a good moral economy. That is, having or maintaining a good moral commitment to send remittances back home. In spite of this, young men are said to prefer urban destinations for the quick money earning opportunities and modernisation features of such places including electricity, western foods, and autonomous lifestyles. *You mentioned your rival brought some money and lent some of it to your husband. Do you know how much she gave to your husband?* “Yes, 150 Ghana cedis”. *Do you remember how your husband used this money?* “He bought a bag of maize and spent the rest on the farms.” *Do you know the entire amount of money your rival brought home?* “I don’t know but she mentioned she lent nearly all the money she brought

to our husband. But I trust her because she is very generous and also a woman cannot hide money when children are hungry.” The lending transaction between Ashetus’ rival and the household head is reflective of the gender roles in the study area where it is men’s responsibility to supply food particularly the grain. This way Ashetus’ rival didn’t have to use much of her income to procure food for the household unlike the two boys who sent home remittances in the form of money for the purchase of food. Also, as a responsible male the first son of Ashetu’s rival assumed responsibility and migrated to earn income for the household. Similarly, when the situation got tough, it was a male and not a female that was sent off to Bimbilla to ‘find money’. According to mma Ashetu, she and her rival took their own decisions to migrate. “Because things were still difficult for us I also went to Accra to hustle. My rival had left her things there for me to continue”. *What things were these?* “Oh just some basin, strings, some ropes and a sleeping mat and she paid for the room for one more month...These are the things she uses to carry goods in the market for money” *Did you both agree on that before she came back home?* “You this *Karachi* (educated fellow), you want to know everything. Yes, one of the girls came home with some money and a lot of soup things (ingredients) for me from her and the girl had a hand palm bangle (mobile phone) so I told her (her rival) we were still in difficulty and if that place was better for her then I would also come. She asked me to follow that girl who brought the things the following week but you see my daughter was going to marry and was already in the in Accra working hard for that so there was no one to cook. So we decided that I wait for her return before I went to Accra.” “So when she arrived with some money and plenty things for making soup my husband let me also go...if not because he saw what came home he wouldn’t let me”. *So, how were the benefits of migration of the people in this house during last year’s drought?* “Hm, you have asked a good question...The first month was very good but the other one month was terrible. In the first

month I sent some money to my rival who used it to buy ingredients and pay school fees. I also bought some cloths for myself and my husband's mother, I bought second hand clothing for all the children and then I sent money to my husband to buy me a goat and groundnut seeds...after the second month things were very hard to the extent that I just wanted lorry fare to return but it was difficult." *Why was this so?* "They said the rains delayed in the Mamprugu area (the home of the Mumprusi ethnic group in North-East Ghana) so their women all run to Accra fearing there was going to be another drought. Those who were there already didn't even move a foot (to go back home). So I came home...my daughter paid for our transport back home." *You mean your daughter was still there too?* "Yes, as for her, she migrates every year...she wants to marry." *So was she already coming back home?* "No...it's just what I told you...there was no more money over there...she normally comes home during sowing but it wasn't time yet." Mma Ashetu had planned to stay longer and earn more money but her migration was cut short by the shortage of jobs. Also, her daughter's return home was unusual for the same reason. "...but my rival did well, she was lucky with work...the other two boys also came home and bought several bags of maize and one bag of cassava and still had money to give to their father for tractor services." *So supposing there is a drought again would you consider migrating?* "If I have enough to eat in this house I will not go anywhere. If what we have here can't help us then we have to go where we can find it."

Case two**Box 6. 2. Pagnaa's household**

| | |
|---|---|
| <ul style="list-style-type: none"> ▪ <i>Pagshe's return migration is delayed</i> | <p>I have seen a number of droughts here in this household...the first one, I was still at <i>dogkana</i> at my parents house...more than twenty five years ago, in the early days of J. J (president Jerry John Rawlings) my husband did not come for me because things were hard...but later his father told</p> |
| <ul style="list-style-type: none"> ▪ <i>Drought precipitates new migration</i> | <p>him I had already spent two years so he should come and ask my parents and take me back home. When I arrive there is nothing, nothing, even a single cassava...First we sold groundnuts to buy maize. Then we sold two goats to buy maize again before the price of maize went high...Then two</p> |
| <ul style="list-style-type: none"> ▪ <i>Seasonal migrants leave earlier</i> | <p>boys migrated to Kintampo to find money and food. One girl also migrated but her aim was to satisfy her own desire and prepare for marriage...and because of the drought there was so small groundnuts to harvest so she left earlier than usual. One of my boys too usually goes every year, the other</p> |
| <ul style="list-style-type: none"> ▪ <i>Debt postponed</i> | <p>does not...it is the bad harvest that led him to travel...the one who normally travels every dry season normally goes to Accra. But when there</p> |
| <ul style="list-style-type: none"> ▪ <i>Funerals postponed</i> | <p>is a bad harvest he goes to Kintampo because there is food there and he knows some of the drivers who can help bring us maize...they boys sent some food but we didn't have money. We also had to pay some debts to the tractor owner but we postponed it to the next harvest. The tractor man</p> |
| | <p>did not argue when my husband asked because he too saw what happened in the fields... In the very beginning of president Kuffour's winning of the election, those years(2000-2005) were not good...there was a drought that was very bad for us. We sold all our animals and poultry...I even sold my radio to buy half a bag of cassava...that year no one in this village performed funerals with happiness, for us we just postponed our funerals...when things got out of hand I went to Kumasi to find some money and my husband went to Bimbila to raise yam mounts.</p> |

Source: Field work, Pagnaa, 43, Laligu Village

Although Pagnaa was not present during the first drought after she got married, which occurred somewhere between 1980 and 1985 the spill over effects reached her whilst at

her father's home. Her return from *dogkana* was delayed as a result of the drought. *Mma Pagnaa, you mentioned that some people migrate in this house when there is drought. Does it help you very well?* "Yes, but it is all luck...you can go and you will get nothing and you can go and God will bless you...you can buy some food and bring it or send it down." *Who buys the maize and cassava, the men or the women?* "Ei, it is the men but if they fail then we buy." *As you mentioned, drought brings many problems. Besides the lack of food what were some of those this house faced before you went to Kumasi during the Kuffour time?* "...we had no food, even my clothing were worn out, if you have a wedding all of the women will wear nice clothing and you wear old ones, you see that is not good...they will say your husband is a useless man but it is not their husbands that bought it for them, they bought those from earning something from the farms just like we all do." *What about the boys?* "Yes, they too had their own problems and yet carried our own. You see the one who just left with the bicycle...he was inches away from marrying a wife but he was not lucky, but the girl spent a lot of his money so this year he got a nice one who has gone to Accra to prepare herself...he has to pay her bride price before this one too goes out of hand...so he took up his legs and migrated to solve all these problems...but if there was no drought he would have sold some food easily."

Case three**Box 6. 3. Ali's household**

| | |
|--|---|
| <ul style="list-style-type: none"> ▪ <i>Drought in the 1970's</i> ▪ <i>Drought in the 1980's</i> ▪ Shortage of food ▪ Put cattle under the care of nomadic Fulani herdsmen ▪ <i>The decision to migrate</i> ▪ <i>Migration to southern Ghana</i> ▪ <i>'The wait for remittances'</i> ▪ <i>Failure to secure enough remittances.</i> ▪ <i>Migration to replace livestock</i> ▪ <i>Drought and migration in 1993, 1994 or 1995</i> | <p>That was in the (president) Acheampong days (1970s)...we just sold some cows and sheep to buy food in addition to the food in stock from the previous year. We didn't face any problems at all...in the years Rawlings was a young, and slim, and tiny man, there were more droughts but I remember there was a very bad drought that destroyed all our crops...That year we sold one cow and gave the rest to the Fulani to take them away and look for food and water. Then my father now had only sheep and goats to sell. These quickly run out along with the poultry except the sizeable hens which we needed for sacrifice...the household was very very big...during the dry season of that year my father sent for one cow from the Fulani but he was too far. My two senior most brothers walked and walked from one village to the other without citing the Fulani men. They couldn't even remember direction of the village where their bicycle broke down so we lost it...then my two senior most brothers had a meeting with my father in the evening and the next morning no one saw them, they were gone! One month passed and no one heard of them. So my father sent me to go after them...I travelled for the first time! I found them in the bush of Nkoranza...we sent food through a relation to my dad...then my father sent word that the Fulani man was back but with bad news. We had lost ten cattle out of fifteen!!...We came home that year to farm but the yield couldn't buy even one cow...so the three of us kept on migrating for five years until we bought five cows...Two years after marrying my second wife (1993, 1994 or 1995), there was a drought and I migrated for the first time since I became the household head and the elders summoned me on my return to ask why I stayed long...household heads cannot migrates just like that...</p> |
|--|---|

Source: Ali, 60, Kpalung village

The migrations of Ali were all related to drought. The first migration was embarked upon after sedentary strategies were insufficient at ameliorating the adversity from the drought together with the failure of his brothers to send remittances as expected. His second migration (according to him) was a straight forward move as he explains: “I knew where to get work. I left the little at home so that we could save it.” Ali also demonstrates how age and status in the household are crucial factors at influencing migration during drought and can result in immobility of some members of affected households. Ali currently owns a grinding meal in Savelugu. He decided to buy it because it was a more reliable means of getting income as he explains: “it doesn’t follow (depend on) rain, you just go and buy the metal that is damaged and that is it.” This demonstrates clearly that perceptions of climate risk influence adaptation. Adaptation to drought is the subject of the next chapter.

6.4 Conclusion

Migration as a coping strategy to drought is precipitated by vulnerability to the primary or secondary effects of drought. The effects of drought on migration are determined by the interaction of the vulnerability circumstances to the drought and non-drought factors such as age, status in household, witchcraft, funerals and objectives of the household and its members. The capitals available to a vulnerable household (such as migration networks and age composition and abilities of its members) and the perceptions of drought are key determinants of the character of its drought-related migration. Migration decisions under drought vulnerability circumstances are therefore myriad and complex. This ensures that households experience various and differential decision making path-ways. According to respondents, migration increases during drought years. Males are seen as more prone to migration when faced by current vulnerability to drought than their female counterparts due to the gender roles. Coping with drought vulnerability does not only result in out-

migration but return migration. Also vulnerability to drought results in the extension of the stay and or change of destination among some migrants.

CHAPTER SEVEN

MIGRATION AS AN ADAPTATION STRATEGY TO DROUGHT IN THE STUDY AREA

7.0 Introduction

“The asset status of households, mediated by social factors and exogenous trends or shocks, results in the adoption and adaptation over time of livelihood strategies. Livelihood strategies are dynamic; they respond to changing pressures and opportunities...” (Ellis, 2000. 40).

The generalisations in the statement above resonate quite well among respondents in the study area. Alhassan demonstrates this when he clearly explains *“...no one used to migrate in this house but now there are new problems...and more problems...also those days there were no buses but now Kuffour (metro) buses are everywhere...”* (Alhassan, 50, Laligu, focus group). Livelihood adaptation as an ongoing process of change in the study area is an inevitable consequence of constellation of various factors. Increasingly dynamic social, physical and economic forces and thus conditions resulting from modernisation, globalisation, climate variability and change, and structural adjustment in the economy have inevitably ensured that livelihoods are constantly undergoing change. There is not only livelihood adaptation but continuous flux between and within them as well as various combinations of livelihood activities and livelihood systems at different points in time as conditions and experiences dictate which are geared at ensuring or improving security and capacity. Drought is one of these many factors contributing to these changes. Migration is one of the varieties of adaptation strategies to drought used by households in the study

area. This chapter discusses the mediation pathways encountered by farmers resulting in migration as a livelihood adaptation strategy to drought vulnerability.

7.1 Adaptation Strategies to Drought

Drought is a paramount and recurrent constrain to livelihoods in the study area and the people have learnt to devise long-term ways of dealing with it. Table 7.1 illustrates all the identified adaptation strategies to drought. They are classified as on-farm, off-farm and non-farm livelihood adaptation strategies in consonance with the general literature on livelihoods. The study does not intend to detail how all these are used by households. Rather the purpose is to identify migration as one of the strategies and then detail its emergence and manifestations.

It is more helpful to discuss adaptation strategies to drought as strategies occurring in different livelihood systems. Associating different strategies with their respective livelihood systems helps to better understand farmers' long term responses to drought at a broader level. Broadly, there are two livelihood systems, that is, farm and non-farm livelihood systems (Ellis, 2000). Farm livelihood strategies are sub-divided into on-farm and off-farm livelihood strategies (Yaro, 2004). On-farm strategies are those conducted for own-account farming. Off-farm refers to wage earning or exchange labour on other farms within the agricultural sector. It includes labour payments and share harvest systems commonly practiced in the developing world. It also includes resources from the commons. Non-farm refers to non-agricultural livelihood strategies. Blacksmithing is an example of an activity in this sector. 'However, livelihood diversification cuts across livelihood typologies; individuals and households may diversify on-farm, off-farm or non-farm' (Ellis, 2000, p14). Livelihood activities or strategies may not always fit exactly into

any one of these. Migration is one of such (Ellis, 2000). In the study area for example, migration is found to occur in all the three livelihood systems.

Table 7.1. Household Adaptation Strategies to Drought (N=200, Multiple Response)

| On-farm Strategies | | Off-farm Strategies | | Non-farm Strategies | |
|--|------|--------------------------|------|---|------|
| Strategy | % | Strategy | % | Strategy | % |
| Storage of food stuff | 14.5 | Farm Labour (at home) | 20.0 | Trading | 2.0 |
| Farm in flood prone area | 24.5 | Migration (farm labour) | 9.0 | Migration (non agricultural activities) | 13.5 |
| Grow variety of crops | 4.0 | Weaving of roofing grass | 5.0 | | |
| Rear more animals | 22.5 | Firewood storage | 11.0 | | |
| Grow drought resistance crops | 9.5 | Labour visitation | 3.0 | | |
| Irrigation farming | 12.5 | | | | |
| Grow quick maturing crops | 12.0 | | | | |
| Early farming | 8.0 | | | | |
| Cultivate crops at different times | 2.5 | | | | |
| Mango farming | 1.5 | | | | |
| Seasonal migration (Own cultivation of bush-farms) | 8.5 | | | | |

Source: Field Data

From Table 7.1 the commonest adaptation strategies irrespective of livelihood type classification in dealing with drought include farming in flood prone areas, rearing more animals, migration (in its aggregate form which is 17.5%) and storage of food. Migration

is the third most common adaptation strategy. It can be realised that migration occurs within all the livelihood systems.

On-farm adaptation strategies to drought range from storage of food to seasonal migration where a household migrates temporally to seek (more appropriate) land elsewhere for farming. On-farm strategies comprise the commonest forms of adaptation measures used. Farming in flood prone areas and rearing more animals are generally, the first and second commonest strategies both mentioned by about a quarter of the respondents. Migration for the purpose of making farms which is mentioned by about one-fifth of the respondents is the third most common strategy. Growing quick maturing crops, mango farming and irrigation farming are said to relatively new strategies generally made possible by government, donor assistance and private investment. Mango plantations in the study area are a private initiative by companies largely interested in exporting the product abroad. These companies have engaged villagers not only as labourer but also as out-growers. Farmers get assistance from the companies to grow their own farms mango plantations. The fruits of the plantation are then sold solely to the company providing the help. The adoption of improved seeds that mature within a shorter time is understood to reduce the risk of drought. The irrigation system in Libga is understood to have brought immense positive changes to the lives of the people by allowing for the cultivation of crops and vegetables in the dry season. Picture 7.1 portrays irrigation farming in the study area.

Picture 7.1: Irrigation farming in Libga



Source: Field Work, January 2012, Libga

Off-farm strategies include farm labour at home, migration farm labour, weaving of roofing grass and firewood storage. Farm labour at home is the commonest strategy in this livelihood system and is mentioned by about one-fifth of respondents. In this livelihood system, migration is mentioned by nearly one tenth of respondents. Weaving of roofing grass and firewood storage are gender specific strategies. The former is the privilege of the male while the latter is that of the female. Picture 7.2 shows a woman packing firewood that she had stored for close to seven months onto a truck to be transported to the market for sale.

Picture 7.2 Selling off stored firewood during hard times



Source: Field work, May 2012, Tunaayili

Non-farm strategies include trading and Migration. Migration as a non-farm adaptation strategy usually involves migrants who work as traders in scrap metal and as head porters. Males usually engage in trading in the former while females engage in the latter.

7.2 Migration as an Adaptation Strategy to Drought

“Drought is a big problem...So we are aware it can come when God says so. So we must prepare for it. Only a fool...will not find and save something different from waiting for farm yields...look you can buy fertilizer to take care of the goodness of the soil but can you buy rain?...so some of the young men migrate every year to bring back something to support us...because only God knows when there will be drought.” (mma Fati, 45, Zaazi)

The statement above throws light on livelihood diversification through migration as a response to the impacts of recurrent drought. This form of drought-related migration concerns what can be described as a long term response to various kinds of drought-related perturbation and their ramifications suffered from the past.

Drought is the biggest problem in this village...it is our biggest problem in this household because we don't have enough farmland in the marshy areas... There is no certainty of a good harvest because of the unpredictable behaviour of drought...some people keep cattle and more animals...the women also do other things like shea-butter processing...some of us the strong ones have to migrate in the dry-season to get money while we save the harvest just in case there was a drought the following year...the young ones do all kinds of jobs...it is not just what you want but also what is there that brings hot cash. (Yusif, 28, Laligu village).

Insecurity to drought is a key concern of the study population as highlighted in the statement above. The perceptions of drought risks and effects as highlighted in the statement have therefore prompted livelihood adaption strategies which includes migration. Migration allows for the diversification of livelihoods to increase the security of households.

Out-migration from rural areas may be rural-rural or rural-urban. The literature on migration and adaptation to drought in rural areas suggest that there has so far been more emphasis on rural-urban than rural-rural migration as an adaptation strategy to climate variability in general. This trend in the literature is enforced by the growing evidence and growing body of literature showing the rising rural-urban migration trends worldwide. Indeed, rural-urban migration is the most prominent form of migration (Stark, 1991,

Castles & Miller, 1993; Warner et al., 2008; Adepoju, 2010). The rise and dominance of rural-urban migration has inevitably contributed to the rise in urban populations worldwide. Today, more people live in urban areas than in rural areas (World Urbanisation Prospects, 2012). In the year 2010, the urban population in Ghana surpassed that of the rural by a small margin (GSS, 2010; World Urbanisation Prospects, 2012). The increasing rural-urban migration trend in northern Ghana signifies the growing importance of non-farm livelihood strategies (Yaro, 2004) as urban areas largely provide non-agricultural jobs as in the construction and service industries. Notwithstanding the growing trends in rural-urban migration, people in the study area seek to differ in some respects.

In the study area rural-rural migration has been found to be significant and understood to be rising. Focus group discussions involving household heads in all the study villages but Libga and Zaazi ranked on-farm-related migration as the most rewarding form of economic migration. On-farm-related migration is also ranked as the most effective adaptation strategy to drought by focus groups in all villages but Libga and Zaazi. The spatial difference in the ranking is as a result of differences in the micro-ecology of these two groups of villages. The existence of irrigation farming in Libga and Zaazi and its absence in the other villages is paramount. This makes cultivation of crops and vegetables all year round possible for the people in these two villages. Also, Libga and Zaazi are endowed with lowlands or marshy areas which collect water from the surrounding higher ground and clay soils that retain water much longer which reduce risk from drought. The other villages have relatively less lowlands and marshy areas.

Temporal rather than permanent migration is, however, understood to be dominant. Focus group discussions indicate that temporal migration as an adaptation strategy is more

common amongst the poor as they are normally more vulnerable to drought and are also prone to food insecurity during the lean season. Notably, the food situation of these households, according to focus groups, normally easily worsens with drought. This partly explains the adoption of migration as an adaptation strategy to drought among households to improve food security and reduce vulnerability to drought. The element of social stigma attached to some poor households by other households or members of the village is also cited as a reason or motivation for migration as a response to drought vulnerability. The story is told of poor household heads who feel ashamed to beg or borrow food and money during most drought years and can no longer contain such labels or stigmas as ‘not being man enough’, who migrate temporarily or permanently to places with good rainfall and good soils to ‘try their luck’.

Focus groups explain that the rich on the other hand have been more successful from taking advantage of more vigorous government and NGO support programmes to intensify and also diversify their farming activities. It is understood from interviews that such successful farmers and their household members usually do not engage in circular migration out of necessity as that provided by drought vulnerability but take part in migration for accumulation purposes.

As evident in the account above, by Yussif from Laligu, as well as Table 21, migration is an unspecific adaptation strategy in terms of type of livelihood activity. It is open to activities in different livelihood systems and strategies and their combinations in every possible way. The distinguishing element of migration as a livelihood strategy therefore is the fact that persons involved in it conduct the livelihood strategies away from home; by shifting work and residence temporarily or permanently to a different place. Thus

migration may be viewed as a means or source to a livelihood activity which may occur within the on-farm, off-farm or non-farm livelihood systems.

This section shall therefore continue the discussion of the effects of drought on migration and their realisation in terms of the different livelihood systems involved. In consonance with the aforementioned livelihood systems, this study classifies the forms of migration as an adaption strategy (or ‘adaptation migrations’) as *on-farm-related migration*, *off-farm-related migration* and *non-farm-related migration*. *On-farm-related migration* refers to the establishment of one’s own farm at a different location. On-farm-related migration is said to be largely a rural-rural affair in terms of the movements. Others, however, insist it involves completely rural-rural moves. In the *off-farm-related migration* system, migrants move to other rural areas to labour on other people’s farms in exchange for income or in-kind returns. The *non-farm-related migration* is where migrants perform income generating activities outside of the agricultural sector such as trading in scrap metal and working as head porters in urban locations such as Tamale, Accra, Kumasi and Tema. Non-farm-related migration generally involves rural-urban movements.

7.2.1 Migration as an on-farm livelihood adaptation strategy: Adapting the *Kanako* bush-farm system

The bush-farm system of farming is an extensification of farming into previously uncultivated lands or virgin lands. The bush-farm-system may be divided into two forms, namely, the non-migratory bush-farm system and the migratory bush-farm system. The former involves sojourning to the bush-farm on a daily basis or activity basis. By activity basis is meant, living on the farm for the purpose of conducting a specific farm activity such as clearing, tilling of the soil, sowing seeds, weeding, harvesting or transportation of

food stuff. These activities are conducted within a few days and once they are completed the household members involved return home. This does not therefore result in migration. The migratory bush-farm system involves the temporary change of residence to the new farm village. This practice is referred to as *kanako* in the study area. This form of migration has been adopted by some households as a means to do deal with recurrent drought as Issah explains:

In this house we go to Kanako because of drought...the low land areas are very scarce but those areas save us a lot...drought does not easily affect crops in these areas... In these areas you can farm early and harvest your maize there before the water becomes plenty...and when there is a drought you may not even feel it...even if you don't smile but you will not cry. (Issah, 48, Kpalung, interview).

The expression is succinct of what many focus groups and interviews have had to say about the adoption of *kanako* as a strategy to deal with recurrent drought. A particular emphasis is placed on the scarcity of low lands and marshy areas which are considered 'drought-resistant'. These areas are said to have a good capacity in holding moisture long enough for crops to survive drought conditions. As evident in the statement above, it is claimed that the effect of drought on crops grown in these areas is usually minimal. As a result the chances of harvesting enough food in drought years in these lowlands or marshy areas is said to be higher than that of the highland areas. Lansa, a household head in the village of Tunaayili corroborates the assertions of Issah by explaining:

Drought has sent many people to kanako in this village...if you grow this early maize in the flood prone area it will help you a lot. When there is a drought those ones will survive but our prayer is that we grow it early before the water becomes plenty. Look, that area

also has good soils...and the yield over there during drought is very good than that of the soils here near us because fertile areas can face drought better than the dead soils...the problem is if there is flood or too much water too early in the rainy-season...it will destroy all the maize...as for drought you will still harvest something...and we know that drought comes more times than floods...and when it comes all the villages cry but floods are usually selective...they occur normally in lower areas. (Lansa, 50, Tunaayili).

Lansa does not only point out the influence of drought on the adoption of *kanako* but the importance of adopting the *kanako* bush-farm system as a means to securing land that is less prone to the consequences of drought. Also, Lansa makes a comparison of the effects of flood to that of drought. His stance is a shared opinion in the study area. The explanation follows that although crops generally survive drought conditions longer than that of floods, the former often occurs over a wider area and is more frequent where as the latter is often limited to valleys or low lying areas and is less frequent.

Rice and maize are the main crops cultivated in the flood prone areas. Rice is often cultivated from June when the so called flood prone areas have accumulated enough moisture or water to support efficient growth. Maize is usually cultivated very early in April or May so that it can be harvested before the expected heavy rains in the months of August and September which may result in flooding. It is explained that it is a common practice for a household cultivate two maize farms. One farm is located on high ground which is the usual practice. It is explained higher ground provides better conditions for maize than lower areas under normal rainfall conditions. The other maize farm is established within the valleys to reduce risk from drought. The cultivation of 'early maize' in flood prone areas is said to be a relatively new phenomena.

Below, in box 7.1 Memona recounts how her household first employed the *kanako* bush-farm system (and how useful it has being).

Box 7. 1. Adopting the *kanako* bush-farm system: the case of Memona's household

“It wasn't long after I got pregnant that my husband and his father started *kanako*...one year they performed a lot of old funerals and many cattle were slaughtered. That was not the end...the following years, several old men in the family died and more cows were used to make the funerals. That year (somewhere around 1989-1994)...there was a severe drought but there was no cow to sell...and no food to sell to buy a cow...then one day the old man went to a funeral and learnt that there was a village in Yendi that did not have drought! They said the ground was always wet so even if it did not rain the farmers still harvested food...the old man nodded, he had found a solution to the frequent drought that gave him lots of problems. So he came home and called the men in the morning...they talked and talked and decided to go over there and make a new farm with the help of his grandfathers friend in that village. The old man sent a message to a village far away...he was hiding cattle there, no one knew but his best friend...so they sold the cattle and brought the money and we went to the farm, we stayed there till we harvested...if you saw the food no one would tell you God is great. From that year we kept going to the village while those at home also farm the land here...even my husband's brother has just remained in that village, he has made a lot of wealth as I am talking to you...true to what they told the old man, when there is drought...we still harvest food enough to eat...we all come back after the harvest but in the dry season, a man goes to see if the buildings need repair. If they need repair we go early before the rains and do that and then just continue with the farm.”

Memona, 60, Laligu.

Memona's account highlights difficulty in coping with persistent drought while maintaining acceptable levels of wellbeing. She shows how drought has resulted in the seasonal migration of part of her household. Also, she demonstrates the relevance of social

networks in the choice of migration as a livelihood strategy. Her story is not isolated. Several accounts point to persistent difficulty with coping with drought as a reason for adopting the *kanako* bush-farm system and that social networks have been crucial to its adoption. This conforms to the argument that livelihood adaptation in general is a response to recurrent perturbation and perceived risk enabled by assets and opportunities (Ellis, 2000).

During the farming season the people involved in *kanako* conduct intermittent visits to the origin for very short periods say one or three days. These visits allow for inputs to be sent to the farm and early food to be brought home for the remaining population. It is understood that in a situation where a man has two wives, he normally takes along the younger one as her energy and endurance levels are logically higher than the older one. Another reason for this is to have more privacy with the new wife as the others remain at home. Also, some smaller children are taken along. However, it is a common practice to leave behind an adult son to watch over the house. This system of farming is said to have detrimental effects on children's education as in some cases children are taken along to these farms thereby denying them the opportunity to go to school during the rainy-season. Also, due to the long distances between some farm settlements and the nearest schools, children are unable to attend school and rather attend to the farm during after school hours as is the case for compound farming.

The distance involved in the bush-farm system, however, brings an extra cost element to households compared to farming in lands surrounding the village. Not only does the initial clearing of bush lands cost money but the seasonal transport of family labour, household equipment and harvested food.

Those with tractors can go far into the bush to make farms. The poorer ones join them. If you help them to clear their fields, they will also help you till your land and eventually help you to harvest and to bring your food home...but if you have no tractor and you don't want to be a labourer to a rich man then you just stay home and continue to cultivate the impoverished lands (Abraman, 63 Kpalung).

It is explained that the migratory system of bush-farming is gradually leading to permanent migration bush-farming thus the formation of new settlements or villages. This has been observed in the village of Kpalung where some households have permanently migrated to the bush-farm referred to as *Assembly man* by the villagers, which is about 35 km away from the home village. Interviews with household heads in the new settlement revealed that environmental, economic and social issues were important factors for the move. These include removing the transport costs element involved in *kanako*, easy access to bush meat in the bush and avoidance of conflict at the origin. Dislike for the policies of the new chief and recurrent disagreements or conflict involving members of the village or members of the original household are also cited as reasons. Some of these households, however, still maintain their residences in the origin when indeed they only pay short visits. This, according to focus group interviews is part of the transition from *kanako* to permanent resettlement.

7.2.2 Migration as an off-farm Adaptation Strategy to Drought

There are three main forms of off-farm adaptation migration systems in the study area (as classified by focus groups). These are the *djoa*, *ayugba*, and what may be called *labour visitation* migration systems. As may be recalled from chapter five, the *djoa* systems is where young people migrate to other rural areas to labour on other peoples farms. *Ayugba*

refers to the temporary change of residence by women to other rural areas to engage in harvesting of food stuff for cash or in-kind payments. Labour visitation refers to visits conducted by household members to relations in other villages or to assist them in farm activities. Recurrent droughts have contributed to the adoption of these forms of migration. Focus groups point out that the effectiveness of initial migration in coping with drought is an important determinant of its adoption as a response to recurrent drought. This is demonstrated by *mma Zelia* in box 7. 2 below in narrating how she adopted the *ayugba* migration system.

Box 7. 2. Adopting the *ayugba* migration system; the case of *mma Zelia*

“When I was a girl all the girls and our mother harvested groundnuts so that they could buy their own things...those who were strong went far away to help farmers who had too much and their wives and children couldn’t do it alone...when I was old enough to marry...that year the crops we cultivated didn’t do well, there was a drought...you know flowering groundnuts don’t like drought...so I went off with my friends to Yendi to harvest groundnuts...we got a lot...Me alone got 5 bags! When I got married it was the same drought that sent me to Sang, the village on Yendi road to harvest groundnuts...I spent four months...the farmers don’t have people to dry and collect the groundnuts so if you stay longer you get more. From that year, I said to myself I will go to *ayugba* every year because no one knows how it will come the next season. No one knows when drought will come...when drought happens it becomes difficult for the men in providing the food for the household let alone to give women money to buy their things...and drought is very common here... My girl who is now 12 years comes along with me every year...it helps a lot. You bring that one home and keep it well. You add it to what you already have and when there is a troubling situation you go inside and bring it out and take it to the market or you call the market women to come and buy it...”

Zelia, 35, Kpalung

Several accounts, like mma Zelia's, point to *ayugba* as the 'womens saviour' from drought. This is because it is a main source of alternative income and has become a long term response to drought among some women.

Below, Raphael, shares his experience of the visitation type of migration by stating that;

We also migrate to our relations to help us fight drought...one time there was a serious drought (in the 1970s) and my uncle came home and told my father how his brother had too much to harvest in Nkoranza. So they chose two of us to go...we stayed for about five months and helped them...ah we didn't come home empty handed, we brought a lot of foods, we kept going for many years just to help... Now I send only two boys to migrate during holidays to help their brother in Kintampo. When there is drought he sends money...this is good, isn't it... (Raphael, 70, Laligu, interview).

Sahaa has a similar experience to share.

...when the drought occurred (in the early 1990s), I did not have school fees, so I decided to go and help my uncle in Techiman...after four months he gave me money for middle school and food to bring home...from that time I started going every year...because you don't wait for the same problem to occur before you find help...I help peel the cassava and get something out of it (Sahaa, 40, Tunaayili, focus group).

Like Sahaa's, some other households practice this form of seasonal migration as a way of maintaining ties and improving the chances of getting assistance during drought years. This kind of strategy is, however, said to be on a steep decline due to increasing 'individual wishes' or desire for accumulation of wealth. Thus, young people prefer to migrate and work for wages instead. Also, the practice is said to be gradually assuming a

shorter time dimension say 14 to 30 days as compare to the old situation where a migrant could spend a whole dry-season helping other relations. This is perhaps the reason why the research did not record any migration of this sort quantitatively. Rather, 3% of respondents mentioned non-migratory visiting of relations to help in their farm work as an adaptation strategy.

7.2.3 Migration as a non-farm Adaptation Strategy to Drought

...our grandfathers used to farm smaller farms. We now farm larger farms but we eat less. They ate more food than we do...they had higher yields...they had more dependents. But we farm more and get lesser yields, and we have less people (smaller household sizes) yet we also now sell food for money these days because we have more needs. But we don't always get enough food to eat let alone to sell...this drought...ensures that we don't get enough all the time ...so that is why a lot of young people migrate to find money in other ways...They always go to do something else but not farming because they are tired from the farming season already and they want less tiring jobs with quick money... (Alhaji Abdulai, 61, Kpalung village, focus group).

Adaptation of the non-farm livelihood system has been attributed to drought by some respondents. In the statement above, Alhaji Abdulai explains how drought results in migration in his village. During focus group discussions and interviews, drought received an overwhelming amount of attention as a reason for non-farm related migration.

In box 7.3 Dokurugu demonstrates how drought prompted the strategy of non-farm related seasonal migration in his household.

Box 7. 3. Non-farm related migration; the case of Dokurugu's household

“I have six children and two wives...I used not to travel anywhere in the dry season but let me tell you how it all started...At the time Rawlings was still in power...the year before the party elections (1991) I married a new wife. I quickly build a new house that same year and relocated into it. People said I was rich. Then my father fell ill. They said it was the woman that caused it so I sent her to my uncle's house for a while so that we could treat my father. We used up all the animals and money yet he died. That same year I sacked my wife and started to look for a new one. But there was a drought and I couldn't get even food to feed my household let alone get a wife. There was nothing in this house and I couldn't borrow anything because no one had it. So I took up my legs and went to Techiman where my relatives are and worked very hard pushing a truck, buying and selling scrap metal...I sent food home... When President Kuffour took over a drought occurred so I migrated again... I was there till the rains started... I brought a lot of money back. The following year I migrated again but there was no drought...I needed to save some money in case the year had a drought. The next year I decided to send our younger brother to Techiman to use my truck and bring back money even though there was no drought...I wanted us to be able to get some money as *aziya* (security)...no he had never migrated before so he was really excited when I told him. Now he goes there every year to work and bring something...because we don't know when there will be drought again... is it not better to cover your head...”

Source: Dogurugu, 45, Kpalung

Responding to the question concerning how his decision to migrate the first time was made, Dogurugu responded: “I had relation over there so when the problems were many for me and I didn't have anything to do over here, I knew that I could get work there...because they farm throughout the year, they always have rain... Those relations come back home and tell us what goes on there. They also help us during drought...so we

know it is better over there but we can't sit down and always look up to them." When asked whether he would consider migrating again if there was a drought Dogurugu explained: "No! this time things are hard there and I am no longer a young man to go and struggle among small boys...I have acquired a big farm in the marshy areas deep in the bush so drought doesn't disturb that much...That is where we farm early maize. These days the droughts are not so long so the moisture there can hold the crops till rain returns."

The migrations in Dokurugu's household as shown in box five are a consequence of drought enabled by the lack or scarcity of opportunities at home and the availability of networks and opportunities in the destination. Dokurugu's first and second experiences of migration were meant to cope with drought. The third experience indicates a transformation of coping strategy into adaptation. Here the perception of drought risk played a key role. Several accounts of the reasons for and antecedents of migration as a source of livelihood pointed to the risk of failure of the farm livelihood system with emphasis on drought. The adoption of migration as an adaptation strategy among some households is therefore primarily dependent on farmer's perception of drought risk and opportunities elsewhere. As already discussed in chapter four, past experience is the bed material for the building of drought risk perception and this is crucial to the decisions of farmers regarding their choice of other livelihood strategies. Temporal migration is, however, said to be the commonest form of migration.

Permanent migration as an adaptation strategy to drought although exist in the study villages, is said to be very rare as Nurideen from the village of Kpalung explains:

Some of our young men who have been migrating over the years due to the droughts have refused to come back home because there is money there and there is no drought there.

Some very few have taken their wives there and now live there...Some young men don't come back to farm...They don't care any longer. So the remaining young ones and the women also have to migrate in the dry season to get some money...in this house only one boy has not returned for two years now, everyone else usually come back to farm. (Nurideen, 60, Kpalung, interview).

This account tells about some of the main points relating to permanent migration as an adaptation strategy to drought revealed by interviews and focus groups. Seasonal or circular migration may lead to permanent migration as opportunities at the destination as experienced by a migrant may be more economically or socially rewarding than those at home. Besides the reduced vulnerability to drought, *'some jobs are permanent and when you go home by the time you come back the boss will say someone has taken your place'*. Also, permanent non-farm migration adaptation to drought may result in an individualistic approach to life by the migrant which loosens his or her moral economy. This situation is said to result, in some cases, in new members of the household joining in seasonal migration to secure alternative source for the household and themselves.

There are, however, spatial differences between Zaazi and Libga on the one hand and Laligu, Kpalung and Tunaayili on the other in terms of the employment of migration in the non-farm sector. The timing and purpose of temporal migration as an adaptation strategy is the point of divergence. Focus group reveal that in the former, temporal migration usually starts in the rain-season after the last weeding usually from August and migrants begin to return in November to engage in irrigation farming. Here, earning income for meeting the cost of farming in the irrigation zone is a high priority. Irrigation farming is said to be more profitable than rain-fed farming and migration. Also, the uncertain nature

of rainfall and the expectation of drought have contributed to an increase in investment on irrigation fields as a more reliable way to secure food. On the other hand, the villages of Laligu, Kpalung and Tunaayili, according to focus group, usually begin to experience out-migration after the harvest, that is, usually from November. Migrants are said to mostly stay until the next rain while their main purpose is to secure income to cater for household and personal needs including money to invest in rain-fed agriculture. The statement below offers further insight into these differences, beside the fact that Libga and Zaazi have access to an irrigation facility while Laligu, Kpalung and Tunaayili have not.

...Yes you can sell an animal or even food to pay for the cost of seeds and labour in the irrigation farm but that will be a loss. The prices of food are not good around that time. So you have to wait a while. That is also the period when animals do not sell well due to diseases. If you were me would you do that... Even your father will not let you try that except there was a big problem. If we can get money from nyon (away) then we don't have to use what we have, we save it in case the following year comes with a drought. (Suhyini, 30, Libga, focus group).

In the above statement can be seen two reasons for the migration pattern in Libga and Zaazi. First, Suhyini explains that during the period when farming commences at the irrigation farm the prices of food stuff and animals are usually at their lowest rendering their sale to raise financial capital an unwise option. Migration is then seen as a better option in this case. Second, he points out the need to avoid selling the year's crop to cater for the cost of irrigation farming as a way to save and store food for anticipated drought in the following year. Although similar stories came up to corroborate this account, it was generally agreed that it is the poor that migrate most in search of capital to invest in the irrigation farms. This increases the chances of accruing more capital for the irrigation plots

which may result in more yields to cater for possible droughts. On the other hand, most of those who are better off simply stay at home and wait for the irrigation farming season to commence. The explanation follows that the irrigation farming in these villages is more lucrative than the returns from migration. It was, however, pointed out at this focus group, like in many interviews, that most migrants from Libga and Zaazi migrated for other reasons besides the possible occurrence of drought. Freedom from traditional norms and ‘enjoyable lifestyles’, were cited as the most important reasons.

The pattern of migration in the villages of Libga and Zaazi also has gender variations. The pattern of migration discussed above did not apply to females. The pattern of female migration is said to be rather similar to that of the rest of the study area. Migration for them is said to usually begin after the harvest and the return is made at the beginning of the rain season. This is due to the female dominated character of harvesting coupled with male dominance of irrigation farming. Also, it seems that the main means of access to an irrigation field by women is through inheritance from their deceased husbands.

Migration as an adaptation strategy to drought is not always positive. Migration may be maladaptive as “...sometimes they bring debts...sometimes he sends a message and ask for his goat or sheep to be sold...that one is a loss to us all in this household and when that happens it disturbs our strength to buy food in drought years and to cultivate when the rains come.” (Amama, 38, Kpalung, interview). It is explained that the situation described by Amama often occurs during drought years. In spite of this undesirable situation, Amama, argues that: “...I don’t see anything here in the dry season...there is nothing in the bush. Those rats can’t give us anything so they still have to migrate”. (Amama, 38,

Kpalung, interview). Alidu provides an elaborate explanation for unfavourable returns to migration in drought years in the following words:

I migrate seasonally because of drought...but sometimes when there is a strong drought it is better to stay home and find something like clearing new farms; people will not stop farming the next season because the other year had a drought, will they? When there is a bad drought, everyone migrates so it is hard to get a job...when you stay home you can also crack your groundnuts if you have some so that you get a better price than selling it just like that with the shell. (Alidu, 31, Laligu, Interview)

Although Alidu shares some of Amama's assertions, his opinion on whether to continue migrating or not under situations of unfavourable returns to migration is different. Alidu prefers not to migrate under those circumstances. It is understood from interviews and focus groups that experiences of losses from migration as livelihood adaptation strategy influences immobility during drought years. It is explained, as evident in Alidu's statement above, that the initial incremental effect of drought on migration is said to result in a situation where the demand for jobs outweighs the supply at the major destinations in cities in the south of Ghana. This is also said to have a tremendous reduction effect on wages. This way, a migrant exerts more effort disproportionate to the wage. Previous experiences of this situation is said to result in immobility among people that usually engage in migration.

Faced by conditions of shortage of jobs some migrants are said to resort lending from other migrants particularly when faced with sickness or the need to return home. This is said to sometimes result in serious debt when eventually one fails to earn enough money to pay back. In some cases such migrants have returned home only to sell scarce food and

animals to pay back debts. In other cases, these debts are settled by their parents or guardians. Such unfavourable previous experiences of migrants is said to result in immobility of some seasonal or circular migrants during severe drought.

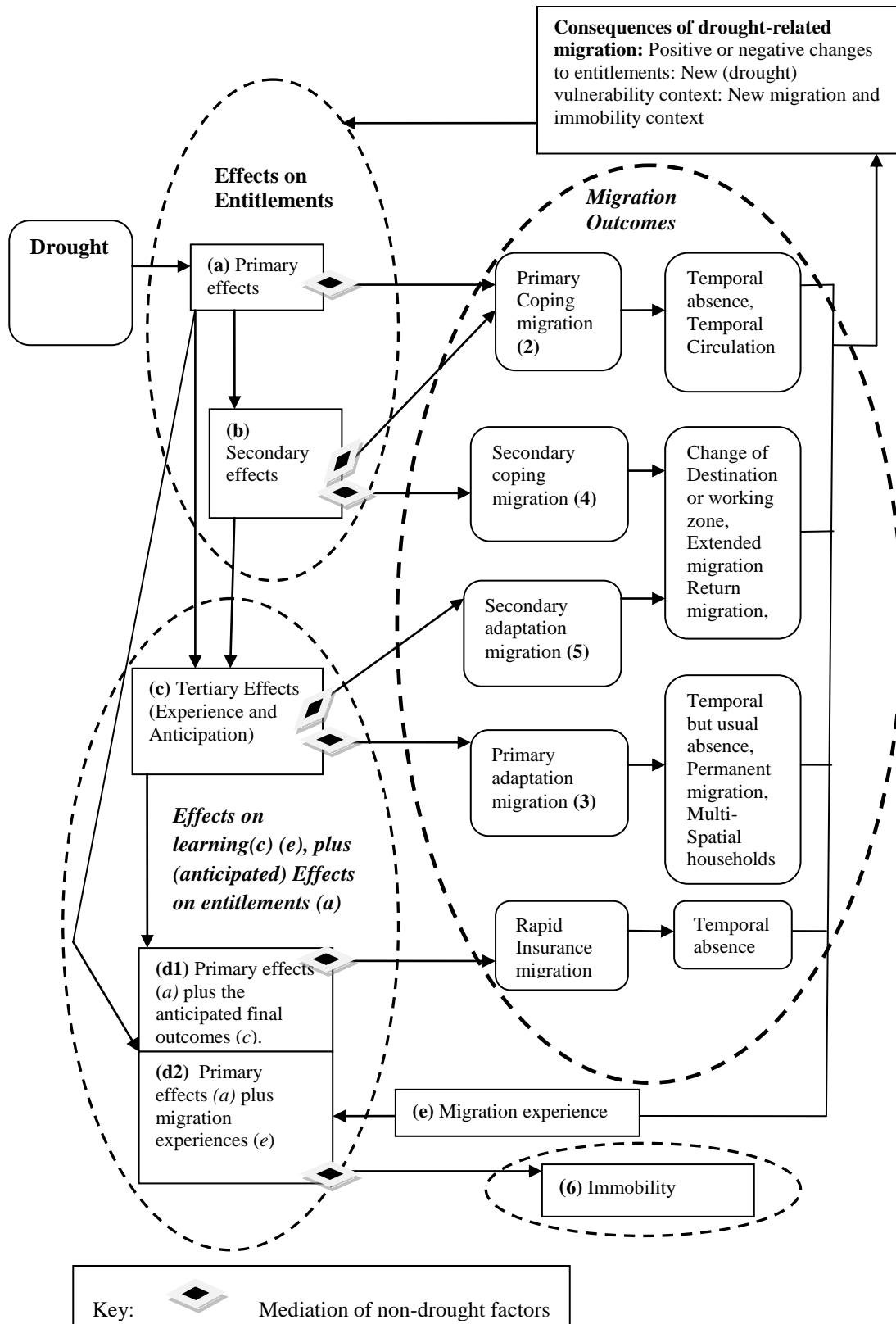
7.3 Drought Vulnerability and Migration Outcomes

This section provides a synthesis of the migration outcomes (generally in terms of moves) triggered by drought vulnerability and also presents a typology of drought-related migration according to purpose of the move and how they are realised. This section is therefore a combination of the summaries of chapter six and seven which depict migration movements as a response to drought-vulnerability. Figure 7.1 illustrates the effects of drought-vulnerability on migration and immobility.

The diagram starts by illustrating three major ways or channels by which drought induces or influences migration in the study area. These are; (a) migration from vulnerability to the primary effects of drought, (b) migration from vulnerability to the secondary or spill over effects of drought, (c) migration from the tertiary effects (experience and anticipation) of drought. These major ways could theoretically combine variously to result in migration outcomes. However, empirically, the research identifies only two of such. These are; (d1) migration from the combination of present or primary effects and past experience (anticipation) and (d2) migration from past and present experience of both the consequences of drought and of migration as a livelihood strategy in general. The first two channels (a and b) emerge from the impact of drought on entitlements of the rural households. The third, fourth and fifth (c, d1 and d2) emerge primarily from the effects of the consequences drought and migration consequences (that is, the returns on migration such as reverse remittances) on the *learning* of households. *Learning* is defined as the

process where households constantly change their livelihood strategies primarily based on past experiences of shocks and stressors.

Figure 7.1: Diagrammatic Illustration of Drought-Related Migration and Immobility



As shown in figure 7. 1 the channels of drought-related migration **a**, **b**, **c**, and **d1**, give rise to three major typologies of drought-related migration. These include, ‘rapid insurance migration’ (1), ‘primary coping migration’ (2), ‘adaptation migration’ (3), ‘secondary coping migration’ (4) and ‘secondary adaptation migration’. These forms of migration may occur in the forms of *djoa*, *kayayo*, *kohimma*, *labour visitation* or *kanako*.

The first category of drought-related migration, *rapid insurance migration*, is labelled after a theoretical reflection on the concepts of coping and adaptation arising out of the need to theoretically situate a part of one aspect of the discussion on the channels of drought-related migration. That is, crop performance which falls under the *migration precipitated by vulnerability to the primary effects of drought* section. The discussion on *crop performance* concerned temporal and permanent wilting of crops and vegetables. Migration that is spearheaded by temporal wilting is the subject of concern. Here migration is induced by the fear of crop failure. Hence the expectation or anticipation of farmers based on current experience of temporal wilting and their previous experience of it, are the main factors at play. Migration arising out of such circumstances neither fits into coping or adaptation behaviour. Coping strategies are geared at curing rather than prevention as in adaptation strategies. As the migration in question relates to fortifying ones security in anticipation of the final outcome of an ongoing process, this paper calls it a rapid insurance strategy. This paper defines rapid insurance strategies as those activities used by people when confronted with the initial effects of an adverse event as well as their own expectation of the final outcomes of that on-going process on their livelihoods which may or not be realised. This way, rapid insurance strategies are responses to the on-set of adverse phenomena geared towards ameliorating possible near future vulnerabilities to the ongoing phenomena which may not be realised. The adverse event may or not result in

the anticipated outcome. By this definition, the migration scenario can then be designated a rapid insurance strategy. The explanations of this form of migration imply that it practically ends when crops are fully matured or when the harvest is completed or when temporal wilting gives way to permanent wilting. At these *final* stages, *rapid* insurance migration may give way to *coping migration* if farmers' expectation of a bad harvest became a reality.

'Primary coping migration' simply refers to the initial move from the origin in order to cope with a current perturbation. 'Primary coping migration', may result from vulnerability to the direct or primary effects (a) of drought such as low yields and total crop losses or from vulnerability to its secondary effects (b) such as price surges in the food market due to scarcity. One such scenario of this kind of drought-related migration is where some households that normally are unable to produce enough for their food and other needs and depend on the sale of animals in the lean season to survive. Such households are sometimes unable to secure food in drought years when prices of animals do not rise or fall while that of food rises. This sometimes induces out-migration of household's members. This form of migration, it is understood from focus groups, usually gives rise to temporal absence in the form of temporal migration or 'temporal circulation'. The latter describes the situation where coping with a drought results in two or more migration movements between the source and destination areas but where the 'circulation' is not already a usual behaviour. This is said to result from the situations where the consequences of a drought on a household goes beyond the particular drought year or when a migrant returns home for a while and re-migrates in another bid to secure resources to help ameliorate drought losses or consequences all within a particular year.

‘Primary Adaptation migration’ (3), describes the situation where migration acts as an adaptation strategy. This is the result of experience and anticipation (c) of drought and may result in a temporal but recurrent absence of household members or permanent migration. This may be in the form of seasonal migration, circulation or permanent resettlement in another place. Permanent resettlement is, however, a rare phenomenon. As opposed to seasonal migration which involves out-migration during the dry-season, circulation involves constant movements between the villages and various destination areas but without specific period of occurrence. Circulation may occur in the dry or wet-season.

‘Secondary coping migration’ (4) and ‘secondary adaptation migration’ (5) are closely related. The terms are used exclusively to refer to temporal migration instances as the research does not investigate how drought currently affect those who have permanently migrated although it looks at the relationship in terms of their initial move from the study villages. These two forms of drought-related migration therefore describe the situation where drought induces or influences migration decisions among (already) temporal migrants. The main distinction between these two forms of drought-related migration then centres on the purpose of the earlier migration as suggested by their naming. The case of the former involves coping while the latter involves adapting to a local phenomena. In both cases the home or sending village remains as the permanent residence. Moreso, ‘coping migration’ results from vulnerability to the secondary effects of drought while ‘adaptation migration’ results from the tertiary effects of drought (*learning*). The research further finds that these forms of drought-related migration give rise to three mobility outcomes. That is, relocation to another destination, return migration *and extended migration*. These outcomes are depicted by the situation where drought-related migration

results in more job seekers chasing fewer jobs. The excess supply of labour in drought years results in migrants who arrived earlier in a bid to cope or adapt to a home perturbation, to change destinations, return home or extend the period of stay than intended or expected by his or her household. Extended migration results from the above scenario as more time is required to make the needed or expected money. These outcomes are temporal in the case of 'Secondary Coping' but they may become permanent features in 'Secondary Adaptation migration'. For example, the recurrent job scarcity crises resulting from recurrent increases in migration from recurrent drought has contributed to the situation where some seasonal or circular (adaptation migration) migrants have gone into new peri-urban areas in the south of Ghana. Rather than changing destinations, others, however, commute between their residence and new found areas of work on a daily basis.

The fifth channel (**d2**) through which drought interacts with migration concerns immobility of people who have previously relied or normally rely on migration as a coping or an adaptation strategy. This results from the supremacy of experiences gathered from past migration outcomes during drought years in the migration decision making during current vulnerability to drought. The explanation follows that some of those who have previously encountered unfavourable migration situations during droughts sometimes prefer to stay back home and try something else when there is a severe drought. An example is where drought results in more waves of migration than number of available jobs and results in some migrants returning home or becoming indebted. Some of the migrants with this experience are said to infer from the nature of the drought (its effects during and right after harvest) to determine whether there would be too many people

moving or not. Some usual migrants state that if they perceive too many people moving, then they do not migrate in that season or year.

7.4 Conclusion

A main feature of adaptation to drought is the adoption of migration as a livelihood strategy by some households. The engagement of migration as adaptation to drought vulnerability involves activities both in the farm and non-farm livelihood systems and may involve rural or urban destinations. Farmers experience a variety of decision making pathways in deciding to migrate as a strategy to deal with recurrent drought. The adoption of migration as livelihood adaptation strategy is influenced by farmer's perceptions of drought risk and available resources. Farmer's perception of drought as a recurrent phenomenon is very important in the decision to migrate. Various socio-economic factors including assets and knowledge of the destination are important in mediating drought adaptation related migration outcomes. The use of migration as a livelihood adaptation strategy is, however, spatially differentiated across villages due to the different micro-ecological conditions. There also exist inter-household differences that can be attributed to differentials in perceptions of drought, in poverty and capital endowments and capabilities and experiences of previous migration.

The study finds three major ways or channels by which drought induces or influences migration in the study area. These are; migration from vulnerability to the primary effects of drought (a), migration from vulnerability to the secondary or spill over effects of drought (b), migration from the tertiary effects (experience and anticipation) of drought (c). These major ways could theoretically combine variously to result in various migration outcomes. The interaction between drought vulnerability and the socio-economic

circumstances of people in the study area result in four major mobility outcomes. That is, out-migration, extended migration, return migration and immobility.

CHAPTER EIGHT

CONCLUSION

8.0 Introduction

The research has sought to provide an answer to the question: *What is the relationship between drought and migration in the study area and how is it mediated and reflected among households?* In pursuit of the answers to this question, several other research questions were posed. This chapter provides a summary of the major findings of the research and some policy and research recommendations.

8.1 Summary of the Major Findings

Farmers' perceptions of drought

Farmers perceive drought as the lack of rain accompanied by heat sufficient enough to cause havoc to plant growth. Farmers' perception of drought is affected by a range of influences and experiences. The background characteristics, degree of exposure to NGOs, media and extension officers are all significant in defining the knowledge of farmers on drought. Generally, drought is seen as the greatest challenge to farm productivity. Farmers perceive a rise in the frequency of droughts. However, its intensity is perceived to be reducing. Farmers attributed drought to three main factors including the super natural, human activities and natural normality. The perception of drought is largely contingent on the social, cultural and economic circumstances as well as time frame within which people experience climate risk. While demonstrating a growing scientific knowledge of drought farmer's perceptions are more inclined to traditional notions emanating from social and cultural realms.

Drought and migration in the study area

Migration is a common phenomenon in the study area. A little more than half of the population of the individual survey had migrated before. Meanwhile about forty percent of people who had migrated before were still actively engaged in the process with intentions to migrate at some point in time during the year or the following year.

Drought is a major reason for migration in the study area. About 51% of respondents mentioned bad harvest which they attributed to drought for their migration. A Chi-square test of association between drought-related migration on one hand and age of respondent, education of respondent, marital status of respondent, minor income of household, age of household head, land size in flood prone area, land size in drought prone area, land size in irrigation facility, availability of irrigation facility in the community (Independent variables) showed that at 0.005 significance level, there is a significant association between sex, availability of irrigation (in a village), more of households land located in drought-prone area and drought-related migration. Furthermore, through the means of a logistic regression analysis, the study finds out that drought-related migration is largely determined by sex, availability of irrigation in ones village and more of households land located in drought prone area ($p < 0.05$). Males other than females and people whose villages have irrigation schemes are more likely to migrate because of drought.

Migration as a Coping and Adaptation Strategy to drought

Investigating coping and adaptation strategies also reveals that migration is a major response to drought-vulnerability. However, temporal rather than permanent migration is the common form of migration precipitated by vulnerability to drought. Migration to the southern part of the country in search of jobs in the dry season is common in the villages.

There is also migration to destinations within the northern region and to other parts of the north of the country during that season. Migrants usually send back remittances in the form of food or money to support their households. This strategy is also said to allow for stored food to last longer by reducing pressure on it due to the absence of some members of the household. These findings are consistent with the literature on migration. Migration has been identified as an important means of coping with drought particularly in drought risk prone environments including the Sahel (Ezra, 2001; Van der Geest, 2011).

Migration is a ranking adaptation strategy to drought perturbation in the study area. Drought-vulnerability and its perception as a recurrent phenomenon, has resulted in diversification of livelihoods among households to include migration. This is consistent with the literature on rural livelihoods and migration (Caldwell, 1968; Stark, 1991; Adger 1999; Bryceson, 2000; McLeman & Smit 2006; Van der Geest, 2010; Foresight, 2011). Farmer's perceptions are informed in part by farmers past experiences with drought. Some households have adopted temporal migration as a livelihood activity to off-set the expected consequences of drought particularly food insecurity. Focus group discussions indicate that temporal migration is common while permanent migration is rare. More so migration as an adaptation strategy is said to be more common amongst the poor who normally face the most suffering from drought and are also prone to food insecurity during the lean season. It is, however, important to point out that migration as a response to drought is not always positive and can be maladaptive in some cases. Some migrants and households experience negative consequences from migration including reverse remittances, debts and the loss of labour power.

The study finds three major ways or channels by which drought induces or influences migration in the study area. These are; migration from vulnerability to the primary effects of drought (a), migration from vulnerability to the secondary or spill over effects of drought (b), migration from the tertiary effects (experience and anticipation) of drought (c). These major ways could theoretically combine variously to result in migration outcomes. These channels are mediated by various socio-economic factors in resulting in out-migration, extended migration, return migration and immobility. The framework of this research proposes that perceptions of drought are of primary importance in mediating migration out-comes from drought. The study shows that this is particularly important for adaptation migration responses. Most studies have focused on scientific environmental data and or quantitative measures of vulnerability to climate perturbations in predicting migration flows. This study suggests that perceptions should be the main focus in explaining the nexus. Peoples' perceptions of the environment and how they relate these to their vulnerability offers a more nuanced understanding of peoples real migration experiences.

The study shows that some migrants decide to return to their villages due to unfavourable experiences at their destinations relating to the flow of migrants from drought affected areas and the shortage or lack of jobs in the cities. Some of these migrants indeed chose not to migrate in subsequent droughts. There is therefore need to consider all possible forms of movements in the analysis of environment and migration relations. Although the literature on migration including Myers (2002), IPCC (2007), Stern (2007) and the Foresight report (2011) all acknowledge the possibility of environmental change affecting non-migration, the focus has been on immobility of people largely as a consequence of ageing and lack of migration capital. The growing attention on this group of people has

inevitably led to the coinage of the term ‘trapped population’. Studies have focused so much on trapped populations to the extent that they have missed the indirect effects of drought on return migration and immobility.

Although the research finds a compelling linkage between drought vulnerability and migration among households, it also reveals that drought-related migration in some households has not always to do with vulnerability to drought of those particular units but that of other households. The findings of this research therefore suggest that vulnerability to climate and its variability can still result in migration outcomes for households that do not become vulnerable to them. The vulnerability of vulnerable households can produce spill over effects and set conditions for migration in resilient households. Thus the transcending effects of environmental phenomena should be considered as a crucial element of vulnerability analysis in rural agrarian economies. The migration influence of the absence of peers from vulnerable households on young people from resilient households as shown in chapter seven is a clear example. Another example from chapter seven is where rich relations would travel to avoid sharing their food stuff or wealth or avoid the spells of witchcraft during periods of drought-vulnerability of other households. Thus, inspite of its ability to capture the environment-human population migration nexus, vulnerability as a theory does not entirely address the issue. This has implications for the framework employed by this study.

The framework does not take on board the possibility that migration of vulnerable households could affect migration in un-vulnerable households. Thus one has to consider the spill-over effects of vulnerable households on non-vulnerable ones in order to further capture the intricacies of the nexus between drought and migration. This way, policies

addressing vulnerability of households to drought should also consider the spill-over consequences on resilient households as these can have unsuspecting consequences. Scholars including Myers (2005), McLeman and Smit (2006), Morton (2007), Burroughs (2007) and the IPCC reports (2001, 2007) have generally focused on vulnerability of households and individuals to climate variability and change as a means through which they are and or will experience increased migration. Thus implicitly, these studies likewise the framework of this research assume that the migration of those not vulnerable and who have never been cannot be explained by vulnerability which is contrary to the findings of this research.

The foregoing discussions have centred on the relationship between drought and migration and also provided a picture of how drought as a trigger condition induces or influences migration. It has been indicated that this occurs in the context of other factors. The key feature of the foregoing discussion is therefore the role of contextual factors that may be called 'Mediating or Intervening factors' in mingling with drought vulnerability circumstances to result in migration and immobility responses or outcomes. Vulnerability to drought is therefore an important but not sufficient condition for migration. The channels of migration and immobility of a vulnerable or un-vulnerable household is determined through the mediation of various socio-economic factors. The socio-economic situations encountered by households are therefore the decisive mechanisms through which people respond to drought perturbations. Multiple decision-making pathways are considered by households considering the general socio-economic and environmental conditions of sending and destination areas.

8.2 Recommendations

Drought is a major contributor to rural out migration; both voluntary and involuntary migrants are easy prey for exploitation and unlawful economic and social practices – it is recommended that policy makers to help rural agrarian communities attain dynamic responses to drought both in coping and adapting to the phenomenon. Having several options or diversifying ones livelihood is crucial both in reducing future vulnerability and in dealing with unexpected drought. There should be effective implementation of agricultural policies, including irrigation agriculture and other rural infrastructure, to enhance adaptation and make migration a choice rather than an obligation to the forces of nature and policy neglect.

Rural-rural migration for the purpose of conducting agricultural extensification or ‘bush farming’ is a key means of adapting to drought. It is therefore important to enhance the ability of rural communities to conduct bush-farming. Enhancing bush-farming will involve improvement in transportation between rural villages and also the construction of at least third class roads connecting major interior farm-settlements to the nearest village. This would enhance easy transport of inputs and outputs to and from the farms respectively. This would improve returns from bush-farming all things being equal.

Migration as a response to drought although useful can also be maladaptive. Policy should therefore focus on managing the migration process such as in ensuring migrants rights and facilitating lower cost of sending remittances. As rural-rural, farm related migration is an important means of adapting to drought policies at managing migration should not only focus on urban migrants as is largely the case, but also on rural areas especially regulation of labour and land rights, to optimise the benefits of migration.

Finally, there is need for further studies into the role of rural-rural migration as a means of adapting to drought. The literature has favoured rural-urban migration to the extent that rural-rural migration seems irrelevant or non-existent in adaptation strategies to drought. This is even more enforced by the fact that rural-urban migration is on the ascendancy worldwide thereby the assumption that rural people will eventually abandon farm-livelihood strategies for non-farm based strategies. Research into rural-rural migration and the bush-farm system could provide significant inputs for the enactment of rural agricultural policies to help farmers adapt meaningfully to drought and other climate perturbations including climate change.

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APPENDICES**APPENDIX A****Household Questionnaire**

1. Name of village a. Laligu b. Kpalung c. Libga
d. Zaazi e. Tunaayili

Demographic Data

2. Sex of respondent a. Male b. Female
3. Age of respondent
4. Position of respondent in household (relation to household head).....
5. Marital status a. Single b. Married c. Divorced
d. Consensual union e. Widowed
6. Sex of Household head.....Age of head.....
7. Education of respondent.....
8. Religion of respondent.....

Assets and Endowments

9. What type of animals do you own-how many each?

| TYPE OF ANIMAL | NO |
|-----------------------|----|
| Cattle | |
| Sheep | |
| Goats | |
| Donkeys | |
| Fowls (hen and cocks) | |
| Guinea fowls | |
| Pigs | |
| Other | |

10. What kind of soil fertility input do you use in your farm? a. Organic: animal
b. organic: plant c. Inorganic
11. How do you acquire inorganic fertilizers? a. Self b. Gift
c. Loan d. Other

12. Do you own land (amamang gbansogu or kagsogu) Yes No

13. What is the total land size cultivated by your household?

a. a. 0 – 5 b. 6 – 10 c. 11 – 15 d. 16 +

14. Do you have a plot in any of the irrigation projects? Yes No

15. If yes, how much land (acres)?

16. Would you say your total land holding is adequate for your household

a. Yes No

17. Do you fallow your land, (“tambahibu”) Yes No

18. If No then ask Why

.....

...

19. Do you have more of your land in drought prone area?

a. a. Yes b. No

20. Do you have more of your land in flood prone area

a. a. Yes b. No

21. In times of difficulty do you borrow money? Yes No

22. What are your sources of borrowing?

a. a. Friend b. Family c. Bank d. NGO e. Government
f. Credit union g. Mutual help association h. Rich farmer
i. Other (specify).....

23. Assets

| Type of Assets | | No | |
|--------------------------|---|-----|----|
| Farm assets | Cattle plough | | |
| | Tractor | | |
| | Pumping machine | | |
| General Household Assets | Refrigerator or freezer | | |
| | Sewing machine | | |
| | TV | | |
| | Radio or cassette player | | |
| | Telephone (ask if any member has a phone) | | |
| Transportation Assets | Bicycle | | |
| | Motorbike | | |
| | Car | | |
| Type of House | Mud house | Yes | No |
| | Block house | Yes | No |
| | Grass roof | Yes | No |
| | Zinc or aluminium roof | Yes | No |

24. Are you originally from this village Yes No
25. Do you have relatives in this village? Yes No
26. Do you help each other with farm or other activities? Yes No
27. Do you get food gifts from them? Yes No
28. What kind of situation(s) do you normally get food gifts?
- i. i. funerals ii. Times of food scarcity iii. Wedding iv. Naming ceremony v. Chieftaincy title occasions vi. other.
29. Have these forms of mutual assistance in a, b, and c above increased or decreased or remained the same over time?..... a. Increased b. Decreased c. Same
30. Do you have relatives outside this village? Yes No
- a. a. Do you help each other with farm work or other activities? Yes No
- b. b. Do you get food gifts from them? Yes No

31. What kind of situation(s) do you normally get food gifts?
.....
.....
32. Have these forms of mutual assistance increased or decreased or remained the same over time?
.....

Socio-Economic Activities

33. What are the sources of income in order of importance? (din lee be tooni ka din paya)
- a.....b.....c.....
.....d.....e.....
.....f.....
34. Which of these crops do you cultivate a. Maize b. Groundnut c. Millet
d. Sorghum e. Rice f. Soya beans g. yam h.
Other.....
35. Of these crops which are the three (3) major ones you cultivate? (order of importance).....
.....

36. Have you experienced losses in crop production in the last ten years? a. NO
b. Yes
37. What resulted to the loss or losses? a.
b. c.
d. e
38. Generally, what are the causes of low yields in crop production?
a. Birds b. Floods c. Animals d. Rodents e. God
f. Failure to harvest in time g. Failure to weed adequately h. Bush fires
i. Soil infertility j. Bad people k. water scarcity l. too much rain
m. Drought n. Bad weeds (mo begu) . o. Other..... p. Other.....
39. Which of the above is the most important?
.....
40. What are the causes of losses in crop production (excluding post harvest losses)?
41. Which of the above would you rank as most important cause of pre-harvest losses?
42. Has this household ever experienced drought? Yes No
43. From your experience from as a child until now, how would you describe the nature of drought in terms of **frequency** of occurrence in this village?
a. Decreasing b. Increasing c. Stable d. non e.
Other.....
44. What do you think are the causes of drought?.....
45. Are you often aware before the occurrence of a drought? Yes
No
46. If yes, by what means? a. local knowledge (includes self or other farmers)
b. Government sources c. NGOs d. Spiritual-soothsaying e. Other
47. If you are aware drought will come do you prepare for it? a. Yes b.
No
48. How do you prepare if you know a drought will come?
49. How would you describe the **intensity** of the droughts from as a child until now?
a. Lessening b. Increasing c. About the same d.
Other.....
50. From your experience of drought, do you think that the rainfall pattern is changing?
a. Yes b. No

51. Is anyone in this household able to predict drought? Yes No

52. If yes, how?

53. Do you often get information on rainfall forecast from the government or NGOs?

NO Yes

54. Do you believe in the government/NGO forecast of rainfall? a. Yes b. No

55. Do you believe in your own predictions? a. Yes b. No

56. Do you believe in the spiritual predictions of drought? a. Yes b. No

57. What are the effects of drought on this household?

58. How do you normally survive the consequences of drought on crops, animals and other arenas of life (**coping strategies**)?

.....
.....
.....

59. Which of the above strategies would you say is most important?

60. What measures do you put in place to avoid the problems caused by drought?

What strategies do you

61. What is normally the food situation in this house in drought years?

a. a. Enough until next harvest b. More than enough until the next harvest
c. Not enough until next harvest

62. In normal years, what is usually the food situation?

a. a. Enough until next harvest b. More than enough c. Not enough

63. Generally, what are the reasons for migration of members of this household? a.

Bad/poor harvest b. To know the city c. Poverty d. Marriage preparation
e. To gain freedom f. Lack of job in dry-season
g. Accumulation – search for wealth h. Dogkana i. Migrants taking girls along to cater for small kids
j. Chasing girls m. Parents sending kids to relations for cultural and other reasons

64. What destinations are usually preferred by members of this household in drought years?

i. a. Urban b. Rural c. Both

65. Why?

.....
.....

66. What is the general effect of drought on migration on this household?
a. a. Increases b. Decreases c. No effect d. Other
(specify)
67. Comparing males to females in this house, which of these normally migrate most in drought years?
a. Females b. Males c. none
68. What is the current trend of migration in this household a. Increasing b.
Decreasing c. Stable
69. Comparing males to female, which of them migrates most in this household?
a. a. Males b. Females c. Other
answer.....
70. Have any person (s) from this household migrated permanently since the first elections of J.J Rawlings (1992)? Yes b. No
71. If yes, why?
.....
72. Which place did he or her or, they go first?
.....
73. What is their (or his/ her) current location?
.....
74. Do you receive remittances from migrant relations during hard times? Yes
No

Thank You Sincerely For Your Help

APPENDIX B

Individual Questionnaire

1. Name of village a. Laligu b. Kpalung c. Libga d. Zaazi
e. Tunaayili
2. Sex of respondent a. Male b. Female
3. Status in household
4. Age of respondent.....
5. Marital status a. Married b. Single c. Divorced d. Widowed e. Other.....
6. Education in progress.....
7. Education completed.....
8. What is the main source of income of your household?
9. What is the minor source of income?
10. Where is majority of your land located-in (a) drought prone area or flood prone area (b) ?
11. Does your household have access to irrigation? No Yes
12. How much land does your household have in the irrigation facility?
13. How would you rate your household a.Well-off b.In okay conditions c. Barely surviving
14. Have you experienced drought before? Yes No
15. How did you as a person respond to this drought? a. Went into different employment b.Dependent on support from family/friends d. Migrated e. Other (specify).....
16. Have you migrated before (away for 3 months)? No Yes (If answer is No then move to question 24)

17. Which of the following forms of migrations have you engaged in?

| Type of migration | |
|--------------------------|--|
| Dogkana | |
| Kanako | |
| Djoa | |
| Marriage (divorced only) | |
| Ayugba | |
| Kohimma | |
| Other | |
| Other | |

18. What was the nature of your first time of migration

| Destination (s) | Year | Age/education at time of migration | Season of migration | | Reason(s) | Activity / Occupation | Source of funding | Decision made by whom?(one or more) | Marital status | Length of stay (months or in years) |
|-----------------|------|------------------------------------|---------------------|------------|-----------|-----------------------|-------------------|-------------------------------------|----------------|-------------------------------------|
| | | | Wet season | Dry season | | | | | | |
| | | Age | | | | | | i ii iii iv | | |
| | | Education (progress) | | | | | | | | |
| | | Completed | | | | | | | | |

19. How was your second migration like?

| Destination (s) | Year | Age/education at time of migration | Season of migration | | Reason(s) | Activity / Occupation | Source of funding | Decision made by whom?(one or more) | Marital status | Length of stay (months or in years) |
|-----------------|------|------------------------------------|---------------------|------------|-----------|-----------------------|-------------------|-------------------------------------|----------------|-------------------------------------|
| | | | Wet season | Dry season | | | | | | |
| | | Age | | | | | | i ii iii iv | | |
| | | Education (progress) | | | | | | | | |
| | | Completed | | | | | | | | |

20. Generally, what are the reasons for your migrations?

.....

21. Which of these reasons for migration is the most important?

First.....

Second.....

Fill in table if drought is mentioned as a reason for migration:

| Destination (s) | Year | Age/education at time of migration | Season of migration | | Reason(s) | Activity / Occupation | Source of funding | Decision made by whom?(one or more) | Marital status | Length of stay (months or in years) |
|-----------------|------|------------------------------------|---------------------|------------|-----------|-----------------------|-------------------|-------------------------------------|----------------|-------------------------------------|
| | | | Wet season | Dry season | | | | | | |
| | | Age | | | | | | i ii iii iv | | |
| | | Education (progress) | | | | | | | | |
| | | Completed | | | | | | | | |

22. Which of these normally influence your decision to migrate? a. Self b. Relations c. friends d. Other.....

23. Which of the above has the greatest influence on your decision to migrate?

.....

24. Are you still actively engaged in migration?.....

25. When do you intend to migrate again?.....

26. Why do you intend to migrate?.....

27. **What do you think are the causes of drought?**

- a.
- b.
- c.
- d.
- e.

28. When there is drought and it brings you problems, how do you normally manage in this household?

29. Are there strategies normally ok in dealing with the situation Yes No.....
Explain
30. What strategies do you put in place in this household to avoid or reduce the impact of drought?
31. Do these strategies normally help you the way you expect during drought? No
Yes
32. Explain
33. Do you think that these strategies will work in the future Yes No
34. Explain
35. What do you think will be the **frequency** of drought in the future? a. Increase
b. Decrease c. The same d. I don't know
36. What do you think will be the **intensity** of drought in the future? a. Increase
b. Decrease c. The same d. I don't know
37. If drought occurs and it brings you problems, would you consider migrating? Yes
No
38. Why?
39. Where?
40. Why that location?
41. Are you able to predict drought? Yes No
42. If yes, how?
43. Do you often get information on rainfall forecast from the government or NGOs?
NO Yes
44. Do you believe in the government/NGO forecast of rainfall? a. Yes b. No
c. Somehow
45. Do you believe in your own predictions? a. Yes b. No c. Somehow
46. Do you believe in the spiritual predictions of drought? a. Yes b. No
c. Somehow
47. Do you believe in the old people's predictions of drought? a. Yes b. No
c. Somehow
48. What has been the trend of migration in this household? a. Decreasing b.
Increasing c. stabl