Droughts, gender and rural household livelihoods in the Nandom municipality, Ghana

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ABSTRACT

In a technologized 21st century, the global community is grappling with the issue of climate change, within which drought is topical and considered the most threatening component of climate change, and its impact is much felt in societies where there is heavy dependence on natural resources for survival with minimal or low coping mechanisms. Most of these societies are to be found in Africa. This study, thus, examined drought and its effects on men's and women's livelihoods among rural households in the Nandom Municipality of the Upper West Region of Ghana. The study adopted the drought identification theory. A non-experimental descriptive research design was used, allowing for the use of questionnaire administration and focus group discussions. Guides were used to solicit information from the respondents and participants. The target population was men and women in the ten communities. The questionnaire was administered to 100 women and men in the ten communities in the Nandom Municipality. The simple random sampling technique was used. Focus group discussions were held with three (3) men's groups and three (3) women's groups. The data was analyzed using the SPSS version 20 software, followed by descriptions, explanations, and narratives. The study revealed that droughts have devastating effects on the livelihood of rural households in the municipality. Thus, the rural households have to supplement their livelihoods with low-income jobs, including migrating to the southern part of the country to engage in menial jobs. Locally, households also engage in fuelwood and charcoal burning during drought periods. Non-governmental organizations (NGOs) minimally support the rural pro-poor households during the drought periods. Comparatively, women's drought stress is more severe than men's. Drought is also more severe among the aged, the illiterate, and the landless who are considered poor. Conclusively, drought is a real phenomenon in the Nandom Municipality, and it has more debilitating effects on women than men. Recommendations are the need for irrigation initiatives in the municipality and the assembly to incorporate and coordinate drought development interventions by national, international, governmental, and non-governmental organizations.

Keywords: Climate Change, Drought, Gender, Livelihoods, Rural Households

I. INTRODUCTION

Globally, drought which is now regarded as an environmental disaster has attracted scholarly attention among environmentalists, ecologists, hydrologists, meteorologists, geologists, policy makers and agricultural scientists. Drought occurs in virtually all climatic zones, such as high and low rainfall areas (Wabwire, Mukhovi & Nyandega, 2020). They went on to elucidate that those temperatures; high winds, low relative humidity timing and characteristics of rains, including distribution of rainy days during crop growing seasons, intensity and duration of rain, onset and termination of rains, climate dynamics, all play a significant role in the occurrence of droughts.

Evidentially, the negative impacts of climate change and by extension, droughts specifically are becoming increasingly alarming today (Idowu & Amara, 2024). These include long term changes in average temperatures and rainfall, changes in the intensity, timing, and geographic distribution of rainfall, an increase in the rate at which extreme events such as drought, flood and rise at the sea level (Wabwire et al, 2020). These impacts have detrimental effects on agricultural productivity, biodiversity and ecosystems. Although some crops in some regions of the world may experience gains, research predicts that the overall impacts of climate change on agriculture will be negative, threatening global food security alarmingly (Idowu & Amara, 2024).

In developing countries such as Serria Leone (Idowu & Amara, 2024), rural households, most of whom are already food insecure are likely to experience the most severe effects of climate change and drought more directly (Wabwire et al, 2020) and are in greatest need of adaptation strategies and development assistance to cope with the changing weather patterns (Idowu & Amara, 2024). As it is, the vulnerable within these countries have the least capacity

or opportunity to prepare for the impacts of a changing climate giving their limited resources, assets and eventually their general well-being (Idowu & Amara, 2024). Giesbert and Schindler (2010), found out that better-off households typically sell assets in order to maintain their consumption and livelihoods when facing shocks. In contrast, poorer households often reduce assets and consumption simultaneously. Distress sales of assets may cause households to forego future investments in health, nutrition, and education, including children in the household.

A plethora of research by Wabwire, Mukhovi and Nyandega (2020) and Moser (2007), has shown that assets are paramount for rural households because they can help them cope better with shocks, including long term impacts of climate extremes. In examining pathways out of poverty for rural people, research on asset-based approaches to development and poverty alleviation (Moser, 2007), indicated that since the 1990s, control over assets play a fundamental role in increasing incomes, reducing vulnerability, and empowering people to move out of poverty. In the context of climate change, access to and control of assets can be particularly significant for the rural poor, where assets such as secured land and water rights, agricultural technologies, livestock, knowledge, and social capital can help individuals, both men and women, and households adapt to increasing variability of production.

The bourgeoned literature, Mao et al. (2020), have provided empirical evidence that women experience poverty and deprivation in different ways than men and can be differentially affected by shocks. Evidence also demonstrates that there are many differences in men's and women's access to and control over key assets such as land. Women usually have fewer assets and rights than men. They are more vulnerable to loss of these assets and rights due to separation, divorce, or widowhood, and have less access to capital, extension, inputs, and resources for agricultural production. Yet, women's asset holdings often have positive effects on important development outcomes including household food security and human capital formation (Awosi, Agyemang & Munkaila, 2018).

In Africa, climate change has affected the rainfall pattern such that long and more persistent drought periods are being experienced (Wabwire et al. 2020). Drought has a negative impact on agricultural activities which are the mainstay of most rural people in Africa south of the Sahara. African farmers suffer the consequences of climate change, but the rural poor are more affected because their livelihoods almost entirely depend on agricultural activities. Idowu and Amara (2024), maintained that northern Kenya experiences drought periodically which affects crop production, and that drought negatively affects livestock production among the poor in Ethiopia (Idowu & Amara, 2024.

The frequent drought periods are not only limited to Africa, south of the Saharan countries, but also in other developing countries (Wabwire, et al, 2020). Drought has become a normal phenomenon in Ghana since 1987 and it occurs at least once in every 3 years in Northern Ghana (Wabwire et al, 2020). Ghana is subjected to series of drought periods. From 1982-1983, Ghana experienced a particularly large drought followed by a less intense one in 2004. The major complaint was that the total rainfall on a yearly basis seems to not be changing significantly but, the patterns with which these storms arrive are causing the farmers distress. The rains, in recent years, are late and then when they do arrive are shorter with more intense rainstorms (Nkrumah et al., 2014; Wabwire et al, 2020).

According to the Ghana Statistical Service (2007), the Northern Regions of Ghana are more rural than the south relying heavily on farming for survival. For this reason, predicting the rains is crucial to their existence. Ghanaian precipitation patterns, however, are not easily predicted with years of drought being followed closely by years of flooding, both equally as destructive to Ghanaian crops and both leaving in a wake famine and reliance on foreign aid. In 1999 and in 2007, the Northern Region of Ghana was devastated by flooding (Nkrumah et al., 2014). The flooding in 2007 was preceded by months of drought with June and July being especially dry so that when the rains finally arrived in August, ephemeral streams occurred instead of percolation into the soil. This delay in and the heavy onset of rain washed away healthy crops and also caused a loss to those who planted too early (Nkrumah et al., 2014; Awosi, Agyemang & Munkaila, 2018).

While the frequent occurrence of drought as a result of climate change is well documented, the effects of drought on rural households and among women and men have not been well documented (Idowu & Amara, 2024). According to Nkrumah et al., (2014), the lives of the people of Lawra District, of which the Nandom District was part, before and after the 2007 droughts seems to suggest a downward trend in the general well-being and depletion of the assets of the inhabitants. This should be a subject for academic interrogation.

Presently, rural communities in the developing areas of the world have been victims and are challenged with insufficient infrastructure and social services due to harsh economic and climatic conditions. Wabwire et al. (2020) have since noted that Northern Ghana, which is largely rural in nature experienced persistent harsh economic conditions. There is notable poverty in the five (5) regions of the north (notably, Northern, Upper East, Upper West, Savannah and North East Regions) as a result of limited resources and economic opportunities. This situation has contributed to a continuous migration of the labour force of the north to the southern parts of Ghana such as Accra and Kumasi (Awosi, Agyemang & Munkaila, 2018). The net-migration of male labour from the northern regions in 1960 stood at -89,000. Food insecurity is also a problem as rural poverty increased from 37% in 1998/99 to 50% in 2005/06 with Upper West recording the highest incidence of poverty from 84% in 1998/99 to 88% in 2005/06 (Ghana Statistical Service, 2007; Wabwire et al, 2020).

Low level of education (Adatuu, 2017; Adatuu et al, 2021) is one of the problems that exacerbate the development gap between the north and southern part of Ghana. As of 1998, a greater percentage of residents (80%) of rural northern Ghana were non-literates with Northern Region recording the lowest rural literacy rate of 8.9%, followed by Upper East with 12.4% and Upper West with 15.2%. Compared to Volta, Eastern and Western Regions which had a rural literacy rate of 55.7%, 51.9% and 51.4% respectively, it is clear that northern Ghana lags far behind other regions in education (Adatuu et al, 2021).

The notable industry that has engaged majority of the youth and the general populace in the northern parts of Ghana is the agricultural industry mainly due to the abundance of arable land (Food and Agriculture Organization, 2006; Adatuu et al, 2021). It is a clear potential and offer many opportunities to the people of the north, men and women alike, and Ghana as a whole. The agricultural industry that has always been underexploited has suffered the low potential of supporting the economic growth of the north and the subsequent arrest of the food insecurity across the country especially during the lean season when almost all food stuffs become scarce across the West African sub-Region (Wabwire et al, 2020).

The agricultural industry is an energy driven industry. Large quantities of energy, time, water, financial resources and physical exhaustion are highly expensed in the agricultural processes (FAO, 2006). The farming processes are inefficient leaving farmers with substantial annual losses due in part to inadequate rains as a result of the erratic climate dynamics coupled with the conspicuous absence of irrigation dams across the five regions of the north. As a result, basic human needs such as clean water, education, health, etc, are hardly being met in many rural communities (GSS, 2007; Awosi, Agyemang & Munkaila, 2018; Adatuu et al, 2021). It is expedient therefore to examine whether drought has any effect on the rural dwellers in the first place and to discover which gender suffer most of the effects. This will help craft or design possible management strategies/tools and innovations that could be adopted for the improvement of the lives of men and women as well as the vulnerable in Nandom and other similar rural areas in the north.

1.1 Research Objectives

i. To find out how drought affects the livelihoods of men and women in rural households in the Nandom Municipality of the Upper West Region.
ii. To examine the coping strategies adopted by rural households during drought periods in the Nandom Municipality.

II. LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Drought Identification Theory

This study is hinged on Yevjevich's (1967), drought identification theory. Yevjevich (1967), proposed a theory for identifying drought parameters and investigating their statistical properties such as (a) duration, (b) severity and (c) intensity. The most basic element for deriving these parameters is the truncation or threshold level, which may be a constant or a function of time. A run is defined as a portion of time series of drought variable Xt, in which all values are either below or above the selected truncation level of X_0. Accordingly, it is called either a negative run or a positive run. Yevjevich (1967) and Awosi, Agyemang and Munkaila (2018), stated that various statistical parameters concerning drought duration, magnitude and intensity at different truncation levels are much useful for drought characterization.

A drought event has the following major components (a) drought initiation time (ti) which is the starting of the water shortage period that indicates the beginning of a drought, (b) drought termination time (te) which is the time when the water shortage becomes sufficiently small so that drought conditions no longer persist, (c) drought duration (Dd), expressed in years/months/weeks, etc., during which a drought parameter is continuously below the critical level (Awosi, Agyemang & Munkaila, 2018). In other words, it is the time period between the initiation and termination of a drought. In (d) drought severity (Sd), indicates a cumulative deficiency of a drought parameter below the critical level and (e) drought intensity (Id), which is the average value of a drought parameter below the critical level. It is measured as the drought severity divided by the duration (Awosi, Agyemang & Munkaila, 2018). This theory has thus, been applied in several drought models and analyzes (Awosi, Agyemang & Munkaila, 2018; IDMC, 2011).

The theory is therefore, good for assessing the impact of drought on the livelihood of rural households in the Nandom Municipality of the Upper West Region of Ghana because it helped the researchers to identify the various drought parameters that took place within which include the drought intensity, its duration, severity and spatial extent (Awosi, Agyemang & Munkaila, 2018).

2.2 Empirical Review

2.2.1 How Drought Affects the Livelihoods of Men and Women in Rural Households

Drought as a climatic concept produces a complex web of effects that span many sectors of the society, including the economy. According to Awosi, Agyemang and Munkaila (2018), droughts are a widespread phenomenon since about half of the earth's terrestrial surfaces are susceptible to them. Droughts as a natural hazard have had the greatest negative impact on human life within the 20th and 21st centuries (Awosi, Agyemang & Munkaila, 2018). In recent years, large scale intensive droughts have been observed on all continents, affecting large areas in Europe, Africa, Asia, Australia, South America, Central America, and North America (Wabwire, et al, 2020) and high economic and social costs have led to increasing attention to droughts**.** The impact of droughts on different continents around the globe is now being discussed (Wabwire et al, 2020).

Ghana is subjected to series of drought periods. From 1982-1983, Ghana experienced a large drought followed by a less intense one in 2004. The major complaint was that the total rainfall on a yearly basis seemed not to be changing causing farmers' distress. The rains in recent years are late and then when they do arrive are shorter and more intense (Nkrumah et al., 2014).

The Northern Regions of Ghana unlike those in the south are more rural and rely heavily on farming for survival (Adatuu, 2017). For this reason, predicting the rains is crucial to their existence. Ghana's precipitation patterns are not easily predicted with years of drought being followed closely by years of flooding, all of which are equally as destructive to crops and leaving in their wake, famine and reliance on foreign aid (Nkrumah et al., 2014). In 1999 and in 2007, the Northern Regions of Ghana were devastated by flooding. The flooding in 2007 was preceded by months of drought with June and July being especially dry so that when the rains finally arrived in August, ephemeral streams occurred instead of percolation into the soil. This delay in and the heavy onset of rain washed away healthy crops and also caused a loss to those who planted too early (Nkrumah et al., 2014; Awosi, Agyemang & Munkaila, 2018).

The Nandom Municipality, like other Municipalities/districts of the region, depicts a typical rural economy dominated by the agricultural sector with the commerce and industrial sectors least developed. Agriculture alone accounts for about 86% of the labour force while commerce/service and industry account for 13% and 1% respectively (Nadom Municipal Assembly, 2024). The main farming and cropping systems in the Nandom Municipality are mixed farming and cropping.

According to Nkrumah et al., (2014) and Awosi, Agyemang and Munkaila (2018), the lives of the people of Nandom Municipality before and after 2007 and subsequent droughts seemed to suggest a downward trend in the general well-being of the inhabitants. People in the Nandom Municipality also lamented over the 2011/2012 droughts that had many devastating impacts in their lives. Farmers were worried as food crops were withering since agriculture is the mainstay of the people (Awosi, Agyemang & Munkaila, 2018).

Men and women are affected differently based on varying contexts of vulnerability. The general observation is that women are often more negatively affected than men (Awosi, Agyemang & Munkaila, 2018). Even if men are more negatively impacted by drought, they own land and other assets (Awosi, Agyemang & Munkaila, 2018; Wabwire et al, 2020).

2.2 Coping Strategies of Rural Households during Drought Periods

Adaptation to drought and other components of climate change includes all adjustments in behaviour or economic structure that reduce the vulnerability of society to changes in the climate system. Adaptation takes place at all levels, from changes in global systems through changes at national or regional levels to adaptations made by local communities and individuals. The development of adaptation strategies needs to recognize this and define the appropriate mix of actions at these different levels (Ghana Meteorological Services Department, 2014; Awosi, Agyemang & Munkaila, 2018; Wabwire et al, 2020).

One key role for adaptation and the reduction of such vulnerabilities hold according to Awosi, Agyemang and Munkaila (2018), is the diversification of livelihoods. The diversification of rural livelihoods is defined as the process by which rural households construct an increasingly diverse portfolio of activities and assets in order to survive and to raise their standard of living (Wabwire et al, 2020). The increase of a livelihood portfolio, in other words: the attempt to multiply the sources of income like off-farm labour, remittances from migration stays, etc., might be an outcome of a livelihood adaptation process, but diversification is not necessarily the only way of adaptation. Intensification, which refers to existing income sources that are used more intensively to guarantee a higher income, is another option.

III. METHODOLOGY

The Nandom Municipality constitutes one of the eleven districts and Municipalities in the Upper West Region of Ghana. It was established by a Legislative Instrument 2105 and elevated to the status of a Municipal on January, 2020. The main economic activity in the area is agriculture with an overwhelming majority of 85% of the population engaging in it. The main produce from agriculture are livestock and crops done on the basis of subsistence production with low output (Nandom Municipal Assembly, 2024).

A non-experimental descriptive research design was adopted and used. This was done to enable the researchers to use a mixed method in the data gathering process. That to say that it enabled the researchers to use both quantitative and qualitative approaches and tools to gather the data (Bryman, 2016). A simple random sampling technique was used to select 10 rural communities thus given each rural community an equal opportunity to be part of the study in the Municipality. These communities were Brutu, Danko, Kogle, Toyaga, Biiregangn, pofien Naadegaun, Munyupeli, Piiri, Basebele, Duotange. Ten households were then randomly selected from each community. It gave opportunity to access responses from different categories of rural poor people with different livelihood activities being affected by drought and hence varied coping strategies. The estimated total population for the Municipality according to the Ghana Statistical Service 2021 Population and Housing Census was 46,040 people, with an average number of persons per household (household size) estimated as 7 (Nandom Municipal Assembly, 2024). This gives an estimated 6,577 households representing the sample frame. The sample size is obtained using the mathematical formula below;

Formula: $n = \frac{N}{1+N(\alpha)2}$

Where n = sample size, N = sample frame (6,577) and α represents the margin of error which is 0.1 with a confidence interval of 90%.

By substitution, Formula $= \frac{6{,}577}{1+6{,}577(0.1^2)} \frac{14418}{1+14418(0.1)2} = 99.5 = 100$

Hence, the sample size for the survey is 100 individual respondents. Justifiably, the sample size chosen was highly dependent on the stipulated period of time, the size of the Municipality, the number of communities, the estimated number of households in rural communities in the area.

Purposive sampling technique was used to select the respondents for the KIIs and FGDs. This was done because the respondents were deemed to be knowledgeable in the study area and hence, their inclusion in the study. The data was analyzed using qualitative and quantitative techniques. The qualitative analysis took the form of descriptive narratives involving discussions on the data gathered from the district. This entailed the coding of the data and drawing out themes according to the research questions. The Statistical Package for Social Sciences (SPSS 20) software was used to facilitate the generation of tables and figures. This was followed by descriptive explanations and narratives of the tables and figures.

The study adopted a non-experimental descriptive research design using a combination of questionnaire, key informant interview (KI) guide and focus group discussions (FGDs). The questionnaire was administered to 100 individuals in 100 households. Fifty-six (56) of the respondents were women while forty-four (44) were men. This is was done because the population of the women was more than the men and hence, the need to give the women more representation. The questionnaire was used to solicit information from the respondents on issues of economic activities, time spent on both productive and reproductive activities during drought periods and non-drought periods, coping strategies, vulnerability levels, the effects on men on the one hand and women on the other. It also examined the coping mechanisms of the respondents.

Three (3) Key informant interviews were conducted with key leaders of the Ministry of Agriculture in the Nandom Municipality. The study gathered data on trends of crop production and animal population in the district for the analogy of the yield levels of livelihood activities of most of the rural households in order to establish a relationship between output of livelihood activities and the vulnerability levels of rural dwellers in the district. One key informant interview was also conducted with the Ghana Meteorological Service Department in Wa. The key informant interview (KII) yielded information on rainfall and temperature figures from the region and district in order to determine the trend in the influence of those factors on the major livelihood activities as well as the adaptive capacities of rural poor in the Municipality. This enabled in soliciting information based on in-depth knowledge, experience or record of intervention on climate change issues and livelihood promotion in the district.

Two (2) focus group discussions (FGDs) sessions were conducted with married women, men and with single women separately. This brought to a total of six (6) focus group discussions. Women were separated from men to make the women comfortable to speak out issues without being shy or fearful of their men counterparts. Each focus group discussion session was conducted with six to ten participants. All the participants were at least twenty (20) years old. The FGDs were conducted based on the questions contained in the questionnaire to enable the study crosscheck the

information obtained from the questionnaire. The data was analyzed suing the SPSS version 20 software followed by descriptions, explanations and narratives

IV. FINDINGS & DISCUSSION

4.1 Findings

4.1.1 How Drought Affects the Livelihoods of Rural Households

The main household occupation of the people of Nandom is farming (61%) with few of them engaging in trading (23%), government work (7%) and other livelihood supporting activities such as pito brewing, handicraft, carpentry, masonry comprising of 9%. A closer look at the gender disaggregated figures revealed that most of the people who indicated that they are farmers are men. Of the 44 men respondents, 34 (34%) are into farming as a main occupation, 7 (7%) are engaged in trading while 3 (3%) are government workers. This contrasts sharply with the female respondents who have 27 (27%) of them engaged in farming, 16 (16%) in trading, 4(4%) being government workers and 9 (9%) into others activities to earn a living. This is in line with the Nandom Municipal Assembly's composite budget (see Nandom Municipal Assembly (2024). The Assembly stated that the economic mainstay of the people of the area is agricultural production normal done on subsistent basis. The rest of the population engage in gainful employment and other income generating activities.

About 46% of the respondents collect natural assets/capital such as land, water, livestock, trees etc. They said natural capital serves as the bedrock to their survival and well-being since farming is the main occupation of the area. Others, though indicated that they collect physical (23%), 16% of them collect human/social capital, few (15%) collect financial capital. These findings are also in tandem with the Nandom Municipal Assembly (2024) composite budget that the livestock is one of the main agricultural activities undertaken in the area. The findings are also confirmed by Adatuu et al (2021), which noted that the Northern Regions of Ghana unlike those in the south are more rural and rely heavily on agriculture for survival.

Ninety percent of the respondents said it was very difficult to collect the assets mentioned above during drought periods. The rest, that is 10% said it was difficult to do same in such periods. The bottom line here is that it is not easy to collect these valuable assets (natural, physical, financial and social capital) during drought periods. However, they were quick to add that it was not very difficult gathering these same assets during non-drought periods.

On the main effects of droughts on rural household livelihoods, sixty-five percent of the respondents indicated that the drought periods affect their livelihoods negatively as poverty gets worsen and standard of living reduces. Farming which is the main occupation of the people comes to a standstill with the onset of the drought since irrigational facilities are unavailable for dry season farming. Respondents said they have to sell off assets to maintain diet levels and majority (65%) of them who did not have assets to sell go impoverished.

The aligns with studies by Nkrumah et al., (2014) and Awosi et al. (2018), who observed that droughts affected the people of the Municipality some years back. They noted that people in the Nandom Municipality lamented over the 2011/2012 droughts that had many devastating impacts in their lives. Farmers were worried as food crops were withering since agriculture is the mainstay of the people. This is also well captured in the Ghana Daily Graphic Newspaper, May 19, 2006 page 11. Table 1 shows how droughts affected the livelihoods of the people of the Nandom Municipality.

Table 1

How Drought Affects the Livelihoods of Respondents

Effects of Drought	Frequency	Percent
Decrease standard of living	2	2.6
Inability to feed	1	1.3
Increased poverty level	46	59.0
Low standard of living	19	24.4
Worse standard of living	1	1.3
Worsen poverty level	9	11.5
Total	**78**	**100.0**

The respondents said their livelihood activities either become poorly resilient (39%) or not resilient (60%) as indicated in Table 1. When asked if they had any future drought risk management/investment plan for their households, they answered in totality was in the negative and that they either rely on family relations or household reserves.

The above is in line with the studies of Wabwire et al. (2020), that in developing countries in rural households, many of whom are already food insecure, are likely to experience the most severe effects of climate change and drought more directly and are in greatest need of adaptation strategies and development assistance to cope with the changing

weather patterns (Awosi et al, 2018). As it is, the vulnerable within these countries who have the least capacity or opportunity to prepare for the impacts of a changing climate giving their limited resources, assets and eventually their general well-being.

About 59 percent of the respondents indicated that they did no work during drought periods. However, 41 percent of them said they did minor jobs such as pito brewing, petty trading, hairdressing and seamstress in the case of married and single women whereas carpentry, masonry, or travel to the cities to look for menial jobs is in the case of married and single men. Most of the respondents said in a focus group discussion that the drought period really leaves them with no choice than to engage in this kind of little reward jobs.

Trading (19%) is the major type of work done during drought periods in the Nandom Municipality of the Upper West Region. Apart from the trading, and other menial jobs (38.1%) done, 16.7% of respondents travel to other places such as Accra and Kumasi in such of jobs. This confirms the findings of the Ghana Statistical Service (2007) which noted that there is notable poverty in the five (5) regions of the north (notably, Northern, Upper East, Upper West, Savannah and North East regions) as a result of limited resources and economic opportunities. This situation has contributed to a continuous migration of the labour force of the north to the southern parts of Ghana such as Accra and Kumasi. Wabwire et al. (2020), equally found the net-migration of male labour from the northern regions in 1960 to stand at -89,000.

The sex disaggregated figures shows that it's the women (26% out of 42%) who work during drought periods as against their male (16% of 42%) counterparts. The few men who actually work during drought only travel to the cities in such of menial jobs.

4.1.2 Effects of Droughts on Men and Women's Rural Households

During focus group discussion, women reported spending more hours working (reproductive and productive) daily than men, both during drought and non-drought periods. Single and married women spent between 12-15 hours working during non-drought periods, while men spent only 7-10 hours working during same period. Men spent fewer hours working during drought periods than non-drought periods. Thus, in drought periods, men spent only 4-6 hours working daily compared to 6-10 hours during non-drought periods. However, the situation is different for women.

This makes drought periods more stressful to women more than men. This is in line with Awosi (2018), studies that drought affected women more than men. According to them, the general observation is that women are often more negatively affected than men. Even if men are more negatively impacted by drought, they own land and other assets (Quisumbing et al, 2011). This implies that women than men suffer from drought. Particularly, Awosi (2018) and Wabwire et al. (2020) noted that even if men are more negatively impacted by drought, they have assets such as land and other assets.

Women spent more hours engaging in reproductive and productive work during drought periods. Single and married women spent between 13-16 and 12-15 hours respectively, working daily to support their households during drought periods. In a nutshell, it was reported that the coping strategies adopted by rural poor during drought period has a greater impact on their workloads. However, women's workloads are more compounded during drought periods as compared to their men counterparts.

As also stated in the bourgeoned literature (Mao et al, 2020; FAO, 2011; Idowu & Amara, 2024), empirical evidence shows that women experience poverty and deprivation in different ways than men and can be differentially affected by shocks. Evidence also demonstrates that there are many differences in men's and women's access to and control over key assets such as land. Women usually have fewer assets and rights than men. They are more vulnerable to loss of these assets and rights due to separation, divorce, or widowhood, and have less access to capital, extension, inputs, and resources for agricultural production (Wabwire, Mukhovi & Nyandega, 2020).

4.1.3 Coping Strategies of Rural Households during Drought Periods

Men and Women's coping mechanisms among rural households during droughts in the Nandom Municipality. Eight four percent of respondents said they rely on family relatives to survive during drought periods. 5% who were mostly government workers seek external support in the form of loans. Also, 3% and 7% of the respondents rely on household reserves and other livelihood supporting activities like mason, migrate to cities, petty trading, and travel to cities respectively. Table 2 depicts the coping mechanisms during droughts in the Nandom Municipal.

Table 2
Coping Mechanisms during Drought

Copying Strategy	Frequency	Percent
Rely on relatives	84	84.0
Seek external support	5	5.0
Rely on household reserves	3	3.0
Seek divine intervention	1	1.0
Others	7	7.0
Total	**100**	**100.0**

As captured in Table 2, the respondents' representing 70.5 percent said their poverty level increases as the drought situation in the study area changes (worse). Similarly, 28.3 percent also drought changes bring about low standard of living whilst 1 percent said she finds it difficult to feed during changes in drought periods over the years. The findings resonate the studies of (Awosi, Agyemang & Munkaila, 2018). The author noted that droughts worsen the living conditions of people living in rural areas. It affects both men and women alike.

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

It was established that the men and women collect and value most natural assets/capital such as land, water, livestock, trees, etc. However, this was difficult for them during drought periods. Also, households in the Nandom Municipality rely on family relatives to survive during drought periods. The few privileged government workers seek external support in the form of loans. Others also rely on sales of household reserves and other livelihood supporting activities like masonry, petty trading or migrate to the big cities such as Accra and Kumasi in search of menial jobs. Limited support is received from NGOs and other sources.

The main economic activity of married and single women in Nandom is farming, petty trading, seam stressing and hairdressing, while married and single men engage in farming, carpentry and masonry. During drought periods, almost all the women engage in more than one economic activity to help meet the basic needs of their households: they engage in petty trading, seam stressing, or hairdressing. During drought periods, they also go to the farm areas to collect firewood which is used to boil water for cooking and bathing (especially during harmattan) which make them comparatively to men, suffer more from drought stress.

5.2 Recommendations

Although there has been gradual effort to improve livelihood interventions and strategies by government, non-governmental organizations and agencies especially on agriculture. However, the lack of major irrigational facilities in the Nandom Municipality to ensure an all-year round farming leaves the rural households with worsening living conditions. The study therefore, recommends that many irrigation projects should be setup in the Nandom Municipality to ensure and all-year round farming.

The Municipal Assembly should also incorporate drought occurrence into their Medium-Term Development Plan. It should also promote the coordination of relief and livelihood support initiatives both from government and non-governmental organizations.

Declaration of Interest

The authors declare that they do not have any known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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