AJLP & GS
African Journal of Land Policy and Geospatial Sciences

THE INFLUENCES OF GENDERED CUSTOMARY LAND TENURE SYSTEM ON FOOD SECURITY IN NANDOM DISTRICT, GHANA

[1]Kizito Doghle, [2]Justice Owusu-Ansah, [3]Paul Boniface Akaabre

[1]MPhil Development Studies, Department of Planning ,Kwame Nkrumah University of Science and Technology, Kumasi, kdoghle@gmail.com, Ghana

[2]Senior Lecturer, Department of Planning,Kwame Nkrumah University of Science and Technology, Kumasi, koansah@msn.com, Ghana

[3]PhD Candidate, Department of Planning,Kwame Nkrumah University of Science and Technology, Kumasi, akaabrepaulboniface@yahoo.com, Ghana

ABSTRACT

Food insecurity has been a major global development concern. Hence, SDG Two seeks to achieve Zero Hunger by 2030. The situation is severe in sub-Saharan Africa, where customary practices deprive women of land ownership and limit their access rights. This paper explores the influences of a gendered land tenure system on food security in Nandom District, adapting conditional assessment modules defined by USDA and FAO. With a list of households categorized under headship, 30 respondents were proportionally selected from each of the four study communities. The results from the survey of 120 households show that female headed households experienced extreme and severe conditions of food insecurity while male and co-headed households experienced less, resulting from differences in land ownership and access rights. Further analysis of the situation underscores the need to promote equal ownership and access rights for all gender groups to fight food insecurity and poverty in Africa.

Keywords: Customary Land Tenure System, Gender, Households, Food Security/Insecurity, Nandom District, North-Western Ghana

1. INTRODUCTION

Food security is seen as a global development concern (Godfray et al., 2010). It is estimated that about one billion of the world's population experience varied conditions of food insecurity (FAO, 2013; Sasson, 2012). In particular, most households in the global south suffer from food insecurity (FAO, 2017). Over 50% of households in sub-Saharan Africa are reported to be victims of severe conditions of food insecurity (Sasson, 2012; FAO, 2013). In lieu of these concerns, the United Nations incorporated food security concerns into the Millennium Development Goals (MDGs) and the current Sustainable Development Goals (SDGs) with the aim of achieving "Zero Hunger" across member nations and within households by 2030 (UN, 2015). Besides, the achievement of food security (SDG 2: Zero Hunger) is the basis for the achievement of other Sustainable Development Goals, particularly Goal 1 (No poverty) and Goal 3 (Good health and wellbeing).

To achieve food security, households need to have access to food in sufficient quantities and quality suitable for dietary needs (Economic Commission of Africa: ECA, 2009; FAO 2006, 2013: Sasson, 2012). This can be attained when food producers have access to lands and inputs such as fertilizers, weedicides and tractors, with the adoption of modern technologies (FAO, 2013; ECA, 2009). The nexus between land access and food security is particularly important in agrarian households where the predominant source of food is through farm production (Holden & Ghebru, 2016; ECA, 2009). However, in sub-Saharan Africa, women who contribute about 70 percent of households' food production (Duncan, 2004) are excluded from land ownership and entitlement rights through customary practices and inheritance (Kuusaana & Eledi, 2015; Higgins & Fendrich, 2011). Further statistics indicate that women account for nearly half of all farm labour, and 80-90 percent of food processing, storage and transport (Kimani, 2012; UN-HABITAT, 2008; Dixon, 1990) while owning only one percent of land (Odeny, 2013).

In Ghana, depending on the location, land is customarily held in trust for the people by family heads and traditional authorities or statutorily held by the state (Lentz, 2010; Owusu et al., 2008; Sarpong, 2006). Within the two-fold tenure system, it is estimated that 80 percent of Ghana's lands are customarily managed by traditional authorities and family heads, while the remaining 20 percent are statutorily held (Spichiger & Stacey, 2014; Paaga, 2013; Vermeulen & Cotula, 2010; Ubink, 2008; Sarpong, 2006). Within the customary tenure system, lands are transferred from one generation to the other through matrilineal and patrilineal modes of inheritance, depending on the location in question (Paaga, 2013; Kuusaana & Eledi, 2015; Duncan, 2004).

Within Northern Ghana, land tenure system which is predominantly customary, operates under the patrilineal mode of property inheritance (Yaro, 2010). Although this system has recorded considerable changes with regards to land transfer due to population pressures, urbanization, commercial agriculture and legislative interventions (see Lambrecht & Asare, 2016; Spichiger & Stacey, 2014; Yaro, 2010; Cotula, 2007; Kasanga, 1995), it remains male inclined. It thus excludes women from ownership and limit access rights by inheritance (Yaro, 2010; Duncan, 2004). In most cases, women in these rural patriarchal societies rely on "borrowed lands" for use which is granted based on their status to males as relatives- daughters, sisters or wives (Doghle et al., 2018; Duncan, 2004). This short-term interest can be terminated at any time by the owner (Kimani, 2012; Yaro, 2010; Whitehead & Tsikata, 2003), hence exposing women to tenure insecurity.

According to Kunbour (2002), the patriarchal system of land ownership in North-Western Ghana, specifically among the Dagabas, limits women access rights and use of productive lands. This practice does not only curtail women's right to land, but poses a threat to food security and by implication, poverty, particularly in rural communities where women contribute significantly to food production and in some cases, are in charge of catering for households (Sasson, 2012; Duncan, 2004). This paper therefore seeks to explore/examine the influence of gendered customary land tenure system on households' food security in Nandom District of North-Western Ghana.

2. THE CONCEPT OF FOOD SECURITY

The concept 'food security' has been used over time to mean different things by different authors. Food security was defined by the World Food Conference in 1974 to mean enough supply- that is the availability and price stability of food stuffs at both national and international levels (FAO, 2006). In that sense, national food security implied self-sufficiency, i.e. producing enough food to satisfy the population of the country (Pinstrup-Andersen, 2009). However, the aggregate availability which was mainly supply-focused raised concerns on how it equated to the well-being of households since it did not capture elements of affordability or access (Barrett, 2002). These concerns expressed called for a rethinking of the concept of food security and its measurement to incorporate not only availability but also access, utilization and stability (FAO, 2006; 2013).

At the household level, the United States Department of Agriculture (USDA) (as cited in Bickel et al., 2000), defines food security as access to sufficient food at all time by all people. This requires a minimum of readily available and adequate food, with an assurance in ability to acquire socially acceptable foods (without depending on emergency supplies,

stealing, or other coping strategies). Households are therefore considered to be in a state of food insecurity if they have uncertain or limited availability of foods that are adequate for household members, or are acquired in an unacceptable social manner (Bickel et al., 2000).

In a more holistic way, the FAO (1996) indicates that "food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life". This is a widely accepted definition that incorporates four key dimensions of food availability, access, utilization and stability (Schmidhuber & Tubiello, 2007; FAO, 2006; 2013). These four dimensions of food security are further explored in the subsequent paragraphs.

Food availability refers to the "sufficiency" of food in terms of quantity and appropriateness of quality, supplied through domestic production or imports (including food aid) (FAO, 2006; 2013). Food availability is measured by focusing on production, distribution and exchange (Ingram, 2011). Production focuses on the types and quantity of food available. Distribution assesses the channels through which food is made available, the form in which it is available, when it is provided and to whom it is made available. Also, exchange focuses on the amount of food made available through exchange systems such as barter, loans or purchase.

Food access bears on individuals having adequate entitlements to acquire the required foods for a nutritious diet (FAO, 2006; Ingram, 2011). Entitlements refer to the set of all commodity bundles over which a person can establish control with given social, political, legal, and economic environments. In specifically measuring food access, affordability, allocation and preference are used (Ingram, 2011). The affordability indicator of access measures the purchasing power of households or communities in relation to the prices of food items. Also allocation views the economic, political and social mechanisms that govern where and how food can be accessed by individuals and households. Whilst preference measures the religious and socio-cultural norms that influence the demand for certain types of food.

Food utilization on the other hand implies having adequate diet, clean water, sanitation and health care to attain a status of nutritional wellbeing in which all psychological requirements are met (FAO, 2006; Ingram, 2011). Utilization of food is thus made up of nutritional value, social value and food safety (Ingram, 2011). Nutritional value determines the amount of needed daily calories that is contained in the food while social value defines the social, religious and cultural functions that

the food serves. Food safety as well examines the content of food to determine toxic contamination introduced during processing, packaging and distribution, and food borne diseases.

The fourth dimension, stability views food security as ensuring that households or populations have access to adequate food at all times (FAO, 2006; Ingram, 2011). Individuals or households are food stable when they do not risk losing access to food as a result of sudden shocks (climatic crisis or economic) or seasonality.

Although FAO explanation of food security is widely accepted for determining food security, Pinstrup-Andersen (2009) however argues that, this definition and the indicators of food security are complex and are most likely not very accurate in estimating or measuring food security of households. He asserts that if all the four dimensions with their sub-indicators are to be met, then, the 800-900 million undernourished people estimated by the FAO (2006) would be an underestimation of the prevalence of food insecurity globally. He continues by arguing that, it was not sufficient to make conclusion on food security or otherwise of households based on the FAO definition. According to him, the behavioural aspects of households are also important and should be incorporated.

The USDA assessment module categorizes the conditions, situations and experiences of households into three stages of increasing severity (Bickel et al., 2000; Pinstrup-Andersen, 2009). This module recognises that, no single indicator is satisfactory as a way of measuring food insecurity (Bickel et al., 2000). The module is therefore designed to combine experiences, conditions and behaviours of households as the bases for indicators that can satisfactorily define the food insecurity and hunger situations of households.

The first stage focuses on experience of households in times inadequacy in food supplies and budget, their feeling of anxiety during insufficiency of food to meet basic needs, and the adjustments that are made to their food budgets and the type of food consumed. In the second stage when the situation becomes severe, adults' food intake is reduced thereby experiencing hunger, whiles sparing the children of that experience. Hunger is described as a potential consequence of food insecurity that exposes people to recurrent and spontaneous lack of access to food. The third stage is characterised by a severer and dramatic increase of adults' hunger experience. At this stage, children reduce food intake and thus experience hunger.

Whiles the module is regarded as more practical in approach (Bickel et al., 2000), it is argued as being at risk of moral hazard when using it to gather data from respondents especially when they perceive that the purpose of the survey is related to food supply initiatives by government (Pinstrup-Andersen,

2009). Also, Bickel et al. (2000) note that the model has inherent weaknesses in relation to arbitrary measurements and classification as well as non-measurement of all pillars of food security (it is much focused on sufficiency of food for households without considering the dietary composition of the food being consumed).

In sum, food security remains a core component of individual, household or community wellbeing (FAO 1996:2006: 2013; Ingram, 2011; Pinstrup-Andersen, 2009; Barrett, 2002; and Bickel et al., 2000) and in however way it is defined and measured, it must incorporate the ability to access food physically and economically at all time. In the context of this study, both the FAO and USDA modules which complementarily address issues of physical and economic access were adopted to reflect local context, and used to examine the influence of gendered customary lands ownership and access on households' food security conditions.

3. STUDY SETTING

The study was carried out in the Nandom District of North-Western Ghana. The District is located within the Guinea-Savannah Vegetation Zone with a single maxima rainfall pattern. To the North-West, it shares boundary with the Republic of Burkina Faso, while to the South and East, the Lawra and Lambussie Districts are respectively the adjoining Districts (see Figure 1). Nandom District occupies an estimated total land area of 404.6 square kilometres. Out of about 84 settler communities, 86 percent are considered rural in the district (GSS, 2014).

Predominantly, the inhabitants of the Namdom District are Dagaabas with patrilineal lineage of inheritance (Lentz, 2006a). Dagaabas are the land custodians and per the customs that have been passed down, women are excluded from land ownership and entitlements, which are mostly acquired through inheritance (Doghle et al., 2018; Alfred & Kpieta, 2012; Higgins & Fendrich, 2011; Kuusaana & Eledi, 2015; Lentz, 2006b; Kunbour, 2002; Kasanga & Kotey, 2001). The underlying customary practice in the district offers an interesting case for study on the "age-old" gendered ownership/access to lands and its influence on food security, specifically in the context of growing concerns of food insecurity (FAO, 2013) and poverty in sub-Saharan Africa (FAO, 2017; 2013).

Governance of the District jointly administered by the Local Government and the Traditional System. The Traditional System of governance which is the oldest is headed by the Paramount Chief (Nandom Naa) and assisted by Divisional and sub-chiefs (Doghle et al., 2018). As illustrated in Figure 1, the local government administration of Nandom district has four area councils within which it operates. These area councils are Nandom, Puffien, Baselbe

and Ko. A consultative-criteria[1] shown in Table 1 was used to select four different communities, namely: Brutu, Kokoligu, Tankyara and Tuopare, from the four respective administrative area councils for the study.

4. STUDY DESIGN AND METHOD

This study is set within the social constructivist worldview and thus adopts it as a guiding principle. Within the social constructivism interpretative framework, multiple realities are constructed through lived experiences and interactions with others (Creswell, 2009). The study therefore examined the influence of gendered customary land tenure on food security by interacting with different categories of household heads with regards to their experience of food insecurity conditions within the year 2017. A survey design approach was adopted to select 30 household heads from each of the four area councils indicated in Figure 1, resulting in a total of 120 households being surveyed for data (see sample size in Table 2). As noted by Rice (1995), a sample size of at least 30 respondents is enough to produce valid results in a survey if they are properly distributed and selected among the population. Therefore, in selecting the 120 households from the four communities within the area councils, all households were first stratified according to headship (i.e. male, female and co-headed households) using statistical information provided by an NGO [Partnership for Rural Development Action (PRUDA)] operating in the district (see sample frame in Table 2). In order to minimise sample selection biases, a proportional sampling technique was used to determine the sample size requirement of each stratum based on the sample frame categorization. A simple random sampling technique was then adopted to select the sample size from each stratum to make up 30 heads of households in each study community.

In analysing data from respondents, the study employed the USDA and FAO modules of food security measurement in examining how gendered access to customary lands influence varied conditions of food insecurity (see Figure 2 and Figure 3). In some cases, the study adopted a post-survey stratification response weighting technique for analysis due to multiple responses from households (see Table 3). This technique involves scaling the multiple responses to the sample size or the number of respondents in order to reflect the desired distribution for interpretation (Fotini et al., 2013). The weighting of the responses are obtained using the formula; $WR = \frac{R}{TR}(Z)$, where WR is the weighted response; R is the number of responses to a study variable; TR is the total number of responses of all the study

[1] Consultative-criteria were designed based on research objectives together with views from fieldworkers of agricultural organizations that operate within the district

variables and Z is the total number of respondents (sample size).

5. ANALYSING HOUSEHOLD FOOD SECURITY/ INSECURITY

For a comprehensive assessment of food insecurity situations among households, the USSD and FAO modules (see Bickel et al., 2000) were adapted to screen and scale the intensity of conditions and experiences of households within the year under consideration (2017). In screening households to determine those that were food secure and others that had experienced conditions of food insecurity within the year, conditional questions (see Table 4) were asked. These screening questions were categorised into three segments of increasing intensity, ranging from experiences of anxiety about food, experiences of hunger, to the extreme form of hunger condition which denies children of food to eat the whole day. Households that experienced none of the conditions were presumed food secure and hence were not qualified for the next stage of assessment where households adopted a frequency scale of 0-4 to indicate the severity or otherwise of each experience in all four quarters of the year under consideration.

The determination of food security or insecurity of a household was therefore based on a scale (see Figure 2) that ranked the averages of households' scores on the various conditions. The average values of seasonal rankings were then interpreted on a module of increasing severity. Four categories of food security situations are identified by the module as: food secure, food insecure without hunger, food insecure with hunger (moderate) and food insecure with hunger (severe). Figure 2 summarises the indicators and scaling that were adapted for measuring households' food security/insecurity situation.

6. RESULTS AND DISCUSSIONS

6.1. Households' Mode of Acquiring Food

In the Nandom district, domestic production is the widely used means of acquiring food for consumption (see Table 3). This confirms the findings of Holden & Ghebru, 2016 and ECA, 2009 that rural communities often rely on the use of land for producing food. Also, to complement the primary source of food for households, some respondents indicated that they sometimes purchase food, while others offer labour services in return for food. Additional modes of acquiring food by few households include food aid/ donation and begging. Majority (93.3%) of households however indicated that the quantity of food available from these sources (in Table 3) was not even sufficient to cater for a two-square meal throughout the year. The remaining households noted that they had large farm lands, hence could produce enough food capable of taking care of their meals throughout the year. This revelation underscores the essence of land ownership and access by households on food availability which the basis of security, particularly in the

rural settings (Unruh & Turray, 2006; Maxwell & Wiebe, 1999; 1998). Thus, there is the need to ensure that households, irrespective of gender status, have equal rights and access to land in bit to fight food insecurity and poverty in Africa (ECA, 2009). According to Unruh & Turray (2006), there is a conventional linkage between access to land for food production and the options that are available for households to have enough food for consumption and exchange for income to satisfy other nutritional needs.

From observation and household responses, most of the food staples cultivated are; guinea-corn, maize, yam, millet, groundnuts, beans and rice. However, with all the traditional crops, cultural premium is attached to guinea-corn and as such, a requirement for every household to cultivate. The traditional value is based on its use for brewing local beer (*pito*), cultural symbolism of solidarity among clan mates during funerals, demand by the *Tindana* to appease a land for building and a cultural indication of a household's severe hunger/food insecurity when it is used for meals. Though a basic traditional crop and the last resort in instances of households' food scarcity, the nature of harvested guinea-corn as shown in Figure 3 differed significantly between female and male/co-headed households.

From observation on the differences in outlook, it was explained that, guinea-corn such as that belonging to female headed households was of poor quality and could only be used for commercial activities or food but not for cultural purposes. Male and co-headed households however had guinea-corn that was said to be of good quality and could be used for any purpose.

Some female household heads mainly attributed their poor yield of guinea corn to their inability to access fertile lands and buy farm inputs such as fertilizers and weedicides. According to them, the patrilineal system they practice excludes women from owning land and as such women do not have access to quality/fertile lands for production. They indicated that women could only acquire lands by borrowing from the males which are often of poor quality and infertile. However, because land tenure security is a determinant of investment in the land (see FAO, 2009; Goldstein & Udry, 2008 and African Development Bank, 2000), most female household heads are often sceptical in improving the quality of such borrowed lands. In consequence, they are not able to produce in sufficient quantities for feeding, sale, and to facilitate subsequent production. Most male respondents however differed from the reasons that could result in a good yield by indicating that, output was based on the ability to adequately cater for crops and weather conditions but not the quality of the land or access to farm inputs. Although male

respondents disagreed with females in terms of limited access to quality/fertile lands accounting for poor farm yield, one cannot underscore the relevance of secure tenure in production/farm output (FAO, 2017;2013; ECA, 2009, Duncan, 2004). The observations shown in Figure 3, however, imply that female headed households (without limited access to quality lands/farm inputs) usually have poor quality of food which is likely expose them to severe food insecurity.

6.2 Households Food Security/Insecurity Situations

From the assessment of households' responses to the various food experiences as summarised in Table 4 and Table 5, only three (3) out of the one hundred and twenty (120) households that were surveyed did not experience any of the conditions of food insecurity within the year 2017. These households were one male headed and two co-headed households that had access to large and quality lands for production. This further implies that satisfactory food conditions among rural communities can arguably be achieved based appreciable level of equity in access to land by both males and females.

The pattern of responses in Table 4 points out to the fact that majority of the surveyed households experience moderate conditions of food insecurity or hunger in the communities. The minority that suffer conditions of extreme food insecurity are mostly female-headed households who by customary practices do not own land in patriarchal communities. This finding confirms earlier revelation that women depended on borrowed lands from males that were of poor quality (infertile) and thus produced low yield which exposes them to conditions of food insecurity (Duncan, 2004). It was also observed that co-headed households did not or experienced less of extreme food insecurity conditions within the year. This was because both males and females within the co-headed households had equal access to enough and quality land for joint production, resulting in higher output/yield, capable of supporting their food needs throughout the year. Although, male-headed households experience less conditions of extreme food insecurity as compared to female-headed households, it was not satisfactory as compared to co-headed households. The variations noted in the three (3) categories of households are basically attributed land accessibility. In that case, female-headed households only get access to poor or leftover lands (infertile lands) from males.

6.3 Seasonality and Severity of Households Food Insecurity Experience

Although, majority (97.5%) of households experienced one or more of food insecurity conditions, an analysis of seasonality and severity of their experience vary as defined by monthly quarters within the year (see Table 6).

This was done using a Likert Scale (see Table 5), where all the 117 households that experienced at least one or more of the conditions of food insecurity in Table 4 were asked to rank/scale their experiences with regards to the monthly quarters. An average of the nine conditions per household scoring under the monthly quarters were recorded and interpreted in line with the module adapted from USDA to determine the level food insecurity among households (as cited in Bickel et al., 2000).

With the interpretation of scales under the module, households' whose averages of the nine conditions fell within the range of zero (0) and less than one (<1) are considered as relatively food secure or at risk within the season. Those ranging between one (1) and less than two (<2) are considered food insecure without hunger, while an average ranging between two (2) and less than three (<3) are considered as food insecure with moderate hunger. Households that experienced the most extreme form of food insecurity with severe hunger conditions were those whose averages fell between three (3) and four (4) on the scale.

As illustrated in Table 6, the scaling of households' experience of food insecurity conditions within the first quarter of the season (January-March) show that majority (61.5%) fall within the category of relative food security or are at risk of experiencing food insecurity while only 3.4% indicated a situation of food insecurity with moderate hunger conditions. This implies that households do not experience extreme or severe food insecurity with hunger within this period. The larger proportion of households experiencing minimal conditions of food insecurity is attributable to the timing of the productive season where farm produce is often harvested in October and, relatively still available for consumption.

On the other hand, conditions food insecurity experiences by households are relatively dispersed across the scale within the second quarter which spans from April to June. While a small number (11.1%) of households are relatively secure or at risk, the majority (41.9% and 28.2%) experience moderate form of food insecurity without hunger and with hunger respectively. Also, about 18.8% of households within that season/quarter experience an extreme condition of food insecurity with severe hunger. The dispersed nature of households conditions and experiences under this quarter can be attributed to the fact that, the period begins the farming season hence, some households reduce consumption in order to use part of the food staples for sowing/planting.

Besides, in the third quarter (July-September) which is the middle of the farming season, most households experience moderate to extreme conditions of food insecurity and this

is attributed to the fact that households usually exhaust all food whilst waiting for the harvest. This finding also implies that aside access to land, changes in climatic conditions (single farming season) compound the vulnerability rural households in terms of food insecurity (see Tibesigwa & Visser, 2016; JICA, 2005). With regards to the fourth quarter (between October-December), the number of households that experience relative stability of food conditions is higher (79.5%) and this is attributable to the fact that, it is the harvest period of the single cropping season associated with the savannah zone.

The study found that households adopted some coping strategies, particularly within the second and third season (quarter of the year) where majority experience moderate to severe conditions of food insecurity. Majority (63.2%) of the respondents pointed out the trading of assets for food. Various assets cited by households included livestock and poultry as well as firewood, charcoal and other natural belongings. Some households also resort to borrowing food from other households and families that are considered relatively food secure as a mechanism to cope with the situation. Other households adopted management practices of cutting meals and begging for food from one household to another within and outside the community as their strategies to cope with situations of extreme food insecurity. The situation of begging was particularly cited by female household heads that do not have access to lands for farming. Aside begging, female respondents noted that they sometimes resort to scavenging for grains in the market and waste flour from grinding-mills as options to cope through the period. Other strategies cited include: hiring out household labour to other people's farms, reliance on spouse and food aid.

7. CONCLUSION

An analysis of gendered access to customary lands as well as experiences and conditions of food insecurity among households in the Nandom district confirms a positive correlation. The patrilineal lineage of inheritance and land ownership being practiced in the communities excludes females, depriving many of access to land for farming. Land "borrowing", the predominant mode through which women can access lands from males for farming exposes them to tenure insecurities. Besides, lands given to females as "borrowed" land are often those considered as abandoned or leftover lands that are of low quality (infertile lands) and therefore not capable of supporting high yield production. This customary practice in the district exposes particularly female headed households who are mostly widows and do not have access to much land for farming/production to conditions of moderate and severe food insecurity.

Even though, some male respondents disagreed with females that their (women) inability to own and access land in the communities exposes them to conditions of extreme food insecurity, evidence from households' experiences (patterns) in the survey underscore the need to promote equal ownership and access rights by all gender groups (male and female) since co-headed households were less vulnerable compared to males and more particularly the female headed households. This is attributable to the fact that, in co-headed households, both males and females have equal access to land and also, jointly worked and took decisions, resulting in them producing enough food capable of sustaining the family in most part of the year. Therefore, there is an urgent need for males, traditional authorities (land custodians), and various stakeholders including government to extend land ownership and access rights to include women in patriarchal societies to enable them stand a better chance of fighting food insecurity and poverty in sub-Saharan Africa, which has been a major development concern in recent times.

8. ACKNOWLEDGMENT

The authors acknowledge the cooperation of all traditional leaders, contact persons, community members, Mr. Philip N. Doghle, PRUDA, NANDRIDEP, Cyril Sullo (May his Soul Rest in Peace) and research assistants who provided the required information for the completion of this study. Also, we recognise the financial sponsorship by Katholischer Akademischer Ausländer-Dienst (KAAD).

9. REFERENCES

African Development Bank/ African Development Fund. (AfDB, 2000). *Agriculture and Rural Development Sector Bank Group Policy.* Accessed at https:// www.afdb.org/fileadmin/uploads/afdb/Documents/Policy

Alfred, K. B., & Bonye, S. Z. (2012). Land as a "God": The Gender Dimensions of its Wealth Creation among the Dagaabas in Northern-Western Ghana. *European Scientific Journal*, *8*(14), 109-139.

Barrett, C. B. (2002). Food security and food assistance programs. *Handbook of agricultural economics*, *2*, 2103-2190.

Bickel, G., Nord, M., Price, C., Hamilton, W., & Cook, J. (2000). Guide to measuring household food security. *US Department of Agriculture, Food and Nutrition Service, Alexandria VA*, 1-82.

Cotula L. (ed) (2007). Changes in "Customary" Land Tenure Systems in Africa. ISBN: 978-1-84369-657-5

Creswell, W. J., (2009). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches (3rd ed.).* SAGE publications- California, United States of America.

Dixon, C. (1990). *Rural Development in the Third World.* Routledge. London; United Kingdom.

Doghle, K., King, R. S., & Akaabre, P. B. (2018). Legal Establishments and Gendered Access to Land in Patriarchal Societies of North-Western Ghana. *African Journal on Land Policy and Geospatial Sciences*, (02), 77-99.

Duncan, B. A. (2004). *Women in agriculture in Ghana*. Friedrich Ebert Foundation. Accra, Ghana.

Economic Commission for Africa (ECA, 2009). *Land Tenure Systems and their Impacts on Food Security and Sustainable Development in Africa.* Addis Ababa, Ethiopia. Accessed at http://repository.uneca.org/bitstream/handle/10855/ 593/bib.%209471

Food and Agriculture Development Organization (1996). *World Food Summit: Rome Declaration on World Food Security.* Rome, Italy. Accessed at http://www.fao.org /docrep/003/w3613e/w3613e00.HTM

Food and Agriculture Development Organization (2006). *Food Security: Policy Brief, (2).* FAOs Agriculture and Development Economics Division (ESA). Accessed at http://www.fao.org/forestry/13128 0e6f36f27e0091055bec28ebe830f46b3.

Food and Agriculture Development Organization (2009). *Bridging the Gap: FAO's Programme for Gender Equality in Agriculture and Rural Development*. Rome, Italy. Accessed at http://www.fao.org/ 3/a-i1243e.pdf

Food and Agriculture Development Organization (2013). *The State of Food Insecurity in the World: The multiple dimensions of food security.* Rome, Italy. Accessed at http://www.fao.org/docrep/ 018/i3434e/i3434e.pdf

Food and Agriculture Development Organization (2017). *2017 Africa Regional Overview of Food Security and Nutrition: The Food Security and Nutrition–Conflict Nexus: Building Resilience for Food Security, Nutrition and Peace*. Accessed at https://reliefweb.int/report/world/2017-africa-regional-overview-food-security-and-nutrition-food-security-and-nutrition

Fotini, T., Evangelia, V., & Michail, V. (2013). Weighting of responses in the consumer survey: Alternative approaches – Effects on variance and tracking performance of the Consumer Confidence Indicator. Athens - Greece: IOBE Foundation for Economic and Industrial Research.

Ghana Statistical Service (GSS, 2014). *2010 Population & Housing Census: District Analytical Report.* Accessed at http://www.statsghana.gov.gh/docfiles/ publications/2010 PHC National

Godfray, H. C. J., Beddington, J. R., Crute, I. R., Haddad, L., Lawrence, D., Muir, J. F., ... & Toulmin, C. (2010). Food security: the challenge of feeding 9 billion people. *science*, *327*(5967), 812-818.

Higgins, T., & Fenrich, J. (2011). Legal Pluralism, Gender, and Access to Land in Ghana. *Fordham Environmental Law Review*, 7-21.

Holden, S. T., & Ghebru, H. (2016). Land rental market legal restrictions in Northern Ethiopia. *Land Use Policy*, *55*, 212-221.

Ingram, J. (2011). A food systems approach to researching food security and its interactions with global environmental change. *Food Security*, *3*(4), 417-431.

Japan International Cooperation Agency (JICA) (2005). *Approaches for Systematic Planning of Development Projects: Agricultural and Rural Development.* Institute for International Cooperation. Accessed at http://open jicareport.jica.go.jp/pdf/11788932.pdf

Kasanga, R. K (1995). Land tenure and regional investment prospects: the case of the tenurial systems of Northern Ghana. *Property Management*, *13*(2) 21-3.

Kasanga, R. K., & Kotey, N. A. (2001). *Land management in Ghana: Building on tradition and modernity.* International Institute for Environment and Development. London, UK

Kimani, M. (2012). *Women struggle to secure land rights: Hard fight for access and decision-making power.* African Renewal Special Edition on Women.

Kunbuor, B. (2002). "Customary Law of the Dagara" of Northern Ghana: Indigenous Rules or a Social Construction. *Journal of Dagaare Studies, 2*, 01-21.

Kuusaana, E. D., & Eledi, A.J. (2015). Customary land allocation, urbanization and land use planning in Ghana: Implications for food systems in the Wa Municipality. *Land Use Policy*, *48*, 454-466.

Lambrecht, I., & Asare, S. (2016). The complexity of local tenure systems: A smallholders' perspective on tenure in Ghana. *Land Use Policy*, *58*, 251-263.

Lentz, C. (2006a). Decentralization, the state and conflicts over local boundaries in Northern Ghana. *Development and Change*, *37*(4), 901-919.

Lentz, C. (2006b). *Ethnicity and the making of history in Northern Ghana*. Edinburgh University Press.

Lentz, C. (2010). Is land inalienable? Historical and current debates on land transfers in northern Ghana. *Africa: The Journal*

of the International African Institute, *80*(1), 56-80.

Maxwell, D., & Wiebe, K. (1999). Land tenure and food security: Exploring dynamic linkages. *Development and Change*, *30*(4), 825-849.

Maxwell, D., & Wiebe, K. D. (1998). *Land tenure and food security: A review of concepts, evidence, and methods* (129). Land Tenure Center, University of Wisconsin-Madison

Odeny, M. (2013). Improving access to land and strengthening women's land rights in Africa. '*In Annual World Bank conference on land and poverty', The World Bank, Washington, DC*. Accessed at http://web.law.columbia.edu/sites/default /files/microsites/gendersexuality/odeny improving access to land in africa.p

Owusu, G.K., Kwami, E., & Tagoe, A. C. (2008). *Gender, Land Tenure Dynamics and Livelihoods in the Central and Volta Regions of Ghana*. (Technical publication No.86). Legon, Ghana: the Institute of Statistical, Social and Economic Research (ISSER), University of Ghana.

Paaga, T. D. (2013). Customary Land Tenure and Its Implications for Land Disputes in Ghana: Cases from Wa, Wechau and Lambussie. *International Journal of Humanities and Social Science, 3*(18).

Pinstrup-Andersen, P. (2009). Food security: definition and measurement. *Food security*, *1*(1), 5-7.

Rice, J. (1995). *Mathematical Statistic and Data Analysis* (second ed.), Duxbury Press: Pacific Grove-USA.

Sarpong, G. A. (2006). *Improving tenure security for the rural poor. Ghana Country Case Study*. Accessed at http://www.fao.org/3/a-k0783e.pdf

Sasson, A. (2012). Food security for Africa: an urgent global challenge. Agriculture & Food Security, 1(1), 2.

Schmidhuber, J., & Tubiello, F. N. (2007). Global food security under climate change. *Proceedings of the National Academy of Sciences*, *104*(50), 19703-19708.

Spichiger, R., & Stacey, P. (2014). Ghana's Land Reform and Gender Equality. DIIS Working Paper 2014:01

Tibesigwa, B., & Visser, M. (2016). Assessing Gender Inequality in Food Security among Small-holder Farm Households in urban and rural South Africa. *World Development*, *88*, 33-49.

Ubink, M. J. (2008). Negotiated or Negated? The Rhetoric and Reality of Customary Tenure in an Ashanti Village in Ghana. *Journal of the International African Institute*. *78*(2), 264-287.

United Nations (UN, 2015). Sustainable Development Goals: 17 Goals to

Transform our World. Accessed at http://www.un.org/sustainable development/ sustainable-development-goals/

United Nations Human Settlements Programme (UN-HABITAT, 2008). Secure Land Rights for All. Nairobi: Kenya. Accessed at http://www.gltn.net/jdownloads/ GLTNDocuments/secure land rights for_alleng2008

Unruh, J., & Turray, H. (2006). Land tenure, food security and investment in post-war Sierra Leone. *FAO LSP WP*, *22*. Accessed at http://www.fao.org/3/a-ah243e.pdf

Vermeulen, S., & Cotula, L. (2010). Over the heads of local people: consultation, consent, and recompense in large-scale land deals for biofuels projects in Africa. *The Journal of Peasant Studies*. *37*(4): 899-916.

Whitehead, A., & Tsikata, D. (2003). Policy Discourses on Women's Land Rights in Sub-Saharan Africa: The Implications of the Re-turn to the Customary. *Journal of Agrarian Change, 3*(1&2): 67-112.

Yaro, A.J. (2010). Customary tenure systems under siege: contemporary access to land in Northern Ghana. *Geo Journal, 75*(2), 199-214.

11. Appendix

10. KEY TERMS AND DEFINITIONS

Gender: the socially constructed roles, responsibilities and rights that are associated with being a male or female in society.

Land: that solid surface of the earth used for production and guided by defined societal mechanisms which spell out the various modalities to own or transfer rights to other users **Customary Land Tenure System:** a set of principles and interactional rules that are defined by societies to regulate ownership and transfer rights as well as other operational rights such as access to use, and control land.

Table 1: Community Selection Criteria

Area Councils	Criteria	Community selected
Nandom Area Council	• Shares boundary with adjoining district (Lambussie District) • Proximity to district capital • Relatively large population to cater for different gender categories of household heads views • Women group engaged in agriculture	• Brutu
Ko Area Council	• Shares boundary with adjoining district (Lawra District) • Relatively large population to cater for different gender categories of household heads views • Women group engaged in agriculture	• Tuopare
Puffien Area Council	• Shares boundary with adjoining district (Black Volta) • Relatively large population to cater for different gender categories of household heads views • Women group engaged in agriculture	• Kokoligu
Baselbe Area Council	• Shares boundary with adjoining district (Black Volta) • Relatively large population to cater for different categories of household heads views • Women group engaged in agriculture	• Tankyara

Source: Authors' Construct (2018)

Figure 1: Map of Study Area with Major Communities (Source: Adapted from GSS, 2014)

Table 2: Sample Frame and Sample Size Determination

Category of Household Heads (Strata)	Study Communities													
	Brutu			Tuopare			Tankyara			Kokoligu			Total	
	S.F.[2]		S.S. [3]	S.F.		S.S.	S.F.		S.S.	S.F.		S.S.	S.F.	S.S.
	No.	%	No.	No.	%	No.	No.	%	No.	No.	%	No.	No.	No.

[2] S.F. represents Sample Frame
[3] S.S. represents Sample Size and it is proportionally distributed using the formula: % of S.F of household category multiplied by 30 (i.e. required sample per community)

Co-headed	53	30.2	9	7	10.0	3	16	17.2	5	25	23.4	7	101	24
Male Headed	99	56.6	17	58	82.9	25	71	76.3	23	71	66.4	20	299	85
Female Headed	23	13.2	4	5	7.1	3	6	6.5	2	11	10.2	3	45	11
Total	**175**	**100**	**30**	**70**	**100**	**30**	**93**	**100**	**30**	**107**	**100**	**30**	**445**	**120**

Source: Authors' Construct (2018)

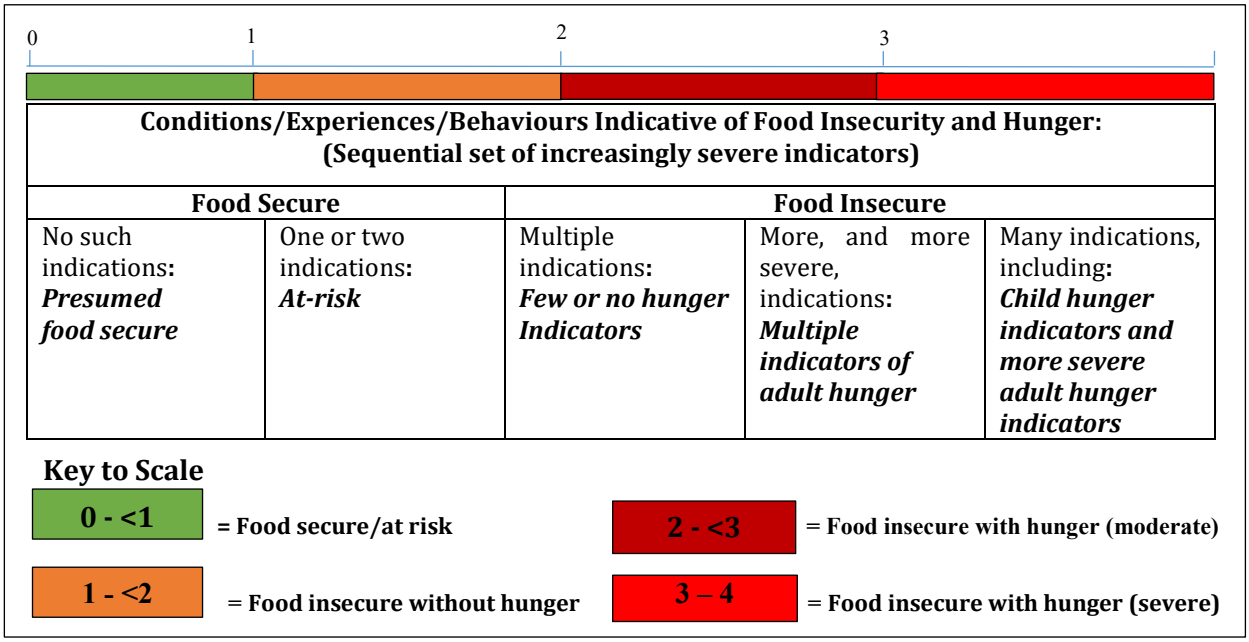

Figure 2: Indicators for Measuring Food Security Situations of Households
Source: Adapted from Bickel et al. (2000).

Table 3: Modes of Acquiring Food by Households

Mode of Acquiring Food	Responses	Weighted Responses	Percentages (%)
Purchase	63	37	30.8
Domestic/Farm production	120	69	57.5
Food aid/ donation	4	2	1.7
Begging	4	2	1.7
Hiring out labour for food	17	10	8.3
Total	**208**[4]	**120**[5]	**100**

Source: Field Data (December, 2017).

[4] Summation does not add up to sample size due to multiple responses
[5] A post-survey stratification response weighting technique was adopted to scale the multiple responses to the sample size in order to reflect the desired distribution

Guinea-corn in a Female Headed Household

Guinea-corn in a Male/ Co-Headed Household

Figure 3: Sample of Guinea-Corn from Different Sects of Households (Source: Field Data, December 2017).

Table 4: Household Food Insecurity Conditions and Experiences
Source: Field Data (December, 2017).

CATEGORY OF HOUSEHOLD HEAD		FOOD SECURITY CONDITIONS AND EXPERIENCES OF HOUSEHOLDS WITHIN THE YEAR (2017)																	
		Experiences of Anxiety about Food						**Experiences of Hunger** (Moderate Condition of Food Insecurity)						**Experiences of Extreme Hunger** (Extreme Condition of Food Insecurity)					
		Worried that food would run out (1)		Food harvested did not just last (2)		Ate the same type of food continuously for a week (3)		Adult(s) cut or skipped meals continuously (4)		Children were not eating enough (minimum of 3 times daily) (5)		Whole household did not eat enough (Three square meal per day) (6)		Adult(s) did not eat the whole day (7)		Children did not eat the whole day/slept hungry (8)		Whole household did not eat for the whole day (9)	
		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Co-Headed 24 (20.0%)	Freq.	11	13	10	14	8	16	7	17	6	18	6	18	1	23	0	24	0	24
	Per. (%)	**45.8**	**54.2**	**41.7**	**58.3**	**33.3**	**66.7**	**29.2**	**70.8**	**25.0**	**75.0**	**25.0**	**75.0**	**4.2**	**95.8**	**0.0**	**100**	**0.0**	**100**
Male 85 (70.8%)	Freq.	76	9	72	13	67	18	52	33	31	54	31	54	4	81	2	83	2	83
	Per. (%)	**89.4**	**10.6**	**84.7**	**15.3**	**78.8**	**21.2**	**61.2**	**38.8**	**36.5**	**63.5**	**36.5**	**63.5**	**4.7**	**95.3**	**2.4**	**97.6**	**2.4**	**97.6**
Female 11 (9.2%)	Freq.	10	1	10	1	9	2	8	3	8	3	9	2	4	7	1	10	1	10
	Per. (%)	**90.9**	**9.1**	**90.9**	**9.1**	**81.8**	**18.2**	**72.7**	**27.3**	**72.7**	**27.3**	**81.8**	**18.2**	**36.4**	**63.6**	**9.1**	**90.9**	**9.1**	**90.9**
TOTAL 120 (100%)	**Freq.**	**97**	**23**	**92**	**28**	**84**	**36**	**67**	**53**	**45**	**75**	**46**	**74**	**9**	**111**	**3**	**117**	**3**	**117**
	Per. (%)	**80.8**	**19.2**	**76.7**	**23.3**	**70.0**	**30.0**	**55.8**	**44.2**	**37.5**	**62.5**	**38.3**	**61.7**	**7.5**	**92.5**	**2.5**	**97.5**	**2.5**	**97.5**

Table 5. A Likert Scale Used in Measuring Severity of Households Food Insecurity Experiences and Conditions

Scale	Interpretation/Condition of Experience
0	Not at all
1	Once a while
2	Sometimes
3	Most at times
4	Always

Source: Authors' Construct (December, 2017).

Table 6: Assessment of Seasonality and Severity of Households Food Insecurity Conditions

Monthly Quarters	Scaling of Food Insecurity Experiences According to Averages									
	0- <1		*1- <2*		*2 - <3*		*3 – 4*		**Total**	
	No.	%	No.	%	No.	%	No.	%	No.	%
January- March	72	61.5	41	35.1	4	3.4	-	-	117	97.5
April- June	13	11.1	49	41.9	33	28.2	22	18.8	117	97.5
July- September	4	3.4	30	25.7	57	48.7	26	22.2	117	97.5
October- December	93	79.5	24	20.5	-	-	-	-	117	97.5

Source: Field Data (December, 2017).

*__Note:__ Coloured portions indicate where majority of households are experiencing a condition of food insecurity within a particular seasons or quarter of the year.