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## **Coping and Adaptation Strategies by Small-Scale Farmers in the Pru district of Ghana: Legal Orders Imposed by State and Non-State Actors**

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**Abstract.** The Pru district has been affected by large-scale land acquisition activities as most smallholder farmers have been affected. However, this study teased out the coping and the adaptation strategies of smallholder farmers to mitigate the effects of large-scale land acquisition in the Pru district in the Bono East Region of Ghana. The study employed a mixed methods (quantitative and qualitative) approach, where farming households and smallholder farmers were interviewed. Focus group discussions were also conducted to solicit data from farmer-based associations to help in the attainment of the objectives of the study. Primary and secondary sources of data were employed in the study. The qualitative data was analyzed thematically. The study found out that smallholder farmers cope and adapt to a situation differently as most cope with the re-location of farms too far places by leaving the house early and reducing the number of days of visit as smallholder farmers bought motorbikes as their adaptive strategies. The study revealed that smallholder farmers engaged in fishing activities, keeping backyard gardening and depending on family and friends for support as a coping and adaptation strategy.

**Keywords.** adaptation, copying, large-scale land acquisition, smallholder

### **1.0 Introduction**

The desire to achieve energy efficiency, increase production, maximize profit, expand to other nations, and achieve food sufficiency explains why rich individuals, international and multi-national corporations and governments are playing engineering roles in the modern investment in large-scale land acquisition (Cotulla, Vermilion, Leonard & Keeley, 2009). Recent statistics indicate that the global share of large-scale land acquisition among the continents is 66.2 percent for Africa, Asia (21 %), America (8.2 %), Europe (2.3 percent) and Oceania (2.3%) percent (Anseeuw, Boche, Brew, Giger, Lay, Messerli & Nolte; cited in Malkamuu & Zakaaryaas, 2012). In Africa, 48% of the total agricultural area is roughly the size of Kenya (Anseeuw et al., 2012). Most developing countries are now seemingly adopting a

developmental model that places large-scale land acquisition supported by Foreign Direct Investment (FDI) at the fulcrum of their strategy (Richards, 2013).

The recent trend of large-scale land for plantation is not totally different from the previous struggles over land. What is different is the scale and speed at which they are driving now (White, Borrás, Hall, Scones & Wolford 2012). The investment interests of foreign investors in large-scale agricultural investments are mainly two; investments in growing food crops such as cashew, mango, rice, maize, pulses and edible oil crops such as sesame and those for the purpose of growing biofuel plants such as palm oil trees, jatropha curcas, and castor oil trees (Rahmato, 2011).

The desire of powerful multi-nationals to own land for plantation purposes in the weak and vulnerable global south with the view of accelerating development has led to the acquisition of large-scale land from the poor rural farmers and thus affected the livelihood activities of the weak people (Chizoba, Gwen, Abiola, Chinny, Chike & Judean, 2012). The idea of community participation is grounded on the belief that there is a community that is willing to be involved in the development planning process in their community. The form the participation takes, however, is dependent on the circumstances and the exclusive social context in which action is taken (Sakyi-Darko & Mensah, 2020).

Despite the known adverse effects of this phenomenon, governments in many developing countries are almost always willing to accept these investments in the name of Foreign Direct Investments (FDIs). This phenomenon is not new to Ghana as plantations are common on-site. Again, in Ghana, the National Jatropha Plantation Initiative (NJPI), initiated in 2006, had a target of developing up to a million hectares of Jatropha plantations by the year 2010. Indeed, Hughes, Knox and Jones-Casey, (2011), identified more than 20 foreign-owned companies, that are cultivating large-scale jatropha and other plantations in Ghana.

In fact, literature on this growing phenomenon of large-scale land acquisition for Plantations is blurred, despite a few attempts on the coping strategy (Erikson & Silva, 2009; Robertson & Pinstrop-Andersen, 2010; Mutekwa, 2009). Indeed, there is a plethora of literature on the effects of the phenomenon on smallholder livelihoods (Cotula, Vermeulen, Leonard, & Keeley, 2008; 2009; Poulton *et al.*, 2008; Tauli Corpus & Tamang, 2007; Knight, 2010; World Bank, 2010). Regardless of the plethora of observations by these researchers, none of these studies provides a comprehensive picture of the strategies adopted by these households to cope with and adapt to the effects visited on their livelihoods by plantation owners in the Pru district in the Bono East region of Ghana. Hence this study has become necessary to fill the knowledge gap in the literature.

### **1.1 Problem Statement**

Coping mechanisms are more psychological than physiological and genetic. Sir Walter Cannon's (1936) landmark research on emotional stress revealed physiological arousal reactions to signals of danger and instinctive fight-and-flight coping patterns. Selye (1976) advocated its introduction to the larger scientific community and public arena, while Wong (1993) stressed the importance of creative, proactive, collective, existential, and spiritual coping. The desire to achieve energy efficiency, increase production, maximize profit, expand to other nations, and achieve food sufficiency explains why rich individuals, international and multi-national corporations and governments are playing engineering roles in large-scale land acquisition in developing nations (Cotulla *et al.* 2009). Recent statistics indicate that the global share of large-scale land acquisition among the continents is 66.2 percent for Africa, Asia (21 %), America (8.2 %), Europe (2.3 percent) and Oceania (2.3%) percent. (Anseeuw *et al.* 2012;

cited in Malkamuu and Zakaaryas 2012). The development model that emphasizes large-scale land acquisition anchored to FDI at the centre of their policy is the priority of many countries in the South (Richards, 2013).

In recent times, Ghana has become one of the destinations for large-scale land deals in Africa, attracting high foreign investment in the agricultural sector. Over the past ten years, the Government of Ghana has leased out large tracts of land for investors, mainly foreign investors (Quansah, Ansah & Mensah, 2020). The contemporary inclination of large-scale land for plantation is not totally different from the previous struggles over land. What is different is the scale and speed at which they are driving now (White et al., 2012). The interest of foreign investors in large-scale agricultural investments are mainly two: (a) investments in growing food and agro-industry crops such as cashew, mango, rice, maize and edible oil crops such as sesame and (b) those for the purpose of growing biofuel plants such as palm oil trees, jatropha curcas, and castor oil trees (Rahmato, 2011). Despite the availability of documented proof of the adverse effects of such investments on small-scale farmers, governments in developing countries still entertain them.

The Pru district in Ghana has been affected by this phenomenon as most smallholder farmers have been affected. This study, however, teased out the coping and the adaptation strategies of indigenous farmers to mitigate the effects of large-scale land acquisition in the Pru district in the Bono East Region of Ghana. Indeed, literature on the coping strategies of smallholders to the growing phenomenon is blurred, despite attempts by some scholars (Eriksen and Silva, 2009; Robertson and Pinstrup-Andersen, 2010; Mutekwa, 2009). Most scholars, however, focused on the effects of such large-scale (Cotula et al., 2008; 2009; Poulton *et al.*, 2008; Tauli-Corpuz and Tamang, 2007; Knight, 2010; World Bank, 2010). The relevance of this study is therefore to fill the knowledge gap in the literature.

## **1.2 Purpose of the Study**

The main purpose of this study is to;

Investigate how smallholder farmers cope with and adapt to the effects of large-scale land acquisition.

## **1.3 Significance of the Study**

Farmers cope with the loss of their land by reducing the number of days on their farms, departing from home to farm early, buying or borrowing lost medicinal plants from friends and family, relying on rain water and also out-migration. Smallholder farmers adapt by buying motor bikes, keeping backyard gardens, growing medicinal plants, fish farming and digging borehole. This study is therefore important to help smallholder farmers on how to cope and adapt to the effects of large-scale land acquisition. This study will also contribute empirically, conceptually, methodically institutionally and theoretically to researchers who want to do a study in the same or other related area. It will also serve as a source document on issues relating to the subject matter by adding to the body of knowledge.

## **2.0 Literature Review**

### **2.1 Coping and Adaptation Strategies**

There exist basically three coping mechanisms to which much concentration is given to psychological rather than physiological and genetic. Sir Walter Cannon's (1936) revolutionary examination of emotional stress established physiological arousal reactions to signals of danger, as well as inbred fight-and-flight managing forms. However, it was not until

Selye (1976) disclosed that stress and coping were introduced to the larger scientific community as well as the public arena. Lazarus and Folkman's (1984) emphasized the identification of functional categories of specific coping behaviours to deal with specific situations, while Folkman (1984) provides a comprehensive definition of stress and coping.

Wong (1993) also came up with creative, proactive, collective, existential, and spiritual coping as being important for future research. Mechanisms of coping can also be called 'survival skills.' There are techniques that people use to control pressures, discomfort and normal changes in life. Coping strategies have been developed to deal with action patterns. Coping according to Lazarus (1991) is an effort to manage and overcome demands and critical events that pose a challenge, threat, harm, loss, or benefit to an individual. In its narrower form, coping is a response of an organism to adapt to adverse settings.

## **2.2 Effects of large-scale land acquisition on livelihood outcomes**

Africa is identified to be one of the most attractive continents for large-scale plantation due to its favourable environment, political, and socio-cultural environment for the large-scale production of feedstock such as jatropha, rice, cashew and others (Quansah, Frimpong & Mensah, 2020). The effects of the large-scale land acquisition have become emerging contemporary academic discourse due to the ascending land acquisition issues and its corresponding land size. The World Bank, (2010) portray it as a positive phenomenon but Anderson (2010) condemns it and calls it 'land grabbing' or large-scale land acquisition.

The International Union for Conservation of Nature (2008), described the phenomenon as a shift from sustainability to non-sustainability. In their view, the poor subsistence farmer is denied his livelihood to satisfy the interest of the rich fuel consumer, exports of goods and government policies. GRAIN et al., (2014) agreed with this view and further asserted that the livelihood of farmers whose total source of living depends on their agricultural activities are rendered with diminutive alternatives and branded impoverished farmers (Ariza-Montobbio & Lele, 2010).

The positivist view of large scale land acquisition points to the payment to affected people (Boamah & Overa, 2016; Geuder-Jilg, 2014; Hunsberger, Bolwig, Corbera & Creutzig, 2014; Boamah, 2010; Mahonge, 2012) as a mitigating measure. Yet, issues of non-payment and inadequate compensation has dominated the scene (Wendimu, 2012; Cotula, Vermeulen, Leonard & Keeley, 2009; Schoneveld, 2011; Hamenoo, 2014; and Ansoms, 2011). In such instances, most farmers turned to alternative means of livelihood (Mujenja & Wonani, 2012). According to Mujenja and Wonani (2012), some failed in such enterprises and ended up being squatters' while others resorted to violent means. Indeed, Locher et al., (2012), claim the agreements entered into between governments and multinationals are not harmless land acquisitions.

Advocates of a large-scale land purchase list a range of opportunities: farm and off-farm employment, building rural facilities like schools and health care facilities, funding new agricultural techniques and the promise of a global market (Braun & Ruth, 2009; (Haralambous, Liversage, & Romano, 2009). According to Collins (2014), the legal bilateral treaties entered into between various governments and multi-national companies attest to its advantage. Andersen (2010), believes that such acquisitions do not bring the desired development opportunity to the host countries. Theting (2010) opined those large-scale agricultural investments of grabbed lands failed to fulfil the promise of building infrastructure and creating jobs. Kachika (2010) adds that, even in situations where farmers were employed, the conditions were not favourable.

A major effect linked to the acquisition is the potential loss of residential-based assets. Such effects may be, especially worsened when the land is acquired forcefully without any form of negotiation and also accompanied by forced evictions of the affected population (Milimo *et al.*, 2001; cited in Cotula, 2012). Land grabbing, instead of facilitating rural development, rather deprives the host country of the natural resources that constitute the assets upon which rural livelihoods are drawn.

### **2.3 A Case for Development**

Some scholars strongly assert that large scale land acquisition brings immense benefits to the local communities and hence, the country (Woodhouse, 2012; Boamah, 2011; Von Braun & Meinzen-Dick, 2009). These benefits that translate into developing the communities include; jobs either on the farm or off it, provision of infrastructural facilities like schools and hospitals, and even, increased food production. These, according to Boamah (2011), create new economic opportunities and a diversified income for the affected farmers.

Again, it is believed that Africa's land and especially, water resources are in abundance and basically, unharnessed (World Bank, 2013). Indeed, the World Bank asserts that Africa has over 50% of the world's arable lands and yet; it is unused, indicating that it is available to large scale multi-nationals (Bossio *et al.*, 2012; Duvail *et al.*, 2012). The advantage invariably, enable countries to meet their Millennium Development Goal targets (Matondi *et al.*, (2011).

Another case for development is the assertion that the land belongs to the nation and as a result, Government has to monitor its use for the benefit of all citizens (Rwegasira, 2012). In this regard, the land is not for the benefit of an individual or a few individuals. The argument here is that the large foreign companies will embark on infrastructure development and create employment for all families, even as they pay compensation to affected families (Liberti, 2013).

### **2.4 Coping and Adaptation Strategies to Effects of Large-Scale Land Acquisition**

Rural communities in developing countries are implementing a range of coping strategies in response to the activities of the large-scale land grabbing activities of multi-national companies (Bryceson 2002; Berman, Quinn & Paavola, 2013). These strategies as examined through the Sustainable Livelihoods Framework (Chambers, 1987; Scoones, 1998) are a part of the strategies to cope with shocks (Ellis, 1998). These strategies include diversification of income sources from farm to non-farm income (Paavola, 2008), cultivating crop varieties (Deressa *et al.* 2009) and migration (Konseiga, 2006).

Farmers recounted varying coping strategies including cutting down on meals and harvesting wild yams and fruits (Harvey, Rakotobe, Rao, Dave & Razafimahatratra, 2014; Morton, 2007). Others include getting employment outside their farms for income (Okonya, Syndikus, & Kroschel, 2013). Other strategies were planting trees; cultivating high-yielding, early-maturing, drought-tolerant, disease and/or pest-resistant crop varieties; planting when the rains start; increased pesticide/fungicide application and others (Okonya *et al.*, 2013; Munhande *et al.*, 2013).

Livelihood diversifications are strategic changes made in reaction to stress whilst coping strategies are the spur-of-the-moment responses to sudden shocks (Ellis, 1998). Drawing on available capital assets like savings and selling livestock to mitigate such shocks are common place (Oyekale & Gedion 2012; Thornton *et al.*, 2007; Chuku & Okoye, 2009). In most cases, whichever coping strategy is chosen is made considering its impact on the (Agrawal, 2008), for example selling livestock in a period of drought (Birkmann, 2011). **The large-scale land acquisition involves a wide range of actors at community, local government, national**

**government and international investment levels (Quansah, Frimpong, Mensah & Mensah, 2020).** Although the focus of this section is on coping strategies for large-scale land acquisition for plantation development, very few such coping strategies are mentioned as the cause of large-scale land acquisition. It is indeed clear that such information is missing in the empirical literature.

Influenced by the urban myth of flourishing cities and poor rural areas (Kulbekova, 2007) and the limited options available, affected people drift to urban areas for alternative livelihoods (Kalebi, 2010). The implication of such movements is well known; urban overcrowding, increase the crime rate, increase urban unemployment and poverty among others, especially in an era where poverty is urbanizing (Mitlin & Satterthwaite, 2001). Geuder-Jilg, (2014) was even more emphatic, he observed that such a phenomenon does not only dispossess land owners but also creates competition for land in the urban areas. The likelihood of conflicts and worsening conditions of living in such conditions are high.

For sustained socio-economic development to occur, people should be encouraged to engage in more economic activities where financial transactions take place (Frimpong & Mensah, 2021). Mahonge (2012) found out that there is often great pressure on the environment for survival after affected people have lost their primary source of livelihood. Affected people from large-scale land acquisitions resorted to charcoal burning to obtain a livelihood (Mahonge, 2012). Similarly, Schoneveld (2011), reported that affected people relied on picking wild fruits, charcoal production and hunting for small game as a means of livelihood. Inherently, the over-reliance on firewood and charcoal burning as alternative livelihoods only compounds the already fast degrading forest reserves in rural areas (Hamenoo, 2014). Coping strategies according to Care (2009) geared toward immediate survival and usually degrade the environment. In simple terms, they are not sustainable. As a result, more sustainable and environmentally preferred mechanisms are habitually suggested by scholars and or espoused by affected people of large-scale land acquisition. Growth is inclusive when it allows all members of a society to participate in and contribute to the growth process on an equal basis regardless of their individual circumstances (Frimpong & Mensah, 2020).

### **2.5 Legal orders imposed by the state vs those imposed by the non-state**

Ghana operates a dual system of land administration, one that Lavigne Deville (2010) describes as a system of legal pluralism. The acquisition and disposal of various land rights are managed by statutory and customary land tenure systems. While the statutory system operates under a set of written rules and statutes, the customary system is operated by the unwritten rules of custom and tradition. Both systems are recognized and guaranteed by the 1992 Constitution. The statutory system covers 20% of the land in the country while the majority of land transactions are governed by customary norms. Under customary norms, stool/skin heads, as well as heads of families, hold land in trust for the members of the community at large. However, as land has increasingly become commoditized, the traditional rules and regulations governing land acquisition no longer hold. Yaro (2013) argues that the moral foundations of rural societies have been weakened such that the custodians of the land are no longer interested in holding land in trust for community members. Instead, they seek to enter into land transactions for their enrichment and often to the detriment of the vulnerable in society. Because of this, most farmers adopt and adapt a lot of coping strategies to maintain their farm lands for developmental purposes and meet their subsistence needs.

Land ownership in Ghana is 80% customary and 20% public. Act 257 of the 1992 constitution of Ghana also makes it clear that all public land is vested in the President on behalf of and in trust for the people of Ghana. All lands are properly documented by the Lands Commission of Ghana working with the 1962 Administration of land Act. First, there is a divide in opinion between those who believe that supporting the authority of customary and other non-state regulatory orders (particularly with respect to land) best serves the interests of ordinary citizens and the poor and underprivileged, and those who believe that state law is the best protector of the poor and excluded against locally inequitable power structures and gender bias. On the one hand, supporters of non-state regimes tout their inherent flexibility, social integration, accessibility, and practical emphasis on dispute settlement. (Berry 1993, 1997; Basset and Crummey 1993; Chauveau 1997; Berry 1993, 1997). This has led to the promotion of the currently in place system in the context of land law reform and concerns such as registration and titling.

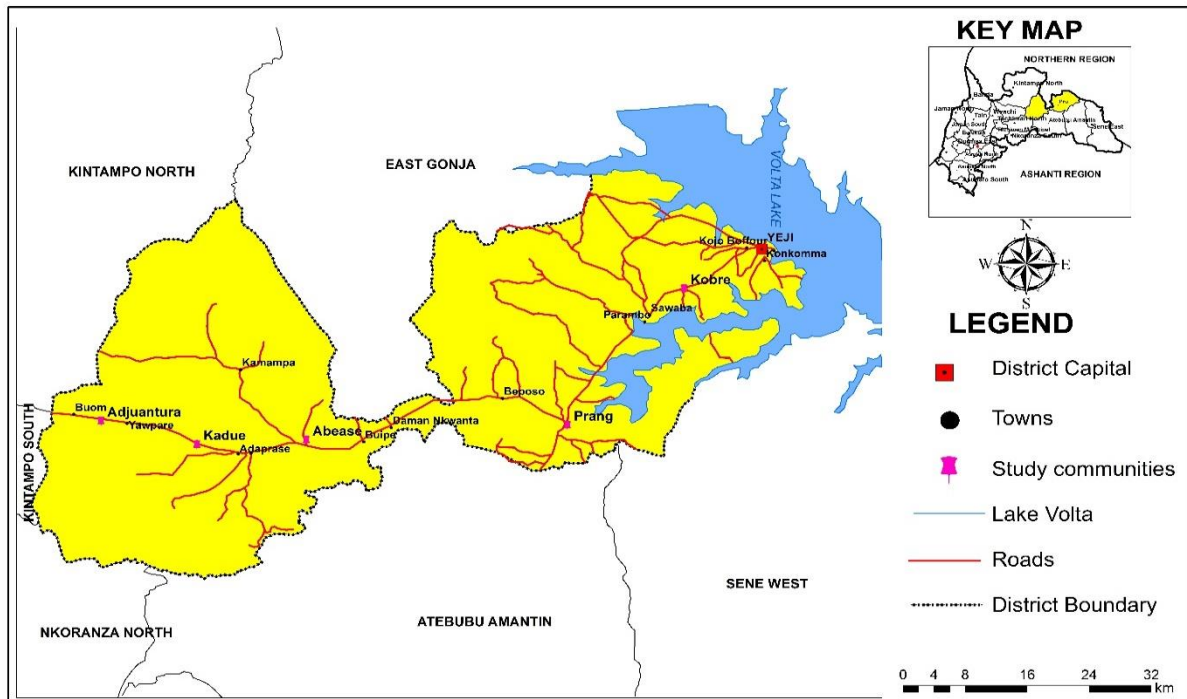
While the idea of unlimited and even inalienable allodial land ownership certainly benefited the political objectives of the chieftaincy at the time, the focus on the idea of 'trusteeship' or guardianship also hampered the chiefs' desire to become rulers. Landowners with a 'controlling' as well as a 'beneficial' stake in their political opponents' lands community. As a result, chiefs in Ghana have been fighting both political and social battles since the country's inception and legal activities to bolster their claims to be the land's sole 'owners'. As a result, especially in metropolitan areas, to act as if they were not seeking office-holders (Berry 2002: 92). It also sparks debate in parts of Ghana that do not share its primarily 'Akan' culture. The land is held by families, not Stools, in communities like the Ga or Ewe, and numerous communities. As representatives of the lineages of 'original settlers,' 'land priests' govern access to land in the Northern and Upper Regions. Unfortunately, the Northern Territory's Indirect Rule procedures were used to enforce the chiefs' claims. Land administration and use have become increasingly centralized and bureaucratized, notably in the areas of stumping grounds. Revenue collection, customary land transfers, title registration, and planning control are all things that the government is responsible for. The Lands Commission, a legally mandated organization, is in charge of not only allocating land but also monitoring it.

### **3.0 Research Methodology**

#### **3.1 Description of the Study Site**

The Pru District was created on the 18th of February, 2004 under Legislative Instrument 1778 of 2004. Pru District was created out of the then Atebubu District. The physical, economic and socio-cultural conditions have shaped and influenced lives in the Pru District. It is therefore relevant to put these issues into perspective to enable a fair appreciation of the current state of the district. There are core natural and anthropogenic factors that have influenced economic production, consumption, reproduction, health, sanitation and the overall welfare of the people in the Pru district.

The Pru district lies between Longitudes 0030" W and 1026" W and Latitudes 7050" N and 8022" N. It shares boundaries with seven other districts, namely East Gonja to the North (Northern Region), Sene East and West to the East, Nkoranza and Atebubu-Amantin to the South and Kintampo-North and South to the West, all in the Bono East Region. The district covers an area of approximately 3220.7kmsq



**Figure 1.** Map of Pru District showing the study communities  
**Source:** Ghana Statistical Survey (2015)

### 3.2 Research Approach

A survey research approach was used for the study. This approach was considered to be most appropriate to provide the required quantitative and qualitative descriptions of the strategies adopted by households in coping and adapting to these effects in the Pru District. Data from farming households were gathered using structured questionnaires. The approach makes provision for both quantitative method and qualitative method to be used. As a result, this study used the mixed method since it gives a better result than using a single method (Johnson & Onwuegbuzie, 2009; Bryman, 2008 cited in Alatinga & Fielmua, 2011). Focus group discussions have also been used to obtain qualitative data from farmer-based associations in the Pru District. A cross-sectional survey from smallholder farming households was the means through which the quantitative data was obtained.

The qualitative techniques were used to assess the coping and adaptation strategies adopted by smallholder farming households to abate the effects of large-scale land acquisition in the study communities. According to Morse and Field (1996), qualitative research refers to subjective and process-oriented methods used to understand, interpret, describe and develop a theory on a phenomenon.

### 3.3 Sample Size for the study

A sample size of 346 households was used for the study out of a sample frame of 2,544 households. It was determined from the sampling frame using Slovin's mathematical method expressed by equation (1)

$$n = \frac{N}{1 + N(\ell)^2} \quad (1)$$

Where 'n' is the sample size, "N" is the sample frame and "ℓ" is the error margin. The use of the formula should contribute to ensuring reliability and validity in the research. The sampling frame is the total number of units likely to be included in the study. In determining the sample size for the cross-sectional survey, a total of 346 sampled smallholder farming households were obtained from the communities in the Pru District at a 95% confidence level and 5% error margin. Out of the total sample size 346 farmers, were quantitatively analysed whereas 14 farmers were also qualitatively analysed through in-depth interviews.

### 3.4 Sampling Techniques

#### The Cross-sectional Survey

A multi-stage sampling technique was employed. The Pru district was purposively selected since it is the most affected by activities of land grabbing in Ghana. The second stage involved cluster sampling to ensure that all communities affected by the phenomenon are represented. The last stage involved a proportionate simple random sampling technique which was applied to select the smallholder farming households in each cluster (study communities).

The design was considered to be the most appropriate research approach to provide the required quantitative and qualitative descriptions of the strategies adopted by households in coping and adapting to these effects in the Pru District. Data from farming households were gathered using questionnaires. The design makes provision for the quantitative method (designed to collect numbers) and qualitative method (designed to collect words/descriptive in nature) in the same study. The study, therefore, used a combination of quantitative and qualitative methods to answer the research questions. The methodological eclecticism is inherent in the mixed research design results in superior results (Johnson and Onwuegbuzie, 2009). The strength of this strategy is that the weakness of one will be compensated for by using an alternative method (Bryman, 2008 cited in Alatinga and Fielmua, 2011).

**Table 1: Allocation to the Communities in the Pru District**

Community	Total population (HH)	Household size	Affected households	Non-affected households	Sample size
Adwentura	210	5.1	4	23	27
Kadue	435	7.9	9	49	57
Kobre	943	6.6	19	104	123
Prang	630	13.3	12	70	82
Abease	326	10.5	7	35	43
<b>Total</b>	<b>2,554</b>	<b>-</b>	<b>51</b>	<b>281</b>	<b>332</b>

**Source: Ghana Statistical Service (2010)**

The socio-demographic characteristics of farming households determine the magnitude of the effect of large-scale land acquisition on their livelihoods and the strategy of coping and

adapting to these effects. The socio-demographic characteristics of farming households considered in this study are the age of household head, household size, household income per annum, total acres of farm land owned by households, number of acres of farm land lost by farming households to large scale land investors, sex of household head and the educational level of the household head. This is presented in Table 1

**Table 2: Descriptive Statistics of Sampled Smallholder Farmers**

Variable	Mean	Std. Dev.	Min	Max
Age of HHH	35.49	1.27	24	58
Household Size	5.40	3.00	1	18
Household income	1700.83	78.04	180.00	3900.00
Land size owned By HH (acres)	8,87	3.92	4	23
Land lost by HH to investors	4.53	3.66	0	13

Source: Author's field data (2020).

The youngest household head was 24 years while the eldest household head was 58 years. The average age of household heads in the Pru district was 35.49 years with a standard deviation of 1.27. This shows that the sampled households comprise youthful members who can energetically carry out farming activities. Meanwhile, the minimum and maximum household sizes were 1 and 18 respectively with an average of 5.40 members. A larger household size is a source of labour for farming activities by a household. The mean household income was GHC1700 with a standard deviation of 78. The minimum and maximum household incomes were GHC180 and GHC3900.00 respectively as shown in Table 2 above.

The size of farm land owned by a household also determines the extent to which households' livelihoods are adversely affected by large scale land acquisition since there will still be enough farm land for cultivation by the household after relinquishing part of their lands to large-scale land investors. The minimum and maximum farm land owned by sampled households were 4 acres and 23 acres respectively while the average farm land owned by households was 8.87 acres with a standard deviation of 3.92 acres. This reflects typical smallholder farmers' in Ghana. Similarly, the number of acres of land lost by farming households to large-scale land investors influences the magnitude of the effect on households' livelihoods. The minimum and maximum size of land lost by households to large-scale land investors were 0 and 13 respectively. Averagely, each household lost 4.53 acres of land through large-scale land acquisition.

### 3.5 Sample Size for the Focus Group Discussion

According to Manoranjitham and Jacob (2007), the ideal number of participants for focus group discussion ranges between eight and ten. The number of participants selected from the associations for the focus group discussions was thus inspired by the work of Manoranjitham and Jacob (2007). Ten members (10) within each of the farmer-based associations were therefore selected. Three participants were the leaders, thus the chairperson, secretary and treasurer of the associations.

Three members in leadership positions (president/chairpersons, secretaries and organisers) of the various associations involved in this study were purposively sampled. The remaining seven were randomly sampled from the members of the associations. Numbers were assigned to members of an association and were first written on pieces of paper. These were

then dropped in a box, shuffled and handpicked until the required number of members was obtained. These steps were repeated for the rest of the others that were covered in the focus group discussions.

### **3.6 The Key Informant Interviews**

The institutions that were covered in the study were purposively selected for the research. Their selection was based on their roles in the formulation or implementation of policies, plans and programmes regarding the large scale land acquisition process for plantation investments. Thus, relevant state institutional heads such as the EPA, LC, MOFA, DA, DADU, OASL, FC, TAs, and the officials of the jatropha company (Smart Energy Company and others) giving a total of ten (10) stakeholders sampled for the interview. In addition, fifty (50) farmer-based association members were involved in the focus group discussions.

### **3.7 Sampling Techniques**

A multi-stage sampling technique was employed. The Pru district in the Brong Ahafo region was purposively selected based on the reason that it is the most affected by activities of land grabbing in Ghana. The second stage involved cluster sampling to ensure that all communities affected by land grabbing are represented in the final sample. The last stage involved a proportionate simple random sampling technique which was applied to select the smallholder farming households in each cluster (study communities).

### **3.8 Techniques for Qualitative Analysis**

The qualitative data were analysed employing the content approach and grounded theory. These qualitative approaches were used to analyse the views and expressions made by the units of enquiry in the course of an interview.

#### **3.8.1 Validation of Data**

1. In making the respondents understand and sign the consent form for this study, an introductory letter was obtained from the head of the department, Department of Geography and Rural Development, Kwame Nkrumah University of Science and Technology. Copies of the introductory letter were given to the various stakeholders, key informants, household heads (if requested) and heads of the selected institutions in this study. That being said the interviewees were briefed about the purpose of the study and the time needed to complete the questionnaire/interview guide before they endorsed the consent forms. The interviewees were assured of the need for confidentiality in the data collection. By these arrangements, the rights of the respondents were respected. The authors of scholarly works which were referred to in writing this thesis were duly acknowledged in both the running texts and the bibliographies of the relevant chapters.

2. Internal validity according to Tybout *et al.*, (1982) is “how well an experiment is done”, with emphasis on whether it avoids confusion (more than one possible independent variable or cause acting at the same time). Thus, it connotes how well research permits the researcher to choose among alternative explanations. Hence, internal validity was ensured by gathering data from diverse groups (i.e. primary stakeholders and the institutions) to understand the large scale land acquisition process for jatropha and other investments and the effects on affected communities, households and farmers. The data from these multiple sources provided completeness to the study.

3. External validity is the generalizability of the research, that is, the ability of its conclusions to be validly extended from the specific environment in which the research study is conducted to similar “real world” situations. Externally valid research with generalizable conclusions is obviously more valuable than externally invalid research, whose conclusions are restricted to specific research settings. External validity thus examines whether or not an observed causal relationship should be generalised to and across different measures, persons, settings and times (Tybout, 1982). External validity was also ensured by the choice of a representative sample for the study. The representativeness of the samples with a 95 percent confidence level and 5 percent error margin and the appropriateness of the sampling techniques with the varied methods for the data collection makes the results appropriate for generalisation.

4. Validity is the degree to which a test really measures what it claims to measure (Epstein *et al.*, 2004). Reliability on the other hand is the extent to which the test provides consistent results when it is administered to the same people at different times (Drost, 2011).

5. Now to ensure the general validity of the study, the questionnaire was constructed to cover all the research objectives and thus comprehensive enough to be able to obtain the desired information to answer the research questions. The items in the questionnaire were all related to the focus of the study which ensured that it measured what it was supposed to measure. Also, the questionnaire was pretested to ensure its practicality and easy administering.

6. The validity of a study can be internal or external. Internal validity according to Tybout *et al.*, (1982) is how well an experiment is done, with emphasis on whether it avoids confounding. Thus, it connotes how well research permits the researcher to choose among alternative explanations. The less chance for confounding in a study, the higher its internal validity. Internal validity has been ensured by gathering data from diverse groups (i.e. primary stakeholders and the institutions) to understand the large scale land acquisition process for investments and the effects on affected communities, households and farmers. The data from these multiple sources provided completeness to the study

7. A Cronbach’s reliability test was conducted using SPSS version 21 to ascertain the degree of reliability of the Likert scale responses of the questionnaire when repeated to measure the same variables with the same sample but at different times. The result is presented in Table 3.6. A Cronbach’s Alpha value of 0.851 indicates that the questionnaire is 85 percent reliable and will produce the same results when administered with the same respondents at a different time.

**Table 3: Results of Reliability Test**

Cronbach's Alpha	Standardized Deviation	N <sub>o</sub> of Items
0.851	44.763	74

Source: Field Survey, 2020

The trained enumerators tested the survey instruments in two communities in the Pru District. As part of the pre-testing, enumerators were to observe the time taken to administer each interview schedule, the responsiveness of participants and any difficulty experienced in understanding and interpreting the questions in the instruments. The results of the pilot testing helped to fine-tune the instruments before a second pre-test was undertaken. The essence of carrying out the second pre-testing was to ensure that all the relevant feedback received from enumerators during the first pre-testing was incorporated into the final instrument and to ensure improvement in the quality of the interview schedules. Having quality assured the interview

schedules through the pilot testing, the trained enumerators collected the required data from the five communities selected from the Pru District.

#### 4.0 Results and Discussion

##### 4.1 Socio-Demographic Characteristics of Respondents

This determines the magnitude of the effects of large-scale land acquisition on the livelihoods of small-holder farmers and the strategy of coping and adapting to these effects. The characteristics of farming households considered in this study are the age of household head, household size, household income per annum, acreage of farm land owned by households, number of acreages ceded to large-scale land investors, sex of household head and educational level of the household head. This is presented in Table1 below.

**Table 4: Descriptive Statistics of Sampled Smallholder Farmers**

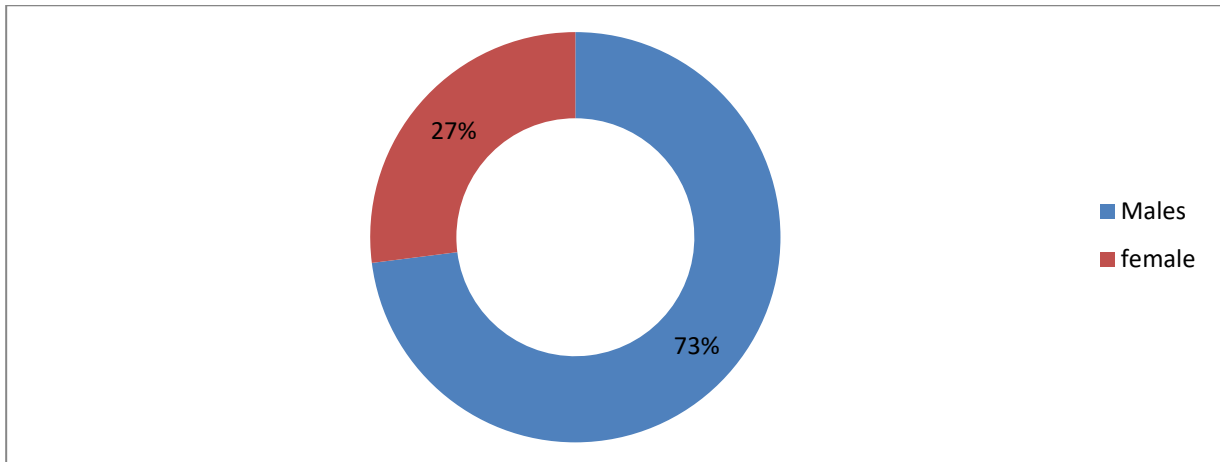
Variable	Mean	Std. Dev.	Min	Max
Age of HHH	35.49	1.27	24	58
Household Size	5.40	3.00	1	18
Household income	1700.83	78.04	180.00	3900.00
Land size owned By HH (acres)	8,87	3.92	4	23
Land lost by HH to investors	4.53	3.66	0	13

**Source:** Field Survey (2020)

The youngest household head was 24 years while the eldest was 58 years; giving an average of 35.49 years and a standard deviation of 1.27. This shows that the sampled households comprise youthful members who can energetically carry out farming activities. The minimum household size was 1 and the maximum was 18. A larger household size is a source of labour for farming activities by a household. The mean household income was GHC1700.83 with a standard deviation of 78.04. The least household income was GHC180.00 and the most, GHC3900.00.

The size of farmland owned by a household also determines the extent to which households' livelihoods are adversely affected by large-scale land acquisition since there will still be enough farmland for cultivation by the household after relinquishing part of their lands to large-scale land investors. The minimum and maximum farmland owned by sampled households were 4 acres and 23 acres respectively while the average farmland owned by households was 8.87 acres with a standard deviation of 3.92 acres. This reflects typical smallholder farmers' in Ghana. Similarly, the number of acres of land lost by farming households to large-scale land investors influences the magnitude of the effect on households' livelihoods. The minimum and maximum size of land lost by households to large-scale land investors were 0 and 13 respectively. Averagely, each household lost 4.53 acres of land through large-scale land acquisition.

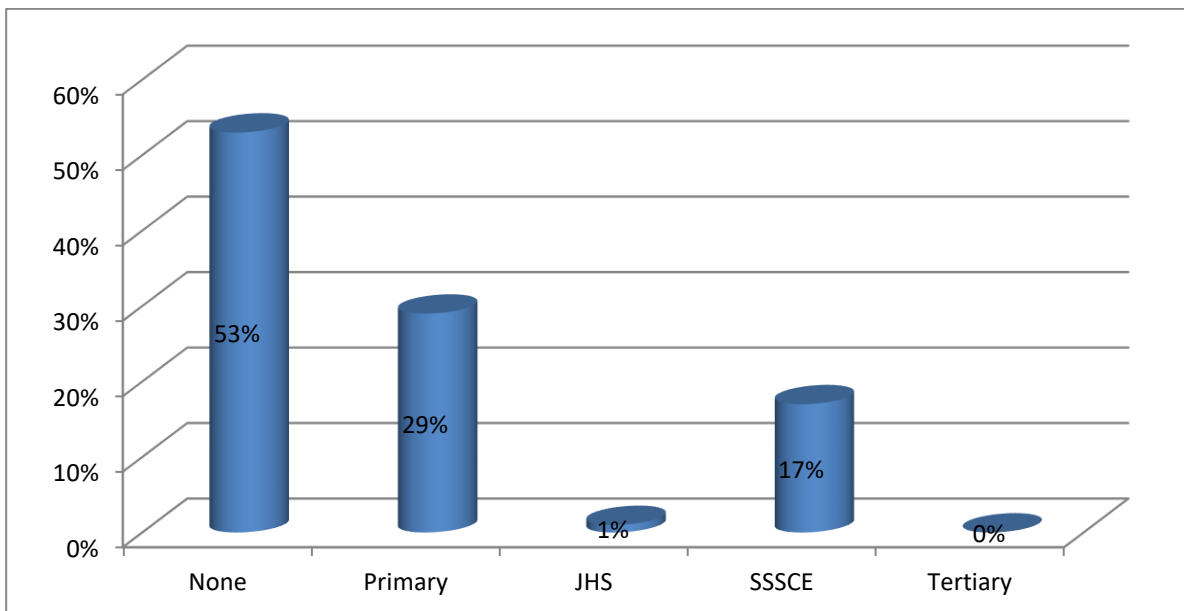
About 73 percent of sampled households in the combined data were headed by males while 27 percent were headed by females. Kobre community had the highest number of households headed by males (94) and households headed by females (29) while the Adjentura community recorded the least number of households headed by males (18) and households headed by females (9). In the literature, large-scale land acquisition has a disproportionately high effect on the livelihood of females headed households than those headed by males. This also influenced the coping and adaptation strategies adopted by the households.



**Figure 2.** Sex Distribution of Household Heads

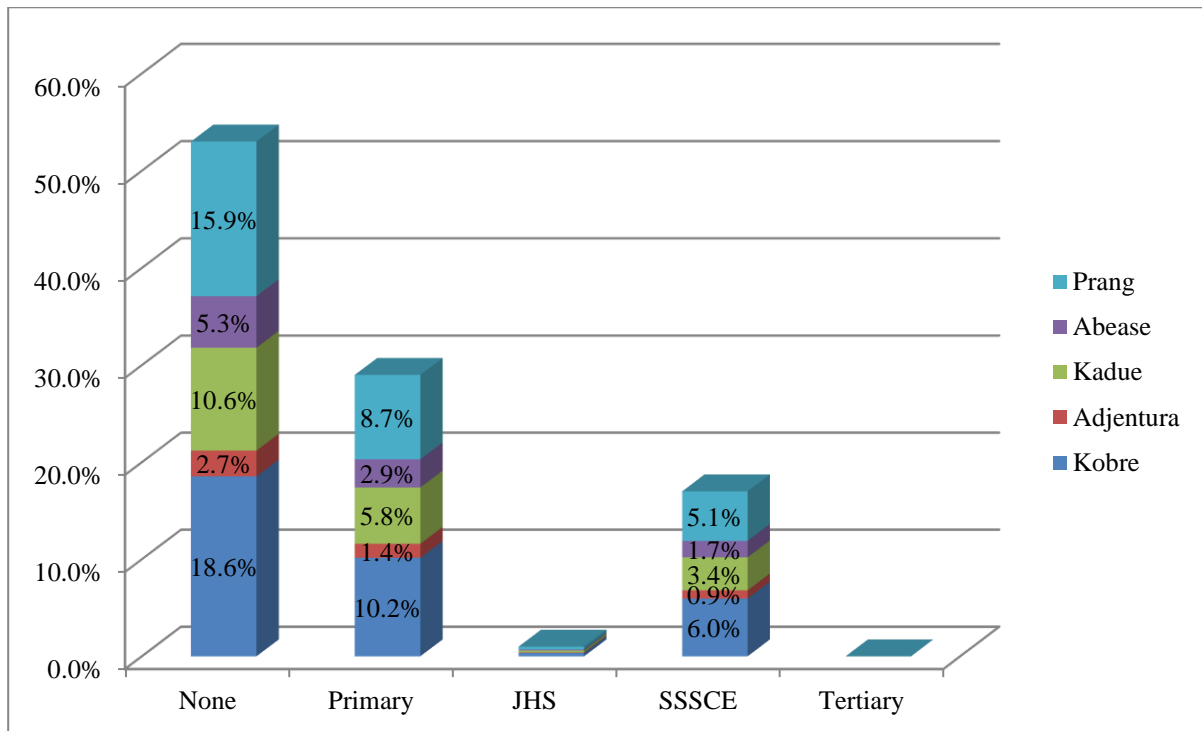
**Source:** Field Survey (2020)

The educational level of household heads also determines /her ability to read and understand issues influencing livelihood including large-scale land acquisition. Figure 3 shows that 53 percent of household heads in the combined data have had no education. The constituents of this percentage of no education by community as presented in Figure 4 include 15.9 percent from Prang, 5.3 percent from Abease, 10.6 percent from Kadue, 2.7 percent from Adjuntura, and Kobre with the highest percentage of 18.6. No household head is educated to the tertiary level in all the study communities. Of the 17 percent of household heads with secondary school education in the combined data as shown in Figure 4. a majority of such household heads were from the Kobre community (6%).



**Figure 3.** Educational Levels of Household Heads

**Source:** Field Survey (2020)



**Figure 4.** Educational Levels of Household Heads by Community  
**Source:** Field Survey (2020)

#### 4.2 Farmers' Strategies of Coping with and Adapting to the Effects of Land Acquisition

Given that large-scale land acquisition has adverse effects on the livelihood outcomes of farming households, some measures have been taken by households to mitigate the effects of large-scale land investment. households of Kadue, Prang, Adjentura, Kobre and Abease embark on coping and adaptation measures to survive the effects of activities of large-scale land acquisition in the Pru district. The coping and adaptation strategies identified to have been adopted by farming households in the Pru district are presented in Table 5.

**Table 5: Farmers' Strategies of Coping with and Adapting to the Effects of Large-Scale Land Acquisition**

Effect of large-scale land acquisition on farmers' livelihood	Coping Strategy		Adaptation Strategy	
	Strategy	%	Strategy	%
Re-location of farms too far from places	Reduce the number of days of visits to the farm	23	Keep backyard garden	91
	Leaving to farm very early	67	Bought motorbike	85
Extinction of medicinal plants	Get them from friends/family	42	Grow medicinal plants	15
Extinction of water resources	Depend on rainfall	99	Fish farming	33
			Dug boreholes	57

Source: Author's field data (2020)

### **Farmers coping strategies**

To immediately surmount the effect, majority of smallholder farmers (67 percent) go to their farms very early than they used to while about 23 percent of smallholder farmers reduce the number of days they visit the farm. However, in the long-run, most smallholder farmers (91 percent) reported establishing backyard farms rather than traveling to distant places to cultivate their produce. About 85 percent of households also reported having adapted to the re-location of farmlands to far places by acquiring motorbikes to aid their transport to their new farmlands which are a bit far from their homes than their old farm sites. At Prang, in a focus group discussion a farmer had this to say:

*“The presence of the investors has contributed to mass unemployment which has led to the recent increased armed robbery cases on the Kumasi-Yeji Road. Indeed, it is affecting our social lives and our properties. It has also led to the breakup of families, breakdown of parental control on children as well as other imminent life development activities”* (The Assemblyman, 2016).

#### **4.2.1 Leaving to their farms very early**

As a coping strategy, majority of smallholder farmers (67%) leave their farms very early than they used to while about 23 percent of smallholder farmers reduce the number of days they visit the farm. The respondents also indicated that they had to leave their homes very early due to large-scale land acquisitions. As the distance to their farm increases, it leaves them with no option but to leave the house early so that the sun's rise will not catch them up. This assertion is attributed to 22.81% (13) of respondents from Kadue, 66.67 percent (18) of the respondent from Adjentura, and 66.67percent (82) of respondents from Kobre, 67.07 per cent (55) of the respondents from Prang and 23.26 percent (10) of respondents from Abease This has led to some farmers migrating and other engaging in other forms of activities to earn a living. In a focus group discussion, a community member stated:

*The presence of the investors has resulted in the mass migration of people with less yield and seed capital, hence the recent increase of armed robbers on the Kumasi-Yeji Road and its effect on our life and properties. Agriculture, which used to provide us with a lot of income, is now not attractive as it cannot provide the income to support the farmer's livelihood, there has been a break-in parental control and has forced the youth out of agricultural activities hence engaging in illegal activities such as robbery.* (Focus Group Discussion-Prang, 2020)

#### **4.2.2 Getting food and help from family members**

However, some smallholder farmers also coped by getting foodstuffs and other help from families and friends to sustain their livelihoods. Large-scale land acquisition has deprived some smallholder farmers off their farming land which they depend on for their livelihood. For to cope with such situations some smallholder farmers depend on help from friends and families to survive. This assertion was made by 42.11 percent (24) of respondents from Kadue, 44.19 percent (19) of the respondents from Abease, 41.46 percent (34) of the respondents from Prang, 41.46 percent (51) of the respondents from Kobre and respondents from Adjentura accounted for 40.74 percent (34).

#### **4.2.3 Harvesting Rain water**

In coping with the situation where smallholder farmers can have good water for domestic purposes, the smallholder farmers cope by harvesting rain water into big tanks and barrels from which they can use it for weeks. The large-scale land acquisition has limited smallholder farmers' access to water resources in these communities thus, 100 percent (82) of the respondents from Prang, 96.30 percent (26) of respondents from Adjentura, 99.19 percent (122) of Kobre, 97.67 percent (42) of the respondents from Abease and 100 percent (57) of respondents from Kadue cope by harvesting rainwater for their domestic use.

The most immediate impact linked with land grabs which exacerbate rural livelihoods is displacement. As a result of large-scale land acquisition, sometimes, it is almost impossible for women to perform their primary functions such as the provision of food, water and fuel for their families. This is because areas initially used for farming, animal grazing, fishing, and gathering wild foods are lost to local communities (Action Aid International, 2014). Extinction of water resources is not exempted from the harsh effects suffered by smallholder farmers resulting from the relinquishing of their farmlands to large-scale land investors. About 99 percent of households depend on rainfall for water as a coping strategy. On the other hand, about 33 percent and 57 percent of households adapt by engaging in fish farming and digging boreholes respectively.

#### **4.3 Farmers' Adaptation Strategies**

As a form of adaptation, most smallholder farmers (91%) reported establishing backyard farms rather than travelling to distant places to cultivate their produce. About 85 percent of households also reported having adapted to the re-location of farmlands to far places by acquiring motorbikes to aid their transport to their new farmlands which are a bit far from their homes than their old farm sites. Apart from its effect on farming systems as indicated by Schoneveld (2011), the diversity of crops serves as a buffer for farmers against the vagaries of climate change and unfriendly weather conditions (Ariza-Montobbio & Lele, 2010) are also affected. Due to the varied soil conditions farmers are most likely not to get the land that would support the diversity of crops cultivated.

##### **4.3.1 Keeping Backyard Garden**

The study found out the adaptation strategies used by the five communities. Out of 82 respondents from Prang, 91.46 percent (75) indicated that they keep backyard gardens while 88.89 percent (24) respondents from Adjentura also indicated that they keep backyard gardens as one of their adaptation strategies against the adverse effects of large-scale land acquisition. Respondents from Kobre, Abease and Kadue also said they keep backyard gardens as one of their adaptation strategies. In Kobre, 91.06 percent (112) of respondents indicated that they keep backyard gardens, 90.70 percent (39) from Abease also gave the same account and 91.23 percent of the respondents from Kadue indicated that they keep backyard gardens to adapt to the effects of large-scale land acquisition. At Kobre, one of the farmers said:

*“Other alternative farming practices have also sustained us to survive, we would apply fertilizer to maximum crops yield to the small piece of land available and hence resulted to backyard farming” (The Chief Farmer, 2020).*

#### **4.3.2 Buying a Motor Cycle**

Another strategy which the respondents of the communities adopted was to buy a motorcycle; 86.05 percent (37) respondents from Abease, 85.37 percent (70) respondents from Prang, 85.19 percent (23) respondents from Adjentura, 84.55 percent (104) respondents from Kobre and 84.21 percent respondents from Kadue, all indicated that they bought motorcycle as an adaptation strategy. The motorcycle was to ease free movement in the communities and reduce the number of hours of walks before they get to their various farms.

#### **4.3.3 Planting Medicinal Plants**

The farmers from the communities adapt to the effect of large-scale land acquisition by planting medicinal plants for their uses. This was evident in the responses from the respondents, as 34.15 percent (12) of the respondents from Prang, 14.81 percent (4) of the respondents from Adjentura, 15.45 percent (19) of the respondents from Kobre, 13.95 percent (6) of the respondents from Abease and 15.79 percent (9) respondents from Kadue all indicated that they grow medicinal plants as an adaptation strategy. The community members are restricted from going to the forest and some parts of the forest are cleared for the projects by the investors, making it difficult to get access to herbs for medicine hence, the smallholder farmers have adopted growing medicinal plants for use. An official from the Environmental Protection Agency (EPA) gave this account in an interview;

*“The farmers have access to a small piece of land which they cultivate. The farmers have found it very challenging to get herbs for their use especially in emergencies. The investors have taken over the nearby forest hence creating this challenge”* (An official from EPA, 2020).

The effect on smallholder farmers as a result of the acquisition of their farmlands by large-scale lands investors is the extinction of medicinal plants in the study communities. About 42 percent of farmers reported that they get depleted medicinal plants from friends and relatives in other communities in the short run, but, adapt to the situation in the long run by replanting or growing such medicinal plants in their communities as reported by about 15 percent of households. This was noted by Schoneveld (2011), who observed that some households engaged in forestry activities before the land acquisition but only intensified the activities after the land dispossession.

#### **4.3.4 Fish Farming**

The study also revealed that community members adapt to fish farming as an adaptation strategy to the effects of large-scale land acquisition on their livelihoods in the Pru District Assembly. As indicated by the respondents from the various communities, 34.15 percent (28) of the respondents from Prang, 37.04 percent (10) respondents from Adjentura, 32.56 percent (14) of the respondents from Kobre, 31.58 percent (18) of the respondents from Kadue and 32.56 percent (14) of the respondents from Abease all indicated that with the activities of large scale land acquisition by investors and limited access to water resources, smallholder farmers engage in fishing activities as an adaptation strategy to sustain the family source of protein and also make extra income to support their livelihood. In a focus group discussion in Kadue, a community member narrated;

*The large-scale land acquisition has resulted in the extensive migration to Yeji, Makango, and other communities that are forced to be fishermen, and hence the current accident on the*

*Yeji River, all these have happened due to investors. Most of these individuals have got their families which they have to take care of and with their farming land taken from them had to engage in different activities to be able to perform their responsibilities the family had to be involved in fishing activities. (Focus Group Discussion-Kadue, 2020)*

#### **4.3.5 Digging Borehole**

In the quest for maintaining a reliable source and safe drinking water for domestic use, smallholder farmers from the communities adapt by digging borehole for a good source of water. The responses from the communities indicated that 57.89 percent (33) of the respondents from the Kadue community, 55.81 percent (24) of the respondent from the Abease community, 56.91 percent (70) of the respondents from the Kobre community, 55.55 percent (15) respondents from the Adjentura community and 57.32 percent of the respondent from the Prang community all indicated that they have dug boreholes in their various homes to serve their domestic purposes.

The coping and adaptation strategies adopted by farming households in this study are not much different from those adopted by farmers (relocation of farmlands, off-farm activities such as fishing, firewood, charcoal burning and shea nut picking) in the Talensi/Nabdam district in Northern Ghana as effective coping and adaptation strategies to the effects of small-scale mining activities in the region (Ontoyin and Agyemang, 2014). Also, according to Dheressa (2013), the majority of smallholder farmers in the Woreda district of the Oromia region adopted such strategies as changing land use, sharecropping, tenant farming, changing to off-farm occupation and seeking employments with foreign companies to cope with the adverse effects of large-scale agricultural projects in Ethiopia.

#### **4.4 Coping strategies by smallholders' farmers in the Pru district**

A serious effect of the acquisition of land grabbing is the tendency of smallholder farmers to relocate their farms too far from sites. To surmount that, majority of farmers (67%) leave for their farms earlier than previously while about 23 percent of smallholder farmers reduce the number of days they go to the farm.

*The presence of the investors has resulted in the mass migration of people with less yield and seed capital, hence the recent increase of armed robbers on the Kumasi-Yeji road affects our lives and properties. Agriculture which used to provide us with a lot of income is now not attractive as it cannot provide the income it used to give farmers, this has break parental control and has forced youth out of agricultural activities hence engaging in illegal activities such as robbery (Focus Group Discussion-Prang, 2020).*

The most immediate impact linked with land grabs which exacerbate rural livelihoods is displacement. Due to the large-scale land acquisition, it is almost impossible for women to perform their primary functions of providing meals, water and fuel for their families. This is because areas initially used for farming, animal grazing, fishing, and gathering wild foods are lost to local communities (Action Aid International, 2014). Extinction of water resources is not exempted from the harsh effects suffered by smallholder farmers resulting from the relinquishing of their farmlands to large-scale land investors. About 99 percent of households

depend on rainfall for water as a coping strategy. On the other hand, about 33 percent and 57 percent of households adapt by engaging in fish farming and digging boreholes respectively.

#### **4.5 Adaptation strategies by smallholders' farmers in the Pru district**

A great number of farmers (91%) reported staying home and establishing backyard farms rather than travelling outside their communities. About 85 percent of households adapted to the re-location of farmlands to far places by securing motorbikes to aid their transport to their new farm situated far from their homes. Apart from its effect on farming systems as indicated by Schoneveld (2011), the diversity of crops which serve as a buffer for farmers against the vagaries of the weather (Ariza-Montobbio and Lele, 2010) are also affected. Due to the varied soil conditions farmers are most likely not to get the land that would support the diversity of crops cultivated.

Another effect that has befallen smallholder farmers as a result of land is the extinction of medicinal plants; a major source of healing to ailments. Nearly 42 percent of farmers said they relied on friends and relatives for depleted medicinal plants whilst 15 percent replanted such medicinal plants. This was noted by Schoneveld (2011), who observed that some households engaged in forestry activities prior to the land acquisition but only intensified the activities after the land dispossession.

*The large-scale land acquisition has resulted in migration to Yeji, Makango and other communities are compelled to be fishermen and hence frequent accidents on the Yeji River. This is all because of the investors. Most of these individuals have got their families which they have to take care of and with their farming land taken from them had to engage in different activities to be able to perform their responsibilities the family had to be involved in fishing activities (Focus Group Discussion-Kadue, 2020).*

The coping and adaptation strategies adopted by farming households in Pru are not very different from those in the Talensi / Nabdum district of the Northern sector (Ontoyin & Agyemang, 2014). To Dheressa (2013), smallholder farmers in the Woreda district of Oromia have adopted strategies such as land-use change, share-cropping, tenant farming, switching to off-farm occupation and seeking employment in companies to cope with the adverse effects of large-scale agricultural projects in Ethiopia.

#### **5.0 Conclusion and recommendations**

Households' strategies of coping with the effects of land grabbing on their livelihood include reducing number of days they visit their farms, leaving very early to farms, getting extinct medicinal plants from friends and families in other communities and depending on rainfall. The adaptation strategies of smallholder farming households to this phenomenon are keeping backyard gardens, buying motorbikes, cultivating extinct medicinal plants, engaging in fish farming and digging boreholes. Given that farming is the main occupation in the Pru district, land grabbing by large-scale land investors means a seizure or reduction in their livelihood sources. To restore farming households to normalcy, the study recommends that a sufficient compensation package in the form of start-up capital be given to households losing farmlands due to this phenomenon. Thus, farming households should be given seed capital with training venture into off-farm activities as an alternative means of livelihood sustainability.

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