

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

COLLEGE OF ARCHITECTURE AND PLANNING

DEPARTMENT OF PLANNING



**THE EFFECTS OF LARGE-SCALE LAND ACQUISITION FOR JATROPHA
PLANTATION ON SMALL-SCALE FARMERS IN RURAL COMMUNITIES IN THE
ASANTE AKIM NORTH DISTRICT**

By

HAMENOO, SIMON VICTORY QUARCSO

(BSc. Agriculture)

A Thesis submitted to the School of Graduate Studies
Kwame Nkrumah University of Science and Technology, Kumasi in partial fulfilment
of the requirements for the degree of

MASTER OF SCIENCE IN DEVELOPMENT POLICY AND PLANNING

July, 2014

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July, 2014

DECLARATION

I hereby declare that this submission is my own work towards the Master of Science in Development Policy and Planning(Economic Option) and that, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due knowledge has been made in text.

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ABSTRACT

From the hypothetical perspective, the phenomena of large-scale land acquisition for jatropha plantations may or may not affect small-scale farming but from the empirical point of view, the phenomena have been shown to have had diverse effects on small-scale farming within project communities. The implications could have interfering effects on household agriculture leading to reduced access to land, increased cost of land and change in farming systems among others. The study therefore examined the effects of large-scale land acquisition for jatropha plantation on small scale farmers in the Asante Akim North District. The study also sought to understand the processes that went into the large-scale land acquisition in the study area. The study is presented in five chapters. The study was an exploratory research that investigated the effects of large-scale land acquisition for jatropha plantation on small-scale farmers. The study therefore adopted the mixed research design using a combination of qualitative and quantitative methods to answer the research questions. The study adopted the pre-post research design to measure the effects of large-scale land acquisition on small-scale farmers. The selected communities include Dukusen, Afrisie, Ananekrom and Baama. The units of enquiry were purposively selected based on their presence in the study communities and their engagement in small-scale farming at least four farming seasons before and after the land acquisition. In all, 120 respondents were selected for the study from the four study communities. Ten key informants were also selected at the institutional level for interview on the process of land acquisition. A response rate of about 96% was obtained for the analyses. Data were collected through field observations, household questionnaires and key informants' interviews. Telephone Assisted Interviews (TAIs) were also done to validate some of the responses collected through direct interviews. Frequency and percentage distributions and analysis of variance (ANOVA) using Paired Sample Test to validate the strengths of the effects of large-scale land acquisition on small-scale farmers were applied in data analysis. The study found that: the minimum of 750,000 acres (303,514.7 hectares) of land said to be acquired by the Company was actually an aggregate or a summation of the projections of the proportions of land to be operated by the Company (Scanfuel Ghana Limited) from 2008 to 2017. The entire land acquisition process by the Company was fair and largely followed guidelines put in place by the Customary Land Secretariat and the Lands Commission amidst few post-acquisition agitations due to the encroachment of individual and family lands within project communities. Local participation in the process of the land acquisition was overlooked. The effects large-scale land acquisition on farmers' household economy (production, consumption, incomes (farm and non-farm) and expenditures (food and non-food) was mixed. However, farmers' household economy has improved after the large-scale land acquisition. The study therefore found household food security has relatively reduced after the large-scale land acquisition by the Company. It is concluded therefore that farmers' access to agricultural land is diminishing as a result of large-scale land acquisition by the Company. It is recommended therefore that the Traditional Authorities should exercise restraint in the customary disposition of land in the name of financial gains.

ACKNOWLEDGMENT

I am fortunate indeed to have had various forms of technical and professional inputs into my project from different individuals within and outside this University whom I accordingly deem an honour and a necessity to give credit to in this work. I am grateful first of all to God for bringing me this far in my education. My non-negotiable appreciations go to the following personalities in the academia and the international community: The late engineering Professor, Professor Abeeku Brew-Hammond, the then World Bank Energy Consultant and Director of The Energy Center, KNUST for recommending the Development Policy and Planning programme for me; Dr Rudith S. King, Senior Lecturer and Evaluation Officer of the United Nations Environment Programme (UNEP) in Kenya for financially facilitating the commencement of my Masters Programme; and Mr Owusu Amponsah, a Lecturer and a hardworking brother of mine for primarily encouraging me amidst isolated discouragements in enrolling for this programme.

Now, my very profound gratitude goes to Dr Oduro-Ofori Eric, my project supervisor who also doubles as the Director of the Spring Programme for his professional and immense contributions and directives towards the commencement and completion of this project. Credit also goes to Dr. John T. Bugri, Department of Land Economy at KNUST for his contributions at the initial stages of this work. My august recognition hereby goes to the following individuals who have played significant roles in one way or the other during my data collection for the project: the Divisional Chief and the Registrar of Agogo Traditional Council; Mr Mike Eshun, the Operations Manager, Scanfarm Ghana Ltd.; the Municipal Planning Officer and the Stool Lands Officer, Office of the Administrator of Stool Lands, Asante Akim Central Municipality; the District Planning Officer, Asante North District, the Chief of Dukusen; the Assemblymen of Dukusen and Ananekrom Electoral Areas; the Regional Land Officers of Stool Lands and the Lands Commission. Credit also goes to a colleague President of the United Nations Association of Ghana (UNA-GH), Ashanti Region Prince Entsie and Mad. Edna Nyame Philips, Vice President of the World Federation of the United Nations Association (WFUNA) for their encouragements. Edward Owuani Tsum and Michael Asibey are also hereby acknowledged. Finally, I am also grateful to all other Lecturers, colleagues, family and friends who, though numerous to mention individually, did encourage and helped me in diverse ways in the course of this programme and towards this project. Thank you all.

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List of Acronyms and Abbreviations

ANOVA.....	Analysis of Variance
DAs.....	District Assemblies
DCE.....	District Chief Executive
EIA.....	Environmental Impact Analysis
EPA.....	Environmental Protection Agency
FAO.....	Food and Agriculture Organization
FASDEP.....	Food and Agriculture Sector Development Policy
FDI.....	Foreign Direct Investments
FOLA.....	Focus on Land in Africa
GEXSI.....	Global Exchange for Social Investment
GIPC.....	Ghana Investment Promotion Centre
GoG.....	Government of Ghana
GPRS.....	Ghana Growth and Poverty Reduction Strategy II
GSGDA.....	Shared Growth and Development Agenda
GSS.....	Ghana Statistical Service
HEA.....	Household Economy Analysis
HH.....	House Head
IIED.....	International Institute for Environment and Development
ILC.....	International Land Coalition
JICA.....	Japan International Cooperation Agency
JHS.....	Junior High School
LAP.....	Land Administration Project
LGR.....	Locally Generated Revenue
LC.....	Lands Commission
MDG.....	Millennium Development Goal
MiDA.....	Millennium Development Authority
MLGRD.....	Ministry of Local Government and Rural Development
MLNR.....	Ministry of Lands and Natural Resources
MOFA.....	Ministry of Food and Agriculture
NGO.....	Non-government Organizations

NLP.....	National Land Policy
OASL.....	Office of the Administrator of Stool Lands
SHS.....	Senior High School
SDGs.....	Sustainable Development Goals
TA.....	Traditional Authority
TAIs.....	Telephone Assisted Interviews
TC.....	Traditional Council
TCPD.....	Town and Country Planning Department
TEC.....	The Energy Center
USD.....	United States Dollar
WWF.....	World Wide Fund for Nature



CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The environmental impact of fossil fuels like coal and oil on the atmosphere, the consequences of which is global warming, coupled with the increasing cost of oil has generated the drive to look for alternative sources of energy (The Energy Center, 2008: 2). As a result, the use of organic oil to make usable diesel fuel is becoming more and more popular. Using this method that anyone can learn to do at home, one can run any diesel engine at an economical rate of 60 cents to 90 cents per gallon (Morgan, 2013).

Since 2005 there has been an unprecedented growth in global biodiesel demand, production, and production capacity (ActionAid, 2009). During this time, the increasing demand for traditional jatropha feedstocks (raw materials) have contributed to a host of concerns on the implication these trends could offer for food crop production (Thurmond, 2007) and access to land. Despite these concerns, the growth of the biodiesel industry in Europe, the United States (US), Asia, Latin America and recently in Africa, have continued on a rapid pace, and has spawned a variety of new opportunities for agrofuel developers to meet growing demands for lower cost and non-food feed stocks for biodiesel (World Bank, 2009). Available statistics also point to increasing foreign direct investments (FDI) in the cultivation of jatropha biofuel feedstock in Ghana (Ghana Investment Promotion Centre, 2011).

Agronomically, *Jatropha curcus* is a perennial tree, which produces non-edible seeds that contain 30-40 percent oil ideal for biodiesel production. One hectare (2.47 acres of land) of jatropha can produce between 1.5 – 2.5 metric tonnes of seed oil (Thurmond, 2007). Such investments have the potential to generate employment, increase incomes, and improve competitiveness in regional and international trade. Nevertheless, without transparent and comprehensive policies to regulate land acquisitions for biofuel investments, these projects could threaten communities' access to the land and livelihoods on which they depend (Hughes et al., 2011) largely for food crop production and household income.

In Ghana, majority of the poor live in rural areas and have labour and land as their main productive assets (FAO, 2012). As land tenure defines access to and use of land resources, it has become the focus in identifying the causes of Africa's food production and environmental degradation problems (Bugri, 2007). It is important to recall that, agriculture takes place on land since Adam. Therefore, achieving the just-about-to-end first Millennium Development Goal of halving the proportion of people living in absolute poverty by 2015 will require agriculture and for that matter, land to play a major role in this global quest. Ghana just like many sub Saharan African countries is an agrarian (dominated by agriculture) economy. The country's population of close to 25 million people is predominantly dependent on agriculture. The agricultural sector employs about 55 percent of the labour force (Schoneveld *et al.*, 2011). Although the sector's contribution to the GDP continues to decline, with the share reducing from 25.6 per cent of GDP in 2011 to 23.1 per cent in 2012, its significance in the economy cannot be underestimated (MOFEP, 2013:36).

As a result, the Growth and Poverty Reduction Strategy (GPRS II, 2006-2009), Food and Agriculture Sector Development Policy (FASDEP II, 2007), the Ghana Shared Growth and Development Agenda (GSGDA, 2010-2013) and the current Ghana Shared Growth and Development Agenda II (GSGDA, 2014-2017) all consider agricultural modernization as a primary means to promote inclusive economic growth and structural transformation in rural areas. One of the key action points in these policy documents is to enhance private sector competitiveness by promoting investments in commercial farming.

However, in the quest of following these policy guidelines, conflict of access to land between food crop production and non-food crop production, particularly, jatropha can be, if not interfering, pathetic for small-scale farmers in the given investment communities. This is because, large-scale land acquisitions for jatropha plantation have been shown in several empirical works to have had serious effects on food security, agricultural land use, decrease in food crop production, livelihoods and other aspects of the environment (World Bank, 2002: 157; Hughes *et al.*, 2011; Cotula *et al.*, 2008). The story has not been different in Ghana, particularly within the savannah regions (northern parts) of the country, where limited empirical works confirmed these claims.

In fact, equitable access to land and the security of land rights are central to socio-economic development, food production and poverty reduction. This is because land and its resources are fundamental to fulfilling the basic needs of small scale farmers in rural communities. In addition to being an important economic asset, land also contributes to the identity, dignity and social inclusion of the individual rights holder (World Bank, 2002; FoodSPAN, 2012). A secured access to land is therefore important for ensuring the enjoyment of fundamental human rights, particularly, the right to adequate standard of living which includes access to water, food and housing.

Hypothetically, the situation might not be different in the study District given that, 20,000 hectares (500,000 acres) of agricultural land had been acquired for jatropha plantation and biodiesel production by Scanfuel Ghana Limited (Schoneveld et al., 2010: 4). Although the actual land acquired has been inconsistently reported by different authors even in limited literature, an enquiry into the implications and the dimensions of this land acquisition on small-scale farmers was of relevance to policy decisions as far as access to and use of land are concerned. While an enormous 500,000ha and 304, 000ha had been respectively reported by ActionAid (2010: 7-8) and Wisborg (2012), 20, 000ha had been reported in the World Bank's Land Governance conference paper (see Schoneveld et al, 2010). In fact, in comparing the figures of these studies, a difference of several thousands of hectares of land could be said to have diminished within a period of two years within the study area. This therefore invited the interest for a preliminary stakeholder survey to validate the actual land size obtained by the Company. Consequently, a 13,058.35ha land was found. Clearly, there could be issues surrounding the land acquisition for the project.

Taking stock of some of the evidences in a wider context, Wily (2010) estimates that 18 out of the 33 to 40 countries leasing lands for FDI are in sub-Saharan Africa (SSA), and two-thirds of the global lands under lease for biofuel and food production are in SSA. Consequently, Reenberg (2010) found that, land deals affected between 51,415,000 and 63,111,000 hectares of land in Africa following a rigorous review of media reports across the continent. Cotula et al., (2009) also established that four African countries (Mali, Ethiopia, Madagascar and Ghana) had approved land acquisitions totalling two million hectares between 2004 and 2009 in a study of

national inventories of land of 1000 hectares from government sources with multi-stakeholder corroborations. These figures despite possible inaccuracies, offer a broader picture on the scale of commercial land acquisitions in Africa and in Ghana for instance. These large-scale acquisitions were often masked and characterized by growing tensions within communities and loss of livelihoods for small-scale farmers (Schoneveld, 2010; Hughes et al., 2011; FAO, 2012).

Among the many large-scale land acquisitions for jatropha plantation mention can also be made of the Solar Harvest Limited with 10,600 hectares of land for jatropha plantation in the Northern Region of Ghana (Tsikata *et al.*, 2011), 15,000 and 30,000 hectares of land at Atebubu and Bredie respectively within the Brong Ahafo region (Schoneveld, 2010). The reality is that “virtually no large-scale allocations can take place without displacing or affecting local populations” (International Land Coalition, 2009: 3). It is against this background that this study was conducted to investigate the effects large-scale land acquisition for jatropha plantation could have on small-scale farmers, their access to land, household economy, and household food security.

1.2 Statement of the Problem

Despite the spate of media reports and some isolated examples of empirical researches on the globe (World Bank, 2002; ActionAid, 2009; Cotula et al., 2009; Schoneveld et al., 2010; World Bank 2010; Bugri 2012; FAO, 2012), there is still very little empirical evidence about large-scale land acquisition and their implications on small-scale farmers within Ghanaian communities. Unfortunately too, foreign companies control more than 37 percent of Ghana's cropland for jatropha plantation (World Fact Book, 2010). As a result, the spread of jatropha plantation is pushing small-scale farmers off their land. The World Bank's (2002) global poverty study found that farmers' access to agricultural land is diminishing as a result of increasing land acquisition which can lead to scarcity of food, hunger and poverty which could also trigger rural-urban migration. A case study conducted by ActionAid (2009) has shown that the acquisition of large-scale fertile agricultural lands for jatropha plantation due chiefly to its biodiesel potential has been seen to have had consequences on small-scale farmers. Findings from Schoneveld et al., (2010) shows that the phenomenon can significantly worsen rural poverty as communities lose access to vital livelihood resources.

On the institutional side too, reference to the guidelines of the Environmental Protection Authority (EPA) was found to be silent on the possible implications such investments could have on small-scale farmers having endorsed jatropha plantation for biodiesel production as alternate source of fuel (EPA Guidelines, 1999: 53). Conversely, the Lands Commission acknowledged that small-scale farmers are vulnerable in several respects when a higher interest holder is negotiating for the release of lands for plantation projects (Lands Commission Guidelines, 2012). What is more is that, the absence of biofuel production policy coupled with the customary disposition of land in Ghana makes large-scale acquisition for jatropha plantation an open phenomenon at the detriment of small-scale farmers and their access to agricultural land. In fact, the isolated case studies that even exist in Ghana (see Bugri, 2007; ActionAid, 2009) were conducted mostly in the northern part of Ghana. While Bugri in his study linked tenure security, agricultural production and environmental degradation to land acquisition, ActionAid however focussed on the effects of jatropha plantations on livelihood of small-scale farmers.

There is therefore no known study on the effects of large-scale acquisition for jatropha plantation on access to land, household economy and household food security in the Asante Akim North District where the largest land acquisition has been reported to have taken place in the Ashanti Region. While case studies on the subject in the Asante Akim North District is missing in literature, it is feared therefore that, given the customary disposition of land in the District, where chiefs who were supposed to be trustees of land rather control and dispose off land, the processes of these large-scale acquisitions could be done behind the small-scale farmers. The implication is that, tenure insecurity could be triggered; making land access and land uses a challenge for small-scale farmers within the study communities. The study therefore sought to fill the knowledge gap on the process of the land acquisition and the resultant effects on farmers' access to land, household economy and household food security.

1.3 Research Question

This study sought to provide empirical answers to the question: ‘What effects did large-scale land acquisition for jatropha plantation have on small-scale farmers within rural communities in the Asante Akim North District?’

1.3.1 Sub Questions

- i. How was the land acquisition for the project done?
- ii. How has large-scale land acquisition for jatropha plantation affect farmers’ access to land?
- iii. How has large-scale land acquisition for jatropha plantation affect household economy of farmers within the project communities?
- iv. How has large-scale land acquisition for jatropha plantation affect household food security of farmers within the project communities?
- v. How can the effects of large-scale land acquisition for jatropha plantation on small-scale farmers be mitigated?

1.4 Research Objectives

The main objective of this study was to examine the effects of large-scale land acquisition for jatropha plantation on small-scale farmers in the Asante Akim North District. The study also sought to understand the processes involved in the land acquisition within the study area and then provide policy recommendations based on the findings of the study.

More specifically, the study sought to;

- i. Understand the processes involved in the large-scale land acquisition for the jatropha plantation.
- ii. Assess the effects of large-scale land acquisition for jatropha plantation on access to land.
- iii. Examine the effects of large-scale land acquisition for jatropha plantation on household economies.
- iv. Examine the effects of large-scale land acquisition for jatropha plantation on household food security.
- v. To make policy recommendations based on the findings of the study.

1.5 Scope of the study

The study investigated the processes that were involved in the land acquisition, the effects of jatropha plantation on farmers in relation to their access to agricultural land, household economies and food security. Given that agricultural land is paramount to food crop production, it was important that, the processes for the acquisition of agricultural land for jatropha plantation particularly, on a large-scale and its implication on smallholder farmers, be put in context. Farmers' access to land, their land rights, household income, and livelihood activities before the land acquisition were assessed to provide baseline information about their access to land and its related dynamics. The demographic characteristics, household income and food supply of the selected farming households were also assessed before and after the land acquisition to draw inferences on the effects of large scale land acquisition on small scale farmers. This study was therefore conducted from September 2013 to May 2014.

Geographically, the study was limited to the Asante Akim North District. The North District where the hub of this study had taken place has Agogo as its capital. Due to the decentralization process in Ghana, the Asante Akyem North District was created out of the former Asante Akim North Municipal Assembly in 2011. Although at the time of this study, documented information on the study communities (Dukusen, Afrisie, Ananekrom/ Nyantonkron and Baama) was not available as the District was newly created; such information was however sourced from the community chiefs, the Assemblymen of the study areas and the District Planning Officer. Dukusen is the hub of the jatropha plantation project with adjoining communities including Afrisie, Ananekrom, Baama, among others. These communities are located within the Dukusen electoral area with farming as the main occupation of households.

The District shares boundaries with Asante Akim South on the south and Ejisu Juaben and Asante Akim Central Municipal Assembly on the West, Sekyere East and Sekyere Afram Plains on the North and Kwahu South on the East. The District is one of the 30 Districts in the Ashanti Region. Figure 1.1 presents a study map (current independent map not yet available) of the District showing the selected communities and other relief features. Agriculture is the predominant occupation among people aged 15 years and older. In the short to medium – term, the development of the district will be dependent on the development of agriculture. The major stable food crops produced in the district include maize, cassava, plantain, cocoyam and yam.

The major cash crop of the district is cocoa. Agriculture is generally undertaken by small holders with about 72% of the farmers cultivating less than 3 acres of land. Large-scale farming is virtually absent as only about 6% of the farmers cultivate more than 5 acres at the household level. The existing road network (trunk, feeder and farm tracks) needs to be maintained and extended. To complement the transport system, assembling points, storage warehouses are needed. Intermediate technology, i.e. tractor, power tiller and irrigation and mono-cropping which presently are on a limited scale will have to be increased to boost output in production levels. This is because farming practices is predominantly traditional with agriculture being rain-fed and lands are cleared by slash and burn with animal husbandry being relatively low in the district as most animals and birds are on a free range. Although the district is well endowed with raw materials such as woodfuel, vegetables (e.g. tomato, cabbage and citrus) for the promotion of agro based products; the level of industrialization is very low to support such. As a result they are sold in their raw form on the market.



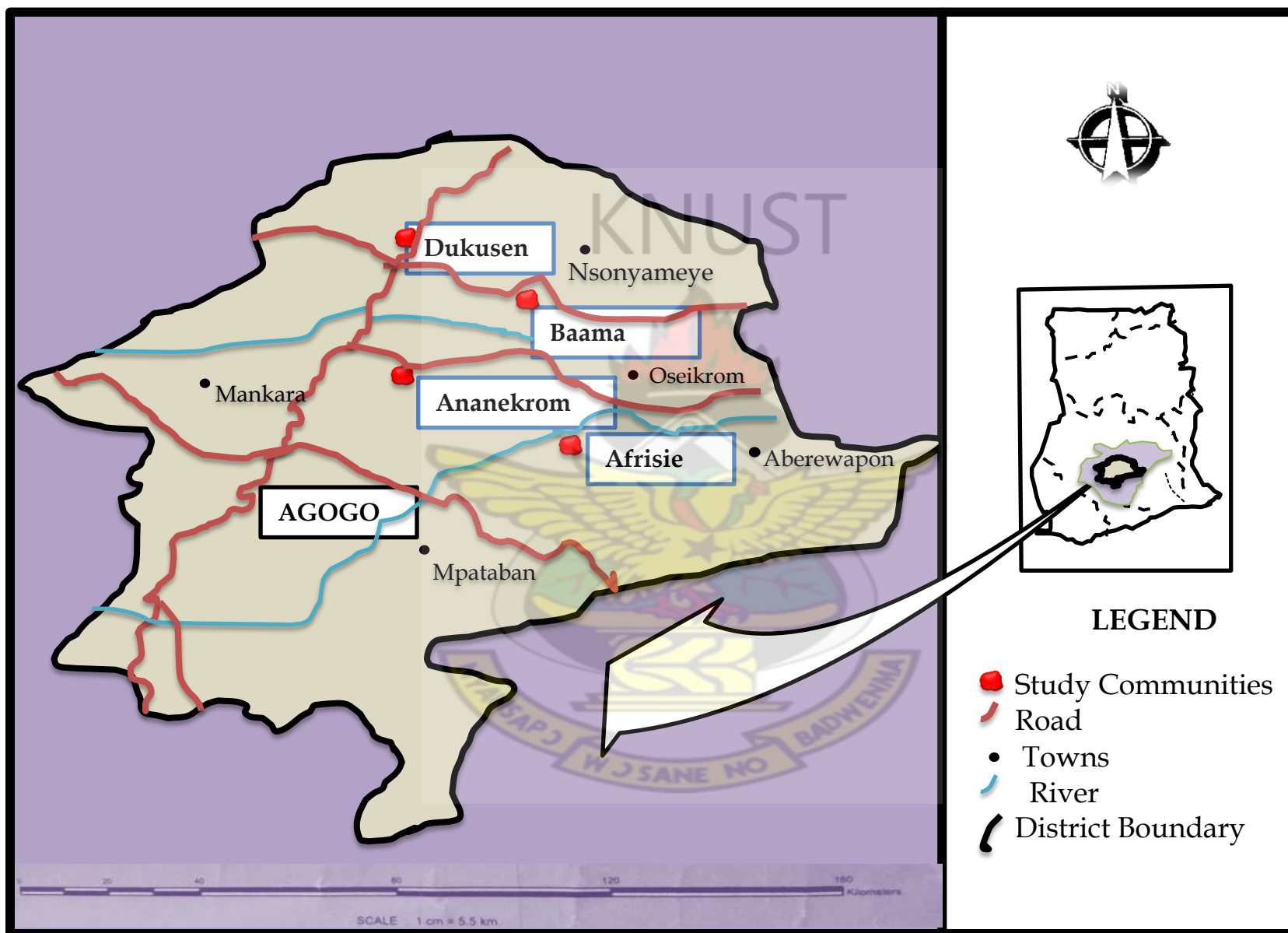


Fig 1.1: Map of study area.

Source: Researcher's Construct, 2014.

1.6 Justification of the Study

Given first of all that national policy on jatropha plantation and its biodiesel production potential is lacking, the findings of this research will serve as an empirical study for policy formulation on biodiesel production through jatropha plantation. Much of the rural population in the country depends on land for their livelihoods, household food supply, household income, which in a justifiable sense, makes the issue of large-scale land acquisition a sensitive one for this study.

On the other hand, large-scale land acquisitions can result in local people losing access to the resources on which they depend for their food security and livelihoods. Local residents may be directly dispossessed of the land they live on and so, case study evidences are important in understanding these phenomena given that large-scale land acquisition for the jatropha plantation does not occur in every community or region in Ghana. Nevertheless, this study will also serve as a piece of literature among the existing empirical and scientific studies. Findings of this research will also re-inform institutional policies (viz. Ministry of Food and Agriculture, Ghana Investment Promotion Centre, District Assemblies, Customary Land Secretariat, among others) on how large scale land acquisition for jatropha plantation is to be managed and regulated. Finally, findings of this research will provide an understanding of the phenomenon on large scale land acquisition and its related implications on small scale farmers.

1.7 Limitations of the Study

Paramount among the limitations that confronted this study was the scope and the amount of time spent in data collection given the widened interest of the topic to various stakeholders and state institutions such as the Lands Commission, Office of the Administrator of Stool Lands, the Municipal Assembly and the Traditional Authority, among others. The bureaucracy of getting access to institutional respondents took a lot of time. At the household levels, the farmers were busy with seasonal activities on their farms and so rescheduling of interviews to subsequent days had to be done because the communities were not on the national grid. As a result, it took longer than anticipated to arrange for interviews. In addition, the Asante Akim North District, where the hub of the study was done, had no geographical maps and medium term plans and so, access to information on the study communities became difficult.

This was because detailed and documented information on the study communities were not available as the District was one of the newly created Districts in 2011. And so, the mother District (Asante Akim Central District) and various stakeholders (the District Planning Officer and Assemblymen of the study communities) within the Asante North District had to be consulted for information on the study communities. Again, while the unit of analysis in this study is farming households, not all household members were interviewed.

Responses provided to answer the research questions were obtained from household heads only and where they were not available, responses were obtained from or spouses of household heads. Again, the study acknowledged that household heads do not keep records of household income and expenditure levels and so, responses provided by the respondents might not be as accurate as possible given also that, data were requested on *before* and *after* the time of the large-scale land acquisition by the Company. This means that, although internal validity (i.e. the extent to which the study measures what it was supposed to measure) had been considered in the data collection instruments, data obtained for the study were based on the reflective recollection of the respondents. That being said, the researcher ensured that responses on household economy (production, consumption, income and expenditure) were limited to two years *before* and *after* land acquisition. Finally, external validity (i.e. the extent to which the results of this study could be generalized) is limited to the study District. This is because the research problem (large-scale land acquisition) was not uniformly distributed in the District.

1.8 Organization of the rest of the Study

Given that Chapter one already presented the background to the study, Chapter two then presents the contextual, theoretical and the empirical bases for the study, outlining contextual factors influencing land-related investments in Ghana and the corresponding implications it had on smallholder farmers. The chapter later presented theoretical framework, empirical reviews and a conceptual framework on the subject matter. Chapter three presented the profile of the study area and the research methodology employed while the fourth Chapter captured the data presentation and analysis of findings for the study. Finally, the fifth Chapter presented the summary of key findings, conclusions based on the study objectives with the necessary recommendations to inform policy decisions.

1.9 Conclusion on the Chapter

The chapter spelt out the background information to the problem of land acquisition for jatropha plantation and how it affects small-scale farmers. Four major working objectives were formulated to guide the process of this research. The chapter then outlined the scope of the study, the justification and the limitations for the study. As a result, a more contextual and empirical reviews on the issues as revealed in the study background and objectives were presented in the chapter two of this report. In second chapter a conceptual framework on the dynamics of land acquisition and its resultant effects on small-scale farmers and how that informed the methodology for data collection is presented.



CHAPTER TWO

CONTEXTUAL AND EMPIRICAL REVIEWS OF LARGE SCALE LAND ACQUISITION FOR JATROPHA PLANTATION AND ITS EFFECTS ON SMALL-SCALE FARMERS

2.1 Introduction

This chapter is divided into two major parts. The first part of the chapter presents the introduction and definition of terms Trends in land acquisition for jatropha plantation, evolution of jatropha plantations in Ghana, agronomic and economic importance of jatropha curcas and the role of small-scale farmers in jatropha plantation among others are also presented. The second part of the chapter presents the theoretical framework, empirical reviews on the implications of large-scale land acquisition for jatropha plantation on farmers and the conceptual base for the study. The chapter ends with a conclusion. In the chapter, the terms *customary lands* and *stool lands* are used interchangeably to mean the same thing.

2.2 Definitions of Concepts and Terms

This section of the chapter presents useful but technical and operational definitions in this study. Following from Chapter one, terms like large-scale, small-scale, land, land tenure, household economy among others as used in this study, are defined.

2.2.1 Land

Land according to Food and Agriculture Organization (FAO) (1993) is an area of the earth's surface, including all elements of the physical and biological environment that influence land use. Thus, land refers not only to soil but also landforms, climate, hydrology, vegetation and fauna, together with land improvements such as terraces and drainage works. The term could also include other natural resources such as water and trees (FAO, 1999). According to the International Land Coalition (ILC) whose vision is to secure equitable access to and control over land thereby reducing poverty and promoting identity, dignity and inclusion of people, land according to them refers to 'natural resources' (ILC, 2006).

For the purpose of this study given that farmers are the main respondents, *land* as used in the study is *agricultural* referring to the percentage of total land that is arable, used for permanent crops (subsistence farming), permanent pastures, including economic and non-economic trees and serving as means of livelihood activities for the rural people.

2.2.2 Access to land

The FAO defines ‘access to land’ as the ability to use land and other natural resources (such as land use rights for grazing, growing subsistence crops and gathering minor forestry products), to control the resources (e.g., control rights for making decisions on how the resources should be used, and for benefiting financially from the sale of crops), and to transfer *rights to the land* to take advantage of other opportunities (e.g., transfer rights for selling the land or using it as collateral for loans, conveying the land through intra-communal reallocations, transmitting the land to heirs through inheritance, and so on) (FAO, 1999).

Similarly, in the *land* glossary of Focus on Land in Africa (FOLA), the term has been defined as ‘a local and/or legally recognized right to enter onto and use a physically defined land area’ (FOLA, 2013). Access rights are defined in terms of location, time, use, and the individual’s relationship to the community and may be obtained through family, group membership, or legally sanctioned processes such as allocation, purchase and inheritance (FOLA, 2013).

Access to land for the rural poor is often based on custom. Customary rights to land in indigenous societies, for example, are usually created following their traditions and through the ways in which community leaders assign land use rights to the community members. FOLA, (2013) continues to say that these rights of access may have their origin in the use of the land over a long period. They are often rights developed by ancestral occupation and by the use of land by ancestral societies. In such cases, it is through the act of original clearance of the land and settlement by ancestors that rights are claimed.

2.2.3 Land acquisition and land grabbing

Although the term ‘Land acquisition’ seems to lack very clear standard definitions in literature, what can be said in general terms is that, it is simply another term for going out and getting some land for use. Typically, acquisition simply means ‘to buy or get land’. You can also acquire land through inheritance, lease contract and gift. Therefore, the terms ‘land acquisition and land grabbing are not exactly the same. This is because the latter is a form of land acquisition. What then is land grabbing? Land grabbing as used today primarily refers to large-scale land acquisitions following the 2007-2008 world food price crisis. It can also refer to the contentious issue of large-scale land acquisitions through the buying or leasing of large pieces of land in developing countries, by domestic and transnational companies, governments, and individuals.

Sheppard and Anuradha (2009) indicate that ‘Land Grab’ refers to the purchase or lease of vast tracts of land by wealthier, food-insecure nations and private investors from mostly poor, developing countries in order to produce crops for export. The World Bank has referred to the term as ‘global interest in farm lands’ (World Bank (2010) while others have called it transnational commercial land deals (Sindayigaya, 2012; Cotula, 2009). According to Kugelman, such transactions of land grabbing are highly opaque and few details have been made public (Kugelman and Lavenstein, 2009). It has been argued however that it is in fact, the scale, rate, negative impacts and the lack of transparency surrounding large-scale land acquisitions that have been criticized and made advocate groups to describe the term as “Land Grab”.

2.2.4 Land tenure

Given that several standard definitions exist on the term, it can be put generally that land tenure is the ownership or leasing system of land, or of the rights to use land. Technically however, land tenure is the relationship, whether legally or customarily defined, among people, as individuals or groups, with respect to land (FAO, 2013b). Land tenure is an institution, i.e., rules invented by societies to regulate behaviour. Rules of tenure define how property rights to land are to be allocated within societies. They define how access is granted to rights to use, control, and transfer land, as well as associated responsibilities and restraints. In simple terms, land tenure

systems determine who can use what resources for how long, and under what conditions (FAO, 2013b).

Similarly, land tenure is the set of rules that determines how land is used, possessed, leveraged, sold, or in other ways disposed of within societies. These rules may be established by the state or by custom, and rights may accrue to individuals, families, communities, or organizations (Garvelink, 2012). The term also refers to the relationship between a tenant and landowner in the acquisition, occupancy and use of a piece of land. In more specific terms, land tenure systems are the customary, legal or otherwise institutionalized relations between government, society, groups and individuals regulating the ownership and control of land and rights and duties accompanying such relations (Gays, 2005; Oladele et al., 2011; FAO, 2012). The term further put, refers to the arrangement or right that allows a person or a community to use specific pieces of land and associated resources (e.g. water, trees, etc.) in a certain period of time and for particular purposes (Riddell, 1997; Oladele et al., 2011).

2.2.5 Operational definitions

Given the varied existence of contextual application of land acquisition being large scale, there is the need to borrow or operationalize the definition. According to the Environmental Protection Authority of Ghana (the EPA), in the context of guidelines for Environmental Impact Analysis (EIA)(a procedure to predict the effects of changes in land use on the environment), any agri-investment projects of 40 hectares and above is commercial and needs to be environmentally assessed before implementation (EPA Guideline, 1999). Reasoning from the above definition, it can be implied that any land acquisition below the 40 hectares of land is small-scale whilst above 40 ha is large-scale.

This study therefore adopts the classification of large scale as found in the global study conducted by Global Exchange for Social Investment (GEXSI)(2008) in the World Wide Fund for Nature (WWF) and Cotula et al., (2009). The reports looked at large-scale land acquisitions (whether purchases, leases or other) as land areas of over 1,000 ha. Acquisition below 1000 ha had been reported to be commercial whiles up to 5ha has been classified as small scale.

2.2.6 Household Economy and Household Food Security

Given that mixed definitions exist on what *household* means in literature, the term as used in this study and as defined by Ghana Statistical Service (GSS), is “a person or group of persons living together in the same house or compound, sharing the same housekeeping arrangements and being catered for as one unit” (GSS, 2010). A household also refers to a group of people, each with different abilities and needs, who live together most of the time and contribute to a common economy, and share the food and other income (Boudreau *et al.*, 2008).

Given also that the terminology *household economy* is less mentioned in literature, its concepts in modern economics generally involves the sum of ways in which a household acquires its income (farm and/or non-farm), its savings and asset holdings, and by which it meets its food and non-food needs (Boudreau *et al.*, 2008). The meaning of the term has been mixed even in limited literature. While the term is seen to mean household production and consumption by some authors, others limit it to food economy (Seaman *et al.*, 2008). The term is also classified as *closed household economy* and *open household economy*. The former implies that goods are produced and consumed by the same household. In other words, a closed household economy is an economy where households are closed to trading whilst the latter refers to households not only consuming what they produce but also, purchasing what they do not produce.

The Household Economy Approach (HEA) gives a detailed insight into the ways people in different parts of a defined geographical location manage their income and expenditure and how they cope with shocks, including drought, market failure and price changes. In this study however, the cause and effect relationship between large-scale land acquisition and household food security are conceptually important.

The flow of economic resources into a household during a given time period is labelled “household income”. A household’s income (from both food and non-food sources) constitutes the basis for its outflow of economic resources, its household *expenditure*, and is the source for its accumulation of household wealth over time. The “income” concept is closely related to the concept of “production”. Usually, household income is generated from remuneration of the household members’ labour input in the production of goods and services.

According to (Boudreau et al., 2008), the household economy is a complex pattern of different types of incomes earned by various household members. Consequently, there is a need for mapping of individual incomes aggregated to the household level, as well as for incomes from various household enterprises. Household expenses and savings are usually calculated at the household level. Given that varied understanding of household economy exists, this study therefore limits the term to production, consumption, income and expenditure at the household level.

On household food security, standard definition to explain the terminology remains contextually mixed amongst different authors. This is because the concepts of food security kept evolving to suit existing situations. Clay (2002) and Heidhues et al., (2004) noted that the concepts of food security have evolved in the last thirty years to reflect changes in official policy thinking. According to the policy briefing paper of FAO (2006), the term first originated in the mid-1970s, when the World Food Conference organized in 1974 defined food security in terms of food supply - assuring the availability and price stability of basic foodstuffs at the international and national level. In 1983, FAO analysis focused on food access, leading to a definition based on the balance between the demand and supply side of the food security equation: *“Ensuring that all people at all times have both physical and economic access to the basic food that they need”* (FAO, 1983). This definition was revised at the World Food Summit to include the individual and household level, in addition to the regional and national level of aggregation, in food security analysis.

Similarly, the World Bank's position on the subject appeared relatively different. According to the World Bank (1990) food security means access by all people at all times to sufficient food for an active and productive life. Indeed, the widely accepted World Food Summit's definition (1996) which was also endorsed by FAO reinforces the multidimensional nature of food security and includes food access, availability, food use and stability.

The evolution still continued as the analysis of food insecurity in line with social and political construct has emerged (Devereux, 2000 cited in FAO, 2006) given also that more recently, the ethical and human rights dimension of food security has come into focus (FAO, 2006). While the evolving definitions on food security have deeply been acknowledged by the World Food

Programme (WFP), they however strongly argue that, a successful national food security strategy cannot be achieved without assuring food security at the household level (WFP, 1989). The World Bank (1990) also argues that food security cannot be attained without:

- i) Assuring the availability of adequate food and supplies, through domestic production or imports and
- ii) Assuring the ability of households to acquire food, either by producing it themselves or by having the income to purchase it.

The World Bank (1990: 14) continues to argue that food insecurity can be either chronic (meaning a continuously inadequate diet) or transitory (implying a temporary decline in household's access to enough food). According to Von Braun (1991), food security at the household and individual levels is defined, in its most basic form, as access by all people at all times to the food needed for a healthy life. The risks associated with household food security are the inadequacies of dietary intake, income and food production by households under normal situations. Therefore, at the household level, food security is the ability of the household to secure enough food to ensure adequate dietary intake for all its members. Von Braun continues to argue that in as much as availability and access to food are important, household food security is not necessarily related to national food availability. Von Braun therefore endorses the World Bank's chronic and transitory distinctions of household food security.

The concept of adequate or sufficient food is an important part of the current definition of household food security. Clearly, what is adequate for one member is not adequate for another. In a farm household, food security has been defined based on daily calorie intake by the World Health Organization. As a result, Reardon and Matlon (1989) argue that food insecurity in a farm household refers to the consumption of less than 80 percent of what the WHO considers to be an average required daily calorie intake of 2850 kilocalories (kcal) for a moderately active adult equivalent.

Reardon and Matlon continue to argue that households that have chronic food insecurity are those whose consumptions are inadequate during two or more cropping seasons. However, a person's nutrient requirements and calorie intake within the household depend on many factors including age, sex, level of activity and physiological status. In that respect, FAO notes that

adequacy of diets should not be considered only in quantitative terms (i.e. caloric sufficiency), but also in qualitative terms (i.e. variety, safety and cultural acceptability) (FAO, 1997; FAO, 2012). Therefore, household food security, as noted earlier, depends not only on the availability of a sufficient and sustainable supply of food, but also on the strategies employed by households for its acquisition. The ability of different households to establish access to the food supply can be considered both in terms of production and in terms of the people's ability to exchange their assets (their access to, use of and/or ownership of land; their labour and the products of their labour) for food, for example through bartering, purchase or food-for-work.

Indeed, most households purchase a portion of their dietary requirements depending on need and affordability (FAO, 2012). This type of food acquisition represents economic access. Rural farming households regularly purchase a proportion of food commodities which they do not produce themselves. This suggests therefore that households that do not have sufficient food stocks during seasonal droughts may have to borrow money or sell assets such as small livestock or engage in wage labour to buy food to replenish family supplies until the next harvest season. From the policy perspective, though the objective of attaining food security is national, the poor still appear to be the most vulnerable to food insecurity (FASDEP II, 2007: 24). Given the various contextually related definitions on the subject of household food security, this study therefore limits the context of household food security to availability, accessibility, affordability and sufficiency of food in recognition of the factors of utilisation and stability of food within the household.

2.3 Trends in Land Acquisition for Jatropha Plantation for Biodiesel Production

While the jatropha plantation industry waits for other feedstock contenders to commercialize and address rising demands for biodiesel production, a dramatic increase in the planting of jatropha has been seen in Asia, Africa and Latin America (GEXSI, 2008). Given that biofuels have arisen as a potential alternative to fossil fuels, the United States and European Union have set alternative energy consumption targets that have stimulated increased investment in biofuels cultivation worldwide (Hughes et al., 2011:2). As a result, global studies conducted by the WWF in 2008 has shown that the largest acreage of jatropha plantations today exist in Brazil where identified projects totalling an acreage of 15,800 ha were operating. This is about three

quarter($\frac{3}{4}$) of the total acreage of all projects identified in Latin America. Brazil is followed by Mexico, Colombia and Guatemala according to the same study. Similar report also states that two-thirds of the most recent reported land-deals happened in Sub-Saharan Africa (Deininger et al., 2011).

Early efforts to introduce jatropha for use as a fuel crop in Africa, including Ghana, were typically promoted by non-government organizations (NGOs) through community-level cultivation, processing, and consumption. More recently, jatropha is increasingly being adopted as a plantation crop, despite limited experience in the crop's propagation and management on a commercial level. Along with countries such as Tanzania, Mozambique, Madagascar, and Ethiopia, Ghana is one of the primary investment destinations for commercial jatropha companies (WWF, 2008) although Mali and the Cape Verde Islands have a long-tradition in jatropha cultivation providing village energy supply. According to a recent World Bank Report (Sindayigaya, 2012), countries that attract foreign investors are the countries with abundant land and/or weak land governance.

The period from 2005 until now has experienced unprecedented growth in global biodiesel demand, production, and production capacity (Biofuels International, 2007; ActionAid, 2009). During this time, the increasing demand for traditional jatropha feedstocks (raw materials) have contributed to a host of concerns on the implication these trends could offer for access to land and food crop production (Thurmond, 2007). Within the same period, large-scale acquisitions of farmland in Africa, Latin America, Central Asia and Southeast Asia have made headlines in several media reports across the world. Lands which are so central to identity, livelihoods and food security are now being sought by international investors to the tune of hundreds of thousands of hectares (Cotula et al., 2009). Subsequently in 2008, jatropha was planted on an estimated 900,000 hectares globally with 760,000 hectares (85 percent of the total) located in Asia, followed by Africa with 120,000 hectares and Latin America with 20,000 hectares (ActionAid, 2009).

In response to demands to satisfy both international and domestic energy needs, Ghana government published the Strategic National Energy Plan in 2006, which mandates 10% of biodiesel by 2015 (Hughes et al., 2011) and for electricity and transportation by 2020. The development of large-scale mechanized agriculture became a policy objective until Ghana's independence in 1957 (Akoto 1987; Cotula et al., 2009). According to Schoneveld et al., (2011), a total of 17 commercial biofuel developments have been identified in Ghana where 15 of these companies are foreign-owned and/or financed by some individual Ghanaians. Thirteen of the foreign companies focus primarily on the cultivation of *Jatropha*, one on cassava and another on oil palm. By August 2009, it was estimated that these companies collectively had access to 1,075,000 hectares of land, 730,000 hectares of which is located in the forest-savanna transition zone of central Ghana (Brong Ahafo, Northern and Ashanti regions) (Schoneveld et al., 2011; Policy Brief on Land Grabbing, 2012: 5).

Conversely, only a fraction of these lands have, however, actually come under cultivation, with no more than 10,000 hectares likely to be under cultivation by these investors as at 2008 based on remote sensing data according to Schoneveld et al (2011). In 2008 however, a Global Market Study on *jatropha* conducted by the World Wide Fund for Nature (WWF) cited Ghana to have 'a strong commercial activities of *jatropha* plantation and biodiesel production' within the West African Sub- Region. Again, the Global Market survey on biodiesel predicted long term, sustained investments and *jatropha* production growth in Africa with a growth trend of 1-2 million hectares annually in the next years all over the world (WWF, 2008).

In September 2011, Oxfam released the most recent report on land grabbing citing that, approximately 227 million hectares of land, mostly in Africa, have been leased and/or sold to international investors since 2001. Prior to the Oxfam report, the World Bank, in its report released in April 2011, estimated that approximately 56 million hectares of farmland were leased or sold in the year 2009 alone (Sindayigaya, 2011) with more than 70 percent of those deals in Africa (Deininger et al., 2011). Despite the fact that the two reports show different statistics, they both draw attention to the scale of these trends in land deals and reveal that most of land deals are happening in Africa. They also show that the trend of land acquisition is increasing and is not likely to slow down.

Another example validating that the upward trend of land grabbing is not likely to change, is the recent report released by Friends of the Earth (FOE) stating that 60% of the land used to meet European Union demand for agricultural and forestry products comes from outside the continent (FOE, 2011). Although much media attention has focused on acquisitions by foreign governments, private sector deals account for about 90% of allocated land areas in Ethiopia, Ghana, Madagascar, and Mali (Cotula et al. 2009; Cotula, 2011). The same report assumes that in order to meet the European Union's energy policies, which promote the use of bio-fuel energy, the demand for land outside the European continent will continue to grow (FOE, (2011). Based on these statistics, it is estimated that by 2015, jatropha would be planted on a projected 12.8 million hectares, according to an FAO report (ActionAid, 2009).

According to a global market survey in 2007 dubbed 'Biodiesel 2020' where 170 experts in 55 countries were interviewed to create a global inventory of jatropha projects, three major trends in the jatropha feedstock markets were observed. The first is the expansion of commercial scale jatropha production from India into Africa, Southeast Asia and Latin America. This expansion includes pilot programmes and larger-scale ventures now underway in China, central Asia, south and central America, and southern parts of the United States. The second trend observed the participation by governments and energy majors in the cultivation and production of jatropha. As a result, the governments of India, Indonesia, Mozambique, Malawi and Brazil have announced major initiatives around large scale jatropha production.

The third trend involves jatropha-based projects being developed as dual purpose entities; one for government programmes, and another for addressing rising global biofuels demands. In the case of government projects, jatropha offers nations the prospect of decreasing petroleum import dependency, while establishing a means for sustainable economic development in rural areas.

Unfortunately, this is not the case in Ghana as petroleum prices keep surging although, due largely to unstable international market. Estimated figures from WWF (2008) indicate that, Asia will continue to be the largest jatropha plantation destination in the world followed by Africa by 2015 (see Table 2.1).

Table 2.1: Trends in Global Jatropha Plantations

Jatropha plantations	Latin America	Africa	Asia	Total
Expert estimates scale of Jatropha plantations 2008 (ha)	27,000	73,000	911,000	1,011,000
Number of projects identified in the study	41	97	104	242
Scale of projects identified (ha)	21,000	119,000	796,000	936,000
Expert estimates scale of Jatropha plantations 2010 (ha)	330,000	630,000	3,760,000	4,720,000
Expert estimates scale of Jatropha plantations 2015 (ha)	1,600,000	2,000,000	9,200,000	12,800,000

Source: Researcher's Construct, 2014 with data from World Wide Fund for Nature (2008).

2.4 The labour Roles of small-scale farmers in Jatropha Plantation

Global studies conducted on jatropha plantation in 55 countries have shown that smallholder farmers play a vital role in most jatropha projects. According to the study, two thirds of all projects analyzed worked with local outgrowers, often in combination with a managed plantation (GEXSI, 2008:6). In case studies conducted in Ghana, it has been shown that several hundreds of small-scale farmers who are already into food crop production for household consumption were also involved in the operation of these plantations through farm labour (FAO, 2010; FAO, 2012; Cotula et al 2009) and outgrower models (GEXSI, 2008:6; FAO, 2013c). Similarly, in Latin America and Asia, about 50% of all project developers make use of farmers on their plantations.

The above trends could be due to the fact that Africa's agricultural sector is essentially made up of subsistence or small-scale farmers. It is also found that the first victims of land acquisitions for jatropha plantations and any such plantations are primarily the subsistence or small-scale farmers, who are forced out of their farm to make room for foreign investors (Sindayigaya, 2011:13).

This section of the chapter argues that the use of farm labour is divided between jatropha plantation and food crop production by small-scale farmers. The implication is that, productive time spent in food production by households could have consequences on quantity of food production and supply, food demand, food prices and hunger. The overall effect is that household food security could be threatened, although, the effects within the study area may not significantly reflect in the Millennium Development Goal 1.

In fact, farmers' roles on the plantations are found in planting method through transplanting seedlings or cutting and direct seeding, pruning the trees and intercropping it with other food crops. On average, the tree is planted such that there can be 1,000 trees per ha, and the expected yield is 5 tonnes dry seeds per ha per year (Ladefoged et al., 2009: 38) with spacing of 2m by 2m or 3m by 2m for commercial productions as could be found in several literature and websites on the botany of the plant (e.g. Ghosh et al. 2007; www.jatrophaworld.org; The Global Authority on Non-food Biodiesel Crops, the Jatropha Handbook, 2010).

2.5 The land tenure system in Ghana

FAO (2007) on *Land Tenure and Agricultural Development in Ghana*, a series of land tenure studies, found that land is the most important resource in the world. They noted that access to land, security of tenure and land management have significant implications on development. They further noted that land administration is relevant for infrastructure provision towards an efficient economy thereby involving how to earn a living.

It is in the light of this that, review on the land tenure system in the Ghanaian setting is paramount to this chapter. Land tenure is an aspect of land administration governed by the National Land Policy of Ghana. In fact, land tenure system in Ghana has pre-colonial, colonial and post-colonial dimensions. Within the pre-colonial era, no centralized state of governance existed and therefore, administration of lands rested in autonomous kingdoms and empires (Hammond, 2011 cited in Adarkwa, 2011). Allocation and distribution was done by word of mouth.

Within the colonial era however, acquisition of territories by Western European countries led to the introduction of foreign laws such as British common law, a declaration of eminent domain and land administration faced interferences from colonialism. Ghana now has a dual tenure system, in which customary and statutory land management run parallel to one another. In the former, land is owned by traditional societies that take the form of tribes, clans or families (Arko-Adjei, 2011:56).

Apparently, a large proportion of land is under the control of indigenous institutions in the nature of customary land tenure (Kasanga and Kotey, 2001) where traditional land management structures are embedded in the institutions of chieftaincy and the official land administration structures that operate within the traditional land management systems (Adarkwa, 2011:3). Narrowing down to the study region however, majority of lands are customary and are held in trust for the people of Ashanti by the 'Asantehene' (The chief of the Ashanti Kingdom). These customary lands therefore belong to the Stool and in which case we refer to them as Stool Lands. Initially, all lands in Kumasi belonged to the Stool but today, absolute ownership of the lands is held by the State or the Stool which had undergone several legislative interventions and reforms by successive governments (Hammond, 2011 cited in Adarkwa, 2011).

Under the customary usage, the Ashanti Stool lands are administered by various paramount stools in a hierarchy of traditional rulership on behalf of the Golden Stool (Edusa, 2011: 12). In principle, the *Asantehene*, who is the occupant of the Golden Stool, protects and manages all lands in Ashanti for the general good of the people of Ashanti and does so indirectly through paramount, divisional and sub chiefs representing him on various traditional jurisdictions within the region. In fact, tradition holds it that, the chiefs, based on the jurisdictions of their rulership, are indeed the first to be consulted on matters relating to land and its access before subsequent processes are followed within the traditional and institutional settings. This has therefore given the nexus for the subsequent section on the types of the land within the land tenure system under public and customary dispositions.

2.6 Types of Land and the Land Tenure System in Ghana

Hammond (2011:55-56) identified three categories of land tenure within the Ashanti Region. These include, Part One lands (i.e. all lands within one mile radius of the Kumasi Fort), Part Two lands (i.e. all other lands vested in the Golden Stool on behalf of the people and are managed by the hierarchy of chiefs). The third category are purely public lands and parcels of land found between the Parts one and two lands and are managed by the Lands Commission but owned by the State. These lands have been acquired by successive governments from the Stool for the State.

According to the 1992 Constitution of Ghana and the Millennium Development Authority's (MiDA) Report (2006), the following types of land are identified namely;

Public/State Lands: *these* are lands acquired compulsorily by the State to secure and promote public interest. These interests can be for public safety, defence, public order, public morality, health, town and country planning or for the economic benefit of the public. This is followed by **Stool/Skin Lands** which *are* controlled by traditional authorities on behalf of communities and are lands held by stools/skins acting as custodians for and on behalf of all the subjects of particular stool/skin. **Family Lands** are those owned by individual families and entrusted to the custody of the head of a particular family, acting for, and on behalf of all members of the particular family.

Vested Lands: these are lands which are vested in government and held on behalf of and in trust for the particular stool to benefit its subjects. This type of land has split ownership because the State holds the legal interest or right (to hold, manage and dispose) while the Stool/Skin retains the beneficial interests and therefore has the right to retain and enjoy the benefits (revenue and royalties) that accrue from the land. **Private/Individual Lands:** these are lands which have been acquired from a person's own resources through outright purchase or by gift, and therefore the individual owns the freehold interest which is controlled by individuals or families or clans (Clans as used here refer to a group of families related through a common ancestor).

2.7 Land Acquisition processes in the Land Market of Ghana

Foreigners may be able to acquire leasehold interests in public land directly from the government for very large tracts of land, but public lands represent only 20 percent of land in the country (MiDA, 2006). According to Tsikata *et al.*, (2011), under customary tenure systems, agricultural land is either under the control of land-owning families with most decisions made by the family heads and their elders (i.e. in Accra and Volta Regions) or is stool-land (as seen in Ashanti, Brong Ahafo, Eastern, Central or Western Regions) or under the control of skins (in the three Northern Regions) with the earth priest (Tendana) who hitherto controlled land in Northern Ghana.

The land tenure arrangements in Ghana are varied across the country, which is partly due to commoditization of land and the interplay of state and non-state actors in the increasingly profitable land market. Results from a nationally representative survey of 2,690 households conducted by the Institute of Statistical Social and Economic Research (ISSER) of the University of Ghana confirmed that there are diverse land tenure systems in Ghana (Gyasi, 2005) with approximately 78% of land is under customary ownership (Deininger 2003). Coming down to the Ashanti region, interests and rights in lands is premised on the country's pluralistic legal system which involves a combination of state and customary laws. Within this legal framework, the highest interest in the tenure regime is the allodial (permanent) interest owned by the Stools/Skins. This interest then gives birth to other lesser interests and rights which are grantable to subjects and strangers as usufructuary interest, tenancies and licenses (Hammond, 2011).

In short, other forms of tenure have been introduced from the English System, the most notable of which is the *lease* that has now replaced the *customary freehold* grant as noted by da Rocha and Lodoh (1995) cited by Agyemang (2005). Leases are now regulated by State law as served in the Conveyancing Degree, 1973 (NRCD 76) although, later amended as noted by Hammond (2011). As a result, Ghanaian citizens are granted up to 99 years leases for residential plots and 50 years for industrial lands while non-Ghanaian citizens are restricted by constitutional provision to a maximum of 50 years leases in all cases across the country (Hammond, 2011). Based on the above provisions, access to lands in the Ashanti region is by way of grants made by the appropriate custodians (Chiefs and elders) with the Golden Stool as a confirming party and

thereafter, subject to statutory requirement of concurrence of the Lands Commission and other integral institutional structures until the land is dully registered (see Fig 2.1) .

It must be mentioned however that, in the exception of customary lands, other types of lands as identified in section 2.7 of this chapter are very limited in supply and relatively affordable within the land market. Conventionally too, the stool lands therefore have unregulated prices fixed by the respective custodians. The implication is that, agricultural lands could be under severe threat of displacement by residential and commercial users of land which could in turn have resultant effects on systems of farming, food production and consumption at the household levels.



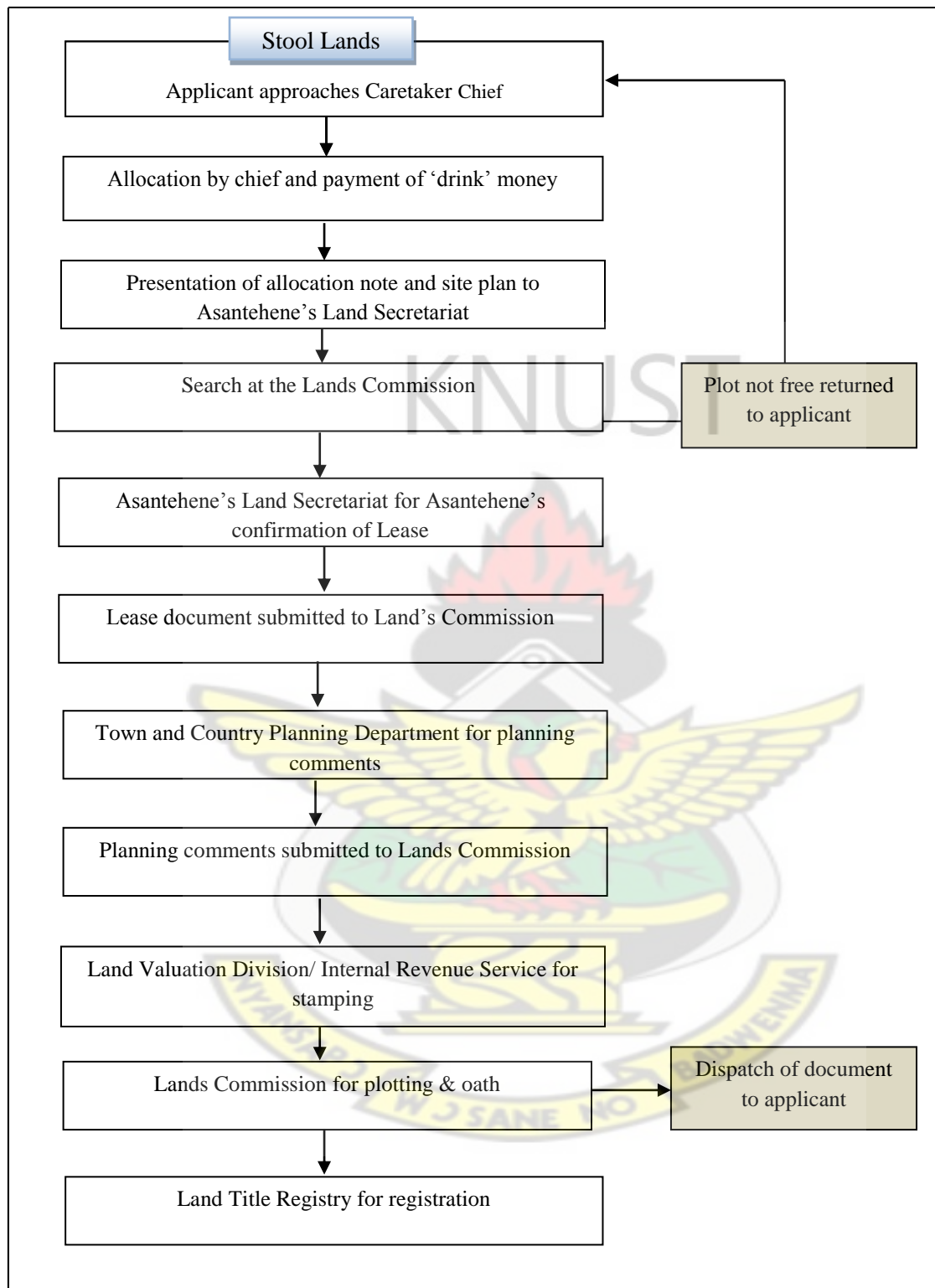


Fig 2.1: Land Acquisition processes in Ghana.

Source: Adapted from Hammond, 2011 in Adarkwa, 2011.

Indeed, the Lands Commission's (LC) current guidelines on large-scale land acquisition also fully acknowledged these developments. In the preamble of the said Guidelines, it is strongly stated that:

“In recent times there has been a spate of acquisitions of lands in Ghana involving large tracts of lands primarily for various agricultural ventures. The magnitude and frequency of these demands for land have been unprecedented. Apart from a few acquisitions that have been witnessed in the past for palm and rubber cultivation, most traditional authorities have never witnessed acquisitions of this magnitude. Recent acquisitions have been by private business entities often foreign but with local counterparts, private indigenes of these or other communities and in rare cases state institutions. This clearly is a new phenomenon that needs to be tackled with tact since it has several ramifications when analysed in the context of global changes in foreign investments. More importantly also is the clamour for access to land and water resources by these investors”.

(Lands Commission, Guidelines for Large-Scale Land Acquisition, 2012:P. 1)

Against the above position of the LC, the Guidelines further outlined due procedures to be followed in the quest for disposing or acquiring such large-scale lands. This has been put in two main stages which become binding on players in large scale acquisitions.

2.7.1 Stage One: Pre-Registration Stage

○ Public Forum (Local Hearing):

A local hearing/forum should be done before any lease is prepared although a preliminary agreement would have been reached between the GRANTOR and the GRANTEE spelling out the essential aspects of the grant such as the location of the land, size of the land, the term of the grant and the proposed use. This is meant to ensure effective consultation at the grassroots level. A local hearing (public forum) within the area where the land is to be acquired must be organised because it provides an opportunity for all persons likely to be affected by the proposed acquisition of the land to have first-hand information on how much land will be involved, where

the land is, its limits, what use it is proposed to be put and what possible impacts the proposal will have on the local community. It will also be an opportunity to identify the concerns of the local community with regard to the acquisition and to find ways of addressing such concerns.

○ ***Financing and Facilitation of the Forum:***

The financing of the forum shall be by the acquiring body.

The process shall be facilitated by a local NGO or CSO operating in the area in liaison with the Regional Lands Commission. The Regional Lands Officer in close liaison with the Representative of the particular District Assembly on the Regional Lands Commission will organise this forum.

○ ***Presiding over the Forum:***

The District Chief Executive of the area should preside at the meeting. The Regional Lands Commission should ensure that the proceedings are well captured using every available form of medium. The minutes of the forum must be certified by the representatives of all groups present and participating at the forum as well by all the technocrats. Each technocrat at the session should provide his/her informed preliminary opinion on the proposed acquisition and its conformity or otherwise with their plan in the District.

○ ***Participants:***

Participants must include but are not limited to the following:

- i. The Traditional Ruler/grantor or his representatives and his elders involved in land matters;
- ii. Persons occupying and using any land within and contiguous to the land that is the subject matter of the acquisition;

- iii. The Officer in the District responsible for the following Government establishments:

The District Planning Officer of the Assembly, Ministry of Food and Agriculture, Environment Protection Agency, Lands Commission, Department of Town and Country Planning.

Each of these agencies will be required to provide a briefing on the proposal from the perspective of their establishment. This will enlighten the participants on the issues at stake and to enable the local community appreciate the import of the proposal in its wider context.

- iv. The investor(s) or their accredited representative(s) with informed knowledge of the proposed project;

- **Issues for consideration:**

Key facts to be made known before and during the forum will include the following

- a. The extent of the land must be clearly brought to the knowledge of all participants;
- b. The plan for the proposed use must be displayed and the intended use must be adequately explained including any phased development and known impacts of the activity disclosed;
- c. Proceedings at the session must be recorded (in writing and possibly on video) and attested by representatives of the key participating groups;

- **Dissemination of the outcome of the Forum:**

The outcome of the forum will be fed to the District Chief Executive of the area, the Regional Lands Commission, the Traditional Ruler, the Traditional Council and all those who affirmed the proceedings.

2.7.2 Stage Two: Certification (Concurrence) and Registration

Upon receipt of the formal application for concurrence (stool/skin lands) or for registration (family lands) which must include a copy of the feasibility report on the proposal with justification for that extent of land, the Regional Lands Officer.

- a. Must satisfy himself/ herself that Stage One has been complied with and that there is majority agreement on the acceptability of the proposal and the grant of the land.
- b. Must cause an inspection of the land to apprise the Regional Lands Commission of the key elements about the land and to ascertain the veracity of the report of the local hearing.
- c. If the land is 1000 acres (400 ha) or less, the Regional Lands Officer will make a recommendation to the Regional Lands Commission for its deliberation. The Grantor will then be appropriately advised in writing by the Regional Lands Commission on its opinion.

- **Environmental Impact Assessment:**

The grantee will also be advised to cause an environmental impact assessment to be undertaken and a permit obtained from EPA after the grant has received the certification by the Lands Commission.

○ **Recommendation to the Lands Commission:**

Where the land exceeds 1000 acres (approximately 400 hectares) a recommendation is made to the National Lands Commission for its consideration. This referral must be accompanied by the report of the local forum/hearing and a brief report from the Regional Lands Officer with his recommendation, including the factsheet.

2.8 The Legislative and Institutional Setups of Land Tenure System in Ghana

Customary tenure institutions as observed by Acheampong (2012) play a crucial role in land allocation, land-use planning and land management under their respective jurisdictions. These institutions were born through appropriate legislations from different governments in Ghana.

Within the legislative provisions, Ghana has outlined in its fundamental constitutional domain matters regarding land use and management. As a result, sections of Articles 266 and 277 of the Constitution of the Republic of Ghana (1992) on the matters of land state therefore that;

“No interest in or right over, any land in Ghana shall be created which vests in a person who is not a citizen of Ghana a freehold interest in any land in Ghana.

(1) All stool lands in Ghana shall vest in the appropriate stool on behalf of, and in trust for the subjects of the stool in accordance with customary law and usage.(2) There shall be established the Office of the Administrator of Stool Lands which shall be responsible for;

(a) the establishment of a stool land account for each stool into which shall be paid all rents, dues, royalties, revenues or other payments whether in the nature of income or capital from the stool lands; (b) the collection of all such rents, dues, royalties, revenues or other payments whether in the nature of income or capital, and to account for them to the beneficiaries specified in clause (6) of this article; and (c) the disbursement of such revenues as may be determined in accordance with clause (6) of this article.

(3) There shall be no disposition or development of any stool land unless the Regional Lands Commission of the region in which the land is situated has certified that the disposition or development is consistent with the development plan drawn up or approved by the planning authority for the area concerned”.

On the grounds of revenue from land deals, the Constitution in the same article, puts it that;

(6) Ten percent of the revenue accruing from stool lands shall be paid to the office of the Administrator of Stool Lands to cover administrative expenses; and the remaining revenue shall be disbursed in the following proportions;

(a) twenty-five percent to the stool through the traditional authority for the maintenance of the stool in keeping with its status; (b) twenty percent to the traditional authority; and (c) fifty-five percent to the District Assembly, within the area of authority of which the stool lands are situated.

(7) The Administrator of Stool Lands and the Regional Lands Commission shall consult with the stools and other traditional authorities in all matters relating to the administration and development of stool land and shall make available to them all relevant information and data. (8) The Lands Commission and the Administrator of Stool lands shall co-ordinate with all relevant public agencies and traditional authorities and stools in preparing a policy framework of the rational and productive development and management of stool lands.

Against these legislative provisions, it is therefore inconclusive to present an objective analysis of the land acquisition process for the jatropha plantation within the Asante Akim North District. Nevertheless, the institutional setup within which land administration and management resonates is thus presented in Fig 2.2.

The Ministry of Lands and Natural Resources (MLNR) has overall responsibility for land issues as well as mines and forestry (see Fig 2.2). Customary authorities (Stools and Skins), however, are the allodial title holders for more than 80 percent of the land in the country and are responsible for the allocation, administration and management of these lands as also noted in Land Administration Project 2 (2011: 1). The traditional authorities hold the land in trust for the community and its future generations and are expected to dispose of lands in the interest of and with the consent of the community. State and vested lands are under the management of the Lands Commission which was established by the Constitution and recently restructured by Parliamentary Act 2008 (Act 767).

The Act brought four land sector agencies namely, the Survey Department, Land Valuation Board, Land Title Registration and the Public and Vested Lands under the umbrella of the National Lands Commission. The Commission is also responsible for providing consent to the disposition of stool, skin and private lands provided the development is consistent with the approved planning schemes of the area and also advising the government, local authorities and traditional authorities on land policy as constitutionally stipulated. Other land sector agencies are the Office of the Administrator of Stool Lands (OASL), the Town and Country Planning Department under the Ministry of Local Government and Rural Development (MLGRD).

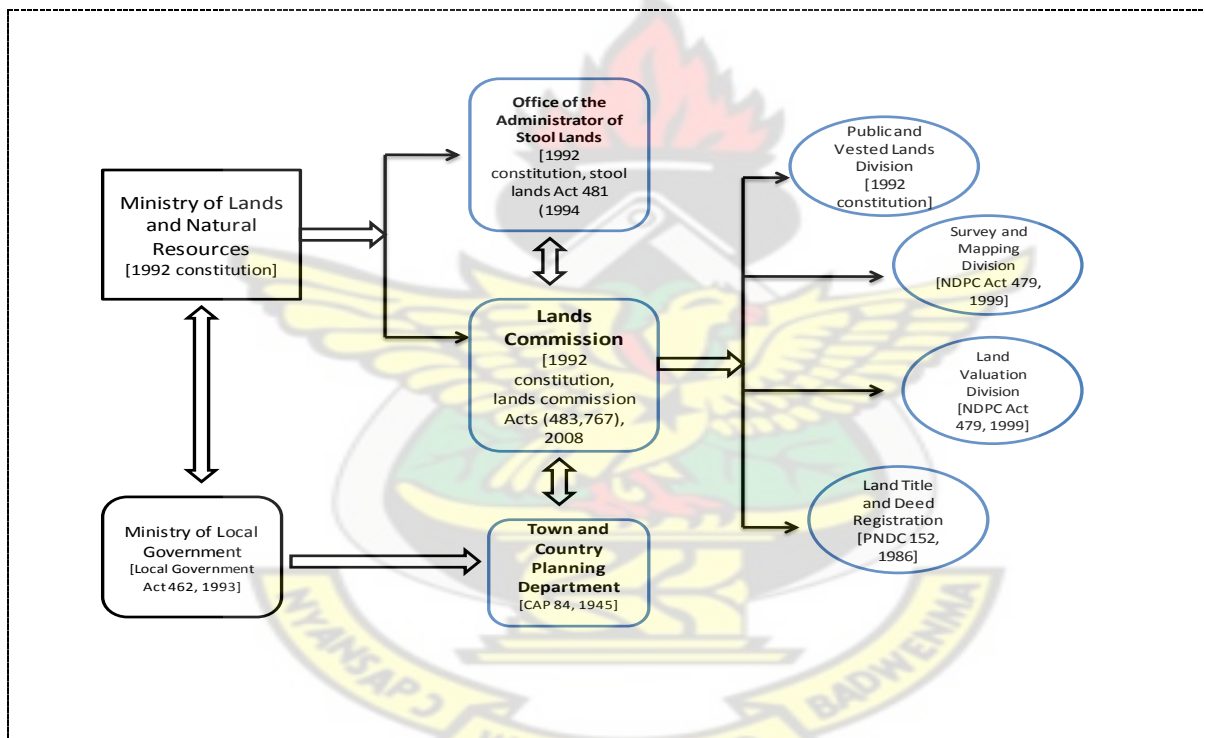


Fig 2.2: The Legislative and Institutional setup of land administration in Ghana.

Source: Researcher's Construct, 2014.

2.9 Linking the study to National Policies, Programmes and Projects

Indeed, a lot had been done in the past vis-à-vis land related issues towards promoting development at the local, district, regional and national levels. In the midst of these acknowledgements, this study maintains that much still remains to be done.

The country's Growth and Poverty Reduction Strategies (GPRS I & II) recognize the considerable role the land sector plays in the attainment of national development. The Shared Growth and Development Agenda (GSGDA) 2010 similarly links land as a valuable economic and social resource and also as a key natural resource which needs to be disposed of and utilised in a sustainable and efficient manner to propel Ghana towards middle income status by 2020. This study also shares the positions of these development policies on the need to strengthen the land sector through updated legislations and institutional capacity building towards finding lasting solutions to land administration and acquisition problems presented in the National Land Policy (NLP) (1999).

In response, the Land Administration Project (LAP) was formulated during 1999-2001 to address major issues raised in the NLP. The LAP was originally designed as a Program with a 15-25 years perspective scope consistent with the long term policy objectives of Government of Ghana (GoG) to be implemented in phases of 5 years. The first phase of the project (LAP 1) rolled out in 2003 but extended to 2010 due to its complexity was intended to lay the foundation for the implementation of a long-term land administration reforms. As a result, LAP 2 (2011 to 2015) whose overall goal is to consolidate and strengthen land administration and management systems for efficient and transparent service delivery through computerization and digitization of land processes and documents is expected to be followed by LAP 3 soon in the future.

Creditably, LAP I has succeeded in; (i) Streamlining land administration institutions by the passage of the Lands Commission Act 2008 (Act 767) which merged four land sector agencies into a single entity – the Lands Commission (LC) – and brought the title and deeds registries under one organizational unit, the land registration division (see Fig 2.2).

(ii) Decentralizing the deeds registry to all the nine regional capitals, effectively bringing the registration of deeds closer to the clients with a reduction in time for delivery from more than 36 months to about three months;

(iii) The establishment of 38 customary land secretariats to facilitate the management and recordkeeping by traditional authorities of land allocations and transactions within their traditional areas among others. While these achievements remain a success story for land tenure issues in Ghana, how they reflect access to land by small scale farmers within the Asante Akim North District before and after the land acquisition by the Scanfuel (now Scanfarm) leaves much to desired.

2.10 The Empirical Reviews of the Study

This section of the chapter presents reviews of empirical studies on the implications of large-scale land acquisition for jatropha plantation for farmers. Empirical reviews on the effects of jatropha plantation on small-scale farmers are presented in terms of land access and livelihoods activities, household economy and household food security.

2.10.1 Access to agricultural land and Livelihoods

In most African countries, agriculture is a main economic activity, and access to land is a fundamental means whereby the poor can ensure household food supplies and generate income (Cotula, 2007). In the “*Voices of the Poor from many lands*”, the World Bank’s global poverty study conducted in 2002, it was found that farmers’ access to agricultural land is diminishing as a result of increasing land acquisition which can lead to scarcity of food, hunger and poverty which could also trigger rural-urban migration (World Bank, 2002: 157). This could be due to weak policies or out-dated legislations on land administration. Recognizing this flaw, the LAP was born to address these institutional problems on land acquisition. In a study conducted by Hughes and others, they showed that without transparent and comprehensive policies to regulate land acquisitions for biofuel investments, these projects could threaten communities’ access to the land and livelihoods on which they depend (Hughes et al., 2011).

In an article published by Nyari (2008) on “Biofuel land grabbing in the Northern Ghana”, women during public consultation on the jatropha project said;

“Look at all the she nut trees you have cut down already and considering the fact that the nuts that I collect in a year give me cloth for the year and also a little capital. I can invest my petty income in the form of a ram and sometimes in a good year, I can buy a cow. Now you have destroyed the trees and you are promising me something you do not want to commit yourself to. Where then do you want me to go?”

Clearly, the above qualitative account suggests how livelihood sources of particularly women in project communities can indeed be compromised in the name of large-scale land acquisition for jatropha plantation. Work done by Schoneveld (2010) also shows that the phenomenon can significantly exacerbate rural poverty as communities lose access to vital livelihood resources. Vulnerable groups, such as women and migrants, are found to be most profoundly affected because of their relative inability in recovering lost livelihood resources.

2.10.2 Tenure security and farming systems

In the Oxfam report, it was found that the land deals are indeed negotiated in secrecy and in a non-transparent way in if not most cases, some isolated cases. In the negotiation process, the affected population is not consulted and when they are, they are in a weak position as they do not necessarily have the same resources and abilities as their counterpart (investors) to negotiate fair terms. This situation leads to unclear and unfair provisions of the contracts in favour of the investors (Kachika, 2010).

Also, the local land rights which are usually customary rights are commonly ignored. Similarly, in the foreword of the FAO report on Land Rights in Africa, it is stated that lack of respect for the rights of the poor contributes to tenure insecurity (Knight, 2010). Clearly, biofuel development also has the potential to undermine land and labour rights; especially in the case of large projects where land tenure is poorly defined. For example, forest lands used by indigenous people in Indonesia have been expropriated for oil palm plantations, ignoring their customary rights to the land (Tauli-Corpuz and Tamang, 2007; Cotula, 2009). Evidences from case studies also confirm widespread concerns about the risks associated with large-scale investments,

including (i) weak land governance and a failure to recognize, protect, properly compensate local communities' land rights; (ii) lack of hosting country's capacity to process and manage large scale investments, including inclusive and participatory consultations that result in clear and enforceable agreements (Cotula et al., 2009; FAO, 2013a). While farming systems appeared subjective and mixed in literature, traditional and modern farming systems are generally classified under agricultural land uses (see FAO, 2013a; Garrity et al., 2012). Within the Ghanaian context, traditional farming system dominates with hoe and cutlass as the main farming tools (MOFA, 2011). The traditional system include shifting cultivation, land rotation, mixed cropping, sharecropping (Abbey et al., 2001: 255) but the modern system include mixed farming, crop rotation, mechanised farming among others. Farming systems also vary with agro-ecological zones (MOFA, 2011) and access to land (Abbey et al., 2001: 255). This is because; shifting cultivation and land rotation have been practised due to the availability of vast agricultural lands. Land issues and land tenure reform in sub-Saharan Africa is characterised by a range of farming systems all with varied rights under multiple forms of tenure (Tenaw et al., 2009).

The FAO, (1997) in their resource book for teachers of agriculture noted that traditionally, food production in Africa remained at subsistence level and the farming system was based on shifting cultivation and bush fallow farming. Under these practices, soil fertility was periodically restored to cultivated land by the shifting of cultivation to fresh, rested ground, allowing the recently cultivated land to rest and recover. However, with increasing numbers of people and animals, more modified cropping patterns were established, and the fallow period was gradually reduced. As a result, cultivation practices became more intensive; crop rotation, multiple cropping and intercropping were adopted as effective strategies to maximize land productivity without endangering soil fertility (FAO, 1997).

2.10.3 Displacement and relocation

Sindayigaya in his paper, 'Foreign Investments in Agriculture – 'Land grabbing' published by the Oxfam, noted that the displacement of small-scale farmers has social consequences (Sindayigaya, 2011). He argues that the phenomenon dismantles communities, creates intercommunity conflicts and tensions among opposite parties. He continued to say that the

affected farmers are often promised to be relocated to new farms and/or to receive fair compensation for the lost land and resources associated to it (Sindayigaya, 2011:13) but few evidences from northern Ghana reveal that displaced farmers are not fully compensated (Tsikata and Yaro, 2011). Consequently, the displacement of customary land uses for plantation agriculture could exacerbate rural inequalities (Cotula et al., 2008; Poulton et al., 2008; Hayami, 2010; World Bank, 2010), thus conflicting with rather than supporting government policies to modernize subsistence agriculture (Cotula et al. 2009) as also found in the Food and Agriculture Sector Development Policy (FASDEP II, 2007).

Empirical evidence of the relationship between tenure security and agricultural productivity remains scattered in literature (Tenaw et al., 2009). Work done by Krumona also established that Africa's agricultural sector is said to be essentially made up of subsistence farmers where an estimated 80 million small-scale farmers supply 95% of Africa's food needs and produce 30% of its Gross Domestic Product (Krumova, 2011). The paper also found that, the first victims of land grabbing are the subsistence or small-scale often female producers, who are forced out of their farm to make room for foreign investors. Several empirical studies have also similarly shown that large-scale land acquisitions for plantation agriculture tend to displace customary land uses (Cotula et al. 2009; Sulle and Nelson, 2009; World Bank 2010).

2.11 Effects of Jatropha Plantation on Household Economies

This section also presents empirical reviews of the effects of large-scale land acquisition for jatropha plantation on household food production, consumption, income and expenditure levels. Study conducted by Bosch and Zeller (2013) on "The impacts of wage employment of a Jatropha plantation on income and food security of rural households" using panel data analysis, a weak evidence was found, that households working for the plantation experienced less reduction in incomes and expenditures than control households. Such investments have the potential to generate employment, increase incomes, and improve competitiveness in regional and international trade.

Although evidence on food production, consumption and sales by households as a result of large-scale land acquisition seemed to be little in empirical literature, the first global study conducted in 55 countries on jatropha plantation found that the plantation has not led to a reduction in food production and consumption (GEXSI, 2008). In their sample analysis, only 1.2% of areas planted with *Jatropha* had been used for food production in the five years prior to the start of the project. The paper found further that, 70% of all projects analysed practice some form of intercropping, an effort into food production. Therefore, large-scale land acquisition for *jatropha* cultivation supports food production.

Conversely, country studies conducted by the FAO and IIED in 2012 on the “Gender related Implications of large-scale land acquisition” in the northern part of Ghana of which I played significant roles, found strong evidences that plantation work relatively increased household income of smallholder farmers within project communities (FAO, 2012; FAO, 2013c). The study further found that the majority of households did not reduce agricultural production as a result of the plantation works. The paper also indicates that the plantation farmers are mostly poorer farmers who need an additional income source. In a similar study, it was found that large-scale land acquisition has economic consequences since it puts at risk a sector that supplies a third of the market value of all final goods produced within a given country (Sindayigaya, 2011). The paper found further that, *jatropha* plantation impacts the ability of small-scale farmers to generate income and provide for their families (Sindayigaya, 2011:14). In a very current study I co-conducted on “Farming Households’ Coping Dynamics in Response to Large-Scale Land Acquisition for *Jatropha* Plantations: Evidence from Asante Akim North District of Ghana”, it was found that the average farm size of farming households reduced from 3.5 acres per household to about 1.5 acres due to large-scale land acquisition (Oduro-Ofori and Hamenoo, 2014). This, the paper pointed to have had implications for household food production through the increased use of agrochemicals to meet household food demand.

2.11.1 Employment and Labour

Similarly, evidence from Sindayigaya (2011:13) points out that the promises made by the investors of large-scale *jatropha* projects, in most cases, are not fulfilled and the evicted farmers are left struggling since they lost the only asset they had. (Krumova (2011) also found that, even

when the investors promise to offer employment to the evicted farmers, it is usually seasonal; low paid and offers poor working conditions. Nevertheless, findings from Phalan (2009) showed that biofuels have the potential to bring increased employment and income to some rural populations thereby contributing to poverty reduction. In a typical case study for example, production of biodiesel in Indonesia provided 2.5 million jobs (Cassman and Liska, 2007). In the case study community of this research, it has been reported that, the initial employment on the plantation stood around 200 people (Dogbevi, 2010).

Findings from Schenoveld et al., (2010) revealed that greater access to off-farm livelihood opportunities, such as plantation employment, is frequently cited as particularly instrumental to rural poverty reduction through enhancing livelihood resilience to shocks due to income diversification and enabling households to invest surplus income in agricultural production (Reardon 1997, Ellis 1998; Cotula et al., 2009). Such promises are countered with concerns, particularly in regards to early evidence that large-scale land acquisitions for plantation agriculture tend to displace customary land uses (Cotula et al., 2009 and World Bank, 2010).

2.12 Effects of Jatropha Plantation on Household Food Security

This section also puts forward the empirical reviews on the effects of jatropha plantation on household food security. Indeed, the arguments of the effects of large-scale land acquisition for jatropha plantation on food security beyond the household levels remained polarized in empirical literature. While environmental lobbies including the Global Forest Coalition and Greenpeace as well as some conservation scientists, argue that biofuels will destroy tropical forests and undermine food security (Cotula et al., 2008), on the other side however, proponents of the biofuels industry argue that in addition to reducing the use of fossil fuels and related emissions and providing jobs and income opportunities, jatropha are grown almost entirely on agricultural or pastoral land, and thus do not involve deforestation and food insecurity (Goldemberg, 2008).

As a result, a study conducted in central Madagascar to assess whether large-scale Jatropha plantations offer sufficient income possibilities to contribute to poverty alleviation and food security showed that incomes and food security improved in 2008 due to income generated on the plantation, but deteriorated between 2008 and 2010 mostly due to a decline in agricultural

yields for climatic reasons (Bosch and Zeller, 2013). In another similar study, it was unveiled that BioFuel Africa jatropha project improved household food security in the project villages through employment creation in the plantation, increased petty trading activities as well as increased food production (Boamah, 2011).

Conversely, Phalan (2009) found that conversion of active agricultural lands to jatropha plantation has been found to adversely affect food security. More specifically, the food security of rural people is also likely to be affected if they are deprived from lands they have been using for shifting cultivation or collection of wild foods, unless measures are taken to provide substitutes for those resources (Cotula et al., 2008).

2.13 The Theoretical Framework of Large-scale Land Acquisition and the Household

This section of the chapter presents the theoretical basis for the study. Theoretically, access to customary land according to Pottier (2005) is placed in two basic principles (viz. right of avail and the right of inheritance). The inheritance right according to Cotula (2007) gives birth to a bundle of land rights including operational rights such as the right to access to land, cultivate it among others and management rights such as the right to allocate and transfer land.

However, large-scale land acquisition (see red broken arrow in Fig 2.3) which emanates from the traditional authorities can interfere with indigenous customary land rights and the rights to access and use of land. The implications are that, these interferences could lead to tenure insecurity and related effects on smallholder farmers (Knight, 2010; Cotula et al. 2009; Sulle and Nelson 2009; FIAN 2010; World Bank 2010). From this theoretical base, the interferences could be positive or negative. Therefore, how these interferences affect small-scale farmers at the household levels give the conceptual base (see Fig 2.3) for this theoretical framework.

The household in economic theory as seen in literature is divided between the unitary household model and the collective household model (Alderman et al., 1995). The unitary model is the prevailing, widely applied model of resource and labour time distribution within the household. While the unitary model considers one person as representing the entire household, bargaining models considers two actors within a household whose interests differ (Mattila-Wiro, 1999). Again, the unitary theory assumes that decisions within a household are made jointly and that the household maximizes a single set of objectives for all its members (Ellis, 1988). While this

study was not designed in any way to test the reliability of these models, given the diverse criticisms that even exist for these models, the researcher sought to put the household as used in this study in a theoretical context. As a result, the use of *household* in this study is theoretically based on the *unitary* model proving why household information can be obtained from household heads.

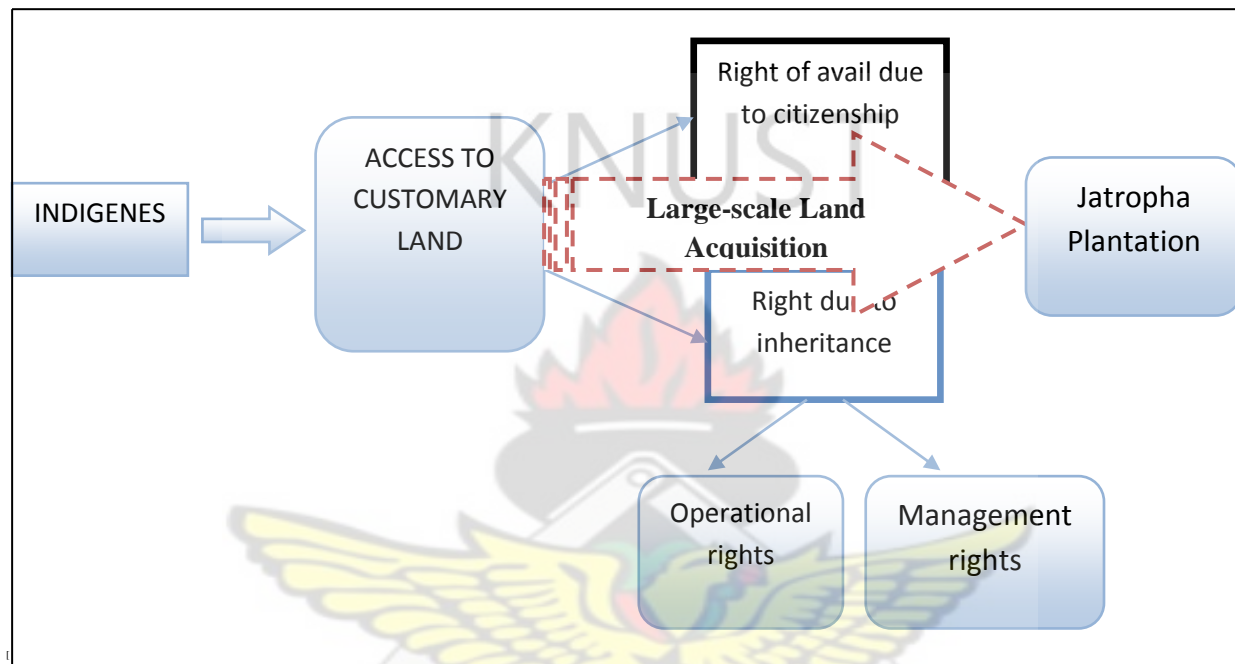


Fig 2.3: Theoretical framework for the study

Source: Researcher's Construct, 2014

2.14 The Conceptual Framework for the Study

This section presents the conceptual base for the study. Following from the contextual reviews in literature and the theoretical framework (see Fig 2.3); interferences due to large-scale land acquisition for jatropha plantation are conceptualized (see Fig 2.4). Clearly, there is a cause-and-effect relationship of the problem under study. It is conceptualised that, if land acquisition for jatropha plantation becomes large-scale (more than 1000 ha), the resultant effects on access to land, household economy and household food security (respectively represented by numbers one to three) could be disadvantageous for small-scale farmers within project communities. Respectively, these numbers are the underlying objectives of the study which are explainable by the dependent variable (large-scale land acquisition for jatropha plantation).

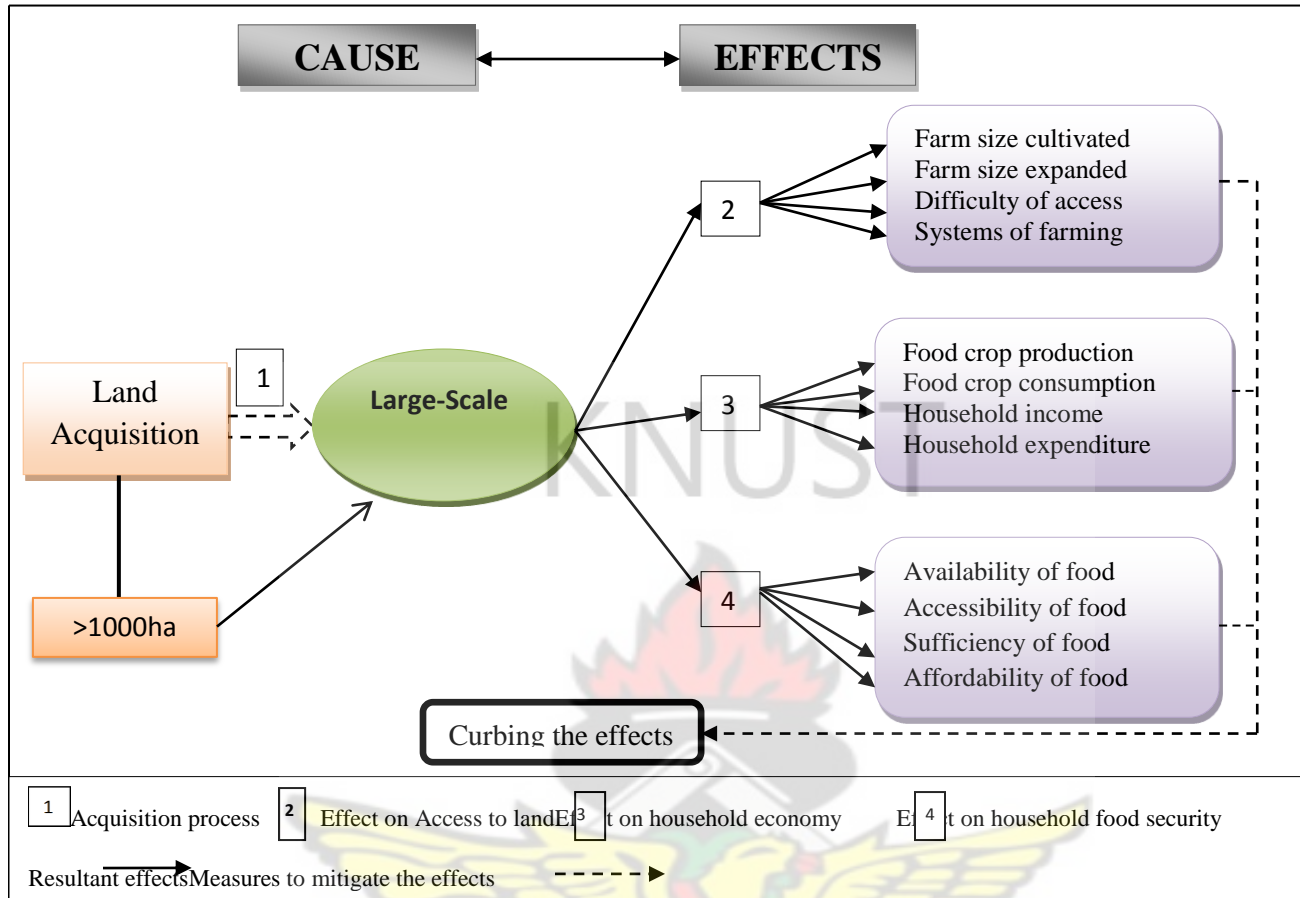


Fig 2.4: Conceptual framework for the study

Source: Researcher's Construct, 2014

2.15 Conclusion on the Chapter

This chapter built on the background of the study as served in chapter one. The first part of the chapter presented the contextual reviews of the study whilst the second part presented the theoretical and empirical reviews of the study. Contextually, the chapter defined various key terminologies and then presented reviews of topical issues *vis-à-vis* large-scale land acquisition within the customary disposition of the land tenure system in Ghana. Institutional and various legislative provisions and reforms that had given birth to the land tenure issues and the trends in large-scale land acquisitions and national efforts in the land sector are also presented. Empirical evidences within and outside Ghana are also presented. The next chapter presents the profile of the study area and research methodology.

CHAPTER THREE

PROFILE OF STUDY AREA AND RESEARCH METHODOLOGY

3.1 Introduction

Following from chapter two, which looked at the various contextual, theoretical and empirical reviews on the effects of large-scale land acquisition for jatropha plantation on small-scale farmers, the methodology that informed the data collection for the study is thus presented in this chapter. The first section of the chapter presents the profile of the study area. The second part of the chapter therefore presents the research design; sample selection, sampling technique and sample size determination. Data sources, data collection and analytical methods and the study variables are also explained in this chapter. The chapter ends with a conclusion.

3.2 Profile of Study Area

This section of the chapter presents a profile of the study area. This included the demographic and physical characteristics of the study area, climate, soils and the vegetation within the Asante Akim North District.

3.2.1 The physical Characteristics of the Study Area

The Asante Akim North District is one of the 30 Districts in the Ashanti Region. It has Agogo as its capital and was carved out of the then Asante Akim North Municipal Assembly in 2011 as part of the Ghana's decentralization process. It was established by Legislative Instrument (LI 2057). It is located in the eastern part of Ashanti Region and lies between latitudes 6°30'N and 7°30'N and Longitude 0°15'W and 1°20'W. It shares boundaries with Asante Akim South on the south and Ejisu Juaben and Asante Akim Central Municipal Assembly on the West, Sekyere East and Sekyere Afram Plains on the North and Kwahu South on the East. It covers a land area of about 509km² with an estimated population of 84,000 people (2010) with an annual growth rate of 3% (MOFEP, 2013). The vision of the Asante Akim North District Assembly is to create a sustainable growth through wealth creation by forming forces and resources with other actors such as private sectors, local businesses to create jobs and stimulate economic activity in an enabling environment (MOFEP, 2013). The District is also endowed with conspicuous mission hospital (the Agogo Presbyterian Hospital) which serves as healthcare centre for the populace and people from the adjoining Districts.

3.2.1.1 Relief and Drainage

The topography of the District is generally undulating. From the north, the land rises gently to heights between 305 and 610 meters and is interrupted by a stretch of the Akwapim-Mampong Range, which is between 610 and 762 meters. Lowlands between 152 and 305 meters are found in the northern portion where the land slopes gently towards the Volta Lake. The Akwapim-Mampong Range serves as a watershed for the numerous rivers and streams in the District. Prominent among them is the Anum to the west, Owerri to the south, Oyin to the East and Onwan and Egyan in the north. The steep slopes at Kyiriyawa near Hwidiem and at Onyem have created waterfalls, which are yet to be developed as tourist sites.

3.2.1.2 Climate of the Study Area

The District lies within the semi-equatorial belt characterized by double rainfall which occurs in July and November. The first rainy season starts from May to July and the second from September to November. The dry harmattan season occurs between December and April and is associated with drought conditions. The municipality fall within the semi-equatorial belt, characterized by two rainfalls a year with an average minimum temperature of about 21.5°C and a maximum average temperature of 30.7°C. Streams dry up during this period. Temperature is found to be uniformly high all year round with a mean annual temperature of 26°C. The municipality has moderate humidity coupled with the double maxima rainfall pattern of 209mm in May and 189mm in June respectively.

3.2.1.3 Soils of the Study Area

Two major soils have been identified in the District; the Forest Ochrosol and Savanna Ochrosol. The Forest Ochrosol is fertile and supports cereals, oil palm, cassava, plantain, cocoa and vegetables. The Savanna Ochrosol is well leached, richly supplied with organic matter and is good for the cultivation of yam, maize, cassava, groundnut and vegetables.

3.2.1.4 Vegetation of the Study Area

The major vegetation types are grassland, broken forests and forest reserves. Predominant species of trees found are Wawa, Ofram, Sapele, Sanfina, Okyere (Kofo), Onyina, Kyenkyen, Otie and Yaya. The rich soil has promoted agricultural production in the area. Most of the original forest

in the district has degenerated into secondary forest and grassland due to indiscriminate felling of trees, bush fire and poor farming practices such as shifting cultivation, bush fallowing, slash and burn, and bush burning for fresh forage for cattle feeding by the Fulani herdsmen. In some parts of the district, which fall within the Afram Plains, the semi deciduous forest is gradually degenerating into interior wooded savannah due to intensive farming activities.

Under the Collaborative Forest Management System reforestation of the degraded forest are underway in the Bandai Hill reserves at Behome and Nyamebekyere. The forest reserves are a source of income to private timber companies, traditional authorities, the District and individuals. Timber, foodstuffs and raw materials are obtained from the forest for industrial and domestic use. Most of the forest belts are rich with delicacies such as snails and mushroom, which are in season between March and April. However, most of them have gone into extinction due to rampant bush fires. There are prospects for mushroom and snail farming in the forest areas.

3.2.1.5 Governance structure

The development goal of Asante Akim North District Assembly is to ensure that the socio-economic wellbeing of the people irrespective of their social, political and economic status is improved through provision of social services, employment creation and empowering the citizenry including the vulnerable and the excluded to participate in the decisions that affect the District Economy and their wellbeing. The District has one Urban Council (Agogo-Hwidiem), two Area Councils and 13 electoral areas. It has 33 communities. Traditional chiefs and queen mothers rule the towns and villages and help settle disputes among inhabitants. They are also custodians of all lands within their traditional areas. The District has one Traditional Council called the Agogo Traditional Council.

3.2.2 Demographic Characteristics of Study Area

3.2.2.1.1 Characteristics of the Study Communities

Although documented information on the District and the study communities (Dukusen, Afrisie, Ananekrom/ Nyantonkron and Baama) is not available, observation via community visitation and information gathered from the District Planning Officer point to the following;

- i. The District consists of 33 communities.
- ii. That Dukusen is the hub of the jatropa plantation project with adjoining communities including Ananekrom/ Nyantonkron, Afrisie, Baama, Nyamenekyere among others. These communities are located within the Dukusen and Ananekrom electoral areas with farming as the main occupation of households. The two electoral areas are under the supervision of two Assemblymen serving as the political authority and local government representative thereby reporting to the main District on the development in the communities.
- iii. Apart from the few isolated solar street lights at some junctions of these communities, access to national grid is nil in these communities. Households therefore resort to the use of candles, kerosene lanterns, and flashlights for visibility. Energy for cooking is predominantly wood fuel, consisting of firewood and charcoal. Sub-chiefs exist for each community to guide the custodian disposition of lands.
- iv. The communities are made up of indigenes and some migrants from the northern region of Ghana who serve primarily as farmers or Fulani (cattle herdsman).
- v. Households are predominantly male headed. Women and children help in farming activities of male headed households. They also help in gathering and/or making woodfuel as household energy for cooking. Corn mills serve as means of making corn flour and cassava dough which are partly sent to the market for sale. Raw farm products such as food crops (cassava, yam, cocoyam, plantain, vegetables such as peppers and cabbage) are also sent to the market for sale while some are left for household consumption.
- vi. Access to safe drinking water is low as fewer boreholes are utilised in the communities. Some households still rely on rivers and streams as source of water for drinking and household purposes. According to the 2010 population and housing census, about 21,452 people, representing 30%, have access to pipe borne water, either in their house or within reach.

3.2.3 Economic Characteristics of the Study Area

The District is predominantly rural with subsistence farming as the dominant economic activity both in terms of employment and income. It has a tremendous agricultural potential and is one of the major cocoa and food crop producing Districts in the Region. The major occupation of the working population in the District is farming, producing major crops such as maize, cocoa, cassava, plantain and cocoyam and to some lesser extent rice, yam and vegetables. The major staple food crops produced in the District include maize, cassava, plantain, cocoyam and yam. Agriculture is generally undertaken by small holders with about 72% of the farmers cultivating less than 3 acres of land. Large-scale farming is virtually absent as only about 6% of the farmers cultivate more than 5 acres. Intermediate technology, i.e. tractor, power tiller and irrigation and mono-cropping which presently are on a limited scale will have to be increased to boost output in production levels. This is because farming practices are predominantly traditional with agriculture being rain-fed and lands are cleared by slash and burn. The use of modern technology in agricultural practices is very low as farmers rely on the use of traditional implements. The practice of animal husbandry is relatively low in the district as most animals and birds are on a free range. Other forms of economic activities in the District include trading (buying and selling) of general goods and foodstuffs. Masonry, carpentry, painting and electrical and electronic works are also found in the District. Livestock and poultry farming are further economic activities in the District within the informal sector whiles public service such as teaching, policing, nursing among others, represent the formal sector in the District.

3.3 Research Methodology

3.3.1 Research Design

The study is an explanatory research employing a case study research method in investigating the effects of land acquisition for jatropha plantation on small-scale farmers. The case study method used as empirical inquiry to investigate a contemporary phenomenon within real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which, multiple sources of evidence are used (Yin, 2006). Case studies emphasize detailed contextual analysis of a limited number of events and their relationships and are useful especially in helping

to understand complex issues. They can also contribute to value-addition in terms of experience or what is already known through previous research.

The study adopted the mixed research design using a combination of qualitative and quantitative methods to answer the research questions. The methodological eclecticism characteristic of the mixed research design results in superior research (Johnson and Onwuegbuzie, 2009). The qualitative techniques were used to analyze the processes involved in the large-scale land acquisition and the effects of the said acquisition on household food security. The quantitative techniques were applied in the analyses of the effects of land acquisition on access to land and household economy.

The case study approach, with its use of multiple data collection methods and analysis techniques, provides researchers with opportunities to triangulate data in order to strengthen the research findings and conclusions. Given the various sources of primary data selected for triangulation (see Table 3.1) and given also that the target population for this study is not uniformly distributed within the study area, the adoption of the Case study approach in this study in investigating the phenomenon was done. In addition, given that the land acquisition occurred within a particular period, there was the need to understand and measure the effects against baseline information. As a result, two measurements were taken on the same subject, one *before* and one *after* the introduction of a stimulus (the large-scale land acquisition). In so doing, the study had adopted the *before* and *after* research approach (also known as the **pre-post** research design) under cross sectional research design in measuring the effects of large-scale land acquisition on small-scale farmers. This was because, if the large-scale land acquisition had no effect, the average difference between the measurements would be equal to zero and vice versa.

3.3.2 Sample Selection

Following the review of contextual issues presented in chapter two and given also that, several large-scale jatropha plantations exist in the country the jatropha project within the Asante Akim North District in the Ashanti Region was conveniently selected as a case study project in investigating the land related effects on small-scale farming based on the existence of the problem under investigation and its proximity to the researcher.

3.3.3. Sampling Technique

Given that the research problem of large scale land acquisition was not uniformly distributed in the District, there was the need to sample. In this study, preliminary visits to the study communities revealed that;

- i. Some of the affected farmers have moved out of the study communities. Some have relocated to the District capital and other communities.
- ii. Some migrant farmers including Fulani herdsmen have also moved to settle in the communities after the large-scale land acquisition.

The above revelations had informed the need to use the non-probability sampling techniques in the selection of the units of enquiry. And so, the Purposive sampling technique was used. This was because, introducing randomization (probability approach) as a sampling technique could bias the results of the study. As a result, there was the need to select the right communities and the right respondents.

Communities whose lands were given out or who were found to be close to or surrounding the plantation project were selected. The selected communities include Dukusen, Afrisie, Ananekrom and Baama (see Table 3.4 below). The selection of the unit of enquiry (small-scale farmers) was based on the following criteria;

- i. Present in the selected communities and engaged in farming for at least four farming seasons (equivalent to two years) before the land acquisition was done.
- ii. Present in the selected communities and engaged in farming for at least four farming seasons (equivalent to two years) after the land acquisition was done.

In limiting bias in the interest of reliability and validity, the researcher selected the farmers who satisfied the above criteria at the household level. This was done through the help of the Assembly men in the communities and some of the affected farmers in facilitating the identification at the households. Heads of the selected farming households were interviewed based on the unitary household economic theory that endorses one person as representing the entire household. Where the heads of households were unavailable, their spouses were interviewed.

Recognizing that recollection problems may arise in gathering baseline information, the researcher ensured that responses on household economy (production, consumption, income and expenditure) were limited to two years *before* and *after* land acquisition.

The selection of the institutional respondents was based on the following criteria;

- i. That the institution got involved in the large-scale land acquisition for the jatropha project within the study area.
- ii. That the institutions perform functions in connection with land acquisition or administration in general.

3.3.4 Sample Size Determination

The sampling population for the study included all the communities and farmers affected by the large-scale land acquisition. From the sampling population, a sample size of 120 was selected for the study. The sampling units included farming households in the selected communities who were affected by the land acquisition. Thirty (30) farming households were purposively selected from the four study communities for data collection whilst 10 key informants were selected at the institutional level for interview on the process of land acquisition (see Table 3.1). Saiful (2011) notes that, as sample size larger than 30 and less than 500 are appropriate for most research which have been shown to uncover 90-95% of the phenomena being studied. Griffin and Hauser (2011) and DePaulo (2011) also argue that for in-depth qualitative studies, “20-30 in-depth interviews are necessary to uncover 90-95% of all customer needs for the product categories studied. As a result, 30 respondents were purposively selected from each of the four study communities.

Table 3.1: Sample size Determination

District	Communities	Units of Enquiry	Number of Respondents	Tools
Asante Akim North	Afrisie	Household Heads	30	Questionnaires
	Baama	Household Heads	30	Questionnaires
	Dukusen Ananekrom	Household Heads	30	Questionnaires
		Household Heads	30	Questionnaires
Total			120	
Institutional respondents				
Asante Akim North	Agogo	The Company officials	1	Interview guide *
	Agogo	Traditional Authority (Agogo Traditional Council)	2	Interview guide
	Agogo	Community Chief	1	Interview guide
	Agogo	Assemblyman, Dukusen Electoral Area	1	Interview guide *
Asante Akim Central	Konongo	Office of the Administrator of Stool Lands	1	Interview guide *
		Town and Country Planning	1	Interview guide
		Land Valuation Unit (Lands commission)	1	Interview guide
Kumasi Metro	Kumasi	Regional Lands Commission	1	Interview guide
		Office of the Administrator of Stool Lands	1	Interview guide
Total			10	

Source: Source: Researcher's Construct, 2014.

**Telephone Assisted Interviews (TAIs) were also conducted to validate some data already collected via direct interviews.*

3.3.5 Data Collection

The duration for the entire data collection took three months (February-April, 2014), although not a daily routine. Weekends were mostly used for household data whilst some week days were used for institutional data. Preliminary survey (see Appendix 2 for the introductory letter) was done for two days in September 2013 in order to validate the actual size of land acquired given the enormously inconsistent figures reported by different authors in literature. Also, two research assistants were trained by the principal researcher to collect data from the field. The training of the research assistants took three days from the 5-7th February, 2014 and they assisted in data collection at the household level but all institutional data collection was done by the researcher. Pre-testing of the data collection instruments was done on the 7th of February with the principal investigator being assumed as a respondent. This was to check consistency, comprehension of the instruments and address any misconceptions so as to limit errors in data collection. Satisfied with the output of the pre-testing, the actual data collection took place from February 9, 2014. During data collection, respondents were asked if they were present in the communities before and after the large-scale land acquisition. Those who answered 'yes' were interviewed. The procedure was repeated for the rest of the households. The research assistants were a national service person and a third year student chosen respectively from the Departments of Planning and Agriculture at KNUST based on their experience in data collection and relationship with the principal researcher. Both qualitative and quantitative data were collected on the variables of the study.

3.3.6 Types of Data Collected

3.3.6.1 Sources of Secondary Data and their Collection Methods

The types of data that were gathered for the purpose of this research included among others, the demographic-data of respondents and social-economic data. Demographic data included age, sex, gender of household head, and main occupation of household head, household size, and educational background and so on. Data were also collected on access to land. Data on household economy included household agricultural production, consumption, income and expenditure. Data on household food security was also collected.

As indicated in the reference section of this report, the sources of secondary data were articles in peer-reviewed journals, annual reports, conference proceedings, book, magazines and newspapers. The other sources of secondary data were published and unpublished documents such as books, project reports, government policy documents and theses. Desk studies and reviews and content analyses of these documents were done to build the contextual, theoretical and empirical bases for the study to inform primary data collection.

3.3.6.2 Sources of Primary Data and their Collection Methods

Primary data were collected through field observations and interviews from small-scale farmers, key informants such as chiefs, company official, development planners, land administrators at the Lands Commission and the Office of the Administrator of Stool Lands, officials of the Town and Country Planning Department among others. Appropriately designed data collection instruments were used in the interviews.

3.3.6.3 Field Observations

During the two days preliminary survey, the researcher observed all the relevant characteristics of the study area such as topography, market, farming activities, other economic activities and the culture of the people in the communities as a way of familiarizing with the study communities and some of the stakeholders. Through the field observation, the researcher found that Saturdays were resting days for most farmers. The researcher also found that access to transport to and from the communities was easier on their market days which fall mostly on Tuesdays. This information guided the planning for the actual data collections at the community level. Observations during actual data collections focused on the domestic activities of women and children at the household levels. This was to have an idea about how household labour pertained to the households. Photographs of some of these observations are presented (see Appendix 1).

3.3.6.4 Data Collection Instruments

The data collection was done with the aid of participatory research tools such as direct interviews with the various traditional authorities, traditional councils, farmers, institutional and key informant interviews. The multiple sources of data as typical of case study research were to strengthen or increase the reliability of the findings of the study. Data was collected from the following institutions; the Company (Scanfuel Ghana Limited, now known as Scanfarm), Lands Valuation Unit, the District Assembly, the Municipal Assembly, the Office of the Administrator of Stool Lands, the Lands Commission and the Traditional Authority. The intention was to help the researcher do triangulations on the subject under investigation to arrive at conclusions with reliable findings.

3.3.6.5 Questionnaires

Information was solicited from respondents through the administration of open ended and semi structured questionnaires. Respondents were given the opportunity to express themselves and give their own understanding of issues concerning the land acquisition. The questionnaire was grouped into sections aligned with the research questions so as to establish consistency with the study objectives. The questionnaires were answered by heads of farming households in the selected communities.

3.3.6.6 Interviews

Given that, in a case study research, using only structured questionnaire could place a limit on the responses that the study sought to measure, interview guides (open ended questions) were also used to collect data in order to triangulate and understand the real issues on the research problem. These data were mostly collected from the institutional respondents. Telephone Assisted Interviews (TAIs) were also done to validate some of the responses collected through interviews from the Company and the Office of the Administrator of Stools Lands located in Agogo and Konongo respectively. The data collected via the direct interviews and TAIs were also recorded by the researcher for cross-checking and validation.

3.3.7 Measurement and Data Analytical Tools

In measuring the responses from the respondents for each objective and research question, the researcher ensured that measurement parameters were followed (see Table 3.3). A five point Likert scale was adopted in measuring responses on the difficulty of access to land by the small-scale farmers *before* and *after* land acquisition (see section C of questionnaire at Appendix 3).

The scale on *difficulty of access to land* and its interpretations consisted of;

1. Very difficult: ability to get land easily is uncertain all the time
2. Difficult: ability to get land easily is uncertain
3. Neutral: cannot tell
4. Not difficult: ability to get land easily is certain sometimes
5. Not very difficult: ability to get land easily is certain all the time

Systems of farming were also used to explain access to land. This was because; shifting and land rotations farming systems traditionally depended largely on the availability and access to farm land. Similarly, five point Likert scales were used to measure responses on household food security (see Appendix 3, section E). The interpretations of these scales were based on the standard definitions of food security presented in chapter two of this report. Table 3.2 presents the details of these scales.

Table 3.2: Likert scales for measuring household food security

Variable	Scale	Interpretation*
Food availability	1. Very available 2. Available 3. Neutral 4. Not available 5. Hardly available	1. Food can be obtained by household all year round 2. Food can be obtained by the household sometimes in the year 3. Cannot tell 4. Food cannot be obtained by household most times in the year 5. Food cannot be obtained by household all year round
Food accessibility	1. Very accessible 2. Accessible 3. Neutral 4. Not accessible 5. Hardly accessible	1. Food is easy to get by household all year round 2. Food is easy to get by household sometimes in the year 3. Cannot tell 4. Food is not easy to get by household most times in the year 5. Food is not easy to get by household all year round

Food affordability	1. Very affordable 2. Affordable 3. Neutral 4. Not affordable 5. Hardly affordable	1. Purchase of food is inexpensive for households all year round 2. Purchase of food is inexpensive for households sometimes in the year 3. Cannot tell 4. Purchase of food expensive for households most times in the year 5. Purchase of food expensive for households all year round
Food sufficiency	1. Very sufficient 2. Sufficient 3. Neutral 4. Not sufficient 5. Hardly sufficient	1. Food is more adequate for households all year round 2. Food is adequate for household sometimes in the year 3. Cannot tell 4. Food is not adequate for household most times in the year 5. Food is not adequate for households all year round

Source: Researcher's Construct, 2014

** Food as used in the interpretation is limited to the main food crops produced by the households [i.e. grains, roots and tubers, suckers and vegetables] and those not produced at the households [e.g. salt, sugar, onions, ginger, meat, fish, etc]. Also, the accuracy of the responses provided by the household heads based on these interpretations remained subjective given the level of recollection of the respondents. The study therefore acknowledged the complexity of measuring household food security particularly, the affordability component of household food security given the influences of several internal and external factors on commodity prices.*

The instruments were semi-structured. In order to process the responses collected, the data collected were then structured to accommodate the responses. These structured data were then cleaned and coded into the Statistical Package for Social Scientists (SPSS) to facilitate data processing. Data collected through key informant interviews were not structured and coded into the SPSS. Data analyses were done quantitatively and qualitatively. Quantitative analysis included inferential statistics such as frequency and percentage distributions, where there was the need to show proportions. After the percentage distributions, Analysis of variance (ANOVA) using paired sample test was done to validate the strengths of the effects of large-scale land acquisition on small-scale farmers (see Table 3.3 for details). These were aided by charts, graphs and figures in the Microsoft Excel statistical package.

This was to present the analyses in pictorial views of the effects of large-scale land acquisition on small scale farmers. Percentage distributions and crosstabulations were used to analyze demographic data of respondents. Trend analysis was used to show the proportion of land acquired by the Company over time.

3.3.8 Variables for the Study

The study variables that informed data analyses in chapter four were presented (see Table 3.3below).



Table 3.3: Measurement of data for the Study

Objectives	Research Questions and Variables	Units of Enquiry	Indicators	Type of Data	Measurement	Analysis
Process of land acquisition	How was the land acquired? ➤ Process of land acquisition	Selected institutions and Households Heads	Processes from Fig 2.1 in chapter two	Qualitative	Compliance to procedures followed. based Fig 2.1 in chapter two and LC's Guidelines	Documentary/ content analysis
Effects of land acquisition on farmers' access to land	How the land acquisition affected access to land? ➤ Access to land	Selected institutions and Households Heads	-Size of land cultivated - Size of land expanded - Difficulty of land access -Systems of farming	Quantitative Quantitative Qualitative Qualitative	Initial land acquired/ ac Extra land acquired/ ac 5-point Likert scale Incidence of shifting farming	Percentage distributions and analysis of variance (ANOVA) using Paired Sample Test. Content analysis
Effects on household economy	How the land acquisition affected household (HH) economy? ➤ Household economy	Household Heads	-HH Food production -HH Food consumption - HH farm income: <i>(farm income, non-farm income)</i> -HH expenditure (food items/ non-food items)	Quantitative “ “ “ “ Quantitative	Quantity produced/kg /ac“ Ghana cedis Ghana cedis	Percentage distributions and analysis of variance (ANOVA) using Paired Sample Test.
Effects on household food security	How the land acquisition affected household food security? ➤ Household food security	Household Heads	- Availability of food/yr - Accessibility of food/yr - Sufficiency of food/yr - Affordability of food/yr	Qualitative “ “ “	5-point Likert scales	Frequency and Percentage distribution
How to mitigate the effects	How could the effects be mitigated?	Households and Institutions	-	Qualitative	-	-

Source: Researcher's Construct, 2014.

3.3.9 Reliability and Validity

Data collected from respondents through the use of field observations, questionnaires, interview guides and informal discussions were cross-checked through triangulation to ensure consistency. The purpose was to facilitate convergence of facts and improve the reliability of the data collected. That was meant to strengthen the findings of the study thereby making them more reliable to give strong conclusions and recommendations.

In ensuring internal validity, pre-testing of the instruments was done to check measurement errors. Also, the design of data collection instruments (questionnaires and interview guides) for both households and key informants was thoughtfully done. The questions were structured and unstructured to enable respondents provide as many details as possible. External validity of the study is limited. The results however present evidence of the phenomenon of large-scale acquisition for jatropha plantation on small-scale farmers in rural communities within the Asante Akim North District.

3.3.10 Conclusion on the Chapter

This chapter essentially outlined the research methods employed in the study. The chapter presented exhaustive justifications for the choice of the study area, the research design and the sampling technique. The chapter then explored the profiles of the study community. In short, this chapter provides the basis for conducting an enquiry into the real life issues on land matters as seen in the Asante Akim North District. This was to help validate the conceptual issues as contextualized in the chapter two. The presentation of results and the analysis of the study as presented in the next chapter (Chapter Four).

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter is in two sections. The first section provides a presentation and discussion of the demographic characteristics of the respondents; their age, gender, marital status, educational background, household size, among others. This was done using frequency and percentage distributions and crosstabulations. The second section therefore presents the data analyses based on the study objectives with an in-depth discussions on the effects of large-scale land acquisition on small scale farmers. In the second section, frequency and percentage distributions, trend analysis and Analysis of variance (ANOVA) using Paired Sample Test in validating the strengths of the effects of large-scale land acquisition on small-scale farmers were done.

The study was designed to collect data from a total of 120 respondents and ten (10) institutional respondents. Out of the 120 household questionnaires, data for 115 were collected but data for five questionnaires could not be administered due to relocation of these households from the community. Call-back efforts to reach heads or spouses of those households via Telephone Assisted Interviews (TAIs) were not successful due to the mobile network problems in the communities. As a result, a response rate of about 96% was obtained for the analyses of the household data in this chapter. The effect of the non-response rate (4%) on the analyses is therefore insignificant in affecting the results given that response rate of 75% has been shown to be adequate in ensuring external validity (Bose, 2001; Fowler, 1993; Babbie, 1990; Ary et al., 1996; Richardson, 2000; Welch and Barlau 2012). The analyses presented in this chapter are therefore based on the recollection of the respondents.

The SPSS software (version 20) and the Excel Statistical Package were used to present the analyses. Discussions of the results were also linked to literature to make inferences and validations. This was important as it enables the comparison of the study results to similar studies on the subject of large-scale land acquisition for jatropha plantations. The results of the SPSS ANOVA statistical outputs are presented in Appendix 6.

4.2 Demographic Characteristics of Respondents

4.2.1 Age of Respondents

Majority of the respondents (household heads) represented by 47% of the total number of respondents were within the age group of 26-36 years (Table 4.1). This is followed by the age group of respondents from between 37-47 years old representing 37.4%. Following this age group are 13.9% of the respondents within the age group of 48 years and above. Finally, age group of 15-25 years out of the total number of respondents had the least frequency, representing 1.7%. These results show the youthful nature of the farmers who were involved in the study.

Table 4.1: Age range of respondents

Age	Frequency	Percent
15-25	2	1.7
26-36	54	47.0
37-47	43	37.4
48 and above	16	13.9
Total	115	100.0

Source: Field Survey, 2014

4.2.2 Gender of respondents and Relationship to household heads

Majority of the respondents interviewed during data collection were male household heads, who were small-scale farmers representing 86% followed by 13% of them being spouses of household heads and 7.5% being parents of household heads who were only males (see Table 4.2). Also, out of the total number of respondents, eight of them (representing 100%) were found to be the spouses of household heads. The implication is that, farming households as far as this study is concerned, were male headed with supports from spouses and other household members. This respectively agrees with the findings of the Ghana Statistical Service (2013: 20) that male headed households largely dominate household headship in Ghana.

Table 4.2: Crosstabulation of Gender of respondents and Relationship with Household Head

		Relationship with HH*			Total
		Household Head	Spouse	Parent	
Gender of respondents	Male	92 86.0%	7 6.5%	8 7.5%	107 100.0%
	Female	0 0.0%	8 100.0%	0 0.0%	8 100.0%
Total		92 80.0%	15 13.0%	8 7.0%	115 100.0%

Source: Field Survey, 2014

*HH = household head

4.2.3 Education level of Respondents

The results of the study show that majority of the household heads have completed the Junior High level of education represented by 53%. However, the proportion of the households heads who have completed Senior High level were only 7.8% while those have completed the Primary level of education were 19.1%. Nevertheless, 20% of the households have had no formal education. The results therefore show that, respondents' level of education completed was fundamentally at the basic level.

Table 4.3: Highest level of education completed

	Frequency	Percent
Primary	22	19.1
Junior High School	61	53.0
Senior High School	9	7.8
None	23	20.0
Total	115	100.0

Source: Field Survey, 2014

4.2.4 Relationship between household size and Economic Activity of Respondents

The results according to Table 4.4 present no evidence of single headed households in the study. The results also show that majority of the two-five member households (76.6%) were engaged in farming and plantation job temporally or seasonally whilst 19.1% of them were engaged in farming and permanent plantation job. These plantation jobs include security positions for the plantation and the company. In addition, only about 4.3% of the two-five member households were into only farming as an economic activity (see Table 4.4). The results further showed that, six-ten member households were largely in only farming. This is represented by 73.1% followed by 26.9% who were also combining farming and trading as an economic activity. Once again, eleven-fifteen member households have been found to have made only farming their economic activity. This is so because farming is the major occupation of respondents within the communities. The result therefore confirms Asante Akim North Municipal Assembly Profile (2010) that Agriculture is the predominant major occupation among people aged 15 and older, comprising 53.9% of all occupations.

It can be inferred that, as household size increases, shift from the plantation jobs into farming or trading become possible. This is probably because; households needed more food than wage income which might not be adequate to sustain them. Trading as found here meant households engaged in the selling of agricultural produce (food crops), firewood, charcoal, roasted plantain, yam and cocoyam, corn, boiled corn, other domestic ingredients, clothes, small kiosks, *pito* brewing, drinking spots among others. On the whole, these results confirm the findings of Phalan (2009), Bosch and Zeller (2013) that plantation investments have the potential to generate employment and increase incomes. The results also agree with Schenoveld et al., (2010) that biofuels have the potential to bring increased employment and income to some rural populations thereby contributing to poverty reduction.

Table 4.4: Crosstabulation of household size and economic activity

			Name of employment				Total
			Farming Only	Farming and Trading	Farming Plantation job (permanent)	Farming Plantation job (temporal)	
Number of HH members	two-five	Count	2	0	9	36	47
		%	4.3%	0.0%	19.1%	76.6%	100.0%
	six-ten	Count	38	14	0	0	52
		%	73.1%	26.9%	0.0%	0.0%	100.0%
	Eleven- fifteen	Count	16	0	0	0	16
		%	100.0%	0.0%	0.0%	0.0%	100.0%
Total		Count	56	14	9	36	115
		%	48.7%	12.2%	7.8%	31.3%	100.0%

Source: Field Survey, 2014

4.2.5 Marital status and religion of Respondents

Table 4.5 presents the relationship between the religion and marital status of respondents. Majority of respondents who were Moslems and were married at the time of the study represent 85% of the total number of Moslems whilst the remaining 15% were widowed (see Table 4.5). The proportion of the respondents who were Christians and were married was 69% followed about 15% who were widowed whilst the remaining 16% were separated. Finally, all the respondents who belonged to the Traditional religion were married representing 100%. The results however show that majority of the households interviewed were married and are Christians, followed by household heads who were Muslims.

Table 4.5: Crosstabulation of Marital status of HH and Religion of Respondents

			Marital status of HH			Total
			Married	Widowed	Separated	
Religion of respondents	Islamic	Count	17	3	0	20
		%	85.0%	15.0%	0.0%	100.0%
	Christian	Count	60	13	14	87
		%	69.0%	14.9%	16.1%	100.0%
	Traditional	Count	8	0	0	8
		%	100.0%	0.0%	0.0%	100.0%
Total		Count	85	16	14	115
		%	73.9%	13.9%	12.2%	100.0%

Source: Field Survey, 2014

4.2.6 Place of origin of Respondents

Findings from Figure 4.1 show that about 83% of the total number of respondents interviewed was natives in the study communities. This was found as the 83% of the respondents answered “yes” to the demographic question “Are you a native of this community?” Conversely, 17% of them who were not indigenes of the study communities and answered “no” to the same question have cited to have come from one of the three Northern regions (viz. Upper East, Upper West and Northern regions). Analysing the indigenes of the respondents are important in understanding the modalities that may be thought to have influenced their access to customary land within the study communities.

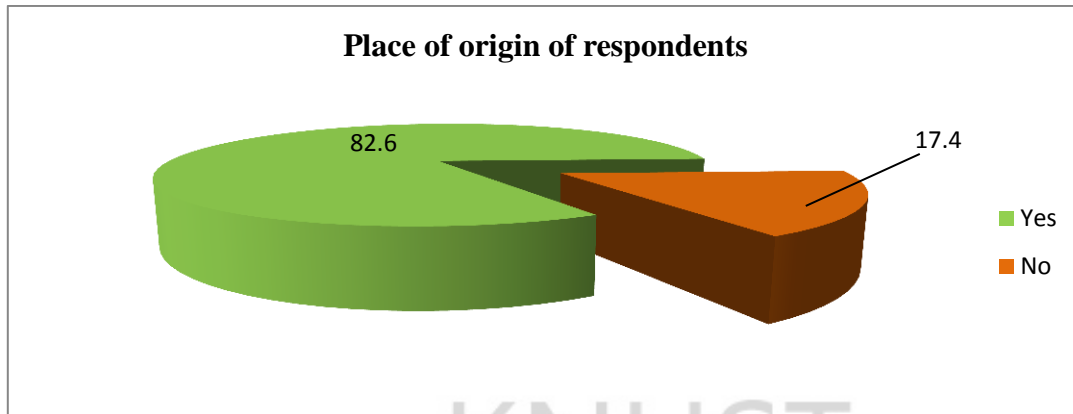


Fig 4.1: Place of origin of Respondents

Source: Field Survey, 2014

4.3 Understanding the Process for the Land Acquisition

This section of the chapter presents a systematic analysis of the processes followed in the land acquisition by the Company in tandem with the customary procedures for the disposition of land as executed by the Agogo Traditional Council. These processes were analysed based on the guidelines for land acquisition as presented by the Lands Commission of Ghana (2012) and Customary Land Secretariat as noted by Hammond (2011) in Adarkwa (2011: p 61). In fact, one of the challenges of this study was finding answers to the research question **“How was the land acquisition for the project done?”** given the complex and sensitive nature of issues emerging from the land acquisition.

In finding answers to the question however, a number of state institutions were selected (see methodology in chapter three) to provide such responses. This was important in arriving at empirical findings having extensively reviewed literature on the process of land acquisition. Analyses presented in this section show the extent to which the processes followed in the customary disposition and the acquisition of the land whose effects have called for this study, complied with institutional guidelines.

Findings from the study reveal that the Scanfuel GhanaLtd was owned by Norwegian and Ghanaian investors who were into jatropha feedstock plantation for biodiesel production for export. The Company with Thor Hesselberg being Chief Executive Officer and Barfour Kyei

as Director consulted the Agogo Traditional Council in 2007 for large tract land for the said project. The first land concession meeting was held on November 29th2007 (see Fig 4.2). A paragraph of the Head of Agreement document from the Agogo Traditional Council as presented in Fig 4.2 states that;

“The Landlords have represented to the Company that they own a large tract of agricultural land in the Ashanti Region of the Republic of Ghana and to grant leases covering in total, not less than 750,000 acres of such land to the Company for its purpose”[Head of Agreement for the land acquisition, p.1].

The above account clearly indicates that at least primary processes were followed in the land acquisition by the Company. One significant thing in this agreement is the proportion of land under agreement. Talking about “**not less than 750,000 acres** of agricultural land” which is equivalent to **at least 303,514.7 hectares** of land is not different from what has become to be known as **land grabbing** as found in empirical literature (see Sheppard and Anuradha, 2009; Sindayigaya, 2011:13; Kugelman, 2009; Cotula, 2009) presented in chapter two of this report. The acquisition of such proportion of land could in fact, have serious effects on small-scale farmers at the household level or even wipe out or displace several communities seated within the catchment of the land.

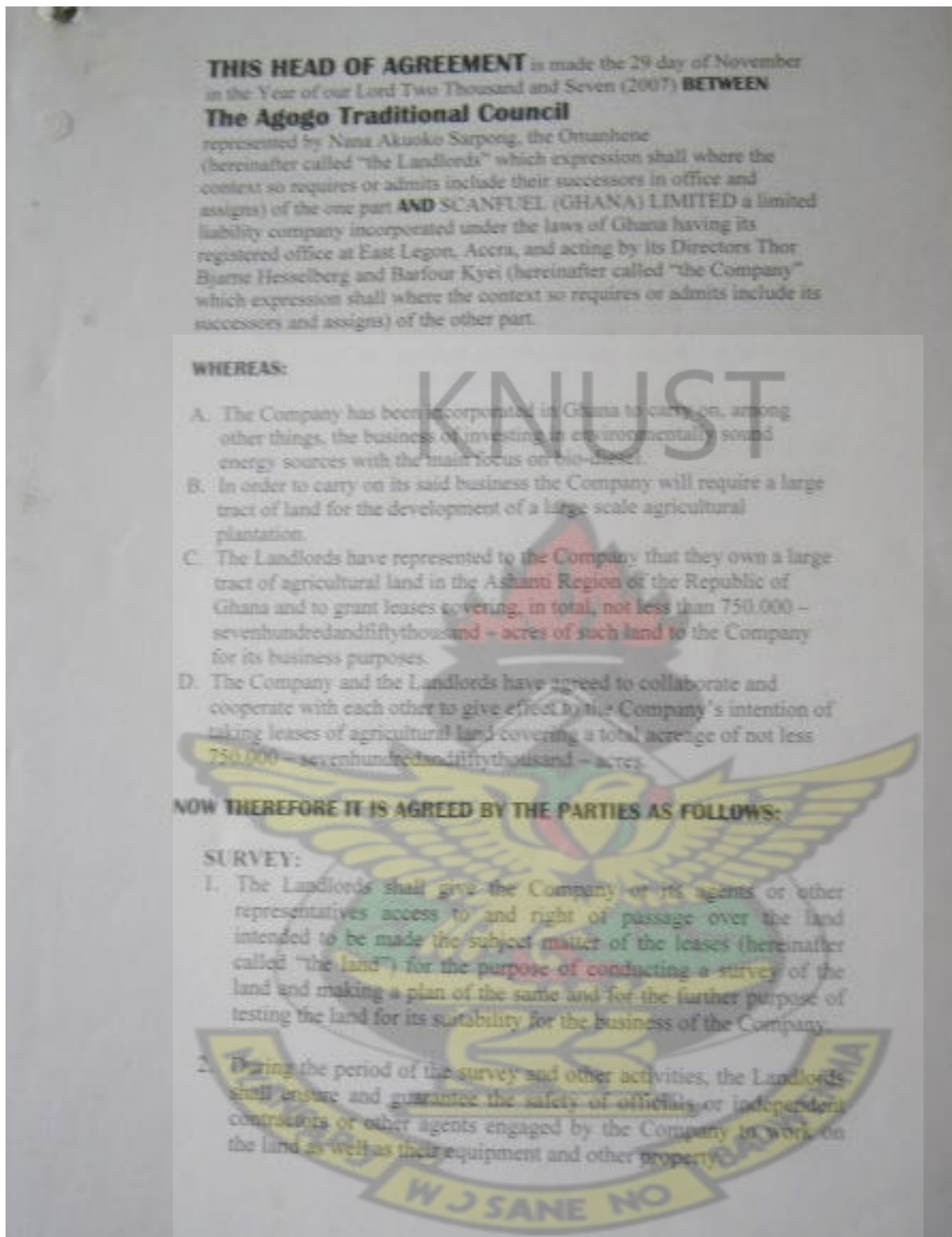


Fig 4.2: Head of Agreement for the land acquisition, p.1

Source: Agogo Traditional Council, Land Files.

Careful study of the land documents and interview with the Company officials reveal that the *not less* 750,000 acres (303,514.7 hectares) of land were actually **an aggregate** or a summation of the progressive projections of the proportions of land to be operated on from

2008 to 2017 (see Fig 4.3 and Appendix 5). The figure shows that, all things being equal, the Company's operation will claim at least 300,000 hectares of farm land until 2017. These are indeed large-scale land acquisitions as defined in literature to be land acquisitions more than 1,000 ha (whether purchases, leases or other) (GEXSI, 2008; Cotula et al., 2009).

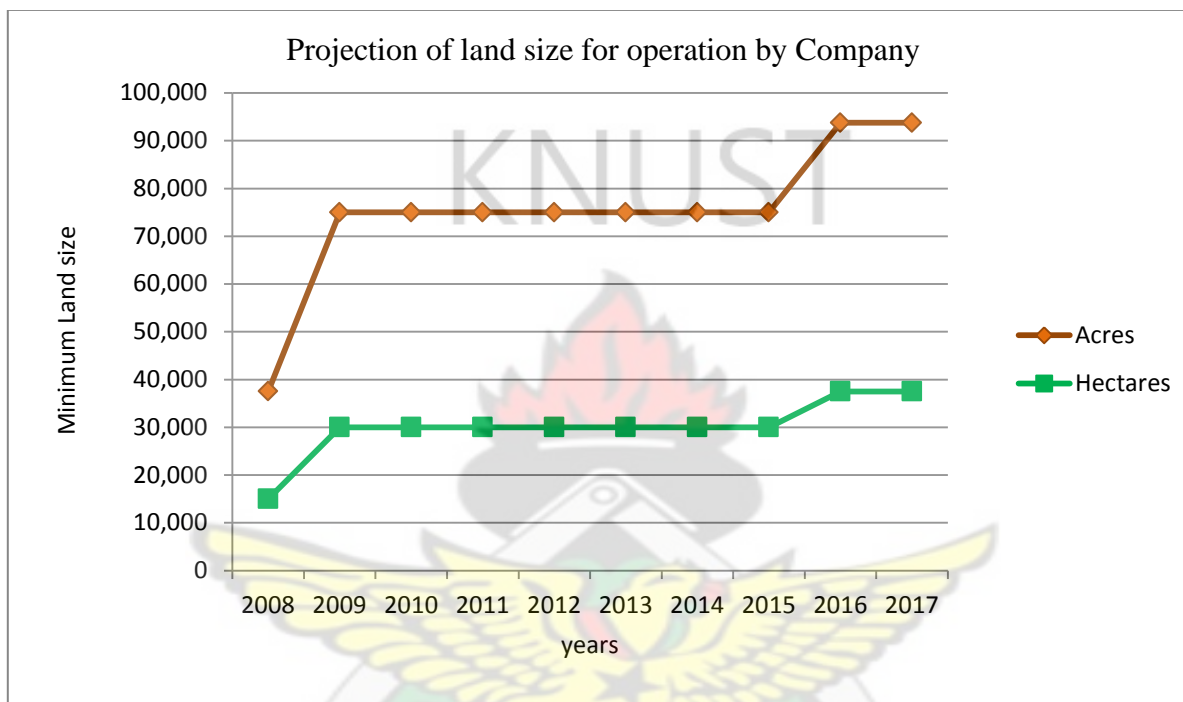


Fig 4.3: Proportions of land size projected for operation by Company

Source: Field Survey, 2014

This study therefore sought to understand how such proportion of agricultural land upon which small scale farmers depend on for their livelihoods was acquired given the numerous inconsistencies of the actual land size found in limited literature. In finding answers to the above question, institutional interviews were also conducted based on the procedures put in place by the Customary Land Secretariat and the Lands Commission for land acquisition. Table 4.5 presents the results of those interviews.

Table 4.5: Understanding the land acquisition process based on customary procedures

Steps	The Land Acquisition Process	Institutions contacted			
		TC	OASL	LC	Others*
1.	Applicant (the Company) approaches caretaker chief	✓	✓	✓	✓
2.	Allocation by chief and payment of drink money	✓	✓	✓	✓
3.	Presentation of allocation note and site plan to <i>Asantehene's</i> Lands Secretariat	X	X	✓	R
4.	Search at the Lands Commission to see whether plot is free otherwise application is returned to applicant	X	✓	✓	R
5.	<i>Asantehene's</i> Land secretariat for his confirmation of lease	X	X	✓	R
6.	Lease document submitted to Lands Commission	✓	✓	✓	R
7.	Town and country planning department for planning comments	✓	✓	✓	R
8.	Planning comments submitted to Lands Commission	✓	✓	✓	R
9.	Land Valuation Division and Internal Revenue Service for stamping	✓	X	X	R
10.	Lands Commission for plotting and oath pending dispatch of document to applicant	✓	X	X	R
11.	Land title Registry for registration	✓	X	X	R

Source: Field Survey, 2014

✓ : Process followed

X: Process not followed

R: referred interview

TC: Traditional Council/ (Authority); OASL: Office of the Administrator of Stool Lands
LC: Lands Commission.

* These were institutions which have referred some of their responses on the land acquisition process to the Regional Lands Commission. They include the Company (Scanfuel Ghana Ltd), Municipal Assembly (Land Valuation Unit), District Assembly (District Planning Office), Town and Country Planning and Assemblymen of Agogo District. These institutions have cited transfers or unavailability of their personnel who had information on the acquisition at the time of the study. They were however sure of steps 1 and 2 of the land acquisition process.

Although reasons were not given for the non-compliance to steps 3-5 by the Traditional Council, they mentioned that;

“The entire land acquisition process by the Company was fair. However, there were some issues of communal interest and concern over the land disposition. Some family and farmers’ lands were taken in the process. The issue was reported to the High Court and the matter was deferred to the Lands Commission at the national level for redress. Work is being done to that effect. The Company too has not yet paid to the Stool due to the complaint of the farmers’ whose lands were illegally taken. The Company had even sublet portions of the land to National Investment Company Ltd (NICO) for tree planting which is a contravention to the land Agreement. The Stool had written to them to that effect” [Interview with the Lands Registrar, Agogo Traditional Council, at the King’s Palace, March 28; 14:02-14:45 GMT].

The above account indicates that after the preliminary land acquisition was done, some agitations at the grassroot levels were voiced out. This could have probably led to the diminishing land size of the company as some farmers and individuals whose lands were said to have been taken, reclaimed parts of their lands. This is because, the Head of Agreement cited “not less than 750,000 ac (303,514.7 ha) of land to be leased but at the time of this study, the Site Plan as presented by the Company indicates only 13,058.45 ha (32,646.125 ac) for the land. The Company further noted that, the diminishing land size was as a result of reclamation of some parcels of the land that were said to have belonged to some farmers and individuals in the communities.

According to the Office of the Administrator of Stool Lands, the *Asantehene* Lands Secretariat was not involved in the land acquisition process (see steps 3 and 5) in Table 4.5. They mentioned that;

“Because, the Agogo Traditional Council also had Paramountcy, their land acquisition issues do not come to the Asantehene’s Lands Secretariat. Steps 9-11 were not followed and that the Company as we speak have not even secured lease

on the land. The land is not registered because of the displacement of a lot of farmers and communities within the catchment area. Compensations to be paid to displaced farmers and families were not dully done and so the National Lands Commission is not in favour of the land acquisition for the project”[Interview with the Assistant Stool Land Officers, Office of the Administrator of Stool Lands, Konongo and Ashanti Regional Office, 09:11-10:13 GMT].

Inferences from the above account show that land title and lease to the land were not prepared for the Company by the LC following the emerging concerns raised by the farmers and individuals over matters of encroachment. It can be inferred that, the position of the LC favours the interest of the individuals and the small-scale farmers. This is because; Ghana’s Constitution gives room for land acquisition up to 50 years for non-Ghanaians. This agrees with paragraph seven of Fig 4.3. The implications such acquisitions could have on small-scale farmers are widely reported in literature as presented in chapter two of this report (see Cotula, 2009; Schoneveld et al., 2010). Therefore, the LC’s position on the process of the land acquisition sits well in the interest of smallholder farmers who heavily depend on land as source of livelihoods. A section of proof of title to the land as presented in Fig 4.3 says that;

“The Stool and the Landlords shall provide to the Company evidence of their ownership of the land and shall also give to the Company all necessary assistance to enable the Company satisfy itself about the title of the landlords to the land and their right to dispose of the same”[Head of Agreement for the land acquisition, p.2].

One can therefore infer that, the Traditional Authority has speedily over exercised their custodian powers to the detriment and over-disposition of the land belonging to their subjects. The consequences on community tension, conflict, chieftaincy, household food security, tenure insecurity, landlessness, rural-urban migration and poverty as also found by World Bank (2012) and Sindayigaya (2011) cannot be underemphasized. An acre of the land according to the Head of Agreement was to be rented for USD 1.00, for the first year up to USD 3.00 in the 5th years and onwards (see Appendix 5).

Findings from Wisborg (2012) and few media reports confirm the community tension, conflict and street demonstrations of the people of Agogo due to lack of compensation and transparency emerging from the large-scale land acquisition. It was further clear from the land acquisition documents that the Head of Agreement between the Company and the Landlords was done with the terms and conditions agreed even earlier before the mandated Public consultation meeting. It was found that the Agreement was done on the 29th of November 2007 whilst the public forum was done on 29th May 2008. Clearly, the acquisition and the terms were done at the backside of the local farmers in the communities. This therefore point to the marginalization of the primary users of the land. Close assessment of the minutes covering the said public forum reveals that When one landowner requested uniformed pricing for the land to avoid tensions among settlers and other landowners affected by the project, the Chief of the Agogo Traditional Council responded that;

“This is already taken care of through the contract between the company and the Agogo Traditional Council”.

[Public Consultation Meeting- Agogo Traditional Council, May 2008. P 8] .

The above revelation therefore agrees with the findings of Deininger et al., (2011) and FAO (2010) that large-scale acquisition for jatropha is always done behind the smallholder farmers and local indigenes who are the primary users of the land.

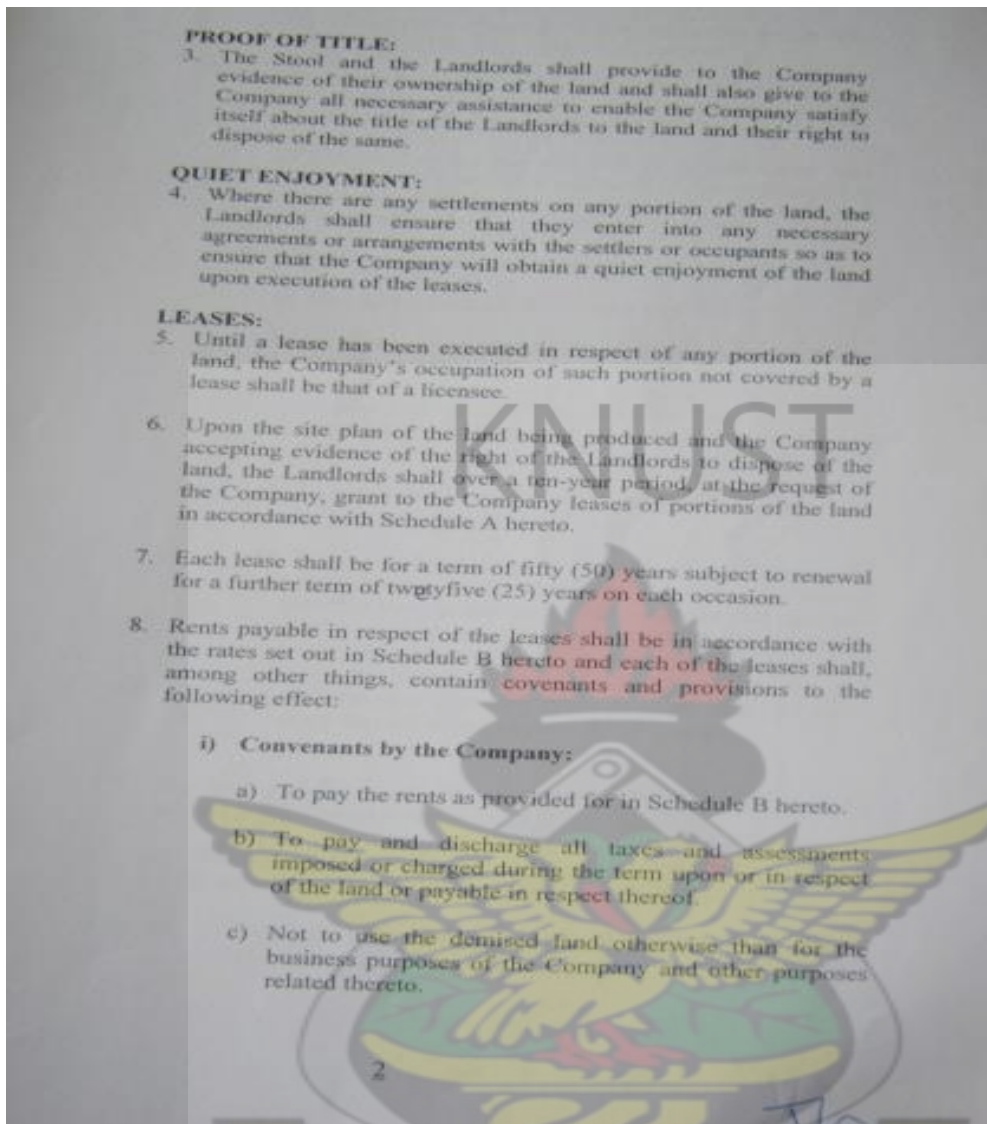


Fig 4.3: Head of Agreement for the land acquisition, p.2

Source: Agogo Traditional Council, Land Files.

The OASL's account also confirms the position of the Regional Lands Commission on the land acquisition process. As a result, a review of the entire acquisition process vis-à-vis the LC's guidelines (2012) for large-scale land acquisition as summarized in Table 4.6, present interesting revelations.

Table 4.6: Understanding the land acquisition process based on Lands Commission procedures

Stages	Guidelines to the Land Acquisition Process	Process followed
One: <i>Pre-Registration Stage</i>	<u>Public Forum (Local Hearing):</u> A local hearing/forum should be done before any lease is prepared although a preliminary agreement would have been reached between the grantor and the grantee	✓
	<u>Financing and Facilitation of the Forum:</u> The financing of the forum shall be by the acquiring body. The process shall be facilitated by a local NGO or CSO operating in the area in liaison with the Regional LC.	✓ ✓
	<u>Presiding over the Forum:</u> The District Chief Executive of the area should preside at the meeting.	✓
	<u>Participants of the Forum:</u> Participants must include but are not limited to the following: i. The Traditional Ruler/grantor or his representatives and his elders involved in land matters;	✓
	ii. Persons occupying and using any land within and contiguous to the land that is the subject matter of the acquisition;	X
	iii. The Officer in the District responsible for the following Government establishments: Planning Officer, MoFA, EPA, LC, TCPD.	✓
	<u>Issues for consideration:</u> Key facts to be made known before and during the forum will include the following c. The plan for the proposed use must be displayed and the intended use must be adequately explained including any phased development and known impacts	✓

	<u>Dissemination of the outcome of the Forum:</u> The Outcome of the Forum will be fed to the District Chief Executive of the area, the Regional Lands Commission, the Traditional Ruler, the Traditional Council and all those who affirmed the proceedings.	✓
Two: <i>Certification and Registration</i>	<u>Environmental Impact Assessment:</u> The grantee will also be advised to cause an Environmental Impact Assessment to be undertaken and a permit obtained from EPA after the grant has received the certification by the Lands Commission.	✓
	<u>Recommendation to the Lands Commission:</u> Where the land exceeds 1000 acres (approximately 400 hectares) a recommendation is made to the National Lands Commission for its consideration. This referral must be accompanied by the report of the local forum/hearing and a brief report from the Regional Lands Officer with his recommendation, including the factsheet. The Regional LC was able to make recommendation for the buffer zones.	✓

Source: Field Survey, 2014

✓ *Process followed*

X: *Process not followed*

Triangulation of data from institutional interviews and land documents show from Table 4.5 that, the processes laid down as guidelines to large-scale acquisition by the LC largely were followed. However, a very important step that talks about grass-root participation was found not to be fully followed. The guideline says that “*Persons occupying and using any land within and contiguous to the land that is the subject matter of the acquisition must be included in the public forum*”. Unfortunately, interview with small-scale farmers at the household level in the study communities largely confirms their non-involvement in the acquisition process although the community chiefs were fully informed and well represented in the process. This therefore reveals the incidence of exclusion and marginalisation of farming households who were primary users of such lands. This revelation agrees with the

findings of FAO, 2010 and Knight(2010) that land acquisitions for biofuel developments leads to lack of respect for the rights of the poor, contributes to tenure insecurity and ignores customary land rights.

4.4 Effects of Large-scale Land Acquisition on Farmers' Access to Land

This section of the chapter presents the effects of land acquisition on small-scale farmers within the communities studied. Although studies exist to explain reduced access to land with large-scale land acquisitions, such studies were not able to disaggregate the effects on the initial, operated and extra land sizes of farmers. This study therefore relates the *before* and *after* effects of large-scale land acquisition to these land uses of small-scale farmers in rural communities.

4.4.1 Effects on the initial land acquired by small-scale farmers

The effects of the land acquisition on the initial land acquired by small-scale farmers are compared in this section. Major changes in initial land acquired by farming households can be observed before and after land acquisition by the Company. The study finds no evidence of farming households engaging in farming on less than one acre before land acquisition. However, after land acquisition, about 14 percent of farming households cultivate less than one acre of land (see Table 4.7). Whereas about 81 percent of households were found to have engaged in farming on at least 5 acres of land before the land acquisition by the Company, that had dropped to about 9 percent of the total number of respondents. Majority of the households interviewed (74%); now engage in farming on 1-2 acres of land after land acquisition (see Table 4.7) as compared to about 81 percent who were farming on 3-5 acres previously. Clearly, farming households' access to land had been reduced as a result of the land acquisition by the Company. This agrees with the findings of World Bank (2002).

Again, evidence of households farming on at least 20 acres of land existed previously but now, the study found no evidence to that effect although mention of such land sizes for farming after land acquisition still exists but limited to only the community chiefs. This was reported in an interview with the chief of Dukusen (see Appendix 1.3). Further probe revealed that, such lands belong to the respective Stools the Chiefs occupy but rather, not their personal

properties. The average farm size initially acquired by the respondents was 5.6ac but this has dropped 2.4ac after the large-scale land acquisition by the Company. Computing the land sizes before and after land acquisition to test for significance using Analysis of Variance (ANOVA), a statically significant difference ($p < 0.05$) was found between land sizes initially acquired by farming households before and after the land acquisition (see Appendix 6.1 for ANOVA results).

What this means is that, there is strong effect of large-scale land acquisition on access to land for small-scale farmers. Interestingly, Krumova (2011) also found that the first victims of land grabbing are the subsistence or small-scale farmers. The results confirm the findings of Hughes et al. (2011) that increasing large-scale land acquisition leads to landlessness and tenure insecurity of smallholder farmers. The result also confirms the findings of Knight (2010) that land acquisitions for biofuel developments contribute to tenure insecurity.

Table 4.7: Size of the land initially acquired before and after land acquisition

	BEFORE		AFTER	
	Frequency	Percent	Frequency	Percent
< 1 acre			16	13.9
1-2 acres	7	6.1	81	70.4
3-5 acres	93	80.9	10	8.7
6-10 acres	7	6.1	8	7.0
11-15 acres				
16-20 acres or more	8	7.0		
Total	115	100.0	115	100.0
Mean	5.6174		2.4252	P (0.000)

Source: Field Survey, 2014

4.4.2 Effects on size of land operated on by small-scale farmers

With respect to size of land operated/ cultivated before and after the land acquisition by the Company, the trend indicates a progressive reduction in land size over the period with largest land cultivated falling from 15-20 acres or more (represented by 7%) before land acquisition to 2-5 acres (represented by 7%) after land acquisition (see Table 4.8). Specifically,

13percentand 7percentof the respondents were respectively operating 5-10 acres and 15-20 acres or more before, but these have diminished after land acquisition. Also, whilst no evidence of farmers operating on less than one acre of land before land acquisition was found, about 4percentof the respondents did after land acquisition. The relative abundance of 2-5 acre landholders decreased from 72percentbefore land acquisition to 7percentafter land acquisition, whilst 1-2 acre holders increased from about 8percentto close 90 percent before and after land acquisition respectively. The mean farm size operated by the respondents before the large-scale land acquisition was 5.12 ac but this has dropped to approximately 2 ac after the large-scale land acquisition by the Company. Statistically, significant difference ($p < 0.005$) was found for sizes of land operated on before and after the land acquisition by the Company (see Appendix 6.1 for ANOVA results). The results once again confirm the clear scarcity of land for farming after land acquisition. This could therefore explain the community and District level agitations and street demonstrations (see Wisborg, 2012) coupled with national legal actions against the Traditional Authority who were expected to act as custodians of the land.

Table 4.8: Size of land operated before and after land acquisition

	BEFORE		AFTER	
	Frequency	Percent	Frequency	Percent
< 1 acre			4	3.5
1-2 acres	9	7.8	103	89.6
3-5 acres	83	72.2	8	7.0
6-10 acres	15	13.0		
11-15 acres				
16-20 acres or more	8	7.0		
Total	115	100.0	115	100.0
Mean	5.1261		1.9522	P(0.000)

Source: Field Survey, 2014

4.4.3 Effects on farm size expansion (extra land)by small-scale farmers

Results presented in Fig 4.4 were respondents' answers to the question "Did you expand your land use after your initial land acquisition?" The results indicated that whilst 72 percent of the respondents did acknowledge farm expansion before land acquisition by answering "yes" to the research question; only about 54 percent did after the land acquisition by the Company. This shows a decrease of 18 percent of land expansion after the land acquisition. Clearly, there is an exponential decrease (see broken arrow) in the land expansion by the respondents (see Fig 4.4). This shows that, land expansion after initial land acquired had been decreasing as a result of large-scale acquisition.

The effects on household agriculture are that, farming systems and crop typologies will change so as to enable the small-scale farmers to adopt coping strategies to the effects of the land acquisition as found by Oduro-Ofori and Hamenoo (2014). It can be inferred mathematically that land expansion has an inverse relationship with large-scale land acquisition. This mean that as large-scale acquisition continues, farm land expansion for small-scale will be diminishing. This could be said to agree with the findings of World Bank (2002) that increasing large-scale land acquisition will lead to landlessness and tenure insecurity of smallholder farmers. Nevertheless, about 28 percent of the small-scale farmers acknowledged their non-expansion of farm land prior to the land acquisition by answering "no" but this has increased to 46 percent after land acquisition. Indeed, farmers' non-expansion of farm land has been seen to be increasing after land acquisition. This phenomenon could be said to be pointing to landlessness.

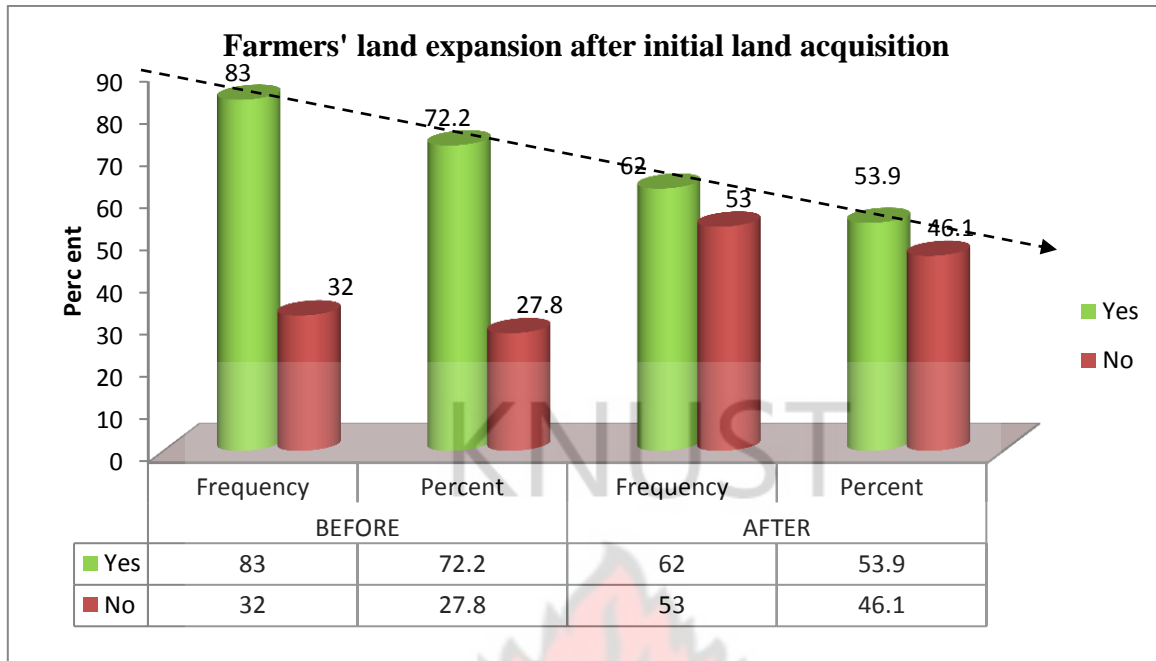


Fig 4.4: Farmer's land use expansion after their initial land acquisitions.

Source: Field Survey, 2014

In checking for the proportion of extra size of land acquired having answered the above question, respondents who answered 'yes' were asked to mention the proportions of land they had expanded before and after the large-scale land acquisition. It is found that land expansion of less than one acre was not a practice for the 83 respondents previously. Meanwhile, 56 percent out of the 83 respondents used to operate on 1-2 acres of **extra land** before land acquisition. In addition, 13 percent of farmers have had land expansion of 3-5 acres out of the total number of respondents who have expanded their farmlands prior to the large-scale land acquisition.

However, 45 percent out of a number of 62 respondents had land expansion of less than one acre after land acquisition. This is followed by about 9% of the respondents expanding 1-2 acres of farmland. Clearly, proportion of land expansion had also diminished after land acquisition. This shows that, land is not accessible as it used to be before the large-scale land acquisition (see Table 4.9).

The average farmland expansion before the large-scale land acquisition was significantly higher (2.1325ac) than after the large-scale land acquisition (0.6727ac).

Table 4.9: Amount of extra land in total acquired before and after land acquisition

	BEFORE		AFTER	
	Frequency	Percent	Frequency	Percent
< 1 acre			52	45
1-2 acres	64	55.7	10	8.7
3-5 acres	15	13.0		
6-10 acres	4	3.5		
11-15 acres				
16-20 acres or more				
not applicable				
Total	83	72	62	53.9
Mean	2.1325		0.6727	P(0.000)

Source: Field Survey, 2014

4.4.4 Effects on how land was acquired by small-scale farmers

Effects on how farmers acquired their lands before and after the land acquisition by the Company show only slight variations. The proportion of respondents who consulted and rented land from their community Chiefs were 65percent before the large-scale land acquisition by the Scanfuel Ghana Ltd. This has gone up to 66percent after land acquisition. Nevertheless, the proportion of respondents who consulted the chief but got the farm land for free and those that got land by inheritance remained unchanged before and after land acquisition, represented by 13percent each (see Table 4.10). Similarly, the proportion of respondents who personally purchased land remained unchanged, representing 7percent each. Given that majority of the respondents have consulted their respective community Chiefs for land, their rights and control over such lands rests in the hands of their Chiefs. Their security of tenure is not constant. This therefore explains why majority of the respondents (81% of 2-5 acre of land farmers) have lost their lands or have had reduced access to land (about 9%) and had to travel very far from their communities in search for cultivable lands, although data on such distances could not be quantified.

Table 4.10: How land was acquired before and after land acquisition by respondents

	BEFORE		AFTER	
	Frequency	Percent	Frequency	Percent
Consultation and renting from chief	75	65.2	76	66.1
Consultation but <i>free</i> from chief	8	7.0	8	7.0
By inheritance	15	13.0	15	13.0
From other persons for sharecropping			4	3.5
Personally purchased	8	7.0	8	7.0
Not applicable (other family members)	9	7.8	4	3.5
Total	115	100.0	115	100.0

Source: Field Survey, 2014

4.4.5 Effects on cost of land acquired by small-scale farmers

With regards to the cost of land before and after land acquisition, there was a substantial rise in cost of land for farming after large-scale land acquisition for small-scale farmers who did not have ownership or control over the land. These were farmers who consulted and rented lands from the chiefs. Whilst evidence of some unspecified number of farmers do present to their chiefs portions of their farm produce as appreciation for their access to land for farming, other farmers believe that the monies they paid was ok. Whilst up to GHc 50 was the dominant cost of land per year for any land size for 65.2 percent of the respondents before land acquisition, the proportion of respondents who paid the same rate for lands dropped to 60percent(see Table 4.11). It must be mentioned here that, there are no clearly defined rules and modalities as to how much one pays for land for farming purposes. It must be stated further that the word *free* as mentioned by the given proportion of respondents was limited to financial commitments.

Interview with the Chief of Dukusen (see Appendix 1.3) on the cost of land indicates that;

“Previously, for farming households, whatever small money (generally GHc 40) one gets for the Chief, which is also called ‘drink money’ with two bottles of schnapps, was considered enough to get land for farming for a year irrespective of the land size requested. But now, one needs to carry a bigger envelop based on the quality of land requested. The lands (for small-scale farming) are now far away from community”

[Interview with the Chief of Dukusen, April, 19, 2014. 14:17-14:48 GMT].

A “bigger envelope” as presented in the above account means more money. The above account therefore agrees with the cost of land cited by majority of farming households (see Table 4.11). Also, cost of land for farming appeared to have relatively increased from at least GHc 50 before land acquisition to between GHc 51-100 after land acquisition (represented by only six percent of the total number of respondents). This could be due to the shortage of farming land within reasonable distances in the communities as a result of the large-scale land acquisition by the Company. Interestingly too, costs of land of GHc 501-1000 remained unchanged before and after land acquisition for seven percent of the respondents each (Table 4.11). This could be explained by the proportion of respondents who have probably purchased their own lands for agricultural purposes. And so, it made little sense in determining the yearly cost of use of their farmlands.

However, the proportion of respondents who do not pay for the land yearly or got lands for free or for sharecropping found payment for their lands *not applicable* represented by about 22 percent and 27 percent before and after the large-scale acquisition respectively. Minimum and the maximum costs of land before large-scale land acquisition were and Ghc 20 and GHc 800 respectively but these increased relatively to Gh 30 and GHc 1000 after large-scale land acquisition as minimum and maximum costs of land respectively. Also, the average cost of land for farming per year was GHc87.22 before the large-scale land acquisition whilst after the land acquisition, the average cost of land stood at GHc 109.29. Statistically, significant differences ($p < 0.005$) were found between cost of land for farming before and after the land acquisition (see Appendix 6.1 for ANOVA results).

It stands to reason therefore that the relative increase in the cost of land could be due to the large-scale land acquisition by the Company. The implication is that, farming households which cannot get money to pay for the land may be searching for jobs in the cities or engage in selling their farm labour as coping strategies as also found by World Bank, 2002 and Oduro-Ofori and Hamenoo, 2014.

Table 4.11: Cost of land before and after land acquisition by small-scale farmers

	BEFORE		AFTER	
	Frequency	Percent	Frequency	Percent
up to GHc 50/yr	75	65.2	69	60.0
GHc 51-100/yr			7	6.1
GHc 101-500/yr				
GHc 501-1000*	8	7.0	8	7.0
Cannot tell	15	13	8	7.0
Not applicable	25	21.7	31	27.0
Total	115	100.0	115	100.0
Mean	87.2222		109.2857	P(0.002)

Source: Field Survey, 2014

* *Personally purchased lands*

4.4.6 Effects on difficulty of access to land for small-scale farmers

This section of the chapter presents the results based on a 5-point Likert Scale (see Methodology for details). The interpretation of the scales was based on how easy farmers got access to land before and after land acquisition. And so, from Figure 4.5, not only have the prices of the lands become generally increased but it also appears that access to land has become more difficult based on the responses from respondents. No respondents were found *neutral* on the difficulty of access to land. However, whilst about 37percent of the respondents reported their land acquisition to be *not difficult* before the large-scale land acquisition by the Scanfuel, only 13percent reported so after the large scale land acquisition.

Again, before the large-scale land acquisition, access to land was not very difficult as reported by 44percent of the respondents although some 19percent of the respondents thought

otherwise. That being said, things have changed after land acquisition. In fact, difficulty of access to land could be said to be increasing exponentially (see broken arrow) with or after large-scale land acquisition. This is confirmed by about 38percent and about 49percentof the respondents citing access to land to be *difficult* and *very difficult* respectively after land acquisition (see Fig 4.5). In probing for possible reasons respondents had on difficulty of land access, they mentioned that “Previously, one could get land nearby but after the presence of the Company, getting land is not easy like before”.

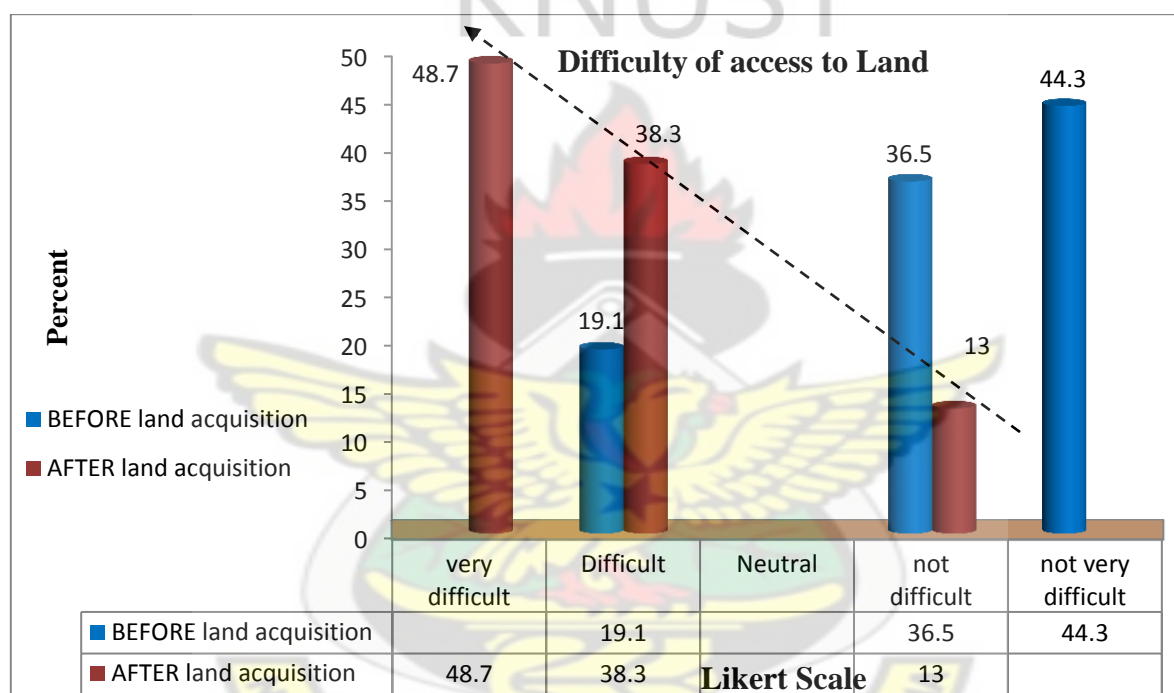


Figure 4.5: Difficulty of access to land before and after land acquisition

Source: Field Survey, 2014

4.4.7 Effects on farming systems for small-scale farmers

The study found weak evidence of the effect of the land acquisition on farming systems of respondents, although there had been strong evidence on reduction of farm sizes and reduced access to land. This is because, farming households who used to practice mixed cropping, intercropping and crop rotation before land acquisition still do same even after land acquisition on their reduced or limited lands. However, evidence of two typical farming

systems (i.e. land rotation and shifting cultivation) had diminished after the Company came to acquire the land. Reasons to explain this change were attributed to the large-scale land acquisition as mentioned by the respondents, the Traditional Authorities and other stakeholders the Lands Commission and the Office of the Administrator of Stool Lands. In such interviews conducted with some of the key informants of this study (see Appendix 1.2 and 1.3 for photographs), it came out that;

“Before the land acquisition by the Scanfuel, a lot of farmers used to practice shifting cultivation and land rotation. Thus, they used to farm on specific lands for few seasons and vacate to farm on other lands. They therefore would allow the previous lands to fallow before they return to farm on them. These had been the practice before. But after land acquisition, these types of farming systems are no more practiced”[Interviews conducted with the Agogo Traditional Council, the Chiefs of Agogo and Dukusen, April-May, 2014].

The above account clearly suggests that only farming systems that involved changing the land or rotating the land for a period have diminished as a result of the large-scale land acquisition. Although these farming practices have been condemned in literature as contributing to deforestation (see Abbey et al., 2001), findings from FAO (1997) and Tenaw et al. (2009) have linked the shifting cultivation and land rotation farming systems to the availability of land.

4.5 Effects of Large-scale land Acquisition on Household Economy of farmers

In this section of the chapter, findings on how large-scale land acquisition affected the household economy of small-scale farmers are presented. The section looks at results on the production, consumption, income and expenditure levels of the respondents before and after land acquisition in order to make inferences. Evidence on major crop typologies produced by households is also presented. In this thesis report, measurements of production and consumption quantities were based on 50kg bags as a standard approach to quantifying most agricultural produce as noted by the Ministry of Food and Agriculture. Although some farmers quantify their produce using baskets, this study therefore limits these measurements to

the use 50 kg bags given the inconsistencies in the estimation of baskets due to its variety of sizes. These bags are used to sell grains and cereals (maize, beans, and groundnuts, among others) and vegetables like cabbage and onion. Conversely, crops like yam and plantain were respectively measured based on counts of tubers and bunches produced as also accepted by the Ministry of Food and Agriculture.

4.5.1 Effects on quantity of food crops produced by farming households

The study found that, typologies of food crops produced varied from household to household. While the study did not collect data on the variations in household food crop production, it is assumed based on simple economic principles that consumer behaviour and consumer choice are not constant and vary due to individual preferences; and such differences also exist at the household level. That is not to overrule the fact that, cultivation of types of crops is also dependent on agro-ecological zones. That being said, the study has therefore drawn the line on four dominant household food crop productions irrespective of the varieties (viz. maize, yam, plantain and vegetables).

Output levels are very important measures within the household economy in this study. This is because, output levels to a large extent depends on the size of land cultivated. It can be said therefore that, the relatively larger the size of land is, the bigger the output of crops produced will be and vice versa. Table 4.12 thus shows that approximately 59 percent of the sample population had an average of 11-20 bags of maize per farmland before the land acquisition. However, there was a significant reduction from the 59 percent to 39 percent after the land acquisition by the Company. Whilst no evidence exists before land acquisition on respondents producing 1-10 bags and at least 51 bags of maize per farmland, 27 and 13 percents of the respondents do so after land acquisition respectively. This could be explained by the proportion of household who had land by inheritance or personally purchased land for maize production. Proportions of the respondents who produce other crops excluding maize (representing 26%) found it non-applicable as they did not cultivate maize before land acquisition. This proportion of the respondents however dropped to 13% after land acquisition.

The implication is that, 13 percent of the respondents had engaged in maize production after the land acquisition. The proportion of respondents who could not tell their production quantities of maize per farm size remained unchanged (see Table 4.12). The results generally, show that quantity of maize production has increased after the land acquisition by the Company.

The average total output for maize production before land acquisition stood at 16.7895 bags. After the large-scale land acquisition, the figure rose to 18.9780 bags of maize. A statistical significant difference ($p < 0.05$) was found between quantities of maize produced before and after the land acquisition (see Appendix 6.2 for ANOVA results). The results therefore agreed with GEXSI (2008) which found that jatropha cultivation has not led to a reduction in food production although GEXSI's study was not limited to maize production. The observation was said to have been induced by households increasing use of inorganic fertilizers to boost production levels of maize. This agrees with the findings of Nyangena and Ogada (2014) and Masinde (2012) that inorganic fertilizers and improved maize varieties significantly increase maize yields when adopted as a package, rather than as individual elements.

Table 4.12: Average quantity of maize produced before and after land acquisition

	BEFORE		AFTER	
	Frequency	Percent	Frequency	Percent
1-10 bags*			31	27.0
11-20 bags	68	59.1	45	39.1
21-30 bags	8	7.0		
31-50 bags				
51 bags and above			15	13.0
not applicable**	30	26.1	15	13.0
can't tell***	9	7.8	9	7.8
Total	115	100.0	115	100.0
Mean	16.7895		18.9780	P(0.005)

Source: Field Survey, 2014

* A bag as used throughout this thesis report was based on the 50kg bag (jute sac or rubber type).

*** Not applicable as presented in the Tables are indicative of households who produce other types of crops except the crop in a given table under discussion. Again, within the structuring and the coding systems of the data collected, skip patterns were introduced so as to prevent mis-representation of data. For instance, all respondents were asked to mention four main food crops they produced on their farms so as to facilitate appropriate selection of measurement units. Therefore, respondents who did not produce maize could not be seen to be giving figures on the quantities of maize produced. As a result, figures for those respondents on the quantities of maize or any other crops they did not produce become “not applicable”.*

**** Can't tell as presented here refers to respondents who could not remember figures or answers to the question asked by the Researcher before and/or after the land acquisition. Also, the missing values in the table indicate that, some respondents do not produce those crops and so could not give figures to that effect.*

On yam production at the household level, the study found that, households that produced between 51-100 tubers per total farmland before land acquisition dropped from 53 percent to 46 percent after land acquisition (see Table 4.13). This suggests a 13 percent reduction of respondents into yam production for 51-100 tubers. The study found no evidence of households producing 1-50 tubers of yam before and after land acquisition. Quantity of yam produced has been seen to have increased relatively after land acquisition by households for 101-150 tubers and from 201-200 tubers or more. The implication is that, due to the shortage in land availability for production, farming households had to maximize their yam productions in order to sustain the household consumption. There was however no change in the output of those who produced over 201-250 tubers of yam per farmland.

The averages of total yam produced by the small-scale farmers before and after the large-scale land acquisition stood at 104.5 and 130.7921 tubers respectively. Consequently, there was no statistical significant difference ($p>0.05$) between household quantity of yam production before and after land acquisition (see Appendix 6.2). This could be attributed to households who do yam production on their own purchased farmlands or family lands or lands gotten from their community chiefs on the grounds of blood relations. And so, these households were not so affected by the land acquisition compared to the majority of households who rented

lands from the chiefs or got lands from other means. Evidence of respondents who found yam production not applicable to their household economy before and after land acquisition as well as those who could not tell their production levels exist (see Table 4.13). Generally, the results show that quantity of yam production has increased after the land acquisition by the Company. The results therefore agreed with GEXSI (2008) which found that jatropha cultivation has not led to a reduction in food production.

Table 4.13: Average quantity of yam produced before and after land acquisition

	BEFORE		AFTER	
	Frequency	Percent	Frequency	Percent
1-50 tubers				
51-100 tubers	61	53.0	53	46.1
101-150 tubers			16	13.9
151-200 tubers			15	13.0
> 201-250 tubers	15	13.0	15	13.0
not applicable	15	13.0	7	6.1
can't tell	24	20.9	9	7.8
Total	115	100.0	115	100.0
Mean	104.5		130.7921	P(0.828)

Source: Field Survey, 2014

Table 4.14 also depicts the average quantity of plantain produced per total farmland cultivated in the study areas before and after the land acquisition for jatropha plantation. The study however revealed that farmers who harvested 41-50 bunches of plantain per farmland recorded over 20 percent increase in average output after the Company's land acquisition.

The ANOVA results show an average of 38.4 bunches for the total plantain output per farmland before large-scale land acquisition whiles after the land acquisition average plantain production rose to 46.5 bunches. The difference is therefore significant ($p < 0.05$). This was as a result of fertilizer applications to boost productions given the limited nature of land access. Olagunju and Salimonu (2010) and FAO (2000) have also found that farmers have been using fertilizer primarily on commercial/ export crops, but in recent years, an increasing quantity of fertilizers is being used on such food crops as rice, maize, wheat, yams and cassava.

This could also be attributed to the fact that, plantains are generative or vegetative plants and so; one does not need to do replanting after each harvest. That therefore explains why households are shifting into plantain cultivations after the land acquisition for jatropha plantation. The results also show that plantain production has increased after the land acquisition. These results therefore agreed with the global study conducted in 55 countries on jatropha by GEXSI (2008), which found that jatropha cultivation has not led to a reduction in food production. The results therefore confirm the findings of Boamah (2011) that large-scale land acquisition for jatropha plantation improved household food security in the project villages through employment creation in the plantation as well as increased food production.

Table 4.14: Average quantity of plantain produced before and after land acquisition

	BEFORE		AFTER	
	Frequency	Percent	Frequency	Percent
1-10 bunches				
11-20 bunches				
21-30 bunches				
31-40 bunches	7	6.1	7	6.1
41-50 bunches	8	7.0	31	27.0
51 and above				
not applicable	100	87.0	75	65.2
can't tell			2	1.7
Total	115	100.0	115	100.0
Mean	38.4		46.5	P(0.010)

Source: Field Survey, 2014

Table 4.15 also shows the average quantity of vegetables produced per farmland in the study areas prior and post land acquisition. The results presented in this section were based on the productions of cabbage. The study found that there has been a general increase in vegetable production for households after the large-scale land acquisition (see Table 4.15). Significant difference ($p < 0.05$) therefore exist between vegetable production before and after the large-scale land acquisition. This emerging trend could be due to the need for households to switch to the production of vegetables as short term crops so as to enable respondents maximize household income. This therefore agrees with the findings of Oduro-Ofori and Hamenoo

(2014) the production of short term crops is a coping strategy for households in response to large-scale acquisition.

Table 4.15: Average quantity of vegetable produced before and after land acquisition

		BEFORE		AFTER	
		Frequency	Percent	Frequency	Percent
Valid	1-10 bags			8	7.0
	11-20 bags	7	6.1	60	52.2
	21-30 bags	8	7.0	15	13.0
	31-40 bags			8	7.0
	41-50 bags				
	>51 bags				
	Not applicable	100	87.0	24	20.9
	Total	115	100.0	115	100.0
	Mean	20.07		23.75	P(0.000)

Source: Field Survey, 2014

4.5.2 Effects on quantity of food crops consumed by farming households

This section of the chapter links large-scale land acquisition to household food consumption. These consumptions are limited to household food production as earlier presented. Table 4.16 depicts the average quantity of maize consumed per farmland by the small-scale farmers. The table shows that approximately 52 percent of the farmers consumed 1-10 bags of maize on average before land acquisition by the jatropha plantation Company. This however reduced to 20 percent, depicting approximately 62 percent reduction after the land acquisition by the Company for 1-10 bags consumers. Strong evidence of households consuming 41-50 bags of maize have also been found after the large-scale land acquisition. On the overall, the aggregate maize consumption after the large-scale land acquisition by the Company has been found to have been higher (with a mean of 23.9737 bags) than previously (with a mean 10.4324 bags). The difference could be explained by the increase in household over the period coupled with the production local drinks such as *pito* with sugar, *pito* without sugar; white porridge and maize pastries.

The difference in household food crop consumption for maize before and after the land acquisition has been found to be statistically significant ($p < 0.05$). This therefore agrees with the findings of GEXSI (2008) which found that jatropha cultivation has not led to a reduction in food consumption.

Table 4.16: Average quantity of food crop (maize) consumed before and after land acquisition

		BEFORE		AFTER	
		Frequency	Percent	Frequency	Percent
Valid	1-10 bags	60	52.2	23	20.0
	11-20 bags	14	12.2		
	21-30 bags				
	31-40 bags				
	41-50 bags			15	13.0
	>51 bags				
	Not applicable	30	26.1	66	57.4
	Can't tell	11	9.6	11	9.6
Total		115	100	115	100
Mean		10.4324		23.9737	P(0.027)

Source: Field Survey, 2014

Table 4.17 also presents household food consumption (yam). The table indicates that 72.2 percent and 57 percent of the sampled small-scale farmers consumed 51-100 tubers of yam per farmland before and after the acquisition by the jatropha plantation respectively. Households that consumed 1-50 tubers have slightly reduced after land acquisition. The average yam consumption by households showed 75.74 tubers previously and 67.6 tubers after the large-scale land acquisition. The difference is found to be significant ($p < 0.05$). The implication is that, households now have to cut down on their yam consumption so as to sell some to get income to support themselves. As a result, reductions in their consumption of quantities of food crop (yam) produced have been found as shown in Table 4.17. This is to enable them sell the rest for household income.

Conversely too, the study found that although evidence of plantain and vegetables consumption exists at the household level, majority are sent to the market for sell to support household income.

Table 4.17: Average quantity of food crop (yam) consumed before and after land acquisition

		BEFORE		AFTER	
		Frequency	Percent	Frequency	Percent
Valid	1-50 tubers	6	5.2	8	7.0
	51-100 tubers	83	72.2	66	57.4
	101-150 tubers	8	7.0		
	151-200 tubers				
	> 201-250 tubers				
	Not applicable	7	6.1	30	26.1
	Can't tell	11	9.6		
Total		115	100.0	115	100.0
Mean		75.74226		67.6	P(0.027)

Source: Field Survey, 2014

4.5.3 Effects on income (farm and non-farm) of farming households

This section of the chapter presents and discusses results on income and expenditure of farming households per farming season before and after land acquisition.

The results show that the proportion of households who used to earn up to GHc 200 per farming season (represented by 12%) has relatively increased by 5% after land acquisition (see Table 4.18). This is followed by a sharp decrease in the proportion of households who significantly earn GHc 201-500 before the land acquisition to 11% after the land acquisition. This could be due to the reduced access to land for those households after the land acquisition by the Company. In addition, households that used to earn GHc 501-800 per farming season has now increased from 6% to 27% after the land acquisition by the Company. This is closely followed by those that earn GHc 801-1000 per farming season increasing from 7% to about 22% after land acquisition. Interestingly, while no evidence exists on households previously earning more than GHc 1000 per farming season, such evidence therefore exists after the land

acquisition (7%), although it appears weak. The implication is that, households have now maximised their crop productions for commercial purposes to support their household expenditure. Nevertheless, households with no regular source of income before land acquisition have also reduced from 13 % to 7% after the land acquisition while the proportion of households that could not tell their income levels remained unchanged (Table 4.18).

The ANOVA results show an average of GHc 401.4 for household farm income per season before the large-scale land acquisition. Average household farm income after the large-scale land acquisition was GHc 656.7 per season. Clearly, household farm income has significantly increased after the land acquisition by the Company. This could be explained by households' reduction in consumption at the household level as more of their farm produce are rather sent to the market for sale. This observation therefore agreed with Sindayigaya (2011) that, jatropha plantation impacts the ability of small-scale farmers to generate more income and provide for their families.

Table 4.18: Average household farm income before and after land acquisition

Average HH income	Before		After	
	Frequency	Percent	Frequency	Percent
up to Ghc 200	14	12.2	20	17.4
Ghc 201-500	61	53.0	13	11.3
Ghc 501-800	7	6.1	31	27.0
Ghc 801-1000	8	7.0	25	21.7
>Ghc 1000			8	7.0
No income	15	13.0	8	7.0
Can't tell	10	8.7	10	8.7
Total	115	100.0	115	100.0
Mean	401.4444		656.7010	P(0.000)

Source: Field Survey, 2014

The study found further that households' non-farm income has significantly increased after land acquisition. From Table 4.19 it can be observed that approximately 45% of the total number of respondents earned an average non-farm income of between GHc201-500 within the last two years before the land acquisition. However, within the last two years after the acquisition an appreciable percentage of 39% and 26% of the respondents earned between Ghc 501-800 and up to GHc200 respectively as non-farm income. Average household non-farm income was GHc 541.91 before the land acquisition while average household non-farm-income after land acquisition was GHc 646.84 (Table 4.19).

The relative increase in non-farm income of households was due to a few respondents who were permanently or temporarily employed on the Company's plantation in addition to the emerging increased selling of agricultural produce on the market by the households to support household income. Evidence of households engaging in woodfuel production and selling was also found to have served as alternative sources of income (non-farm income).

As a result, those households have therefore experienced increase in income after land acquisition. The results here agreed with the findings of Phalan (2009) that biofuel plantations have the potential to bring increased employment and income to some rural populations thereby contributing to poverty reduction although not all respondents were employed on the jatropha plantation.

This is therefore confirmed through a key informant interview with the Chief Operations Manager of the Company. He mentioned that;

“In all, there are a total of 50 permanent staffs made up 12Implement operators, 5 Supervisors, 5 Office staff, 5 Securities, 12Store/ and canteen people, and 4 Managers. Employment for major seasons is around 150 men and women for pocket spraying, cob picking, manual threshing, winnowing, bagging, Loading and offloading. Payment is done on weekly basis where leaders of these employees come to pick the monies for sharing to people. Nobody takes below GHc15 per day”

[Scheduled telephone interview with the Chief Operations Manager of Company, March13 and 17, 2014].

Table 4.19: Average household non-farm income before and after land acquisition

Average HH income	Before		After	
	Frequency	Percent	Frequency	Percent
Up to Ghc 200	8	7.0	30	26.1
Ghc 201-500	52	45.2	-	-
Ghc 501-800	8	7.0	45	39.1
Ghc 801-1000	15	13.0	7	6.1
>Ghc 1000	22	19.1	15	13.0
No income	10	8.7	15	13.0
Can't tell	15	13.0	10	8.7
Total	115	100.0	115	100.0
Mean	541.9126		646.8421	P(0.000)

Source: Field Survey, 2014

Other livelihood sources of income to households include charcoal production, firewood collection and selling, although not all households sell wood fuel. The study further found that woodfuel is a major livelihood activity for all before and after the acquisition. This is because, woodfuel served as an important household energy for cooking by households in all the communities studied. This therefore confirms the findings of UNDP (2010), a national survey that have had my inputs, that woodfuel serves as main household energy for cooking for rural dwellers. The results of this study also found that livelihood activities such as fruit picking and hunting representing about 75 and 73 percents of households respectively had diminished absolutely after land acquisition (see Table 4.20). This also confirmed the findings of Schoneveld (2010) that the phenomenon of large-scale land acquisition can significantly exacerbate rural poverty as communities lose access to vital livelihood resources.

Table 4.20: Multiple response of Livelihood activities of respondents

Responses	BEFORE		AFTER	
	Cases	Percent	Cases	Percent
Woodfuel (charcoal/firewood)	115	100	115	100
Fruit Picking	86	74.8	-	-
Hunting	84	73.0	-	-

Source: Field Survey, 2014

4.5.4 Effects on expenditure (food and non-food) of farming households

This section also presents results and discussion on household expenditure. It must be noted that the study, recognising the complexities and variations in measuring household expenditure has limited data on only farm and non-farm expenditures per farming season before and after land acquisition. This is to closely link the analysis to household food production which has been earlier shown to have depended on access to land. In addition, the study sought to link the difference in expenditure on non-food items which also depend on income from farming and other livelihood activities.

The study revealed that expenditure on food items (rice, beans, *garri*, salt, fish, meat, egg, milk, sugar, milk, cubes, etc.) by majority of household within the last two years after the large acquisition of land has shot up as shown in Table 4.21. From the study it was revealed that while only about 15 percent of households spent between GHc 201-500 before the acquisition of the land, 53 percent of the households now spend the same amount of money after the land acquisition. In addition, whereas about 50 percent of households spent up to GHc 200 prior to the acquisition, only 18 percent now spend up to GHc 200 within the last two years after the land acquisition. It is worth noting that 13 percent of the households now spend as high as GHc 501-800 per farming season within the last two years after the land acquisition.

Average household food expenditure per season was significantly lower (GHc 230.5) than average household food expenditure after the land acquisition (GHc 434.8). The increase in household food expenditure could be due to the increase in household sizes after land acquisition, the increase in household farm and non-farm incomes and the inability of the households to produce every food household members needed. Important information that can be gleaned from the study was also of the considerable percentage (21.7 %) of people who could not account for the amount of income they spend on food. This may be partly due to the fact that these households have had access to land and cultivated most of the food crops they consumed as this is a common phenomenon in farming communities. It can also be partly attributed to the educational background of these respondents as the study has shown in the demographic section that some household heads had not been to school.

Table 4.21: Average household expenditure on food items before and after land acquisition

Average HH income	BEFORE		AFTER	
	Frequency	Percent	Frequency	Percent
Up to Ghc 200	58	50.4	21	18.3
Ghc 201-500	17	14.8	61	53.0
Ghc 501-800	-	-	15	13.0
Not Applicable	15	13.0	8	7.0
Can't tell	25	21.7	10	8.7
Total	115	100.0	115	100.0
Mean	230.5333		434.8454	P(0.000)

Source: Field Survey, 2014

Statistical significant difference was found between average household non-food expenditure before and after the large-scale land acquisition. The results showed that average non-food expenditure before (GHc 282.6) was lower than after (GHc 607) after the land acquisition (see Table 4.22). This is because, no households have made non-food expenditure within the groups of GHc 501-800, GHc 801-1000 and above GHc 1000 before land acquisition as compared to 6, 7 and 13 percents of the respondents respectively after land acquisition (Table 4.22). The only household non-food expenditures prior to the large-scale land acquisition had been up to GHc 200 and between GHc 201-500 represented by 39 and 26 percent of the respondents respectively. Some of the non-food expenditures items identified include farm inputs like seeds, fertilizers, pesticides, weedicides and transportation among others.

However, within the last two years after the acquisition of land, expenditure on non-food items has increased to an amount above GHc1000. Approximately, 56 percent of households spent between GHc 200-500 while another 13 percent spent above GHc1000 on non-food items. The high increase in non-food expenditure after land acquisition could be attributed to increasing cost of farm inputs such as chemicals, sprayers, ploughing costs, transport costs and school expenses as mentioned by household heads. The implication is that, due to the limited access to land, farming households now have to adopt the use of farm fertilizers and other agro-chemicals so as to maximise their farm production outputs to sustain their household economies as found by Oduro-Ofori and Hamenoo (2014). According to the FAO (2000), increased agricultural productivity usually comes as a result of the effective adoption of improved technologies. It was mentioned that regardless of land holding, increased productivity could be met through; an improved farming system, supply of fertilizer inputs, effective application and availability of markets.

Table 4.22: Average household non-food expenditure before and after land acquisition

Average HH income	BEFORE		AFTER	
	Frequency	Percent	Frequency	Percent
up to GHc 200	45	39.1	7	6.1
GHc 201-500	30	26.1	60	52.2
GHc 501-800	-	-	7	6.1
GHc 801-1000	-	-	8	7.0
> GHc 1000	-	-	15	13.0
not applicable	15	13.0	8	7.0
can't tell	25	21.7	10	8.7
Total	115	100.0	115	100.0
Mean	282.6351		607	P(0.000)

Source: Field Survey, 2014

Fig 4.6 presents the researcher and household heads discussing responses on household non-food expenditure and the consequences of excessive use of agro-chemicals on the health of household members and end users who buy farm products on the market. What this suggests is that, landlessness or tenure insecurity of farming households could trigger their increasing use of agro-chemicals on limited land as a coping strategy to maximize productions in order to meet household demand. This confirms the findings of Oduro-Ofori and Hamenoo 2014 that farming households adopt different coping strategies including the use of agrochemicals as their response to managing the effects of large-scale land acquisition.



Fig 4.6: Researcher collecting household economy data from male household heads

Source: Field Survey, 2014

4.6 Effects of Large-scale land Acquisition on Household Food Security

This section of the chapter sought to provide answers to the research question “How did large-scale land acquisition affect household food security?” Given the inadequacy of “yes” or “no” responses in measuring household food security considering the complexity of the term, 5-point Likert scales were adopted to measure the household food security before and after land acquisition. In this report, food availability is based on how food is obtainable by households within a year. For instance, food is said to be very available when it could be obtained by household all year round. These results are presented in bar charts below.

4.6.1 Effects on Household food Availability

Food availability as presented in here implies that food could be obtained by households within a year before and after the land acquisition. Accordingly, food becomes *very available* when it could be obtained all the time throughout the year. Indeed, there are difficulties in measuring this indicator at the household level. According to Figure 4.7, a significant proportion of the respondents (87%) agreed that food was very available before the land

acquisition. However, there is no evidence of food being *very available* post land acquisition. Respondents who ranked food as being *available* before land acquisition amounted to 13 percent. The figure increased sharply to 54 percent after the acquisition. Notably, no one ranked food as *not available* before the acquisition but 46 percent of the respondents indicated that food is *not available* after the land acquisition. The results show that, food could not be obtained by household **sometimes in the year** by close to half the number of households after land acquisition.

In probing for the possible reasons for the ranking of food availability before land acquisition, majority of the respondents cited easy access to agricultural land and high production outputs as the major factors. There were also reasons for the choice of food availability after the land acquisition identified by the respondents. Interestingly, they cited difficulty of access to agricultural land and large scale land acquisition as further reasons that influenced household food availability.

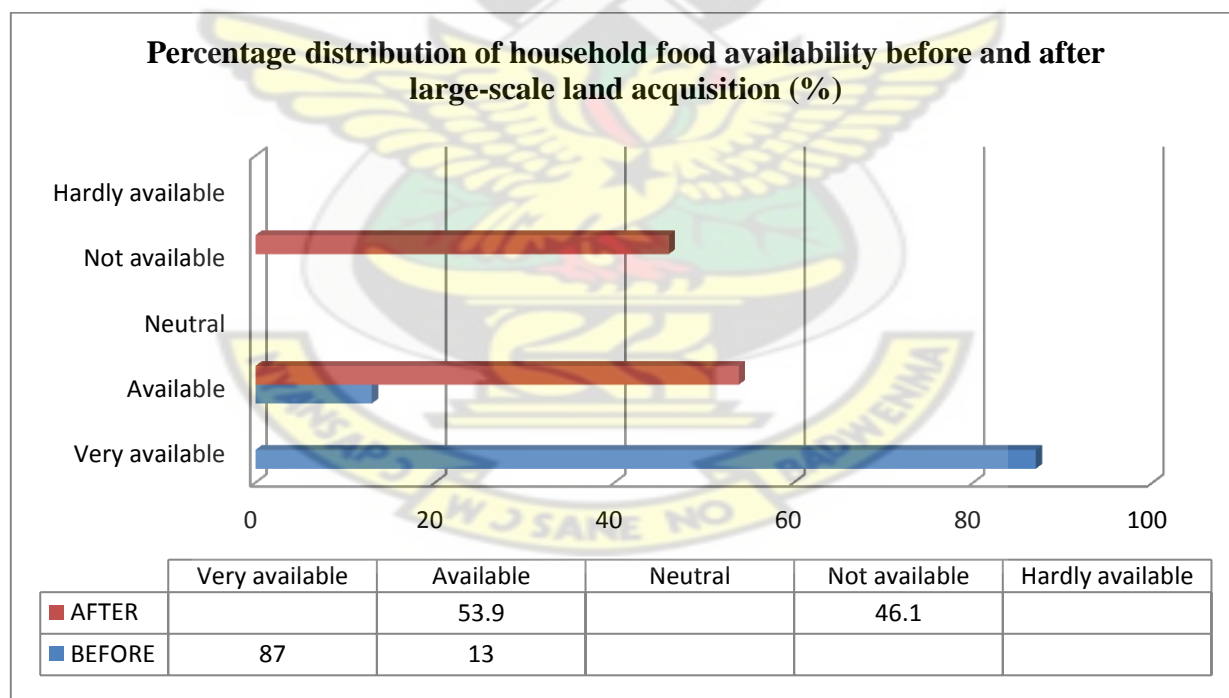


Fig 4.7: Household food availability ranking of respondents before and after land acquisition
Source: Field Survey, 2014

4.6.2 Effects on Household food Accessibility

In this study, food accessibility for households means the ease of getting food in the year. The figure presents results on household food accessibility before and after land acquisition. The study found that 44% and about 56% of the respondents ranked household food to be *very accessible* and *accessible* before land acquisition (see Fig 4.8). What this means is that, food was easy to get by 44% of the households all year round before the land acquisition. In addition to that, the study found that food was easy to get by 56% the households sometimes in the year before the land acquisition by the Company. Conversely, about 95% and 5% of the respondents have ranked food to be *accessible* and *not accessible* respectively after land acquisition. Indeed, the results indicate that food was easy to get by 95% the households **sometimes in the year** after the land acquisition.

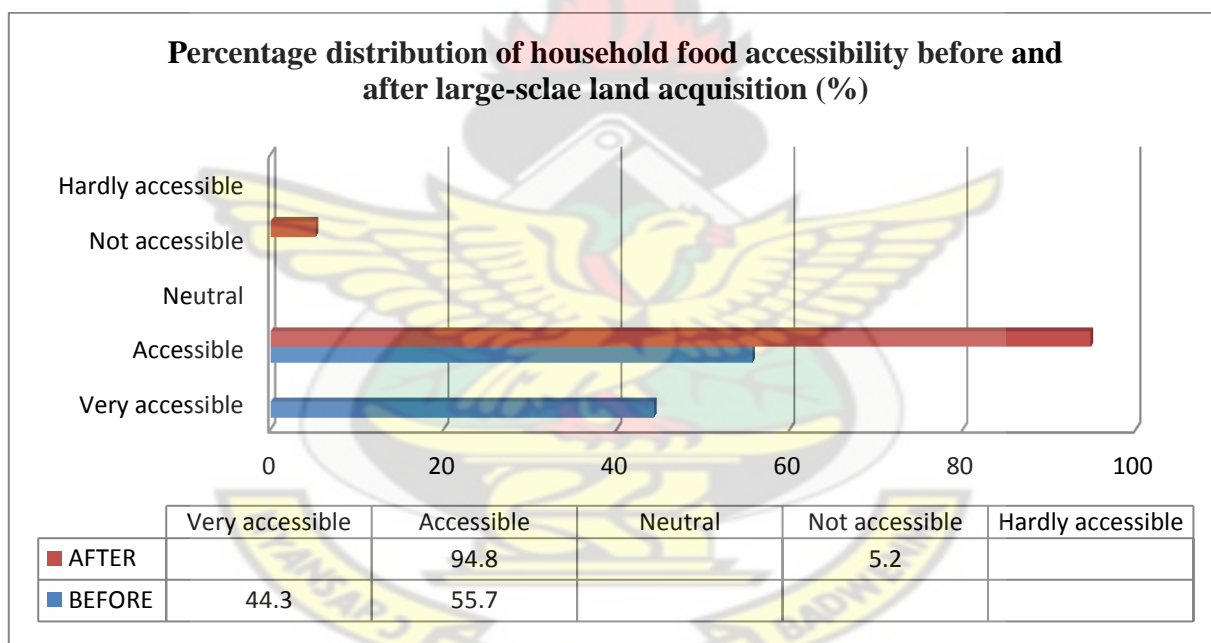


Fig 4.8: Household food accessibility ranking by respondents before and after land acquisition

Source: Field Survey, 2014

On the whole, it came out that four main reasons accounted for household food accessibility to small-scale farmers before land acquisition. The main reasons given include: storage of farm products at the household, cultivation of multiple farms and good harvests. The main reasons given after the land acquisition also include: increased use of farm technologies such as agro-chemicals and tractors for ploughing. Fig 4.9 presents sample interview session within the household setting.



Fig 4.9: Researcher collecting household food security data from spouses of household heads
Source: Field Survey, 2014

4.6.3 Effects on Household food Affordability

Again, the issue of affordability is as complex and subjective as the internal and external factors at play behind food affordability. Prices of goods and commodities have remained unstable over time. In all these, fuel prices and exchange rates have been shortlisted to have accounted for the instabilities in commodity prices. And so, one would rarely expect prices of commodities to be lower after the land acquisition. However, within the context of this study, large-scale land acquisition which had been shown to have had reduction effects on access to land could also have resultant effects on household food affordability given that food production for households, takes place on farm land.

Food affordability in this study therefore means the inexpensive purchase of food throughout the year. Again, this remains a matter of subjectivity. The results presented in this section show mixed evidence of household heads' assessment of food affordability. And so, in as far as the measurement of household food affordability was concerned, subjectivity from the respondents' point of view cannot be underemphasised.

Findings from Fig 4.10 however indicate that 89 percent of the total number of respondents says food was very affordable before the land acquisition while there was no account to that effect after the acquisition. What this means is that, the prices of food had gone up post the land acquisition by the Company. Besides, 11 percent of the respondents have cited household food to be *affordable* before land acquisition but this has increased significantly to 72 percent after the land acquisition.

Respondents who were *neutral* on their household food affordability before land acquisition were nil as against 9 percent after the acquisition. While none of the respondents says food was *not affordable* before the acquisition however, 19 percent said so after the acquisition (see Fig 4.10). Indeed, households which do not produce all that they need to consume have to buy them from the market. That means production costs would be shifted to the consumers and that could have probably led to the non-affordability of food for 19 percent of the households. This is because, households for instance, have now maximised their use of agro-chemicals to sustain their production output due to the land shortage as found by Oduro-Ofori and Hamenoo (2014).

These findings therefore agreed with that of Cotula et al., (2008) who found that the food security of rural people is likely to be affected if they are deprived from lands they have been using for farming. The results therefore confirm the findings of Boamah (2011) that large-scale land acquisition for jatropha plantation improved household food security in the project villages through employment creation in the plantation as well as increased food production. The results however disagree with Phalan (2009) who found that conversion of active agricultural lands to jatropha plantation has been found to adversely affect food security.

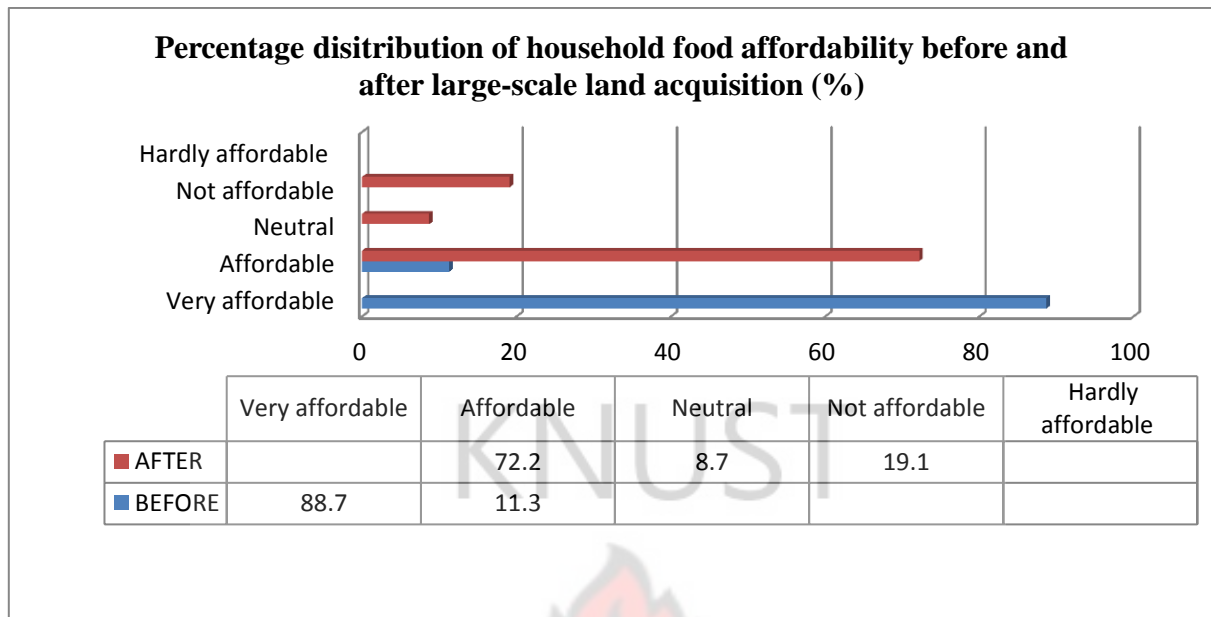


Fig 4.10: Household food affordability ranking of respondents before & after land acquisition
Source: Field Survey, 2014

4.6.4 Effects on Household food Sufficiency

In this section, food sufficiency is premised on the adequacy of food to the households. While intra-household differences and inadequacies of food for household members may exist from household to household; the study acknowledges that household heads or spouses of household heads were in the better position to present these variations in their measure of household food sufficiency. Food sufficiency in the study therefore means the adequacy of food to household members with respect to time throughout the year. And so, in Fig 4.11, the study found that a significant proportion of households (80%) say food was *very sufficient* previously but this had actually diminished after the land acquisition. The implication is that, food may be available or accessible or affordable to/at the household but the extent to which it is adequate for household members **at all times** throughout the year is questionable. These are important indicators as far as the measure of food security at the household is concerned.

Nevertheless, about 95 percent of the respondents have cited food sufficiency for households to be *sufficient* after the acquisition (Fig 4.11). It must be clarified that the measure of food sufficiency differs within the scale of measurement used for this study. What this means is

that, households' ranking of food to be *sufficient* is not the same thing as food being *very sufficient*. And so, these are issues of degrees in measurement. Therefore, the 95 percent of food sufficiency as reported by households meant that food was adequate **sometimes** in the year after the land acquisition by the Company. Conversely, 5 percent of the respondents were *neutral* on food sufficiency after the land acquisition.

Clearly, the degree to which food was sufficient before land acquisition had diminished after land acquisition. This could be attributed to the direct effects of the large-scale land acquisition as evident on the reduction in the farmland for small-scale farmers. Also, reasons for the ranking of food sufficiency were found to be major on two factors; high production levels, access to fertile land and good rains. Other reasons revealed by the study as factors affecting food sufficiency after land acquisition were low production levels, reduction in multiple farms and post-harvest losses. Once again, the results disagree with Cotula et al. (2008) but confirmed the findings of Goldemberg (2008) that jatropha plantations do not undermine food security. The result is also seen to confirm the findings of Boamah (2011) that jatropha project improved household food security in the project villages studied through employment creation.

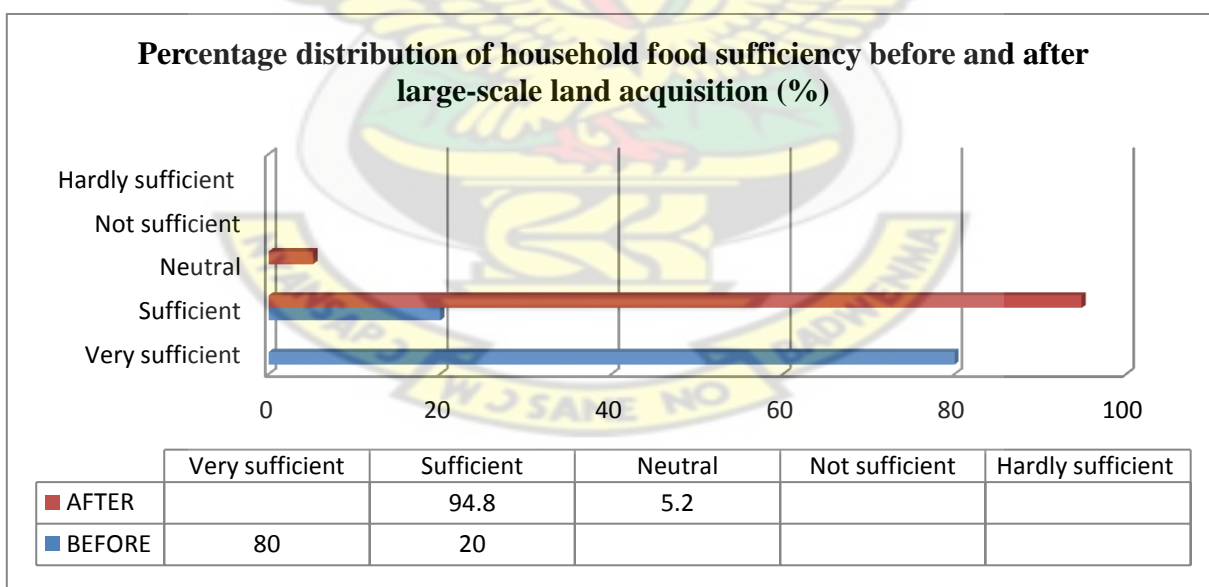


Fig 4.11: Household food sufficiency ranking of respondents before & after land acquisition

Source: Field Survey, 2014

4.7 How to Mitigate the Effects of Large-scale Land Acquisition on Farmers

This section of the chapter presents the ways in which the effects of large-scale land acquisition on small-scale farmers can be minimised. The study found that chiefs or the traditional authorities should in the quest of land disposition, exercise restraint so as not to be seen to be giving out lands for the sake of personal financial gains. This position is represented by 52 percent of the respondents (see Fig 4.13). Similarly, it was suggested that chiefs should be educated or sensitised on some of the effects large-scale land acquisition has on households. This is represented by 37 percent of the respondents. Importantly too, four percent of the respondents have mentioned that affected farmers must be appropriately compensated. Finally, it was suggested by seven percent of the respondents that, wide consultations should be done so as to keep all farmers well informed on such acquisitions. This would enable them to make their voices known on the state of the land acquisition even before the commencement of the agreements.

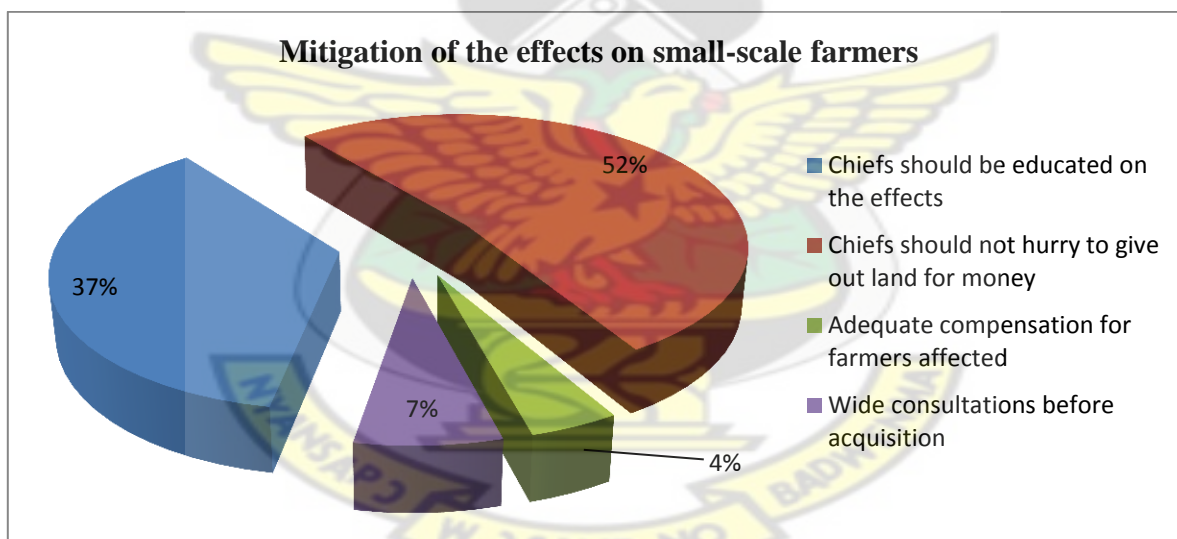


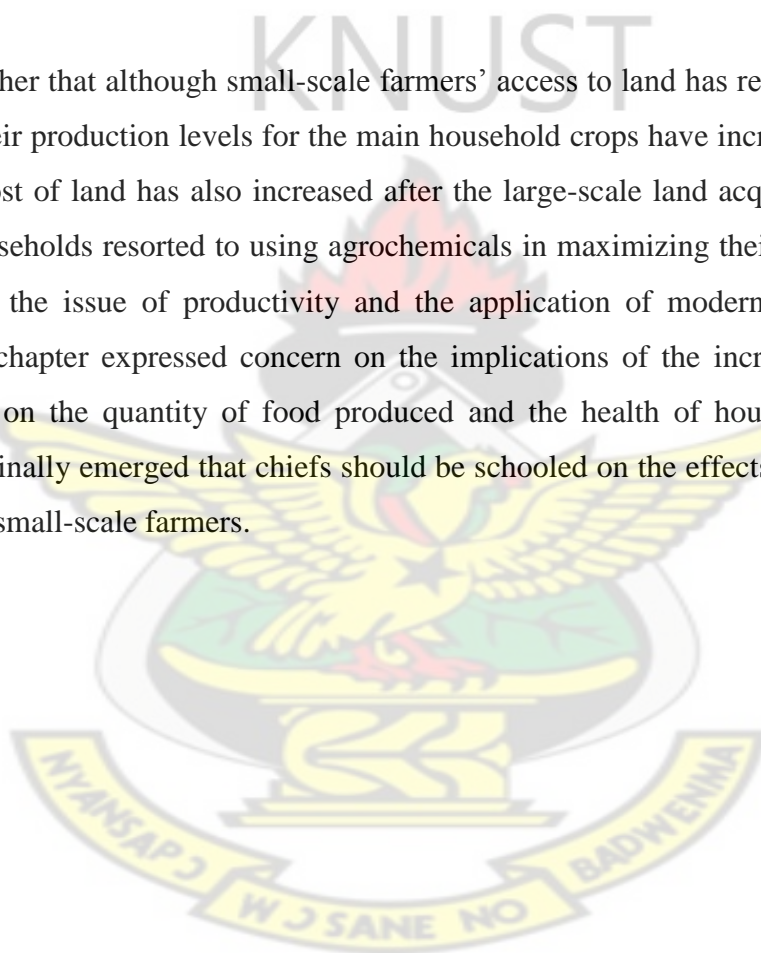
Fig 4.12: How to mitigate the effects of land acquisition of small-scale farmers.

Source: Field Survey, 2014

4.8 Summary of Emerging Issues from the Chapter

This section of the chapter presents summary of key issues emerging from the analysis and discussion of results. It emerged that small-scale farming is the predominant occupation within the study communities. It emerged also that households tend to combine plantation jobs and trading with their main farming occupation. At the time of this study, the actual land size the Company operated on was 13,058.35ha, far less than even the size of land they had initially acquired for the first year of their operation.

It emerged further that although small-scale farmers' access to land has reduced after the land acquisition; their production levels for the main household crops have increased after the land acquisition. Cost of land has also increased after the large-scale land acquisition. It emerged again that, households resorted to using agrochemicals in maximizing their production levels. This points to the issue of productivity and the application of modern farming practices. However, the chapter expressed concern on the implications of the increasing use of these agrochemicals on the quantity of food produced and the health of household members or consumers. It finally emerged that chiefs should be schooled on the effects of large-scale land disposition on small-scale farmers.



CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The chapter of the report outlines the summary of the key findings from the study, conclusions and recommendations based on the findings. Suggestion to inform future research on the subject is also presented.

5.2 Summary of Key Findings

5.2.1 Understanding the process for the land acquisition

The landlords or the Traditional Authorities have represented to the Company that they own a large tract of agricultural land in the Ashanti Region of the Republic of Ghana for them to acquire not less than 750,000 acres for the jatropha project. The acquisition was not a one-time acquisition. It was actually an aggregation of the projections of the proportions of land to be operated on from 2008 to 2017. The entire land acquisition process by the Company was fair and largely followed guidelines put in place by the Customary Land Secretariat and the Lands Commission. Some family and farmers' lands were taken in the process and were not compensated and so, the LC has suspended its endorsement on the preparation of lease to the land for the Company. The jatropha plantation Company has diversified into food crops (maize, sorghum and soybean) in 2010 due to pest infestation, high production costs and low returns.

5.2.2 The effects of large-scale land acquisition for jatropha plantation on access to land

Also, the study found no evidence of farming households engaging in farming on less than one acre before land acquisition. After land acquisition however, about 14 percent of farming households cultivate less than one acre of land. Majority of the households interviewed (74%); now engage in farming on 1-2 acres of land after land acquisition as compared to about 81percent who were farming on 2-5 acres previously. There was also a progressive reduction in land size operated on over the period by households; where those who cultivated 15-20 acres or more before the land acquisition by the Company are now cultivating 2-5 acres after land acquisition. Land expansion of less than one acre was not a practice of the respondents

previously. However, a large proportion of the respondents, representing 54percent had land expansion of less than one acre after land acquisition. Meanwhile, majority of them (representing about 56%) used to operate on 1-2 acres of extra land before land acquisition. Cost of land for farming appeared to have relatively increased from at least GHc 50 before land acquisition to between GHc 51-100 after land acquisition. Whilst up to GHc 50 was the dominant cost of land per year for any land size for 71percent of the respondents before land acquisition, the proportion of respondents who paid the same rate for lands dropped to 60percent after the land acquisition. Also, evidence of two typical farming systems (land rotation and shifting cultivation) had been found to have diminished after the land acquisition.

5.2.3 The effects of large-scale land acquisition on the household economy of farmers

The study found that, typologies of food crops produced varied from household to household. The average yam consumption by households showed 75.74 tubers previously and 67.6 tubers after the large-scale land acquisition. The average total output for maize production before land acquisition stood at 16.7895 bags. After the large-scale land acquisition, the figure rose to 18.9780 bags of maize. A statistical significant difference ($p < 0.05$) was found between quantities of maize produced before and after the land acquisition. The averages of total yam produced by the small-scale farmers before and after the large-scale land acquisition stood at 104.5 and 130.7921 tubers respectively. Significant difference ($p < 0.05$) also exists between vegetable production before and after land acquisition by households. The difference in household food crop consumption for maize has been found to be statistically significant ($p < 0.05$). Statistical significant difference was found between average household income and expenditure before and after the large-scale land acquisition. Although evidence of plantain and vegetables consumption exists at the household level, more is reported to have been sent to the market for sell to support household income and expenditure. As a result, household income has significantly increased ($p > 0.05$) after the large-scale land acquisition. The study found further that households' expenditure have also increased after land acquisition. Other livelihood sources of income to households include charcoal production, firewood collection and selling, although not all households sell wood fuel. The study further found that woodfuel is a major livelihood activity for all households before and after the acquisition.

5.2.4 The effects of large-scale land acquisition on the household food security

On the household food security, a significant proportion of the respondents (87%) agreed that food was very available before the land acquisition. However, there is no evidence of food being very available post land acquisition. About 56 percent of the household heads mentioned that food was accessible before the land acquisition but a significant proportion (95%) ranked food to be accessible even after land acquisition. Also, 89 percent of the total number of respondents indicated that food was very affordable before the land acquisition while there was no account to that effect after the acquisition. In addition, the study found that a significant proportion of households (80%) say food was very sufficient previously but this had actually diminished after the land acquisition.

5.2.5 How to mitigate the effects of large-scale land acquisition on small-scale farmers

The study found that majority of the respondents (52 percent) have mentioned that chiefs or the traditional authorities should in the quest of land disposition, exercise restraint so as not to be seen to be giving out lands for the sake of personal financial gains. Similarly, 37 percent of the respondents have also mentioned that chiefs should be educated or sensitised on some of the effects large-scale land acquisition has on households.

5.3 Conclusions

The study generally concludes that large-scale land acquisition for jatropha plantation has had mixed effects on small-scale farmers in rural communities at the household levels. However, based on the objective of the study, the following conclusions have been drawn;

5.3.1 Understanding the process for the land acquisition

The process for entire land acquisition was fair and largely complied with institutional guidelines put in place by the Lands Commission and the Customary Land Secretariat towards land acquisition. However, grassroot participation in the process of the land acquisition was overlooked pointing to the exclusion and marginalisation of the farming households who were primary users of such lands. The portion of land initially acquired by the Company had now diminished due to the reclamation of some parcels of the land that were said to have belonged to some farmers and individuals in the communities. These findings therefore confirm the

findings of several empirical studies that have shown that large-scale land acquisitions for plantation agriculture tend to displace customary land uses (Cotula et al. 2009; Sulle and Nelson, 2009; World Bank 2010).

5.3.2 The effects of large-scale land acquisition for jatropha plantation on access to land

There were significant reductions in the size of farm land initially acquired, operated/cultivated and expanded after the large-scale acquisition by the small-scale farmers. There was an exponential decrease in the land expansion by the respondents after the land acquisition. Difficulty of access to land had also increased exponentially after large-scale land acquisition. Evidence of two typical farming systems such as land rotation and shifting cultivation had actually diminished after the large-scale land acquisition. These conclusions agree with the findings of World Bank (2002) and Hughes et al. (2011) that increasing large-scale land acquisition leads to landlessness and tenure insecurity of smallholder farmers. It is therefore concluded that farmers' access to agricultural land is diminishing as a result of large-scale land acquisition as also found by World Bank (2002).

5.3.3 The effects of large-scale land acquisition on the household economy of farmers

The effects large-scale land acquisition on farmers' household economy is mixed on the production and consumption level of households. Crop production levels of small-scale farmers have increased after land acquisition within the household economy but food crop consumption have reduced after the land acquisition due to the increasing commercialization of the farmers' agricultural produce in order to support household income and expenses. This therefore disagreed with the findings of GEXSI (2008) that jatropha cultivation has not led to a reduction in food consumption. Household income (farm and non-farm) and expenditure (food and non-food) were significantly higher after land acquisition than previously due partly to income from the plantation jobs. This therefore agreed with Sindayigaya (2011) that, large-scale land acquisition for jatropha plantation affects the ability of small-scale farmers to generate more income and provide for their families. This therefore agreed with the findings of Phalan (2009) and FAO (2013) but disagreed with Bosch and Zeller (2013).

5.3.4 The effects of large-scale land acquisition on the household food security

The study found strong evidence of food being very available, very accessible, very affordable and very sufficient for households before the large-scale land acquisition than after the land acquisition. This means that food has not been available, accessible, affordable and sufficient **at all times throughout the year** for all household members for a healthy life. Household food security has therefore relatively reduced after the land acquisition by the Company. The overall effect is that, household food security had relatively diminished after the large-scale land acquisition. The results therefore disagree with Cotula et al., (2008) but confirmed the findings of Goldemberg (2008) that jatropha plantations do not undermine food security. The results also agree with Phalan (2009) who found that conversion of active agricultural lands to jatropha plantation adversely affect food security. The results further disagree with Cotula et al. (2008) but confirmed the findings of Goldemberg (2008) that jatropha plantations do not undermine food security. These results again disagreed with the findings of Boamah (2011) that jatropha project improved household food security through employment creation.

5.3.5 How to mitigate the effects of large-scale land acquisition on small-scale farmers

The study found the need for the traditional authorities to be educated on the effects large-scale land acquisition on small-scale farmers so as to inform them on the consequences. The study found further that in as much as compensating affected farmers is important; their involvement in the acquisition process at the consultation levels should not be overlooked.

5.4 Policy Recommendations

Based on the findings of the study, it is recommended that;

- i. Land acquisition should not be seen as a sole right of the Stools. It should involve the subjects and the small-scale farmers from the consultation stage through to the official acquisition stage because they will be the most affected. In the customary disposition of lands, the Traditional Authorities should ensure that the grant is in conformity with the total land area that can be given to an individual or a corporate body and that, such customary land dispositions should conform to the land use plans (if any) of the area concerned. The Traditional Authorities should therefore be educated by the Office of the Administrator Stool Lands, the District Assembly,

Town and Country Planning Department (TCPD) and the Lands Commission on the need to involve their subjects and farmers in the disposition of lands for plantation projects. The sub-chiefs and the Assemblymen or Assemblywomen should ensure that the farmers are fully represented on matters of large-scale land acquisition from the consultation stage through to the official acquisition stage because they will be the most affected.

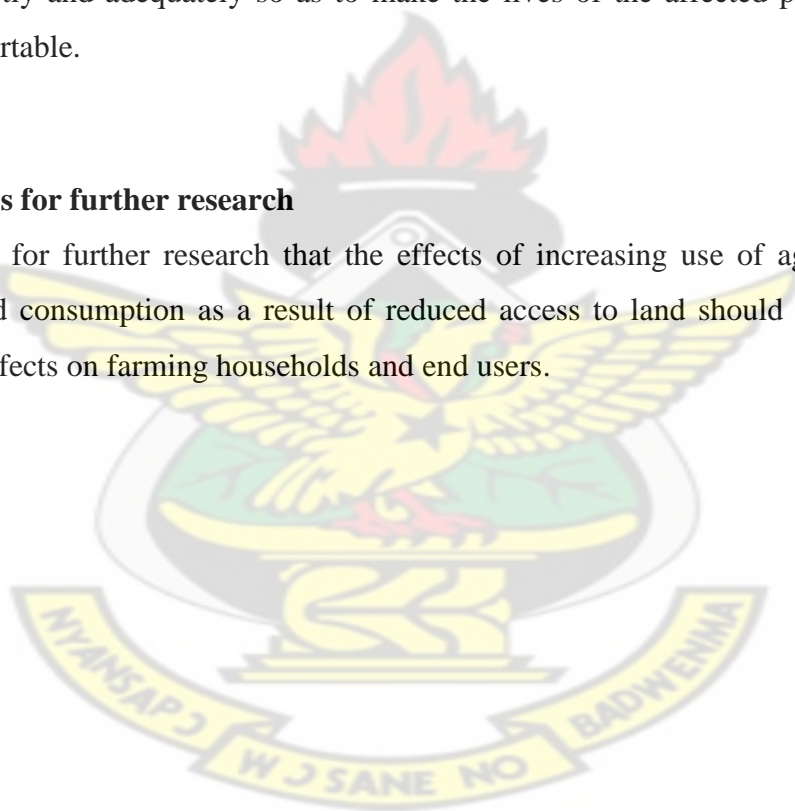
- ii. Financial gains should not be the objective for the customary disposition of lands. The growth and development of communities and inhabitants should rather be the focus of customary land dispositions since the Traditional Authorities are to hold such lands in trust and on behalf of their people. There should therefore be a well-orchestrated search by investors on the availability of customary lands with clear demarcation before any financial commitment is made to the custodians of the land. Such searches should be made both at the Lands Commission and at the community levels by the prospective investors.
- iii. Due to the fact that the jatropha plantation has been discontinued for commercial reasons (pest infestations, high production costs and low returns) and that the Company has diversified into food crop productions (maize, sorghum and soybean) since 2010, the Lands Commission should endeavour to resolve the issues concerning the land acquisition. The Lands Commission should also endeavour to register the land for the Company and issue the needed lease for the land acquisition. This would go a long way to enhance the food crop production capacity of the Company towards augmenting and further deepening government efforts in promoting and exceeding national food security targets in the interest of the-just-about-to-end MDG 1 and the just-about-to-roll Sustainable Development Goals (SDG 1 and 2).
- iv. The Ministry of Food and Agriculture should put in place strategies for supplying and monitoring the increasing use of agrochemicals by small-scale farmers within the project communities. This should be done through the provision of extension services to these communities as the educational levels of the respondents appeared to be basic. This will promote the efficient use of these agrochemicals in conformity to

national and international standards towards food production so as to stay within the recommended minimum allowable levels of chemicals in food crops. This will lessen the health effects on households in the long term.

- v. Appropriate compensation plans should be prepared by the TCPD/ LC and made available to prospective investors for implementation so that small-scale farmers who might lose their lands as a result of the acquisition can be compensated. The implementation of this compensation plan should be coordinated by the Lands Valuation Division of the Lands Commission. Such compensations should be paid promptly and adequately so as to make the lives of the affected people in the area comfortable.

5.5 Suggestions for further research

It is suggested for further research that the effects of increasing use of agro-chemicals on household food consumption as a result of reduced access to land should be carried out to ascertain the effects on farming households and end users.



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APPENDICES

Appendix 1: Photographs of places visited during data collection

Appendix 1.1: Snapshots from Field Observations

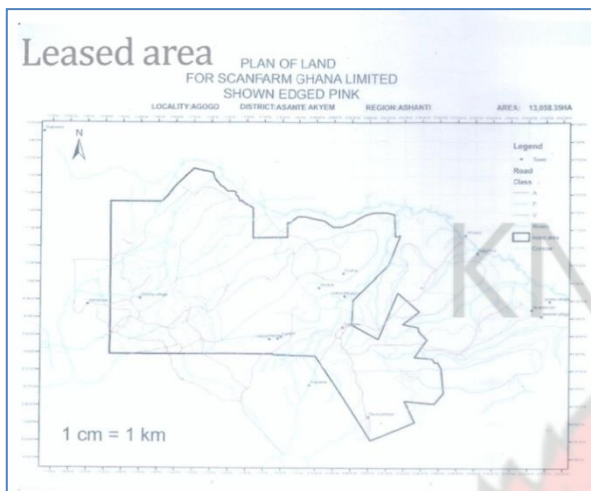


Plate 1: Leased area of the Company (Agogo)



Plate 2: Development Map of the Company



Plate 3: Entrance to the Agogo hospital



Plate 4: Lorry station to the adjoining communities



Plate 5: Singboard of Dukusen



Plate 6: The company field station @ Dukusen



Plate 7: The company's office @ Agogo



Plate 8: The company's farm implements



Plate 9: The Company's mechanic shield



Plate 10: Basic sch. facility built by company



Plate 11: The Company's field station @ Dukusen



Plate 12: A typical household

Appendix 1.2: Snapshots during Institutional Data collection



Plate 1: Office of the Stool Lands



Plate 2: Current Town and Country Planning office



Plate 3: Regional Lands Commission



Plate 4: Interview at Regional Lands Commission



Plate 5: Interview, Agogo Traditional Council



Plate 6: Agogo traditional palace



Plate 7: Interview with the Agogo Chief



Plate 8: Asante Akim North District Assembly



Plate 9: Municipal Lands Valuation Office



Plate 10: District Planning Office, Agogo



Plate 11: Municipal Lands Valuation Office



Plate 12: Municipal Stool Lands Office

Appendix 1.3: Snapshots during Community and Household Data collection



Plate 1: Interview with sub-chief, Dukusen



Plate 2: Interview with household head



Plate 3: Interview with household head



Plate 4: Interview with household heads



Plate 5: Interview with at household heads



Plate 6: Interview with wife of household head



Plate 7: A typical household at Ananekrom



Plate 8: Interview with household head



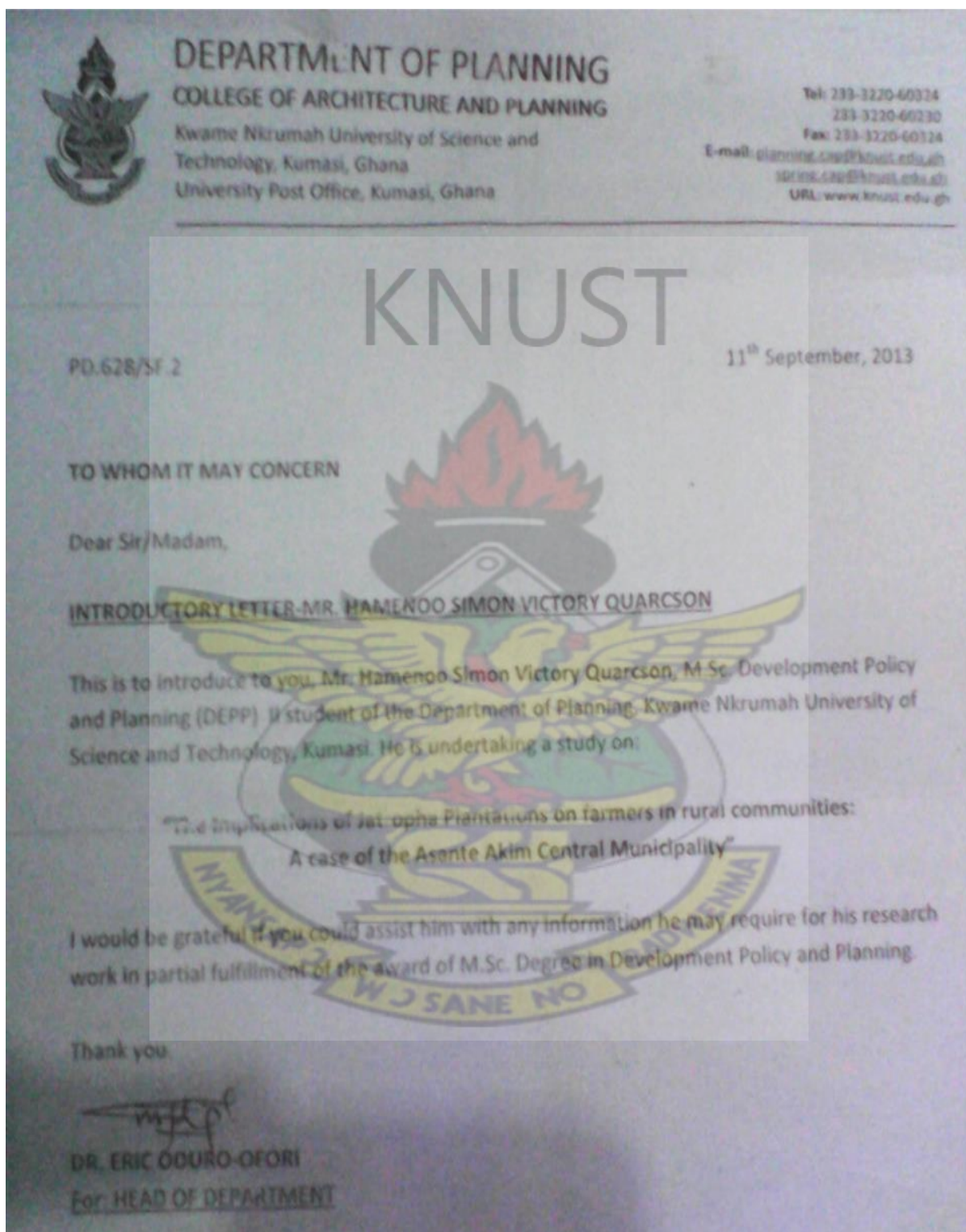
Plate 9: Researcher preparing for interview



Plate 10: A typical Interview at the household



Appendix 2: Introductory Letter for the Study



Appendix 3: Data Collection Instruments

Appendix 3.1: Questionnaire for the Study

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY
KNUST
COLLEGE OF ARCHITECTURE AND PLANNING
DEPARTMENT OF PLANNING



HOUSEHOLD QUESTIONNAIRE

Questionnaire Number:

Telephone No. of Respondent:

My name is **Simon Victory Quarcson Hamenoo**, a final year Master of Science Student in Development Policy and Planning of the Kwame Nkrumah University of Science and Technology, KNUST.

This STUDY is designed to investigate **The Effects of Large-Scale Land Acquisition for Jatropha Plantation on Small-Scale Farmers in Rural Communities in the Asante Akim North District**. The research is in partial fulfilment of the requirements for the award of MSc Degree in Development Policy and Planning from KNUST, Kumasi.

Please, be assured that the responses you provide are for academic purposes and are completely anonymous and confidential. Thank you for your cooperation.

✓ INSTRUCTIONS: Tick as appropriate

Name of COMMUNITY:

[A] Household Bio Data

Gender of respondent	M	F				
Age (yrs)						
Relationship to HH	HH	Spouse	Parent	Child	Grandparent	Other (specify)
Highest level of formal education completed	Primary	Junior High	Senior High	Tertiary	None	
Are you employed?	Yes = 1 No = 2					
If YES, type of employment	Own Farming	Trading (buying and selling)	Only selling (e.g firewood,)	Plantation job	Salary work	Other (specify)
Marital status of HH	Single	Married	Widower/widow	Separated	Divorced	Cohabiting Other (specify)
Number of HH members	1	2-5	6-10	11-15	16-20	above 20
Number of HH members working						
Religion	None	Islamic	Christian	Traditional	Others (specify)	

[B] How was the large-scale land acquisition for the jatropa project done?				
	Yes	No	Don't know = ×	
Do you know of any process for the large-scale land acquisition?				
If yes, mention.				
Were you notified about the land acquisition for the project?				
Were you involved in the land acquisition?				
If YES, at what stage?				
[C] In what ways did large-scale land acquisition for jatropa plantation affect farmers' access to land?				
	BEFORE		AFTER	
Size of the land you had initially acquired?				
Size of land you operated on?				
How did you acquire the land				
How much did you acquire the land?				
Did you expand your land use (e.g Farm) after initial acquisition?				
How much land did you expand?				
How much did you acquire the extra land?				
Were the land acquisitions difficult? If YES, how difficult?	1. Difficult 2. Not difficult 3. Neutral 4. Not very difficult 5. Very difficult		1. Difficult 2. Not difficult 3. Neutral 4. Not very difficult 5. Very difficult	
[D] How did large-scale land acquisition for jatropa plantation directly affect household economy of farmers within the project communities?				
	BEFORE [within last 2 yrs]		AFTER [within last 2 yrs]	
What major crops did you cultivate?	1 2 3 4		1 2 3 4	
Average quantity of food crop produced per farming season				
Average quantity of food crop consumed per farming season				
Average total HH income from land related sources per season (Farm income and Non-farm income)				

Average total HH expenditure per season (Food items and Non-food items)			
Livelihoods activities	Wood fuel (firewood, charcoal), dawadawa, shea nut, hunting, hay	Wood fuel (firewood, charcoal), dawadawa, shea nut, hunting, hay	
[E]How did large-scale land acquisition for jatropa plantation affect household food security of farmers within the project communities?			
	BEFORE	AFTER	
How will you rank your food availability	1. <i>Hardly available</i> 2. <i>Not available</i> 3. <i>Neutral</i> 4. <i>Available</i> 5. <i>Very available</i>	1. <i>Hardly available</i> 2. <i>Not available</i> 3. <i>Neutral</i> 4. <i>Available</i> 5. <i>Very available</i>	
Reasons for your choice of ranking above?			
How will you rank your food accessibility	1. <i>Hardly Accessible</i> 2. <i>NOT Accessible</i> 3. <i>Neutral</i> 4. <i>Accessible</i> 5. <i>Very accessible</i>	1. <i>Hardly Accessible</i> 2. <i>NOT Accessible</i> 3. <i>Neutral</i> 4. <i>Accessible</i> 5. <i>Very accessible</i>	
Reasons for your choice of ranking above?			
How affordable was the food?	1. <i>Hardly Affordable</i> 2. <i>NOT Affordable</i> 3. <i>Neutral</i> 4. <i>Affordable</i> 5. <i>Very affordable</i>	1. <i>Hardly Affordable</i> 2. <i>NOT Affordable</i> 3. <i>Neutral</i> 4. <i>Affordable</i> 5. <i>Very affordable</i>	
Reasons for your choice of ranking above?			
How sufficient was the food?	1. <i>Hardly sufficient</i> 2. <i>NOT sufficient</i> 3. <i>Neutral</i> 4. <i>Sufficient</i> 5. <i>Very sufficient</i>	1. <i>Hardly sufficient</i> 2. <i>NOT sufficient</i> 3. <i>Neutral</i> 4. <i>Sufficient</i> 5. <i>Very sufficient</i>	
Reasons for your choice of ranking above?			
[F] How can the effects of large-scale land acquisition for jatropa plantation on small-scale farmers be mitigated?			

Appendix 3.2: Interview Guide for the Study

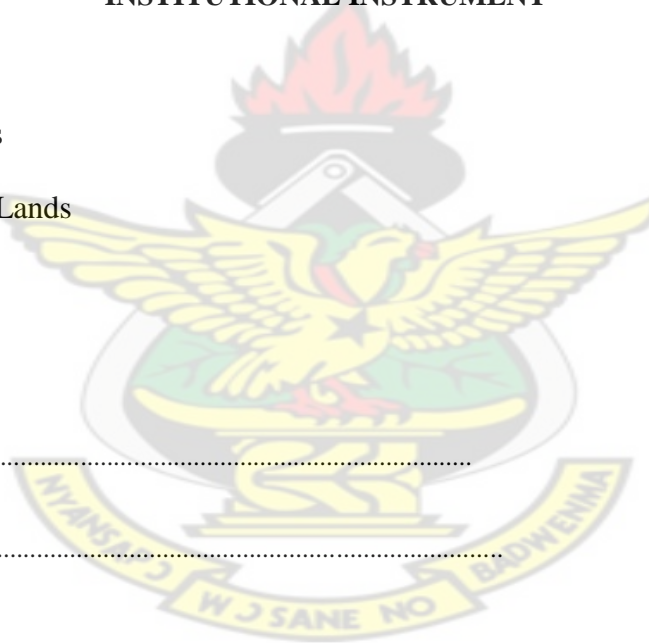
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KNUST
COLLEGE OF ARCHITECTURE AND PLANNING
DEPARTMENT OF PLANNING
INSTITUTIONAL INSTRUMENT



1. The Company (Scanfarm)
2. Municipal and District Assemblies
3. Lands Valuation Unit
4. Office of Administration of Stool Lands
5. Traditional Authority
6. Sub-Chiefs
7. Lands Commission

Questionnaire Number:

Telephone No. of Respondent:



My name is **Simon Victory Quarcson Hamenoo**, a final year Master of Science Student in Development Policy and Planning of the Kwame Nkrumah University of Science and Technology, KNUST.

This STUDY was designed to investigate **The Effects of Large-Scale Land Acquisition for Jatropha Plantation on Small-Scale Farmers in Rural Communities in the Asante Akim North District**. The research is a requirement to be submitted in partial fulfilment for the award of MSc Degree in Development Policy and Planning from KNUST, Kumasi.

Please, note that the responses you provide are for academic purposes and are completely anonymous and confidential. Thank you for your cooperation.

✓ INSTRUCTIONS: Tick as appropriate

Name of INSTITUTION: 1 2 3 4 5 6 7

[A] How was the land acquisition for the project done?

1. How much land was acquired by the company?

Initially =

Later =

Why the difference (If any)?.....

2. Was there any agreements at all and between which parties?

3. How was the agreement done?

4. When was the agreement done?

5. What were the conditions of the agreement?

6. Who were involved in the process?

7. How did the agreement correspond with Institutional guidelines on such acquisitions (large-scale)

Identify key processes involved in getting the land

True = ✓

False = ×

Don't know = *

8. Applicant (the Company) approaches caretaker chief

9. Allocation by chief and payment of drink money

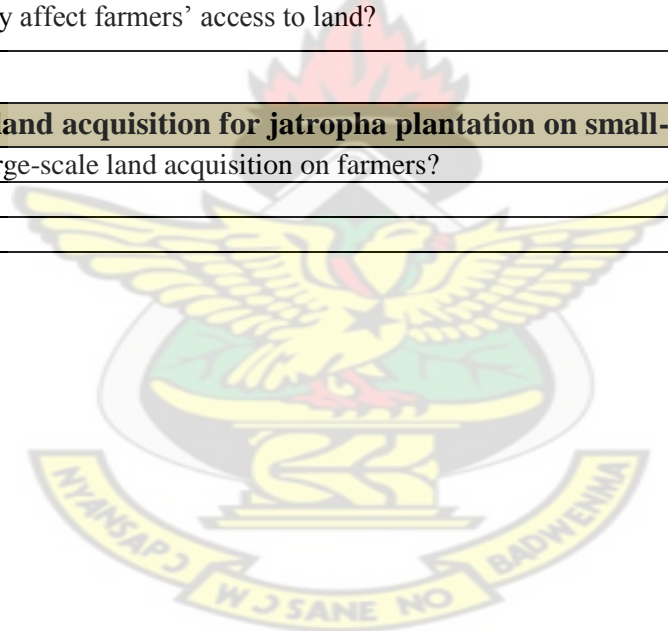
10. Presentation of allocation note and site plan to *Asantehene's* Lands Secretariat

11. Search at the Lands Commission to see whether plot is free otherwise application is returned to applicant

12. *Asantehene's* Land secretariat for his confirmation of lease

13. Lands document submitted to Lands Commission

14. Town and country planning department for planning comments				
15. Planning comments submitted to Lands Commission				
16. Land Valuation Division and Internal Revenue Service for stamping				
17. Lands Commission for plotting and oath pending dispatch of document to applicant				
18. Land title Registry for registration				
Were there any promises and explanations of the benefits the community members would get from the project at the consultation level?				
What Extra information do you have concerning the land acquisition process?				
[B] In what ways could large-scale land acquisition for jatropha plantation affected farmers' access to land?				
How could the land acquired by the company affect farmers' access to land?				
[C] How can the effects of large-scale land acquisition for jatropha plantation on small-scale farmers be mitigated?				
In what ways can we minimize the effects large-scale land acquisition on farmers?				



Appendix 4: Head of Agreement, Schedule B (Land Rents)

IN WITNESS WHEREOF THE PARTIES HERETO HAVE
HEREUNTO SET THEIR HANDS AND SEALS THE DAY AND
YEAR FIRST ABOVE WRITTEN.

SCHEDULE A ABOVE REFERRED TO:

Minimum Annual New Lease Commitment *)

Year	Minimum Land Size
2008	37,500 acres
2009	75,000 acres
2010	75,000 acres
2011	75,000 acres
2012	75,000 acres
2013	75,000 acres
2014	75,000 acres
2015	75,000 acres
2016	93,750 acres
2017	93,750 acres
Total	750,000 acres

*) Company reserves the right to request additional leases are granted by Landlords. Such additional new lease commitment will be taken from the following year's annual new lease commitment.

SCHEDULE B ABOVE REFERRED TO:


Annual rental charges per acres

Year	Minimum Land lease
1-12 months of lease contract	USD 1.00 per acre
13-24 months of lease contract	USD 1.50 per acre
25-36 months of lease contract	USD 2.00 per acre
37-48 months of lease contract	USD 2.50 per acre
49-60 months of lease contract	USD 3.00 per acre
60-until end of lease contract	USD 3.00 per acre

Appendix 5: Public Consultation Meeting for the Land Acquisition

Public Consultation Meeting – Agogo Traditional Council

Date: 29 May, 2008
Venue: Palace in Agogo
Attendance: 350



Invited guests:

Agogo Traditional Council: Nana Sarpong and Elders
Queen Mother Nana Abena Serwaa
Mr. Nti, Registrar

Ananekrom: Nana Asamoah Amoako

Angwamtifi: Nana Kwabena Amponsah

Angwama: Nana Kwasi Ababio

Abradi: Rep

Dukusen: Nana Obeng Akrofi

Afinsre: Amadu Zakari

Sekeduasi: Rep

Tema Bunso: Nana Baah Achemfour

Officers and Institutional Leaders:

Urban Community Chairman: Mr. Bese Dankwah

District Executive Director: Mr. George Frimpong

Executive Coordinative Director: Mr Avah

Scanfuel Ghana Ltd.

mom_public_consultation_meeting.doc

page 1

C. 4

Police Commander:	Mr Damoah
Sanitation & Environmental Health:	Mr Kolan
World Vision:	Madam Mercy Anim
Forestry:	Mr. Thomas Nimah
Fire Service:	
Youth Organiser:	Mr Emmanuel Buabeng
Assembly Members:	Mr Owusu

Hon. Haruna (Zongo)
 Mr Fese Dankwah (Wards 3)
 Madam Augustina Mends (Ward 4)
 Mr Amoako (Obuoasi)

Banks:

Ghana Commercial Bank:	Mr Ebenezer Akuetteh
Agogo Rural Bank:	Mr. Kwaku Owusu
Agogo Hospital General Administrator:	Mr. Thomas Mensah

Centre for environment, health and research training:

Gladys Quaye
 Ruben Ashong Tetteh
 Jeffrey Baa-Poku
 Dela Spitey
 Samuel Abanga



Appendix 6: ANOVA Results of the SPSS Statistical Outputs

Appendix 6.1: Paired Sample Test on Access to Land

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	initial.land.1	5.6174	115	4.07513	.38001
	initial.land.2	2.4252	115	2.08330	.19427
Pair 2	size.operated.1	4.7870	115	3.51442	.32772
	size.operated.2	1.9522	115	.75211	.07013
Pair 3	land.expansion.1	1.3091	55	.46638	.06289
	land.expansion.2	.6727	55	.20226	.02727

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	initial.land.1 - initial.land.2	3.19217	2.40088	.22388	2.74866	3.63569	14.258	114	.000
Pair 2	size.operated.1 - size.operated.2	2.83478	2.96302	.27630	2.28743	3.38214	10.260	114	.000

Pair 3	land.expansion.1 - land.expansion.2	.63636	.53102	.07160	.49281	.77992	8.887	54	.000
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Appendix 6.2: Paired Sample Test on Household Economy

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	maize.produced.1	16.7895	76	4.63987	.53223
	maize.produced.2	12.0263	76	4.61006	.52881
Pair 2	yam.produced.1	104.5000	76	64.03260	7.34504
	yam.produced.2	103.2895	76	33.27214	3.81658
Pair 3	plantain.produced.1	38.4000	15	4.76295	1.22979
	plantain.produced.2	42.6667	15	6.22973	1.60851
Pair 4	veg.prod.1	20.0667	15	7.47822	1.93087
	veg.prod.2	14.6667	15	5.16398	1.33333
Pair 5	maize.consumed.1	8.7895	38	1.49156	.24196
	maize.consumed.2	23.9737	38	23.06101	3.74099
Pair 6	yam.consumed.1	72.5333	75	22.17457	2.56050
	yam.consumed.2	67.6000	75	19.33209	2.23228

Pair 7	Income.f.1	401.4444	90	189.84063	20.01096
	Income.f.2	606.6667	90	278.05908	29.31000
Pair 8	Income.nf.1	496.7053	95	347.19201	35.62115
	Income.nf..2	646.8421	95	401.38659	41.18140
Pair 9	foodexpend.i	230.5333	75	139.13724	16.06618
	foodexpend.ii	373.0667	75	128.80924	14.87361
Pair 10	nf.expen.1	282.6351	74	137.99499	16.04159
	nf.expend.2	451.5541	74	134.12815	15.59208

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	maize.produced.1 - maize.prodedced.2	4.76316	4.98763	.57212	3.62343	5.90288	8.325	75	.000

Pair 2	yam.produced.1 - yam.produced.2	1.21053	48.94632	5.61453	-9.97419	12.39524	.216	75	.830
Pair 3	plantain.produced.1 - plantain.produced.2	-4.26667	5.56092	1.43582	-7.34620	-1.18713	-2.972	14	.010
Pair 4	veg.prod.1 - veg.prod.2	5.40000	3.43927	.88802	3.49540	7.30460	6.081	14	.000
Pair 5	maize.consumed.1 - maize.consumed.2	-15.18421	22.88615	3.71262	-22.70670	-7.66172	-4.090	37	.000
Pair 6	yam.consumed.1 - yam.consumed.2	4.93333	18.88753	2.18094	.58771	9.27896	2.262	74	.027
Pair 7	Income.f.1 - Income.f.2	-205.22222	218.63328	23.04597	-251.01408	-159.43037	-8.905	89	.000
Pair 8	Income.nf.1 - Income.nf..2	-150.13684	263.92547	27.07818	-203.90121	-96.37248	-5.545	94	.000
Pair 9	foodexpend.i - foodexpend.ii	-142.53333	140.84776	16.26370	-174.93946	-110.12721	-8.764	74	.000
Pair 10	nf.expen.1 - nf.expend.2	-168.91892	161.82239	18.81147	-206.41013	-131.42771	-8.980	73	.000