

**URBANISATION AND ITS EFFECTS ON AGRICULTURAL LANDS,
ECONOMIC AND SOCIAL IMPACT: A CASE STUDY OF JUABEN
MUNICIPALITY**

By

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DECLARATION

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma at Kwame Nkrumah University of Science and technology, Kumasi or any other educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

Farming lands are most pretentious by the fast growth and its occupations of a plea. Land use for housing, manufacturing, and culture have the tendency to control farmlands in the proposition for space in the city place. To understand the trend of urbanization and the socio-economic effects on farmers in the Juaben Municipality necessitated this study. The aim of the study was to identify means of improving the planning and management of land-use changes in Juaben municipality. Similarly, the study focused on finding out effects of land uses changes in the agricultural land use, the socio-economic impacts those changes have on farmers and the planning and management strategies deployed to mitigate the problem. The study adopted questionnaire and semi-structured interview as the research instrument to gather data from 90 respondents which comprises of registered farmers, Town, and Country Planning in the Juaben Municipality through a survey and interview secessions. Results from the study identified effects of land-use changes on agricultural land use. These include farm lost and small farm sizes, increase in the cost of land, cultivation of non-perennial crops, decrease in livestock farming, job loses, food insecurity and as well as decrease in productivity of agrarian activities. Also, the economic and social effect of land-use changes on farmers identified included reduction in the income of farmers, high prices of foodstuffs, high cost in farming, high fees for accommodation, lost of interest in farming, purchasing food from commercial suppliers, societal rejection of the farming business, difficulties in adapting to the new social life imposed on them and declined in deteriorating living conditions. It was evident in the results obtained from the study that, the authorities in the Municipality were pulling down structures built on unauthorized land, issuing of building permit to check development and rezoning areas to suite the current land-use changes. But the Authorities were lacking the legal power to restrict lands demarcated for agricultural activities to be used for human settlement unless it poses danger to live and properties. In conclusion, a substantial amount of land changes has occurred in the Juaben Municipality which has led to farm lost and the socio-economic life of the farmers in the Municipality is not encouraging as well as less effective mitigation responses from management to curtail the rapid land-use changes. It is recommended that the government and the other stakeholders should come together to develop the legal framework that will prevent landowners to sell lands which are not properly surveyed and planned by the Municipal Assembly and also impose more severe sanctions to help check rapid land uses changes in the Juaben Municipality.

Keyword: Land Use Change, Urbanization, Spatial Planning, Socio-Economic Effects.

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DEDICATION

This dissertation is dedicated to God Almighty and to my entire family.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Substantial development and urban growth have been the major factor for the loss of most agricultural lands in both developed and developing countries worldwide due to an obvious increase in urban population (Araya and Cabral, 2010). According to (UNDESA, 2009), reported that the urban population in the world has seen a progressive increment rather than retrogressive. The report asserted that the urban population has been on increase from 0.73 billion in 1950 to 1.51 billion in 1975 and a significant increase to 3.42 billion in 2009. The report estimated the urban population in the world to increase to 6.9 billion people in 2050. According to the UN-HABITAT (2008), by 2030 there will be more than 1.2 billion urban dwellers in Africa. An assessment of the world's urban population projected about 68% of the world's population will be living in urban cities (UNITED NATIONS, 2018). Ghana is considered to be one of the countries in the African fraternity with a lot of economic activities and peace which has contributed to an annual influx pollution growth of the urban areas. The countries extensively experience a change in land use due to fast urbanization. As the population in the urban areas swell up, the demand for land for settlement increases and pressure is mounted on peri-urban lands which are mostly agricultural lands.

Urbanization is considered to be the gradual shift in the population concentration from the rural areas to the urban centers. Urbanization is noted to swell up cities and hence the adjoining areas progressively become a city. Verburg et al. (2010) observed that the rapid population growth of the urban population resulted in changes in spatial, economic, social and environmental problems. Moko et al. (2014) noted that given land

to be a fixed asset an increase the variables such as pollution has an adverse effects on the use of land. The value of the land changed and agricultural demand for the land becomes less as compared to building purposes. Azadi et al,(2011) observed a direct relationship between agricultural land loss and urbanization in the developing countries.

Urban growth is associated with many problems, due to an expansion of the population and physical structures such as buildings, roads, recreational facilities, etc. The needed fundamentals responsibility for economic and social transformation in people which also help as a substance of town development comprise transportation, communication, technology, etc. The fast-growing of urban population means changes in economic and social matters for the advancement of society. The identical burdens of fast urbanization and an increasing population have caused chaos on farming land and land administrators in Juaben municipality in Ghana. The onus falls on the researcher to find out the implication of the urbanization on the agricultural lands in the Juaben municipality.

1.2 State of the problem

Farming lands are most pretentious by the fast growth and its occupations of a plea. Land use for housing, manufacturing, market, public and culture have the tendency to control farmlands in the proposition for space in the city place. These control trends deny growers of arable land to improve thus dropping farming production. There is a strong narrative of happen in the Juaben Municipality.

For the past 24 years' major land in Ghana has been experiencing a change in land use. The total area of developed land has increased by 36 million acres or 48% while the total area pasture land and cropland decreased by 76 million acres in the 16 Region in Ghana from 1995 to 2019 (MOA,2019).

Over 62 percent of Juaben population are engaged in Agriculture as a major source of employment according to 2010 population survey in Ghana (Ghana Statistical Service, 2013). The rate of unemployment will increase when the Agric sector has no lands to use due to urbanization. The effects of this approach will eventually affect the life of farmers in the Juaben Municipality.

Because the value of land has changed rapidly by urbanization in the Juaben Municipality. Owners of land intentionally leave their land vacant to expect profit they will make from sales or using it for non-agricultural uses. The land value and land markets around cities are very expensive comparing to agricultural produce. Strategic planning framework or any land use plan obscenely deform the guide to regulate land-use change in the most city area in the low and middle-income nation. There is a weak regulator over the land-use change from farming to non- farming uses. These development activities located and build legally or illegally, comprise of household, enterprise and public sector activities. Politicians and real estate interest avoid the regulation which is meant to limit these illegalities (Satterthwaite et al., 2010). These unauthorized structures extensions pass severe concerns in the Juaben Municipality. This study aimed at finding out the effects of urbanization on the agricultural lands in the Juaben Municipality from an economic and social perspective on farmers in relation frequent land uses changes in the Municipality.

1.3 Aim of the Study.

To identify means of improving the planning and management of land-use changes.

1.4 Research Questions

1. What are the economic and social effects of land-use change on farmers in Juaben Municipality?
2. What are the effects of urban land-use changes on agricultural land use in the Juaben Municipality?
3. What is urban planning and management response to land-use change?

1.5 Objectives of the Study

The main objective of this study was to assess the impact that the rapid increase in urbanization has on agricultural land use in the Juaben Municipality. Specifically, the study sought to:

1. Assess the effects of urban land-use changes on agricultural land use in the Juaben Municipality.
2. Identify the economic and social effect of land-use change on farmers in Juaben Municipality.
3. Identify urban planning and management response to land-use changes in the Juaben Municipality.

1.6 Methodology

Looking at the nature of this piece of work, it was neither fully quantitatively nor qualitatively. The study makes use of both approaches to obtain the ultimate results for

the study. The research instrument used in collecting primary data was a questionnaire. The mode of application of the research instrument was face to face administration of the questionnaire to the farmers whiles interview section was held with the head of Spatial Planning unit in the Juaben Municipality with an interview guide carved from the questionnaire. The results from the questionnaire were presented using distractive statistics while the findings of the study were stated in descriptive manner.

1.7 Significance of the Study

This reading would give information about urbanization and its effects on agricultural land, economic and social impact. It would aid as some of the few written proof of the substance matter. It would also serve as an additional document for other investigators to research and also provide to the store of literature.

The approvals of the study would direct policymakers in framing rules and plans at managing urbanization and its effects on agricultural land. This would also disclose some of the undesirable magnitudes resulting from land-use change.

This would improve planning and managing the urban system. The result of the readings can bring about additional readings and also aid writers to develop upon their facts.

1.8 Scope of the Study

The study covers geographically four (4) communities in the Juaben Municipality in the Ashanti Region of Ghana. The communities include Juaben, Nobewam, Kubease, and Bomfa. They are communities which are rapidly changing from Agricultural lands to developmental lands.

The study in context looked at the contribution of land-use changes and its effects on Agricultural lands in an urbanizing area of the Juaben Municipality. It sought to identify the economic and social effect of land-use change on a farmer and the appropriate management and urban planning response to land-use changes in planning and managing land uses in the Juaben Municipality.

1.9 Organization of Report

Five chapters would be required in the study. The chapter one will contain with the introduction, statement of the problem, aim of the study, research questions, objectives of the study, significance of the study, the scope of the study and organization of report. Chapter two covers the literature review of the writings of related information. Previous literature that includes urbanization in Ghana, Rapid urbanization, land use planning Response to urbanization, Urban Agricultural development, Urban and Per-Urban Agriculture in Ghana and food security in the context of Urbanization.

Chapter three shows the research methodology. It identifies the data collection and analytical techniques available in relation to Urbanization and its effects on Agricultural land.

Chapter four emphasizes on the finding of data collection showing charts, tables, and pictures where needed.

Chapter five delivers a summary of outcomes and suggestions for planning, recommendation, and conclusion.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents a relevant literature review on the urbanization in the world, rapid urbanization in Ghana., the implication of urbanization on Agricultural lands, the conceptual framework and the economic and social impacts of urbanization on the life of farmers.

2.1 Global trend towards urbanization

In the last decades, urbanization was not fast-growing as compared to this recent time. The rapid movement of people from rural areas across all nation in the world has increased tremendously within the past 40 years. People living in urban areas increased from one-third of the world population in 1960 to 47% nearly 2.8 billion people in 1999 (UNFPA, 2014). Today, the global urban population is estimated to grow at a rate of 60 million peoples per annum. Urbanization is not expected to end soon as it has been projected to increase to about 61% of the World's population will be living in the urban centers by the year 2030. In 2016, an estimated 54.5% of the world's population is living in an urban center (United Nations, 2016). On the global scale, Asia and African are the continents which have most of its regions least urbanized. The progression of urbanization in Asia and Africa is estimated to be about 38% with the remaining 62% living in rural areas. Latin America and the Caribbean is projected to have most of its peoples living in the urban centers than that of Europe by the year 2030. In 1960, New York and Tokyo were only megacities which were having more than 10 million inhabiting. In 1999, seventeen (17) megacities emerged around the world with over 10 million peoples inhabiting and among these cities 13 of them were

in less-developed regions. It was projected that by the year 2015, megacities will increase to 26 and out of it, 22 will be in the less-developed regions thus 18 will be in the Asia and more than 10% of the World's population will live in megacities. An excess of 8.3% as compared to 1.7% in the 1950s (UNFPA,2014). The world's megacities increased to 31 in 2016 with 24 of the cities located in global south. China alone grew six megacities while India harbored five. Africa is regarded to be the fast-growing content with rapid increase in urbanization. The urban residence of Africa was projected to increase from 11.3% in 2010 to 20.2% in 2050. According to the 2014 UN report, 90% of the global rural population still dwelled in Africa and Asia. Current progressions indicated that 3.4 billion people are still inhabitants of rural areas but a projected decline is estimated to be 3.1 billion by the year 2050. Urban dwellers are estimated to outweigh rural residents in Africa for the first time in the coming thirty years (United Nations, 2016).

2.2 Urbanization in Ghana

Urbanization in Ghana has been on consistent increment in the proportion of the country's population growth from 1960 to 2014 (Ghana Statistical Service, Ghana Health Service (GSS), 2015). According to GSS (2015), the western, Central and Greater Accra regions urbanization declined in the 1984 but pick it again in 2000. Regions noted to be least urbanized in 1970 and 1984 were Volta, Upper East, and Upper West but these regions appreciated urbanization in early 2000. As for 2014, the Northern region joined the Volta, Upper East, and Upper West as the least urbanized regions in Ghana. The Greater Accra region is the region with the highest urbanization and followed by the Ashanti region. Upper West is the least urbanized region in Ghana (GSS,2015). In Ghana, a population of 5,000 or more concentrated in an area classified

that place as urban. The first enumeration held in Ghana in 1921 up to 2010 suggested that urbanization in Ghana increases alongside the population growth. In 1921, the urbanized settlement constituted 9.4% of the total population but this figure almost tripled up to 23% in the year 1960s and double up to reach 49% in 2007. The proportion of peoples living in urban areas in Ghana as of 2012 was 12,575,998 indicating 50.9% (Ghana Statistical Service, 2014). As Ghana's total population doubled up in 1984 and 2013, a period of 20 years, urban population outpace rural population growth. The growth was 4.4% annually and the urbanization rate grew from 31% to 51%. Over this period the urban population grew from under 4 million people to nearly 14 million. Ghana's urbanization transformation is one of the fastest in African. According to the World Bank 2017 report, as of 2017, the urbanization in Ghana grew to 55.41%. See figure 1 for the urbanization trend in Ghana from 2007 to 2017.

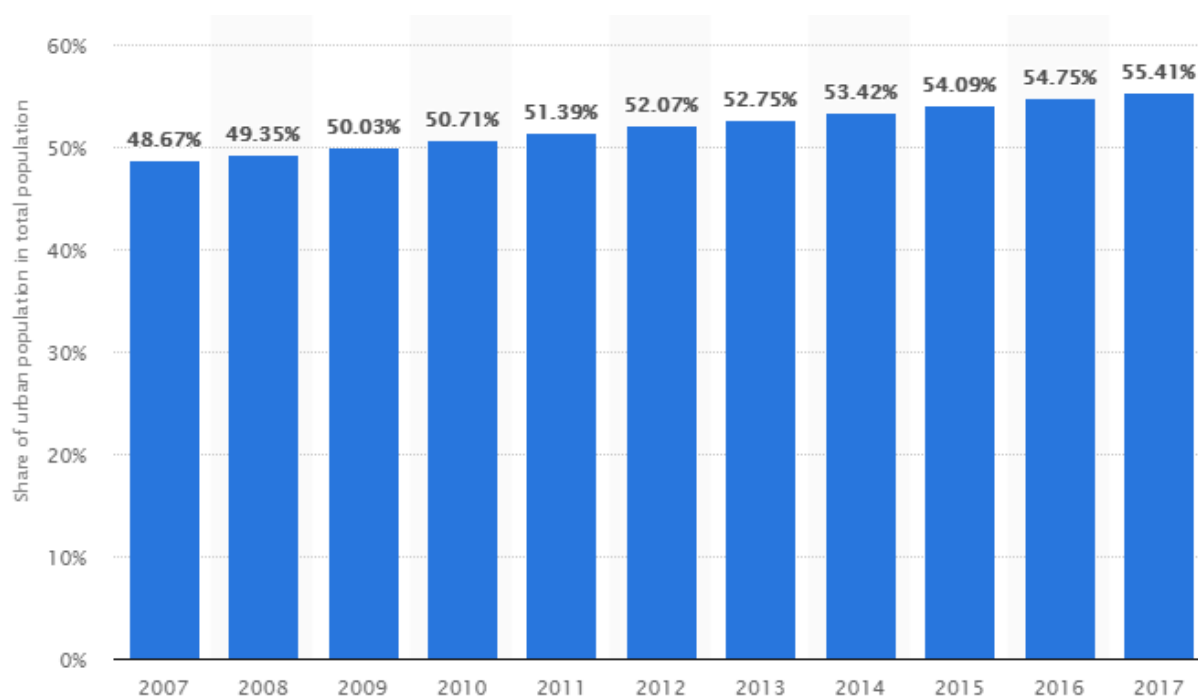


Figure 2.1: Urbanization trend in Ghana from 2007 to 2017.

Source: World Bank (2017)

2.3 The effects of urban land-use changes on agricultural land use

Jiang et al. (2013) noted that urban land-use changes are normally influenced by five factors which are attributed to resources scarcity, natural population increase, migration, decrease in land availability and economic improvement of the urban areas. Cobbinah and Niminga-Beka, (2017) indicated that as towns and cities expand rapidly without a proper planning scheme, encroachment increases and the demand for land changes from agriculture motive to residential purposes. Lee-Smith (2010) observed that purposes for the demand of land shifted from agricultural sense to other related purposes when peri-urban begin to grow into urban and this impact negatively on agriculture as farmers are left with few lands to tilt for agricultural purposes. According to Azadi et al., (2011), more fertile agriculture lands areas turn to be more urbanized than less fertile areas.

They have asserted people move to the farm in those fertile lands and when their population increase astronomically the fertile lands are then turned into other residential purposes. Lambin and Meyfroidt (2010) discovered that urbanization and rapid increase in population in urban cities has serious effects on agriculture lands due to other benefit landowners gained from using their lands for other purposes rather than agricultural activities. Naab et al., (2013) noted that the product of rapid urbanization is the demand of lands for other purposes such as industrial set up, residential facility and other commercial activities with the neglect of agricultural activities. Pandey and Seto (2015) observed in their study that all the states in India lost loss of less than 1% of the total agricultural landmass to urban expansion between the periods of 2001 to 2010. According to the World Bank(2011) in Vietnam, between the period of 2001 to 2010, 1million hector of agricultural fertile lands were converted into peri-urban expansion. Pribadi and Pauleit (2015) observed that an aspect of agricultural activities such as

inland aquaculture and low land horticulture benefit greatly from urbanization because most farmers quit the other sector of the agricultural works and join in that sector making it grow due to its closeness to market center and availability of ready market for their products. But on the other hand, live stocking rearing, perineal crops, and paddy fields are forced to move to un-urbanized areas to make room for the use of the land for other purposes such buildings and constructions. In Asia, it is estimated that the urban population increases by 45 million per annum and more than 10km² of agricultural fertile lands are lost daily (Hussain and Hanisch, 2014). Haller (2014), argued that there is a doubt surrounding urban agriculture to the sustainability and increase in food production and food security due to constant destruction of farmland during urbanization.

However, Liu, Li, and Qi, (2015) noticed that urban expansion is not necessary the strategies of governments to boost economic growth in the urban areas but as a result of other profit-seeking stakeholders who stand to benefit at the expense of farming. Han proclaimed that such individuals acquired most of the land close to urban centers and keep them for other purposes other than farming. In understanding the global trend of land lost to urbanization, D'Amour *et al.* (2017) observed that by 2030 about 1.87% to 2.4% of the global croplands will be lost to urban expansion and about 80% of croplands lost to urbanization will occur in Africa and Asia.

The treat of agricultural land due to urbanization is very common in developing countries rather than developed country (Pouzols *et al.*, 2014). The land acquisition differs around the world due to culture, legislation and the ownership system. Ghana practice the land tenure system which enshrines the ownership power to the individuals rather the state. The use of lands is mostly determined by the individuals who own the

lands and government pay compensation before lands can be acquired and develop in terms of urban expansion. The practice has paved the way for rapid loss of agricultural lands in relations to urban expansion. The value and the purpose of lands in Ghana have greatly been changing due to urban expansion. Peprah (2014), also mentioned that rapid urban sprawl has adversely affected development efforts in many cities in Ghana. He continued that one of these is changes in land use subsequently leading to decreased agricultural land in favor of the provision of residential accommodation in most urban setups.

Oyinloye and Adesina (2011), in analyzing the situation in Ibadan city, observed that one human phenomenon that has been impacting severely on the environment is the incessant expansion of towns and cities. This is reflected by the quality of life in urban centers as well as the spread of the urban features into rural areas. The authors revealed that the urban infrastructure such as roads, streets, electricity, water supply system and waste management system are depreciating and this has compounded the way the cities are sprawling far beyond the range for which the facilities were planned and projected. The expansion of the city of Ibadan has heavily eaten into valuable farmlands.

2.3.1 Reduction in farm size, the complete farm lost and increase in unemployment

The eminent evidence of urban land-use changes is the rate at which settlement encroachment spring in the farmlands of Famers. The sizes of farmlands decrease as the settlement encroaches increases. Famers are left with no choice to other than farming on the leftover lands. Worku et al (2018), observed the trend of agricultural land lost in the Azezo Tekle Haymanot Kebele district in Ethiopia as between the period of 2002-2006, farmlands that were lost totally 205 hectares. They discovered

that urban development like settlement expansion constitutes 70.89% of the land-use changes. Verhoeve et al., (2015), noted the urban expansion does not occur in a vacuum as it is the same land demarcated for agricultural purposes that will be rezoned for settlement.

Naab et al, (2013) argue that a major problem of rapid urban growth is changing land-use patterns which affect agricultural land use, land sizes and for that matter yield. Egypt, a major agrarian country in Africa where the Nile Delta represents the prime agricultural land, about 77.3% of the highly capable farmland and 17.8% of low capable farmland were lost to urban sprawl between 1984 to 2006 (Shalaby, 2012). According to Gordon-Larsen et al., (2006), the USA and Canada lose 4,800 sq km of prime cropland annually to roads, buildings, reservoirs, and other non-agricultural uses. Gerald (2011) in a study observed that 882 hectares (27%) agriculture lands in 1986 at Freetown in Sierra Leone was used for residential activities in 2000. He noted that the transformation occurred mostly at the urban fringes as a response to the rapid increase in population which establishes a strong linkage between urbanization and agriculture land lost.

Phuc, Westen, and Zoomers, (2014) discovered that peri-urban agricultural lands areas around Hue city were affected when the city urbanization expanded. In a period of 12 years, 393 hectares of farmlands were converted for other related projects which are not related to agricultural. Zacharias and Tang (2010) in a study spotted the trend whereby big projects such as tall building, shopping malls, gate housing, and the emergence of new towns has consumed excessively agricultural lands in the mid-1980s.

Attua and Fisher (2011) provided an empirical account of historical and future land-cover changes in and around the New Juaben Municipality. Using Landsat satellite imagery from 1985 to 2003, the study found that the urban core expanded by 10% and the peri-urban areas expanded by 25% over the period leading a lost in farmlands. The conversion of agricultural lands leads to job losses. According to World Bank report on Ghana shows that more than 50% of households that lost access to agricultural land engage in trading and other activities, such as construction, whereas 28% become unemployed. As only 11% of households try to replace the land they had lost, the overwhelming majority would aim to enter the non-farm labor market (FAO, 2016).

2.3.2 Changes in the trend of crop cultivation, livestock farming and declined in productivity.

Crops cultivation in the urban areas is influenced by the frequent demand of land for other purposes aside agriculture (Smith et al., 2014). The extinction in perennial crops in the urban areas are due to the reclaiming and conversion of agricultural land with poor compensation packages for Farmers (Wang et., 2014). Perennial crops are noticeable in areas where there are rapid population growth and the desire for human settlement (Byerlee, 2014). Barretto et al. (2013) observed that an increase in the demand for land deters farmers from growing crops which have a long span of life. In a study conducted by Giesecke et al. (2013) discovered that farmers were shifting from the cultivation of perennial crops to non-perennial crops as the demand for land increased for residential purposes. Deininger (2011) was of the view that as far as farmers are having the notion that their farms will be strip off from them for residential activities without proper compensation, the lower they will grow crops which last longer. According to the cultivation of perennial crops helps in the carbon balance in

the urban areas but lack of proper legislation to secure lands for such purposes has led to the decline in perennial crops farming in the urban areas (Mok et al., 2014). In a comparative study by Quasem (2011) discovered that most land conversion in urban areas affects perennial crops than non-perennial crops.

The ranching of animals and rearing of animals are kept away from the midst of human settlement. The absences of laws to monitor the land uses changes on unauthorized lands leads to decrease in animal keepings. Farmers have to migrate to remote areas to embark on the activity whenever the populace encroaches the lands of the famers. Lambin et al. (2011) observed a declined in the livestock faming when urban expansion occurred. There is also a declined in the production of agriculture products. Over the years, the growth of Agriculture in Ghana has been declining. Agriculture contribution to GDP over the years has shown a steady reduction from 35.4% in 2006 to 34.3 in 2007 and to 33.59% in 2008. The growth rate of the sector however doesn't show any clear trend. The growth rate reduced from 4.5% in 2006 to 4.3% in 2007 and increased to 5.17% in 2008. In 2013, the contribution of the agriculture sector to GDP has reduced to 22 percent from 40 percent and still continues to decline. While agricultural output has improved since 2000, analysts agree that the scale of the growth remains poor in Ghana and other parts of sub-Saharan Africa. According to data from the World Bank, agricultural GDP growth in sub-Saharan Africa averaged 2.3% per year in the 1980s and rose to 3.8% per year between 2000 and 2005. However, much of this growth is a result of an expansion in the areas of cultivation, rather than a proportional increase in yields.

2.3.3 Difficulties in Accessing lands for farming and increase in the economic value of land

The changing demand of lands from an agriculture purposes to residential as peri-urban swell up of human settlement causes the value of the land changed and farmers suffers the most due to the high price placed on the value of land as compared to leasing it for farming (Shah et al., 2013). In response to demand for urban land, the process of land supply has changed from giving farming use rights to urban land use rights which is hectic for farmers in getting lands for farming (Li et al., 2014). According to Adam (2014), the accessibility of lands for farming in urban areas are more difficult as compared to the rural areas. White et al. (2013) notice that land accessibility in developing countries where most lands are vest in the individuals, chiefs and family are more difficult than state vested lands. Anseeuw et al. (2012) observed that most land owners preferred leasing their lands to real estate developers as results of high profit than to farmers for farming. According to Wästfelt and Zhang (2016), land acquisition in most peri urban areas changes from agricultural uses to residential which suggest a difficulty on the part of farmers in accessing lands for farming activities. Osumanu et al. (2016) stipulated that household seeking living space (land, house, etc.) are subjected to exploitive activities of individual landlords who have no regard for the municipal housing policies and regulation. The economic value of land changes when the demand of land shift from agrarian to residential. Francis (2013) observed that in Tamale, an acre of farmland that cost as low as GHC200 in ten years ago was costing about GHC5,000 to GHC20,000 depending on its proximity to the urban in 2013. Liu, Liu, and Qi, (2015) noticed that urban expansion is not necessary the strategies of governments to boost economic growth in the urban areas but as a result of other profit-seeking stakeholders who stand to benefit at the expense of farming. Such people gain

benefits from the sale of agricultural lands and development of estate houses for renting.

2.4 The Socio-Economic Impacts of Agricultural land lost on farmers

Urbanization is by no means bad *per se*. It brings important benefits for economic, cultural and societal development. Well managed cities are both efficient and effective, enabling economies of scale and network effects while reducing the impact on the climate of transportation. As such, an urban model can make economic activity more environmentally-friendly. Further, the proximity and diversity of people can spark innovation and create employment as exchanging ideas breeds new ideas. But these utopian concepts are threatened by some of the factors driving rapid urbanization. For example, one of the main factors is rural-urban migration, driven by the prospect of greater employment opportunities and the hope of a better life in cities. But rapidly increasing population density can create severe problems, especially if planning efforts are not enough to cope with the influx of new inhabitants. The result may, in extreme cases, be widespread poverty. Estimates suggest that 40% of the world's urban expansion is taking place in slums, exacerbating socio-economic disparities and creating unsanitary conditions that facilitate the spread of disease (UNO). The urban expansion comes as economic growth to other stakeholders who benefit directly from the economic activities that are derived from urban expansion. On the other hand, it is the end of the lively hood of peoples whose life depends on it. Tran and Steven (2013) observed that the rapid conversion of agricultural lands into other purposes due to urbanization strengthen the rate at which the livelihood of individuals change. Tran continued that the rapid acquisition of the agricultural lead to a high-income generation of landowners whiles farmers also lose their job and their livelihood support system.

Nguyen *et al.*,(2016) supported the facts laid to bare by Tran and Steven (2013) in a study conducted in Vietnam which revealed that most compensation paid to the farmers for the acquisition of their agricultural only better their life in a few days. Nguyen asserted that most farmers spend their money on house construction and reparation. Ellis (2005) added to the call of Nguyen and Steven that normally farmers who are affected in the urban expansion process do not have the requisite skill to be employed in the urban sector and because of this they stay in farming business as labors which makes them vulnerable to the economic crisis. According to Martine *et al.*(2012), the ordinary farmer is worse off when urbanization stripped of his or her lands because the farmer has to go through a lot of challenges to adapt the new lifestyle imposed on him or her. Livelihood and food insecurity could become an issue for households that do not find employment. Generally, urban food security depends not only on the availability of foods in the markets but ultimately on the ability of households to access food on their income.

2.4.1 Reduction in income of farmers

Land use change, however, does not come without costs. Conversion of farmland to urban development reduces the amount of lands available for food production which affects farmers in many diverse ways. The actual problem arose when farmers lose a significant amount of farmland without any alternative livelihood such as compensation or land replacement. The decline in the farming activities lead to a loss of income to farmers who's their entire life depended on the farming activities. Instances where compensation is paid but not enough, farmers suffers the consequences of living in abject poverty for the rest of their life. According to Haregeweyn *et al.* (2012), in their study they conducted in Bahir Dar in northwest Ethiopia revealed that 271 households

lost their farmlands to urban expansion between 2004 and 2009 and 96% of the households agreed their lives are worsened off since the compensation given to them for their land's conversion was woefully inadequate and their sources of incomes is also taken from them. Nguyen (2011) in a study observed that agricultural land lost do not leads to only lost in income to the farmer but also certain vital craftsmanship that has been preserved for many years. Noted land is the economic pillar of farmers, it is their sources of their livelihood and taken land from farmers is just like cutting of the sources of income. Observed the trend in famers income as it declined when their lands are taken from them. They observed that farmers who have no additional skills to be employed in the other sector of the economy are left unemployed which render them in cable to add any contributions to their income generation. According to about 79% of farmers suffers income declination during agriculture land conversion. Samat *et al.*(2014) noted a decline in farmers household income from 90% in the 1960s to 49% in 2010 due agricultural land conversion.

2.4.2 Increase in the prices of food and agricultural products

Urban expansion inevitably covers some agricultural land while changes in land values and land markets around cities often result in land left vacant as the owners anticipate the gains they will make from selling it or using it for non-agricultural uses. The consequences of the difficulties in accessing lands for farming eventually leads to decline in production hence giving rise in the prices of agricultural products. Urban food security depends on households being able to afford food within other needs that have to be purchased. Stage et al. (2010) noted that urbanization in poor communities affect food prices as most of their lands are converted to non-agriculture land. The number of households that depend on commercial food supplies increases whiles those

that depend on their own production decreases causing the rise in the price of food and the average peasant farmer have to spend much in getting access to food.

2.4.3 Difficulties in adjusting to social life styles

Zhao, Lu and de Roo (2011) noted a trend in China's workforce where most workers within the low- income and middle-income earners living condition are worsened when urban expansion is undertaken. They argued that utility bills go high, pollution increases, crime increases and the normal worker such as farmer finds it difficult to adjust. Liang and Lu (2014) study the social security impacts on landless farmers in Yangtze River Delta in China. From their study they discovered that more than 50% of the farmers were poor and in bad health condition, suffering from depression and anxiety which as results of adjusting to new living style imposed on them through agricultural land conversion in Nyahuru in Kenyan.

2.5 Urban planning and management response to land-use changes

In practice, urban planning in the developing countries has been suggested to be failures to the rapid expansions of urban settlement due to effective land management laws and policy enforcement (Akanbang, Sulemana and Yachori, 2018). The UN-Habitat (2009) spotted a trend in haphazardly spring up of physical structures in urban expansion in most developing countries which do not match up with developed facilities such as good roads, sewage systems, and other essential social amenities. This trend suggests a lack of proper legislative land management policies and enforcement. Studies have shown that the lack of good urban design and infrastructures lead to lack of respect, unattractiveness, and loss of money for its citizens (Appiah, 2012). The view shared by Frimpong (2017), who reported in his study on planning regimes that the

notion that some well-planned areas in the Accra such as Airport East, Legon, Trassaco, Cantonment, and Labone is because those areas have a proper plan.

The local Government Act 936[2016], section 51 and sub-section 3 permit agricultural activities in a district/municipal and metropolitan assemblies upon approval of health environmental Agency. The law in its natural nature does not support agricultural activities. Gyasi et al. (2014) retreated that all farming activities within the Tamale metropolis are illegal except small-scale and flowing vegetable garden. To solve the issue of agricultural lands depletion in the urban areas demand proper legislation and rezoning of the urban expansion. Amoateng et al. (2014) noted that most part of the urban areas demarcated for agricultural activities and recreational facilities has been rezoned for residential uses. According to Yeboah and Shaw (2013), Ghana lacks a proper legislative framework to protect agricultural lands because of the land tenure system in Ghana which inhabits legislation than restrain landowners from leasing their lands that are good for agricultural activities for residential purposes. They continue that the Section 18(1&2) of the 1992 Constitution permit government to acquired state land from the family and the individuals in the country but most of the purposes for acquiring such land exclude agricultural activities. In British Colombia, there a policy called Metro Vancouver's Regional Growth Strategy. This policy converts major parts of the Vancouver metro into agricultural areas which inhabit residential activities. In 2011, Metro Vancouver had 60,893 ha in the Agricultural Land Reserve (ALR), which makes up 22% of the region's land base (the ALR is a provincial designation that protects lands for farming). The average size of a farm in Metro Vancouver is 20 hectares (50 acres), which is typical for farms near urban areas. Ghana is only known for forest preservation and protection laws but there is no clear policy on land reservation for agricultural activities on a national scale (Andrew Wardell and Lund,

2006). The State of Montana has a unique constitutional provision that reflects on the state's agricultural heritage, which required that the Montana Legislature "protect, enhance, and develop all of the agriculture" (McCafferty, 2018). Osumanu et al. (2016) stipulated that household seeking living space (land, house, etc.) are subjected to exploitive activities of individual landlords who have no regard for the municipal housing policies and regulation. Not only are the landlords disregarding policies and regulation, but in the context of the unavailability of housing facilities or their poor state, the people do not comply with the municipal by-laws in Ghana.

2.5.1 The Local Governance Act, 2016 (Act 936)

The local governance Act has been in existence in Ghana for a very long time. The Act has undergone a lot of reviews to improve the work of MCE/DCEs. The Act covers the creation and administration of District/Municipal/Metropolitan Assemblies in Ghana. Act 936 Section 91 to 107 gives a description of how land use and planning should be carried out in the Assemblies in Ghana. Section 91 of the Act stipulate the permit to carry out physical development. Thus;

1) A person shall not carry out a physical development in a district except with the prior written approval in the form of a written permit issued by the District Planning Authority. (2) A District Planning Authority may approve an application referred to in subsection (1), before the adoption of an approved District Development Plan for the district. (3) A District Planning Authority shall consult public agencies and local communities as may be prescribed by regulations issued by the Minister in the determination of an application for a permit to develop prior to the adoption of an approved District Development Plan. The subsections of Section 91 give the power to

the Town and Country planning unit to make sure all development and planning schemes in the Assemblies are proved before is executed.

Section 93 of the Act talks about the conditional or unconditional of permit to develop physical. These conditions authorize the given of a permit to carry out physical development. Subsection 5 gives exemptions of certain agricultural activities that need no approval before carrying it out. Subsection (5) The following activities and any other action, program or project shall not require prior written approval from a District Planning Authority unless the proposed activity obstructs or interferes with a community right of space: (a) subsistence farming; (b) farming in any settlement that comprises a population of not more than five thousand; and (c) small-scale vegetable and flower gardening. (6) Despite subsection (1), members of the community may regulate activities specified in that subsection.

Section 94: Enforcement in respect of unauthorized development (1) Where(a) a physical development has been carried out without a permit or is being carried out without a permit, or(b) conditions incorporated in a permit are not complied with ,a District Planning Authority shall give written notice in the form that shall be prescribed by Regulations, to the owner of the land to require that owner on or before a date specified in the notice to show cause in writing addressed to the District Planning Authority why the unauthorized physical development should not be prohibited, altered, abated, recovered or demolished. (2) If the owner of the land fails to show sufficient cause why the development should not be prohibited, altered, abated, removed or demolished, the District Planning Authority may carry out the prohibition, abatement, alteration, removal or demolition and recover any expenses incurred from the owner of the land as if it was a debt due to the District Planning Authority. (3) A

District Planning Authority may issue an enforcement notice that demands the immediate stoppage of work that is being carried out contrary to this Act or the terms of an approved development plan. (4) A person who fails to comply with a notice to stop work commits an offence and is liable on summary conviction to a fine of not less than two hundred penalty units and not more than four hundred penalty units or to a term of imprisonment of not less than three months and not more than six months or to both the fine and term of imprisonment and in the case of a continuing offence to an additional fine of not more than four penalty units for each day that the contravention continues, after written notice has been served on the offender.

Section 95: Enforcement in respect of execution of district plans (1) A District Planning Authority may, (a) prohibit, abate, alter, remove or demolish a physical development that does not conform to an approved District Development Plan; (b) abate, alter, remove, or demolish a physical development for the implementation of an approved District Development Plan; (c) prohibit the use of any land or building for a purpose or in a manner that is contrary to an approved District Development Plan; or (d) execute any work a person is expected to carry out under an approved District Development Plan, where a delay in the execution of the work has occurred and the efficient operation of the approved plan has or will be prejudiced. (2) A District Planning Authority shall serve notice in the form prescribed by Regulations on the owner of the land in respect of the action the Authority proposes to take. (3) A notice referred to in subsection (2) shall state the nature of and the grounds upon which the District Planning Authority proposes to take the action.

2.6 Theoretical basis of the study

This aspect of the literature gives emphasis based on the study to the theoretical world. The study was based on Johann Heinrich von Thünen Model of Agricultural Land Use theory and Bid-Rent theory.

2.6.1 Johann Heinrich Von Thünen Model of Agricultural Land Use theory

The Von Thünen Model was propounded in 1783-1850 but came to use in 1966 when it was translated into the English language. Von was an experienced skilled farmer with a background in economics. On model was simple and demonstrate how the availability of the market for agricultural products determined how lands in a different location could be used. The model illustrated the relationship between the cost of land and transportation cost. Von propounded that as one gets closer to the city, the price of land increases. In simple terms, urban expansion changes the value of the land. The model explained that there are concentric rings of agricultural products, as the price of acquiring the land for the cultivation and transportation of the agricultural products decreases much of the that demanded agricultural products will be cultivated. But when it becomes more expensive to keep those crops cultivation due to increase in land price and transportation, the farmer will shift to the next crop in the ring which is more beneficial. It then continued until the agricultural land is converted to residential purposes due to the cost of doing business. Von noted when it becomes too expensive for farmers to keep their lands they turn to put value on building houses rather farming. As von Thünen (1966) noted, if conditions change, the boundaries should also change. An increase in urban population or an increase in urban income that drives up demand for housing should lead to an outward movement of the urban land zone and a rippling

effect through other agricultural zone boundaries. Von model was designed before the spring up of industrialization and its assumption was based on the following.

- Von assumed that the urban center(city) is located within the central part of a country or “Isolate State” which is self-sufficient and has no external influences. The isolated state is also the center of the market for agricultural products. Von asserted that the Isolated state or the urban area is surrounded by an uncopied land known as the wilderness. Von presumed that the soil and climate type located around the city or the isolated is fertile, good terrain and support agricultural products and because of this farmer only act based on profit maximization.

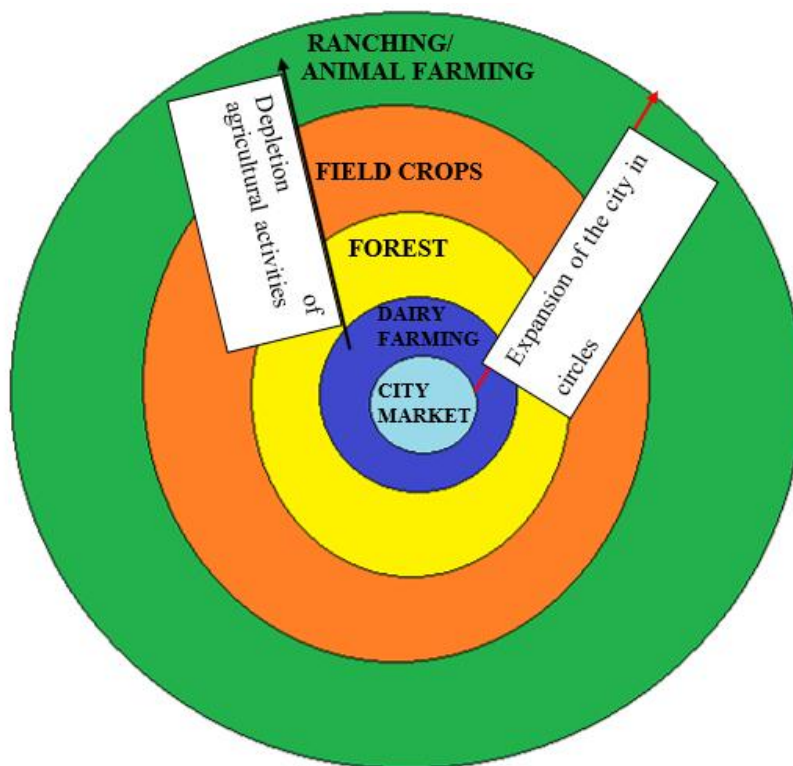


Figure 2.2: Von Thünen Model of Agricultural land uses

Sources: Illustrated by the researcher based on the Von Thünen Model of Agricultural land uses theory.

According to Von as illustrated on figure2, hypothesized that as the Isolated state(city) expands there is an emergence of a pattern of rings which developed around the city. These rings represented agricultural activities around the city which developed in four successions. Von realized that the city is the market center for agricultural produces and there is demand for dairy agricultural products such as vegetables, fruits, milk, and other perishable goods. Intensive farming then occurred closer to the city as the first ring zone development of agricultural activity because such agricultural products cannot go far away from the city because of its perishability in transportation, cost transportation, preservation, and fragility. According to Von, another ring will develop around the city which is the second ring zone of agricultural activity closer to the city or the Isolated city and is known as a forest. The forest provides support for timber and firewood for fueling and building materials for the city or the Isolated city. The third zone of ring closer to the city consisted of extensive fields crops such as grains for bread. Since grains last longer than dairy products and are much lighter than fuel, reducing transport costs, they can be located further from the city. The fourth ring zone for the agricultural activity is the animal rearing or ranching. This located at the outskirts of the city due to health hazards associated with living together with the animals. Von realized that the agricultural land that used to be a zone for dairy agricultural products is soon converted to residential lands as population increases and the demand for housing increases. On asserted the ring will be shifted until is become very expensive for the farmer to continue farming around the city and hence quit the job or move far away from the city but certain agricultural activities such as dairy farming declined and later faced out as farmers moved far away from the city into the uncopied land known as the wilderness. In the wilderness, is very expensive to conduct agricultural business because of its remoteness from the city.

2.6.2 Bid-Rent theory

The bid-rent theory broadens understanding of how urban expansion occurs and geographically the use and the value of the land changes. The bid-rent theory is a geographical economic theory which suggests that the demand for land and real estates changes as the distance from the Central Business District (CBD) increases. Thus, land closer to the Central Business District is expensive to come by as the same as real estates and the vice versa. It states that different land users will compete with one another for land close to the city center. The rents are higher near the city center and low in the periphery. This is based upon the idea that retail establishments wish to maximize their profitability, so they are much more willing to pay more money for land close to the CBD and less for land further away from this area. The bid rent theory confirmed the depletion of agricultural activities proposed in the Von Thünen Model of Agricultural land uses theory as farmers always want to maximize profit and because of this will quit their job when it becomes non-profitable as the Isolated sate expands.

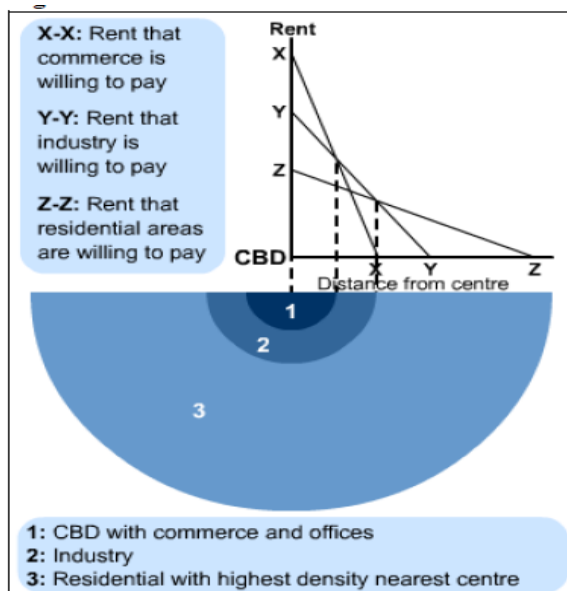


Figure 2.3: Bid-Rent Curve

Source: Narvaez *et al.*, (2013)

The Central Business District (CBD) on figure 3 defined the geographical area close to the urban center within which commerce and office are willing to pay at any price to acquire it for a business transaction. There is a high concentration of population and ready market for a variety of goods and services. Land acquisition within the CBD zone is very competitive with the high bidder considered. Agricultural and industrial activities within this zone are not profitable due to the high price of land. The bid-rent noted that commerce and offices dominated the inner circle of the CDB but start to decline when the distance between the CDB and the place of doing business widens. The industries required a large area to settle so they also situated themselves little bit far away from the CDB where land price and transportation cost are moderate. The theory noted some sort of agricultural activities may take place but not on a large scale because land is still expensive within this zone for agricultural purposes. As the price of land decrease in relation to its proximity to the city and moreover very expensive to acquire in the inner city, the middle income and lower-income earner move to the outskirts of the city to build their houses since the price of land at that fringes are relatively low as compared to the inner city. The demand for land increases in this zone and agricultural lands are later converted into residential lands when the real estate developers notice the value of the land around those areas when there is expansion in the urban settlement. The bid-rent theory simply suggested that the motives of land-use changes as geographical location of the land get closer to the city.

2.7 Conceptual Framework of the study

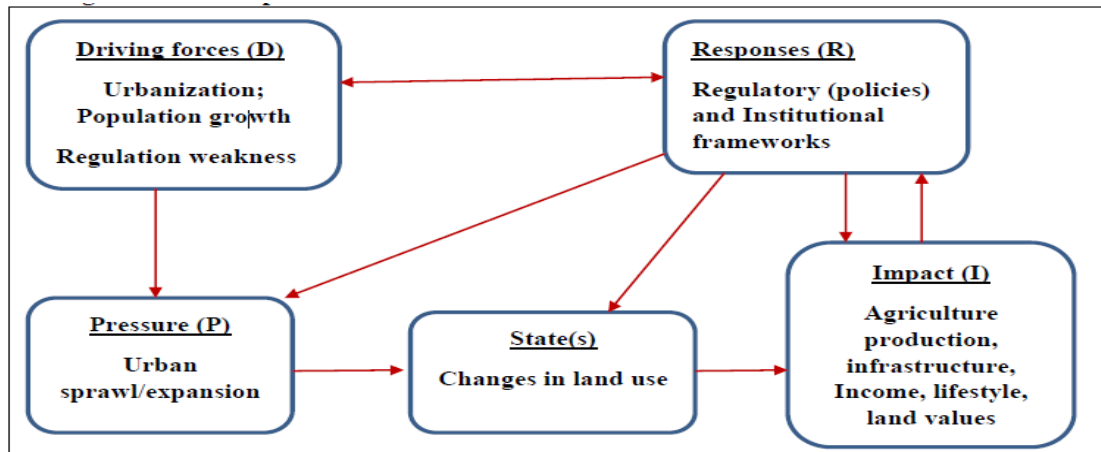


Figure 2.4 conceptual framework of the study

Sources: Taken from Drivers Pressures State Impact and Responses (DPSIR) framework from the European Environment Agency, (1999)

The study adopted the Drivers Pressure State Impact and Responses (DPSIR) conceptual model designed by the European Environment Agency, (1999) (figure 2.3). The model suggested that the driving forces of urbanization are the rapid increase in population and when the population increases to certain threshold without proper legislation to guide the urban development, then pressure is mounted on the natural resources such as land. Due to weak legislation and improper responses from intuitional policy framework to curtail the problem, encroachment on agricultural land spring up and kept on till landowners decided to use the agricultural land for other purposes which are profitable than agricultural activities due to the high demand for the land. The study adopted this conceptual framework because of its relevancy to the study in determining the impacts of urbanization on the socio-economic aspect of farmers who lose their lands during the processes.

Rapid urban population growth means an increasing demand for urban land, particularly for housing, but also for various other urban uses. Urbanization has led to land-use conversion from agricultural land to urban land use, such as for infrastructure, industrial, residential or commercial uses. Such land-use conversion often reduces the most fertile land, and therefore the impact on agricultural production and food security is often larger than the absolute amount of land involved (Francis et al., 2013).

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter consists of the methodology of the study. It presents themes like the study Area which give a brief description about where the study took place, the research design used in the study, the research approaches adopted for the study, the population, sampling and sampling technique used in selection people for the study and the research instrument used in collecting data for the study. It further gives an account of the data analysis procedure, the reliability of the research instrument and ethical consideration.

3.1 Study Area

The study was conducted in the Juaben Municipality. The municipality is geographically located Latitudes $1^{\circ} 15' N$ and $1^{\circ} 45' N$ and Longitude $6^{\circ} 15' W$ and $7^{\circ} 00' W$. It shares boundaries with Ejisu Municipality, Kwabere East, Sekyere East, Bosomtwi, Asante Akim Central and Bosome Freho. The municipality covers a total landmark of 365km^2 .

Topographically, the Juaben Municipality has undulating and dissected plains land surface ranging between the height of 240m and 300m above the sea mean level. The municipality is blessed with rivers such as Oda, Bankro, Anum and Hwere which flows throughout the year. It is the major sources of water for both domestic, agricultural and industrial purposes. The Municipality falls within the semi-deciduous rain forest climatic zone with a bi-modal rainy season, with rainfall ranging between 1,200mm and 1,700mm reaching its maximum during the two peak periods of May/June and September/October. The favorable climatic condition and the underlying Tarkwaian

and birimian rocks have given rise to vegetation which is characterized by tall trees and evergreen undergrowth with associated economic trees like Wawa, Odum, onyina, etc. The main economic activities of the Municipality are Agriculture with about 62% off the populace employed but has dwelling to about 48% in the 2014 survey conducted by Ghana Statistical service.

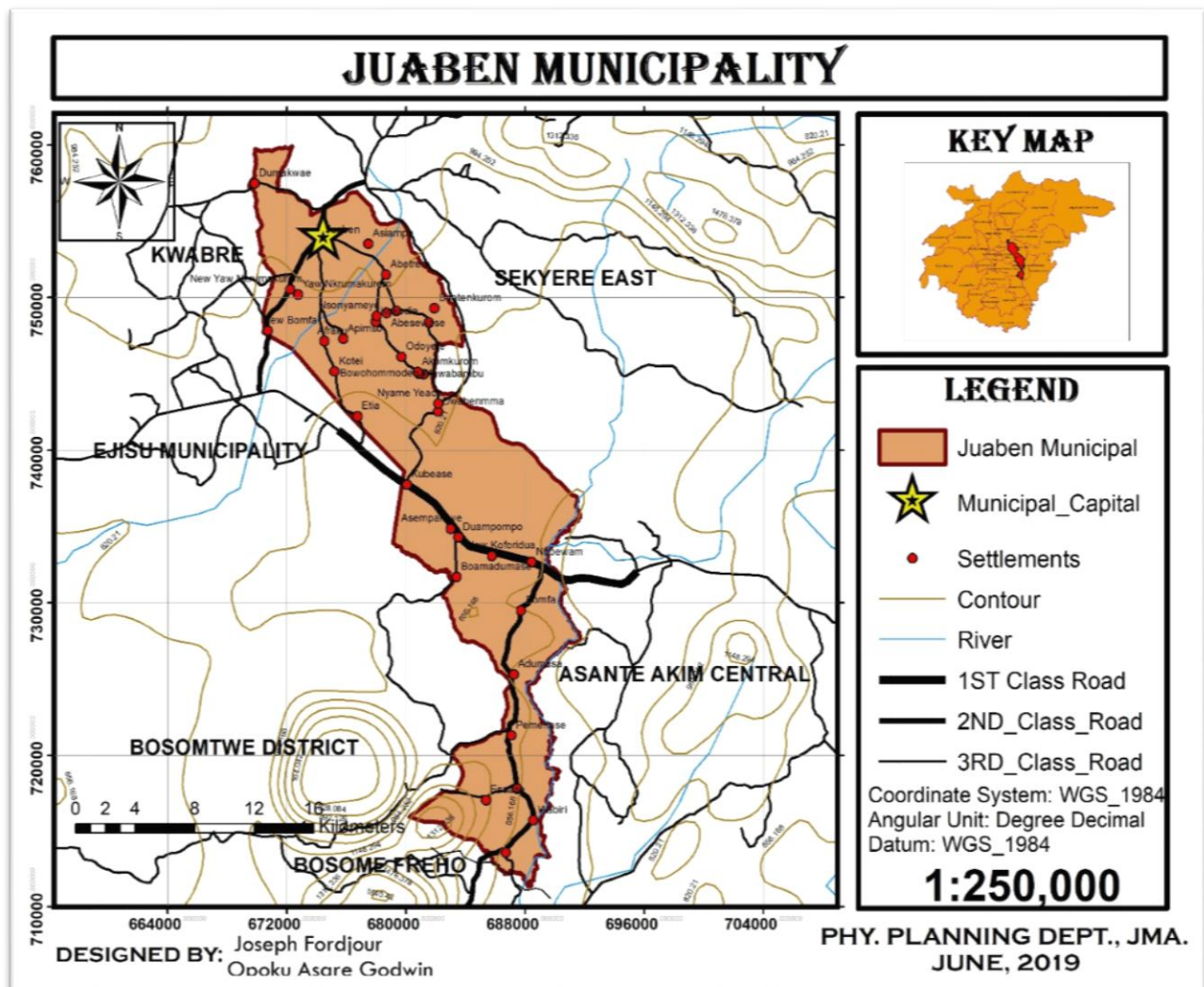


Figure 3.1: Map of Juaben Municipal

3.2 Research Design

The descriptive survey designed was used for the study. According to Owens (2002), descriptive surveys designs try to identify important educational phenomena and variables that intervene in the initial stages of research for further studies.

According to Cohen, Manion and Morrison (2013), descriptive survey design offers the researcher the opportunity to gather first-hand information on a phenomenon using the appropriate methods which guarantee an unbiased representation of the population. According to Hubpages (2013), it is designed to assist in gathering data to give a description to a phenomenon in its natural state where relevant information is not enough. The descriptive survey was adopted for this study because of its flexibility in using research instruments such as a questionnaire and an interview to describe phenomena.

3.3 Research Approach

The two main approaches to conducting research are quantitative and qualitative (Yates, 2014). The quantitative approach operates by developing testable hypothesis and theories which lend themselves to generalization. It is usually applied in the natural sciences and useful for data of numeric nature. Questionnaires, surveys, personality tests and other standardized research instruments are some of the data collection techniques used under this approach. The qualitative approach on the other hand bases research on systematic protocols. Its techniques, findings, interpretations, and conclusions usually reflect the subjective opinion of the researcher. It is suitable where an insightful understanding of a situation is needed. Data collection techniques adopted under this approach include observation, case studies, interview guides and reviews of the literature (Yates, 2014). The choice of the approach to be adopted for a particular

study will largely depend on the purpose of that study (Boohene, 2006). This study adopted the mixed approach method which combines both the qualitative and the quantitative approach. This approach was employed because of its flexibility in handling research problems that demand vivid explanations.

3.4 Population

According to Creswell (2012), the population for research denotes the elements or individuals from whom the researcher collects data for his/her study. A research population is also known as a well-defined collection of individuals or objects known to have similar characteristics. All individuals or objects within a certain population usually have a common, binding characteristic or trait. Every research focuses on a group of elements with a population and this group of elements within the population is known as the target population. Target population refers to the entire group of individuals or objects to which researchers are interested in generalizing the conclusions. The target population usually has varying characteristics and it is also known as the theoretical population. The accessible population which is also another essential part of a study population comprises of a group of individuals or elements to which the researchers can apply their conclusions. This population is a subset of the target population and is also known as the study population. It is from the accessible population that researchers draw their samples.

The accessible population was registered farmers (115), and an officer from the Spatial Planning Unit department in the Juaben Municipality.

3.5 Sample procedure and sample size

In this study, the purposive sampling, quota sampling, and convenience sampling methods were used for the study. The purposive sampling method was used in the selection of both personnel at the Spatial Planning Unit and farmers. According to Creswell (2017), purposive sampling is used where researchers believe that the individuals selected are the right people to give the information the researcher needs. In this instance, the above mention peoples were presumed by the researcher that they can provide accurate information for the study and they were given equal chance to be included in the study. And because the Spatial Planning Unit in Juaben Municipality was having only a staff (1), that staff was automatically selected. The quota sampling was applied to farmers in the four communities

For a proper analysis of each element representation, the researcher applied the Cochran's (1953) formula of calculating for sample size on the total population of the farmers which were having a majority of the respondents and determined the sample size. After the sample size was known for population, quota sampling was applied in selecting respondents from the four communities. In each community, 22 farmers were selected. The researcher then adopted a convenience sampling technique in getting the respondents thus the framers in each community. In all, a total sample size of 90 was used. These include the head of the Spatial Planning Unit (1) and Registered Farmers (89) in the Juaben Municipality

Cochran's for calculating sample size illustrated below:

$$n = \frac{n_o}{1 + \frac{(n_o - 1)}{N}}$$

Where n_o = Cochran's sample size recommendation at 95% confidence level and error of margin 5% and p value of 0.5 ($((1.96)^2 (0.5) (0.5)) / (0.05)^2 = 385$), N is the population size and n is the sample size.

$N=115$

$$n = \frac{n_o}{1 + \frac{(n_o - 1)}{N}}$$

$$n = \frac{385}{1 + \frac{(385 - 1)}{115}}$$

$$n = 88.73$$

Therefore 89 farmers were selected from the 115 registered farmers to respond to the questionnaire.

3.6 Data Collection Instruments

The main research instrument used in the collection of the primary data was a self-administered questionnaire and semi-structured interviews. According to Neelankavil (2007), the greater advantage of using a questionnaire in data gathering is the ability to guarantee best uniformity, consistency, and objectivity in the data collected. Neelankavil asserted that it provides the opportunity for the anonymity and the confidentiality of the respondents been respected and moreover offer conveniences to both the respondents and the researcher during the compilation of the data. The questionnaire was constructed on the variables of the survey, which was adapted from the literature reviewed based on the objectives of the study. Variables such as the effects of urban land-use change on agricultural land use in the Juaben Municipality

and identifying the economic and social effect of land-use change on farmers in Juaben Municipality.

The total average items on the questionnaire were 10 comprising mainly close-ended questions. They were grouped into two sections, A, B, and C. Close-ended questions, according to Becker and Watts (1999), guarantees accurate, one-dimensional, exhaustive and mutually exclusive responses and save times. Section A comprised on average of four (4) items, which measured the indicators for the effects of urban land-use changes on agricultural land use in the Juaben Municipality. Section A solicit information on the farmers' biodata. Section B also comprised of an average of five (5) items, which identify the economic and social effect of land-use change on farmers in Juaben Municipality. In each of the items on the questionnaire has sub-questions which respondents were to choose their option on based on a 5-point Likert scale. The semi-structured interview guide also constructed based on the objectives of the study and respondents were at the liberty to provide their own responses. The semi-structured interview was used to collect data from the head of Spatial Planning Unit in the Juaben Municipality. It was constructed basically on the third objective of the study thus identifying urban planning and management response to land-use changes in the Juaben Municipality.

3.7 Validation of Research Instrument

A pilot study was undertaken in order to refine the questionnaire so that respondents would have no problem in answering the questions. In addition, it enabled the researcher to obtain some assessment of the questions' validity and the likely reliability of the data collected. In order to check the reliability of the questionnaire, a pilot study

was conducted on 2nd April 2019 at Ejisu. This is a close-by district which shares similar features as those included in the study.

The number of respondents was 58 which was sufficient to include any major variations in the population as confirmed by Saunders et al. (2007) that for most student questionnaires, a minimum of ten (10) for the pilot study is sufficient. The statistical validation of the questions (Section A-C) was based on Cronbach's alpha reliability test. With the help of SPSS (Statistical Product for Service Solutions) version 20.0, the internal consistency of Cronbach's alpha coefficient was determined. There was a 98% response rate. The reliability coefficient for the questionnaire (Section A and B) ranged between 0.74 and 0.9. Research has shown that scales with Cronbach's alpha coefficient of 0.70 or more are considered to be reliable (Chau, 1999). Based on the responses given during the pilot study, few modifications were made on the final instrument for the main survey which was then administered.

3.8 Data Collection Procedure

The collection of data was from both primary and secondary sources. The self-administered questionnaire and the semi-structured interview guide formed the main source of primary data whilst related published and unpublished literature particularly from the internet, journals, handbooks, reports, and textbooks provided secondary data for the study. Data collection was from 5th June 2019 to 5th July 2019.

An introductory letter was collected from the Department of Construction Technology and Management, Kwame Nkrumah University of Science and Technology to the heads and leaders of the respondents to seek permission to conduct the study in their institution. The main primary data used for the study was through the data gathered

from the field survey using the questionnaire and the interview sections. The questionnaire was administered by the researcher in a face to face contact with the respondents at their place of work or residence. In each category, the researcher spends two to three days in collecting the data. Because of the nature of the work of some of the respondents sampled for the study, the researcher upon visit will distribute the questionnaire for the respondents that are available to respond to and collect them within the agreed time.

The time allowed for responding to the questionnaire was proportional to the person work schedule or free time available to spare but have within 4 hours to respond to and failure to do so, the researcher retrieved the unfiled ones and come back again upon the time the respondent will be free to respond to. Upon completion of the questionnaire, the researcher collects it by himself. This approach was possible because of the convince sampling technique. In all, 89 farmers respondents responded to the questionnaire in the three categories. Interview section was scheduled with the staff from the town and country planning department on the time and place of their choice and data was collected during the interview section.

3.9 Data Processing and Analysis

The data collected on each day from the respondents using the questionnaire were edited and entered into Excel a computer software for data entry until all the questionnaires were collected. The edited data entered in the Excel was then transferred to another computer software knows as Statistical Product for Service Solutions (SPSS) version 26.0. Data collected was analyzed quantitatively using descriptive statistics. Whiles responses from the interview section were analyzed using a content analysis approach. According to Yin (2014) the content analysis approach comprises of

compiling the data; disassembling the data; reassembling the data; interpreting the meaning of the data, and concluding the data for qualitative analysis. The results were used to support the discussion of the outcome of the questionnaire. Analyzations of data in this particular study adopted both qualitative and quantitative approaches to enable effectiveness and accuracy of the findings from the study.

3.10 Ethical considerations

The study took into consideration several ethical issues. None of the respondents were forced to take part in this study, such that those who openly showed interest were allowed to partake in it. The researcher made use of the common expression “a respondent” to ensure strict confidentiality during the analysis of the data. The anonymity of the respondents was ensured and protected right from the beginning. All the rules and regulations guiding the conducting of research in the Kwame Nkrumah University of Science and Technology was followed.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.0 Introduction

This chapter presents the results discovered in the study using questionnaires. The respondents from which the data was collected included farmers and the head of Spatial Planning Unit in the Juaben Municipality. The results are presented in relation to the objectives posed for the study. An empirical review of the related studies were compared to the results of the study in this chapter.

4.1 Results Presentation

This section gives presentations and explanations of data obtained from the study using the questionnaire and the interview guide. The results are presented in tables using percentages, means and standard deviations as the distractive numerical values of the responses.

4.2 Bio Data of the farmers

The section gives a brief description of the farmers used in the study. The items covered included their gender, ages, years of farming, the type of farmers and the annual income.

4.2.1 Gender of farmers

The study featured a male dominance in the study which amounted to 69 (77.6%) of the farmers with only 20 (22.4%) of the farmers been women. The farming business in the Juaben Municipality was a work of the men than the women (See Table 1).

Table 1: Farmers Gender

GENDER	FREQUENCY	PERCENTAGES (%)
MALE	69	77.6
FEMALE	20	22.4
TOTAL	89	100

Sources: Ronald (2019)

As shown on table 1 majority 69 (77.6%) of the farmers were male while the female constitutes only 20 (22.4%) A suggestion of male dominance in the farming work in the Juaben Municipality.

4.2.3 Age of farmers

The ages of the farmers revealed a declined in the youth in farming in the Juaben Municipality majority of the farmers were a well grown adult. There was no minus in the faming work in the Juaben Municipality (See table 2).

Table 2: Age of farmers

AGE	FREQUENCY	PERCENTAGES (%)
Below 18	0	0
19-30	11	12.4
31-40	24	27.0
41 -50	38	42.7
51 and Above	16	18
TOTAL	89	100

Source: Ronarld (2019)

From Table 2 it is evident that majority (38) of the famers were within the age of 41 - 50 years representing 42.7. similarly, Between the ages of 31 to 40 years recorded 24 (27.0%) farmers while between the ages of 19 to 31 years constitutes 11(12.4%). The

was significant number of 16 (18%) of farmers who were above the age of 51. None of the farmers in the study were below the age of 18 years.

4.2.4 Annual income of farmers

The annual income of the famers revealed a trend of a worrying situation since majority (26) of the famers annual income does not exceed GH¢5,000 (See Table 3).

Table 3: Annual income of farmers

INCOME RANGE	FREQUENCY	PERCENTAGES (%)
Below GH¢2,000	17	19.1
Between GH¢2,000- GH¢3,000	23	25.8
Between GH¢31,000- GH¢5,000	26	29.2
Between GH¢51,000- GH¢10,000	19	21.3
GH¢11,000 and Above	4	4.5
TOTAL	89	100

Source: Ronarld (2019)

In Table 3, Majority of the farmers annual income was in between GH¢31,000- GH¢5,000. Only four (4) representing 4.5% of the farmers were generating income above GH¢11,000 annually. A similar chunk (23) representing 25.8% of the farmers were generating an annual income between GH¢2,000- GH¢3,000 while 17 of the farmers representing 19.1% were earning below GH¢2,000 a situation which suggest a peasant farming.

4.3 The effects of urban land-use changes on agricultural land use

The focus of this objective was to find out the possible effects that urban land changes have on the use of agricultural lands. A questionnaire was issue to farmers to solicit

their ideas about the experiences they encounter in their daily activities as farmers as far as changes in land use is concern. The responses from farmers are presented on table 4.

Table 4: The effects of urban land-use changes on agricultural land use (Famers' Responses)

Variables	Resp.	Min.	Max.	Mean	Std. Deviation
I lost my farm through agricultural land conversion to non-agrarian land uses	89	1.00	5.00	3.8427	.75225
My farm size is relatively small as compared to ten years ago	89	1.00	5.00	3.9326	.57992
There are difficulties in obtaining land for farming	89	1.00	5.00	4.1011	.72370
The economic value of land has changed significantly over the years	89	1.00	5.00	4.0000	.65713
Today, most crops cultivated in this area are non-perennial crops	89	1.00	5.00	4.1685	1.08958
Live stocking farming is not allowed in these areas as it uses to be ten years ago	89	1.00	5.00	3.8652	.71017
Residential land use is predominant in this area	89	1.00	5.00	3.9775	.69048
There is a low productivity in agriculture activities in this area	89	1.00	5.00	4.2247	1.10528
Food insecurity is a great concern in this area	89	1.00	5.00	3.6067	1.24880
There is a decline in farm related jobs creation	89	1.00	5.00	3.9663	.78984
Most farmers have lost their job as active farmers	89	1.000	5.000	4.01124	1.220045
There is the possibility I may loss the rest of my farms soon	89	1.00	5.00	3.2921	1.42384
Valid Respondents (list wise)	89				

Source: Ronald (2019)

Table 4 presents the descriptive statistics of survey results on the farmers' opinion on the possible effects of urban land-use changes on agricultural land use in the Juaben Municipality. It was identified from the farmers responses that most of the farmers have lost their farm through agricultural land conversion to non-agrarian land uses. The farmers strongly agree (Mean = 3.8427, Std.75225) that pressure for the conversion of agricultural lands for residential use and commercial has caused them lose most of their farms in the municipality.

Moreover, the farmers also agreed (Mean = 3.9326, Std. .57992) that there has been a significant decrease in the sizes of their farm due to constant encroachment of human settlement on their farms. They confirmed that the sizes of their farm in ten years ago has reduced drastically due to the influx of land uses changed pattern from agricultural to non-agrarian. Also, the farmers expressed their highly agreement (Mean = 4.1011, Std. .72370) in the difficulties they go through in searching for a piece of land for farming. The farmers admitted (Mean = 4.0000, Std. .65713) that the economic value of the land has changed over the years from where most land were sold cheaply to very expensive regime making it very difficult to access a piece of land for farming.

In addition, the farmers agreed (Mean = 4.1685, Std. .108958) to the changes trend in the cultivation of perennial crops such as cocoa and palm trees which are more economical. The farmers admitted that most of the crops they cultivate these days are crops with short spine of land due to constant reclaiming of lands by the land owners which do not favor the cultivation of crops with longer life spine. As indicated on table1, the farmers agreed (Mean = 3.8652, Std. 71017) to have notice a decline in the rearing of animals in the Municipality. This comes about because of prohibition of animals mingling with human settlement.

On the same Table 1, the farmers agreed (Mean = 3.9775, Std. .69048) that motive of acquiring land has been predominantly by residential uses with the neglecting of agricultural uses paving way for conversion of most agricultural lands for residential uses. The farmers agreed (Mean = 4.2247, Std. 1.10528) that the agriculture activities in the Municipality is on decline due to the shift in the use of lands. On the issue of food security in the Juaben Municipality, the farmers strongly agreed (Mean = 3.6067, Std. 1.24880) that is an ultimate concern that need to be checked because of constant decrease in agricultural productivity in the area. The farmers strongly agreed (Mean = 3.9663, Std. .78984) that as because of decline in the agricultural activities in the area, it has affected the other related jobs that are created along the value chain of farming in the Municipality. They also agreed (Mean = 4.01124, Std. .78984) that most of the farmers have lost their job as farmers because of the land uses changes that has been occurring in the municipality. The farmers where in anticipating of that if proper measures are not taken, they may lose their entire farms very soon.

4.4 Economic and social effects of land-use changes on farmers

This objective examined some of the socio-economic effects of land use changes on the farmers. The opinions obtained from the survey using the questionnaire from the farmers is presented on Table 5.

Table 5: Economic and social effects of land-use changes on farmers (Farmers' responses)

Variables	Resp.	Min.	Max.	Mean	Std. Deviation
There has been reduction in my income over the years	89	1.00	5.00	4.0000	.65713
Prices of foodstuff has gone up	89	1.00	5.00	4.0112	1.22004
I depend on other commercial food providers to feed myself and family	89	1.00	5.00	4.0112	1.22004
The cost of farming has gone up	89	1.00	5.00	3.2921	1.42384
I have lost interest in farming	89	1.00	5.00	3.9663	.78984
I hardly have a spare income to spend on fancy social gathering events	89	1.00	5.00	3.9775	.69048
I spent most of my income on high rent fees due to pressure on accommodation	89	1.0	5.0	3.1921	1.0084
Is difficult to associate with people of not your class	89	1.00	5.00	4.1011	.72370
The society do not recognize farming as a decent job	89	1.00	5.00	3.2472	1.43242
I have lost my job as an active farmer	89	1.00	5.00	3.9888	.80474
My living condition keeps on worsening everyday	89	1.00	55.00	4.4607	5.48771
Valid Respondents (leastwise)	89				

Source: Ronald (2019)

From Table 5, the results obtained from the survey on the economic and social effects of land lost on farmers indicated that majority of the framers have lost some amount of income because of the land use changes in the area. The farmers strongly agreed (mean = 4.0000, Std. .65713) that over the years they have lost income either through destructions of crops for human settlement or their ability to cultivate crops that are

economically viable on a large scale. Similarly, the framers strongly agreed (mean = 4.0112, Std. 1.22004) that because of land scarcity and lower productivity in the production of food stuffs in the Municipality, the prices of food stuff have gone up astronomically over the years. They agreed (mean = 4.0112, Std. 1.22004) that most of the food they consume in their households come from the commercial food sellers who go to the hinterlands to bring them in the Municipality at exorbitant price. The farmers strongly agreed (mean = 3.2921, Std. 1.42384) that not only the prices of food stuffs have goon up in the municipality because of land uses changes but also the cost of farming in the Municipality. Farmers believe that the price of land deters farming in the Municipality because is very expensive to purchase.

Moreover, the farmers expressed their opinion on the economic hardship imposed on them through the land uses changes in the Juaben Municipality. They strongly agreed (mean = 3.9775, Std. .69048) that is very difficult for them to get any extra income to spend on their social life such as outing, partying and others. They strongly agreed (mean = 3.1921, Std. 1.0084) that most of their little income they earn goes into paying high rent fees for accommodation which an evident of land use changes. Most of the farmers (mean = 3.9775, Std. .69048) do not sees themselves as an active farmer (mean = 3.9888, Std. .80474) because they have lost their job as farmers and have been demoralize in farming in the Municipality (mean = 3.9663, Std. .78984).

Additionally, the worrying trend of the farmers were their living condition which keeps on deteriorating because of disturbances in the source of livelihood due to land use changes (mean = 4.4607, Std. 5.48771). Also, the farmers were having difficulties adjusting their lives with the new economic hardship imposed on them. They agreed (mean = 4.1011, Std. .72370) that is very difficult for them to mingle with peoples who

are not of their class. The community which it uses to be a farmer's dominance is now heterogeneous in nature with a lot of people which isolate them. The farmers strongly agreed (mean = 3.2472, Std. 1.43242) that most of these people do not recognize farming as a decent job making it quite difficult to adjust to their new social and economic life.

4.5 Urban planning and management response to land-use changes

The development and planning of areas in the country are the sole mandates of town and country planning. This aspect of the government machinery is to ensure that the expansion of towns and municipalities are in accordance with the rules and regulations guiding the development and planning of towns. The focus of this objective was to find out some of the possible measures that have been deployed to mitigate the changes in land use in the Juaben Municipality over the ten years period.

4.5.1 Creation of awareness of Land use policies and laws

Though ignorance is not an excuse of the law but public awareness of laws helps to reduce crime in the society. During the interview section with the head of the Spatial Planning Unit in the Juaben Municipality, it was revealed that the Assembly have created public awareness on the existence of laws that prevent people from building on waterways, building without permit and building on land that does not belong to them. But there were no specific laws that demarcate areas for solely agricultural purposes without encroachment of human settlement. In the zoning processes those areas demarcated as green areas or undeveloped areas which later develop when settlement expansion occurred. Periodic sensitization of the public on the drafting of new laws and policies in the Juaben Municipality was lacking and moreover, most of the people were aware of

laws and policies that prevent agricultural activities such as livestock farming and heavy induce chemical farming closer to human settlement.

4.5.2 Specific actions taken by the Municipality in preventing land-use changes

The local governance Act 2016, Act 936 mandate the Spatial Planning Unit to Sanction perpetrators who use land without proper approval. Section 93(1)(2)(3)(4), Section 94(1)(2)(3), and Section 95(1)(2)(3)(4) elaborate on the offenses and the attracted punishment. The representative from the Town and Country Planning Department confirmed that they have carried out demolition exercise in the Municipality to remove structures that are built on waterways and unauthorized lands. The representative explained that the Department only has the mandate to demolish the property completely if is on waterways, middle of a road or emergency route, danger to life and property or on government land. But properties that are built on personal land and do not violate any of the areas mentioned, the department only fine the person and issue a permit for the person to continue the activities. The representative responded that they periodically rezone areas in collaboration with the chiefs and landowners and declared those areas for development for human settlement and strict monitoring of schemes designed by the Chiefs and the Municipal Assembly. On the issue of conversion of agricultural lands into residential land, the representative explained that as in much as the Department has the power of the development of the Municipality, matters boarding the use of land is always determined by the users with the support of the department to make sure that it is in the right direction. The department cannot strictly prevent someone from converting a farm to a residential land unless the area poses a threat to human life and property but as for residential to agricultural, certain activities such as livestock farming and heavy induce chemical farming is prohibited in a residential area.

In mitigating the challenges of the frequent land use changes, the representative expatiated that the Assembly in collaboration of land owners are partnering in developing developmental schemes and making sure they abide by them.

4.6 Discussion of results

4.6.1 The effects of urban land-use changes on agricultural land use

The devastating effects of urban expansion are evident in the value of land that is lost by farmers over the years. Urban expansion is associated with population and the demand of land for settlement by the growing population. This push pressures on farmers that are closer to the Urban areas to convert their farming lands to residential. Through this study, it was discovered that the farmers sampled for the study has lost a farmland to urban expansion in the Juaben Municipality as the demand of the use of land changes from agricultural to residential. (See Table 4). The result of the study is in agreement with Asamoah (2010). Asamoah indicated that as towns and cities expand rapidly without a proper planning scheme, encroachment increases and the demand for land changes from agriculture motive to residential purposes and most farmers losses their lands. Attua and Fisher (2010) provided an empirical account of historical and future land-cover changes in and around the New Juaben Municipality. Using Landsat satellite imagery from 1985 to 2003, the study found that the urban core expanded by 10% and the peri-urban areas expanded by 25% over the period giving indication of changes in the land use. Lee-smith (2010), observed that purposes for the demand of land shifted from agricultural sense to other related purposes when peri-urban begin to grow into urban and this impact negatively on agriculture as farmers are left with few lands to tilt for agricultural purposes.

This study discovered most of the farmers were having small farming sizes in the Juaben Municipality and moreover most land acquired recently are predominately residential uses. According to Gerald (2011), in a study observed that 882 hectares (27%) agriculture lands in 1986 at Freetown in Sierra Leone was used for residential activities in 2000. He noted that the transformation occurred mostly at the urban fringes as a response to the rapid increase in population which establishes a strong linkage between urbanization and agriculture land lost. Phuc et al (2015) discovered that peri-urban agricultural lands areas around Hue city were affected when the city urban expanded. In a period of 12 years, 393 hectares of farmlands were converted for other related projects which are not related to agriculture.

According to Mohamed et al., (2010), more fertile agriculture lands areas turn to be more urbanized than less fertile areas. They asserted that people move to farm in those fertile lands and when their population increase astronomically the fertile lands are then turned into other residential purposes. The trend is like what is happening in the Juaben Municipality. The changes in the use of land in Juaben Municipality did not affect farmers only in losing their farm but also influenced the types of crops they were growing on the left-over land. For the fear of losing everything in the future when the place they are farming is declared for human settlement, farmers were strictly growing crops with a shorter life span to pave way for development when the land is needed (Table 4). The observation from the study truly supports Von Thünen Model of Agricultural land uses. This model propounded that as one gets closer to the city, the price of land increases. In simple terms, urban expansion changes the value of the land. The model explained that there are concentric rings of agricultural products, as the price of acquiring the land for the cultivation and transportation of the agricultural products decreases much of that agricultural products will be cultivated. But when it

becomes more expensive to keep those crops cultivation due to increase in land price and transportation, the farmer will shift to the next crop in the ring which is more beneficial. It then continued until the agricultural land is converted to residential purposes due to the cost of doing business. Von realized that the city is the market center for agricultural produces and there is demand for dairy agricultural products such as vegetables, fruits, milk, and other perishable goods. Intensive farming then occurred closer to the city as the first ring zone development of agricultural activity because such agricultural products cannot go far away from the city because of its perishability in transportation, cost transportation, preservation, and fragility but perennial crops are pushed away far from the city. The results from the study revealed a declined in agricultural activities in the Juaben Municipality since most lands acquired in these recent times are used for residential purposes.

A study from Ghana shows that more than 50% of households that lost access to agricultural land engage in trading and other activities, such as construction, whereas 28% become unemployed. As only 11% of households try to replace the land they had lost, the overwhelming majority would aim to enter the non-farm labor market (FAO,2015). There was a substantial amount of land-use changes in the Juaben Municipality which has resulted in job losses and declined in productivity. Peprah (2014), also mentioned that rapid urban sprawl has adversely affected development efforts in many cities in Ghana. He continued that one of these is changes in land use subsequently leading to decreased agricultural land in favor of the provision of residential accommodation in most urban setups. by Francis (2013) observed that in Tamale, an acre of farmland that cost as low as GH¢200 in ten years ago now cost about GH¢5,000 to GH¢20,000 depending on its proximity to the urban. The Bid Rent theory suggested that as the Central Business District of urban areas gets closer to the

nearby peri-urban areas, the price of land increases. The theory suggests that the closer a land get to the urban area the higher the price. This study revealed such pattern in the Juaben Municipality as the economic value of the land was different as compared in the previous years.

4.6.2 Economic and social effects of land-use changes on farmers

The basic element of farmers sources of livelihood is the availability of affordable lands for cultivation and expansion of their farms. Liu, Liu, and Qi,(2015) noticed that urban expansion is not necessary the strategies of governments to boost economic growth in the urban areas but as a result of other profit-seeking stakeholders who stand to benefit at the expense of farming.

The study observed that because farmers cannot acquire huge lands to grow crops such as cocoa and palm trees which are more economical, most of the farmers were poor and life was unbearable for them in the Municipality because of reduction in their income. Samat *et al.*(2014) noted a decline in farmers household income from 90% in the 1960s to 49% in 2010.They attributed the vast declined to the peri-urban expansion of Nyahuru in Kenyan due to agricultural land conversion. Liang and Lu (2014) study the social security impacts on landless farmers in Yangtze River Delta in China. From their study they discovered that more than 50% of the farmers were poor and in bad health condition, suffering from depression and anxiety. Majority of the farmers admitted an increased cost of living which has brought hardship on them. They attributed the cost of increase in hardship to high prices of foodstuff, increased in house rent, increased in the cost faming in the Municipality (See Table 2). Zhao, Lu and de Roo(2011) noted this trend in China's workforce where most workers within the low- income and middle-income earners living condition are worsened when urban expansion is undertaken.

They argued that utility bills go high, pollution increases, crime increases and the normal worker such as farmer finds it difficult to adjust. It was obvious that farmers were not taken due advantage of the high prices for foodstuff because of the high price of acquiring land and the difficulties in getting them. The business was shifted to petty traders who go to the hinterland to bring foodstuff into the Municipality. The farmers' inability to earn much income to cater for their family and contributed their quota to the society has stripped of their social status in the society. They realized that most people consider farming activities in the Municipality as job for the poor and unattractive to encourage younger generation to go into it (See Table 5). Nguyen (2011) in study it was observed that agricultural land lost do not leads to only lost in revenue to the farmer but also certain vital craftsmanship that has been preserved for many years. In addition, it was evident in the study that several changes have occurred in the social lifestyle of farmers as they earn little income and no other spare income for social function such as birthdays celebration, attending parties, taking tours and other vital social events which make life enjoyable. Tran and Steven (2013) observed that the rapid conversion of agricultural lands into other purposes due to urbanization strengthen the rate at which the livelihood of individuals change. According to Martine *et al.*(2012), the ordinary farmer is worse of when urbanization stripped of his or her lands because the farmer has to go through a lot of challenges to adapt the new lifestyle imposed on him or her. The majority of the farmers confirmed that is hard for them to mingle with people of not their class which are always in the case of land us changes (See table 5).

4.6.3 Urban planning and management response to land-use changes

The changes in the land use over the years in the Juaben Municipality was not out of bloom to the urban planning and management in the Juaben Municipality. It was discovered that policies and laws that prevent someone from a building without permit, building on unauthorized land and building in waterways or in the middle of a road or route, emergency exits and as well as areas that pose threat to human life and properties were in existence and the populace was are of it. (See table 2). The unfortunate discovery from the study was the lacking of periodic public sensitization on those laws and specific laws that prevent conversions of areas marked for agricultural activities to be converted for residence.

According to Yeboah & and Shaw (2013), Ghana lacks a proper legislative framework to protect agricultural lands because of the land tenure system in Ghana which inhabits legislation that restrains landowners from leasing their lands that are good for agricultural activities for residential purposes. They continue that the Section 18(1&2) of the 1992 Constitution permit government to acquired state land from the family and the individuals in the country but most of the purposes for acquiring such land exclude agricultural activities Amoateng et al. (2014) noted that most part of the urban areas demarcated for agricultural activities and recreational facilities has been rezoned for residential uses. Specifically, the Municipal Assembly admitted, over the years structures that were raised on waters, emergency route, unauthorized lands. But the assembly is lacking the power to bring down structures which are built on legalized land but the owner did not acquire building permit. It was seen from the account of the assembly that most of the agricultural lands are owned by the chiefs and such structures spring up mostly on agricultural land. The assembly could only fine peoples and then issue a permit to them and perform a rezoning of the area to allow human settlement.

Unlike in British Columbia, there is a policy called Metro Vancouver's Regional Growth Strategy. This policy converts major parts of the Vancouver metro into agricultural areas which inhibit residential activities. In 2011, Metro Vancouver had 60,893 ha in the Agricultural Land Reserve (ALR), which makes up 22% of the region's land base (the ALR is a provincial designation that protects lands for farming). The average size of a farm in Metro Vancouver is 20 hectares (50 acres), which is typical for farms near urban areas.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 Summary of Findings

Urban expansion has been the major contributor to the loss of agricultural lands across the World. As the expansion comes as an end to the means of others, it is also the begin of richness to landowners. This study was conducted in the Juaben Municipality to ascertain the socio-economic impact of urbanization on the farmers in the Municipality. The main aim of the study was to identify means of improving the planning and management of land-use changes. Specifically, the study observed the contribution of changes in land uses which affected agricultural lands, the socio-economic effects of urban lands use changes on farmers and the policies and laws that have put in place to mitigate the land uses changes over the years.

On the first objective of the research work, the effects of urban land use changes on agricultural land spotted in the Juaben Municipality comprises of pressure for the conversion of agricultural lands for residential use and commercial, possible farm lost and small farm sizes, increase in the cost of land, cultivation of non-perennial crops, decrease in livestock farming, job loses, food insecurity and as well as decrease in productivity of agrarian activities and possible land lost in the near future of the existing farms.

The second objective of the study was to identify the economic and social effect of land-use changes on farmers. Possible socio-economic effects identified included reduction in the income of farmers, high prices of foodstuffs, high cost in farming, high fees for accommodation, lost of interest in farming, purchasing food from commercial

suppliers, societal rejection of the farming business, difficulties in adopting to the new social life imposed on them and declined in deteriorating living conditions.

The last objective of the study was to identify urban planning and management response to the land-use changes in the Juaben Municipality. It was discovered that policies and laws that prevent someone from a building without permit, building on unauthorized land and building in waterways or in the middle of a road or route, emergency exits and as well as areas that pose threat to human life and properties were in existence and the populace was aware of it. The Municipal Assembly over the years removed structures that were raised on waters, emergency route, unauthorized lands. But the assembly is lacking the power to bring down structures which are built on legalized land but the owner did not acquire building permit. The assembly also did not have the power to prevent the conversion of agricultural lands into residential lands. There were perpetrators of the laws who build everywhere.

5.2 Conclusion

The study concludes that a substantial amount of land-use changes has occurred in the Juaben Municipality for the past ten years which has resulted in the agricultural land loss of Farmers. The situation has also put pressure on farmers to cultivate non-perennial crops which are less economical to improve their living condition and contributed to a decline in agricultural activities, increase in the price of land, increase in job losses and the risk of food insecurity.

In addition, changes in the land use from the agricultural purposes to residential over the years has socio-economic impacts on farmers. These include identified included reduction in the income of farmers, high prices of foodstuffs, high cost in farming, high

fees for accommodation, lost of interest in farming, purchasing food from commercial suppliers, societal rejection of the farming business, difficulties in adapting to the new social life imposed on them and declined in deteriorating living conditions.

Finally, there was an existence of policies and laws which monitor land uses changes in the Juaben Municipality but the Municipal Assembly was less effective in forcing them due to the land tenure system adopted in the Municipality.

5.3 Recommendation

It is recommended that the government and the policymakers should consider enacting laws that will restrict chiefs and landowners to properly survey their lands and present them to the Country and Town planning to develop that area before selling to the populace.

Also, the government and the Agricultural ministry to consider enacting laws which will protect agricultural lands in the country and national compensation schemes, which will provide a source of livelihood to the farmer who has been affected by the urban expansion.

Because of the land Tenure system in Ghana, Government should compulsory acquired lands purposely for Agricultural activities so that Authorities will have fully control over the land and protect the lands from encroachers. Government should make agricultural activities attractive so that landowners will be discourage to sale their lands other than any developmental project such as residential, commercial areas etc.

Affordable housing unit with proper and planned infrastructure has to be constructed for the general public to reduce or curb any form purchasing or encroaching to agricultural land. The public should be enlightening through education and awareness

creation of the importance of development control on urbanization and its effects on agriculture land. These will help authorities perform their duties properly and reduce the wrong perception people have towards such exercise.

The government collaborating with Lands commission, Lands title Registration, Administration of Stool Lands, and District/ Municipal Assemblies should produce an efficient and authentic data collection system and database on land coverage in Ghana as relevant information needed for in-depth analysis for related research work.

Planners and Stakeholders must be brought on board during planning and implementation to ensure the compatibility of uses. The local Assemblies should endeavor to update its plans to help notice the change in land-use change and how to incorporate them into the developmental agenda for the assemblies.

Adaptations of these measures will mitigate sanity in the urbanization and its effect on Agricultural land.

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APPENDICES

APENDIX A

KWAMENKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

DEPARTMENT OF CONSTRUCTION TECHNOLOGY AND MANAGEMENT

Hi, my name is Ronarld Massamba Niang and a student of Kwame Nkrumah of Science and Technology, Department of Construction Technology and Management pursuing an academic thesis on the topic: **URBANISATION AND ITS EFFECTS ON AGRICULTURAL LANDS, ECONOMIC AND SOCIAL IMPACT: A CASE STUDY OF JUABEN MUNICIPALITY.**

Please be reminded that all information provided is for academic purposes only and would be treated with the utmost confidentiality as possible so feel free to respond to the questions accurately.

Thanks

Famers Questionnaires

Bio Data

1. Gender Male [☐] Female [☐]
2. Age Below 18 years [☐] 19 to 30 years [☐] 31 to 40 years [☐] 41 to 50 years [☐]
51 years and above [☐]
3. Annual income Below GH¢2,000 [☐] Between GH¢2,000- GH¢3,000 [☐]
Between GH¢31,000- GH¢5,000 [☐] Between GH¢51,000- GH¢10,000 [☐]
GH¢11,000 and Above [☐]

SECTION B: The effects of urban land-use changes on agricultural land use in the Juaben Municipality.

Urban expansion has many effects on the lands that are closer to where the development is moving towards. Based on your experience as a farmer, please rank your responses to effects that the changes in the land use in the urban area has caused the use of agricultural lands.

(Please tick (✓) the appropriate cell). Note: 1= Strongly disagree, disagree, 3= neutral, 4= Strongly agree and 5= agree

No.	Effects of urban land-use changes on agricultural land use	RANKING				
		1	2	3	4	5
4.	I lost my farm through agricultural land conversion to non-agrarian land uses					
5.	My farm size is relatively small as compared to ten years ago					
6.	There are difficulties in obtaining land for farming					
7.	The economic value of land has changed significantly over the years					
8.	Today, most crops cultivated in this area are non-perennial crops					
9.	Live stocking farming is not allowed in these areas as it uses to be ten years ago					
10.	Residential land use is predominant in this area					
11.	There is a low productivity in agriculture activities in this area					
12.	Food insecurity is a great concern in this area					
13.	There is a decline in farm-related jobs creation					
14.	Most farmers have lost their job as active farmers					
15.	There is the possibility I my loss the rest of my farms in the near future					

SECTION C: Identify the economic and social effect of land-use change on farmers in Juaben Municipality.

Land uses changes in urban areas have positive and negative consequences on farmers economic and social life. In your opinion as a farmer indicate your responses in the table some of the possible affects you have experienced. **(Please tick (√) the appropriate cell)**. Note: 1= Strongly disagree, disagree, 3= neutral, 4= Strongly agree and 5= agree

No.	The economic and social effect of land-use change on farmers	RANKING				
		1	2	3	4	5
16.	There has been reduction in my income over the years					
17.	Prices of foodstuff has gone up					
18.	I depend on other commercial food providers to feed myself and family					
19.	The cost of farming has gone up					
20.	I have lost interest in farming					
21.	I hardly have a spare income to spend on fancy social gathering events					
22.	Is difficult to associate with people of not your class					
23.	Society does not recognize farming as a decent job					
24.	I have lost my job as an active farmer					
25.	My living condition keeps on worsening every day					
26.	I spend much of my little earn income on paying high rental fees for accommodation					

APENDIX B

Interview guide

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF CONSTRUCTION TECHNOLOGY AND MANAGEMENT
Hi, my name is Ronarld Massamba Niang and a student of Kwame Nkrumah of Science and Technology, Department of Construction Technology and Management pursuing an academic thesis on the topic: **URBANISATION AND ITS EFFECTS ON AGRICULTURAL LANDS, ECONOMIC AND SOCIAL IMPACT: A CASE STUDY OF JUABEN MUNICIPALITY.**

Please be reminded that all information provided is for academic purposes only and would be treated with the utmost confidentiality as possible so feel free to respond to the questions accurately.

Thanks

Spatial planning unit

Objective three: Management responses to land uses changes in the Juaben Municipality

1. Have you notice a change in the land uses in the Municipality?
2. Does your department have the authority to determine what land should be used for?
3. Is the public aware of those laws and abide by them?
4. Do you have perpetrators of the abuse of the purpose of land usage?
5. Do you have an effective sanction for such perpetrators?
6. Is there any specific action that the assembly has been taking to mitigate frequent land-use in the Municipality?
7. What entails in the strategies to control land use changes in the Municipality?
8. What are the challenges of your work as a spatial planning unit in the Municipality?