



**THE IMPACTS OF URBANIZATION ON THE AGRICULTURAL
LAND USE: A CASE STUDY OF KAWEMPE DIVISION,
KAMPALA UGANDA**

By

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This Master's Thesis is carried out as a part of the education at the University of Agder and is therefore approved as a part of this education. However, this does not imply that the University answers for the methods that are used or the conclusions that are drawn.

University of Agder, 2011

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Declaration

I, **Harriet Namara** declare that this work is wholly original and has never been submitted to any higher institution for any academic award.

Signed: Date:

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Abstract

This study aimed to assess the impact of urbanization on agricultural land use in Kawempe Division, Kampala District. To this end, the existing land use patterns, land use practices and factors for urbanization were investigated. A total of 60 people who were involved in the study were interviewed using semi-structured questionnaires. Observation method was also used to visualize the impacts of urbanization on agricultural land use. The study findings indicated that industrialization is the key factor for the urbanization of Kawempe Division and this is closely followed by increased rates of rural urban migration. The dominant land use in this area was human settlement that includes housing for the increased population that seeks employment in this urban area. This study has established that industrialization in the area has resulted to land use changes from bare land to build up areas or from agriculture land to build up area. This has not only reduced agricultural land but has also contributed to degradation through waste deposition. Based on the study findings, it was concluded that urbanization and its associated development activities are responsible for the agricultural land use changes. As such, it was recommended that there is need for government and relevant stakeholders to revisit and make operational the policy frameworks in place such as the urban development and town and country planning acts. Doing this may contribute to sustainable land use practices in urban areas.

Acknowledgment

I extend my sincere thanks to all those who guided me during the time I conducted this research and especially my supervisor Professor Jonathan Baker who guided me right through the period of writing up this thesis; more thanks go to Posan, Åke, and Camilla who rendered their time for me in forming my research topic as well as understanding research methods for Development as a whole during the stay in Sri Lanka. I further thank Dr. Daniel Babikwa for his advice on my research work. More thanks go to my group members who tirelessly gave me advice in this research.

I also highly appreciate my family for giving 'room' for my academic affairs. May God Bless you all!

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LIST OF ACRONYMS

FAO	Food and Agriculture Organization
KCC	Kampala City Council
MWLE	Ministry of Water Lands and Environment
NEMA	National Environmental Management Authority
UBOS	Uganda Bureau of Statistics
UN	United Nations
MOLHUD	Ministry of Land, Housing and Urban Development
UN-HABITAT	United Nations <i>Human Settlements Programme</i>
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific

CHAPTER ONE

1.0 Introduction and background to the study

The loss of agricultural land to other land uses occasioned by urban growth is an issue of growing concern worldwide, particularly in the developing countries. This thesis examines the impact of urbanization on agricultural land use in Uganda.

Urbanization is not a modern phenomenon; it has been occurring since about 5000 B.C. (Sjoberg, 1960). The level of urbanization, measured by the proportion of urban population to total population, has been increasing over the years. After the Second World War, urbanization took place rapidly around the globe. Urbanization levels were high in developed countries – Europe, North America and Oceania, with more than 50% of the population living in the urban areas (United Nations, 2002). A relatively high level of urbanization was also true in Latin America and the Caribbean region, with more than 40% of the population living in the urban areas. Africa and Asia were the least urbanized; in 2000, about 40% of the population of Africa and Asia lived in the urban areas.

On the other hand, the rate of urban change has been higher in Asia and Africa than the developed countries, Latin America and the Caribbean region since 1950. Africa had between 25% and 17% rates of change between 1950-60 and 1990-2000 respectively while Asia had between 19% and 16% rates of change during the same period. The developed countries however had a rate of change below 11%. According to Amis (1990) Africa is the least urbanized but most rapidly urbanizing. The urbanization growth rate for the developed countries had been falling faster than the developing countries. Moreover, the population growth rate tends to be slower or stabilized hence the effect on urbanization growth rate. The developing countries, particularly in Africa and Asia, had urbanization levels less than 40% in 2000; hence higher rates of urbanization were experienced and would continue to be experienced until they reach the level of about 80% urban where the rate of urbanization tends to decline (Palen, 1997).

With regard to particular cities, rates of population growth range from less than 1 percent per annum in places like New York, to more than 6 percent per annum in many African cities like Nairobi, Lagos, and Lusaka. This is another indication that Africa is fast

urbanizing. In Asia and Latin America, many cities are growing at rates of about 5 percent per annum.

According to the Ministry of Land, Housing and Urban Development (MoLHUD), about 15% of Uganda's population is estimated to live in urban areas. It is projected that by the year 2035, Uganda's population will have grown to 68.4 million, of which 30 percent will be in urban areas. The high rate of urbanization (exceeding 5% per annum) is attributable to high rural-urban migration rate, rapid population growth in urban areas, gazettement of new urban centers, uncontrolled growth and expansion of existing urban areas over time.

Kampala Uganda's capital city has experienced rapid population growth of 5.61% per annum from 774,241 in 1991 to 1.2 million in 2002 (UBOS, 2002) and to 1.53 million in 2010 (Geohive, 2011). Research indicates that urbanization in developing countries is largely due to rural – urban migration and this movement is often explained by various theories such as modernization, dependency and urban bias theories. Of these three theories, modernization theory is the one that is most often referred to as the cause of urbanization (Kasarda & Crenshaw, 1991).

Population increase and the corresponding urbanization in Kampala metropolitan area are responsible for increased demand for land that has culminated to changed land use. Land use change has occurred among other reasons at the expense of agricultural activities. At the same time, urbanization in Kampala has contributed to the unsustainable utilization of natural resources within the metro area resulting in environmental degradation through solid waste accumulation, wetland destruction and water pollution all leading to reduced ecological services from the natural environment (NEMA 2000/01; Matagi 2001; Walter *et al.* 2005). The resultant living environment in the city is characterized with poor sanitation, inadequate housing, poorly managed solid and human wastes, increased water pollution and reduction in ecological services. Consequently, this has exacerbated vulnerability of Kampala's population and communities to natural disasters like floods and increased incidences of water born diseases.

Urbanization in Kampala has also come with serious loss of arable land, degradation of ecosystems as well as social and environmental changes to the urban populations. The current urbanization process in Kampala is an indicative of a process that needs

considerable attention not only as a basis for transformation of societies but also for sustainable development (NEMA, 2001). As cities grow and expand it is expected that economic growth and development will progress and act as a driver for social transformation and improvement of not only in urban areas but the greater rural hinterland served by the urbanized region. However, this has not been the case as for Kampala, through its increased urbanization, the city has instead experienced increased and persistent urban poverty, environmental sanitation issues, urban food crises/shortages, housing, transportation and pollution problems and these are also prevalent in other cities of developing countries. Moreover, areas of recent urban expansion and settlements of the urban poor are the most vulnerable to these challenges.

Despite the current trend in urbanization, there has been limited comprehensive documentation on the impacts of urbanization in Kampala. Therefore, a study to document the impacts of urbanization on agricultural land use is the first of this kind and the results shall be useful in informing the government on how urbanization has impacted on agricultural land use. The study was carried out in Kawempe division, one of the five city's division with the highest population density of about 268,659 (UBOS, 2002).

1.1 Statement of the Research Problem

The growth of cities world over has been viewed as good gesture of development irrespective of the driving forces. Critics assert that the growth of cities like Kampala can be both a blessing and also curse especially in absence of a well guided development pattern. For instance, the expansion of cities into the surrounding areas which are under agricultural lands as well as various natural land covers such as wetlands, forests and grasslands is one way in which the growth of cities had been disadvantageous. The changes that come along with this growth may have significant impacts on the ecosystem services, biodiversity, hydrological systems, and local climate which in turn may impact human health. From the current trend of urbanization, it is clearly observable that the available agricultural land had been affected by developments like constructing commercial and residential buildings infrastructure like roads, play grounds and leisure parks. .

The crisis of urban development in Africa has been directly equated with the question of urban land tenure and land use. However, there is little systematic and general knowledge

about how differing rates and levels of urbanization affect agricultural land use. The hypothesized relationship between urbanization and agricultural land use changes in Kawempe Division of Kampala city has received limited empirical assessment, particularly in the context of developing countries. This then forms the essence of this study. .

1.2 Research Objectives

General Objective

To assess the impacts of urbanization on agricultural land use in Kawempe Division, Kampala District

Specific Objectives

- i. To find out factors that lead to urbanization in Kawempe Division
- ii. To establish the current land use practices in Kawempe and how these practices impact on urban agriculture.
- iii. To find out the extent to which urbanization has impacted on the urban agricultural land use in Kawempe.
- iv. To suggest feasible land management techniques/measures that may contribute to sustainable land usage in Kawempe Division

1.3 Research Questions

- i. What factors lead to urbanization in Kawempe Division?
- ii. What are the current land use practices in Kawempe Division?
- iii. To what extent has urbanization impacted on the agricultural land use in Kawempe Division?
- iv. What are some of the feasible land management measures /techniques that may contribute to sustainable land usage in Kawempe Division?

1.4 Purpose and Scope of the Study

The purpose of this study was to assess the impact of Urbanization on agricultural land use in Kampala City. The study was conducted in Kawempe Division which is one of the five Divisions that make up the greater Kampala Metropolitan Area. Although, it is well

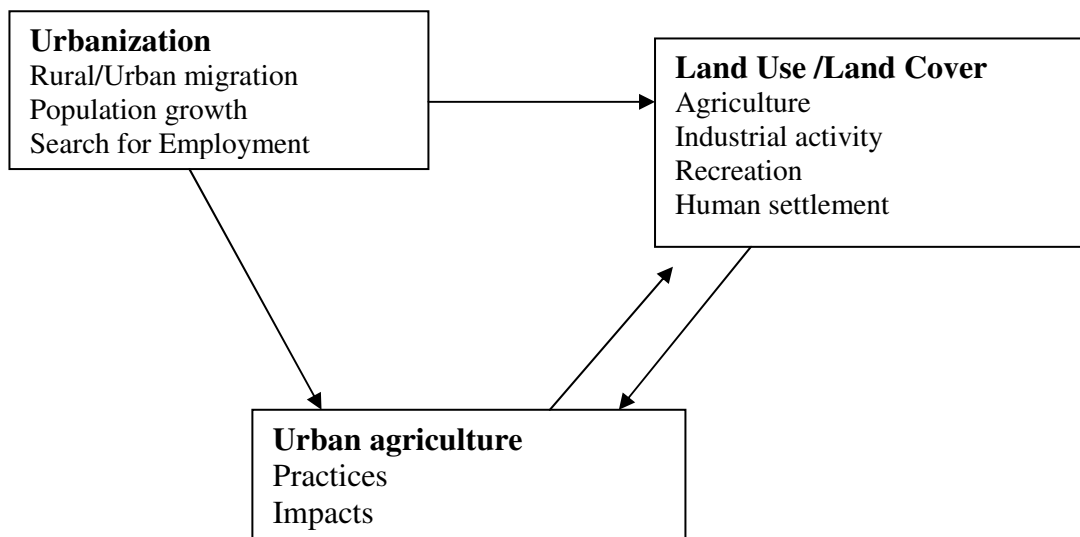
known that there are various land uses in Kampala, this study greatly focused on agricultural land use.

1.5 Justification

The loss of agricultural land to other land uses occasioned by urban growth is an issue of growing concern worldwide. In line with the development of urbanization; arable land is decreasing dramatically, with serious ramifications for long-term agricultural sustainability. Unfortunately in Uganda, planning standards and regulations do not pay adequate attention to or exclude agriculture from urban land use systems.

The fact that the loss of prime agricultural land in urban and peri-urban areas is an unavoidable impact of urbanization on urban agriculture and farmers' livelihoods, its subsequent effects on food security, local development, poverty alleviation and the environment cannot be fully anticipated. As such, realistic, long-term planning goals that take the benefits and drawbacks of agriculture into account are vital. Thus, this study intended to build consensus on the need for agricultural land protection in the context of urbanization.

1.6 Conceptual Framework



(Source: Researcher, 2011)

The concepts shown in this framework are defined substantively in the literature review in Chapter Two. However, a summary of what it entails is stipulated below

Increased urbanization which is triggered by rural urban migration, population growth and the increased search for employment is known to be on the increase in Kawempe Division in Kampala city. The quality of the population which dictates the nature of employment that will be sought from the city coupled with reasons behind the rural urban migration will impact on the urban agriculture practices. This is based on the fact that most of the people in rural areas who migrate to cities are largely dependent on agriculture which may imply that on their arrival in cities, they may tend to practice farming. This therefore implies that urbanization an independent variable.

The impacts of urbanization on land use and land cover depend largely on the nature and practices of urban agriculture. This is because there may be agro-practices that are less degrading and which tend to conserve the land resource. Based on this fact therefore, urban agriculture defined by the practices and impacts makes it an intervening variable.

Lastly the land uses which alters the land cover in Kawempe Division ultimately depend on the reasons for the urban migration and the practices employed in urban agriculture and thus land use and land cover are viewed as a dependent variable.

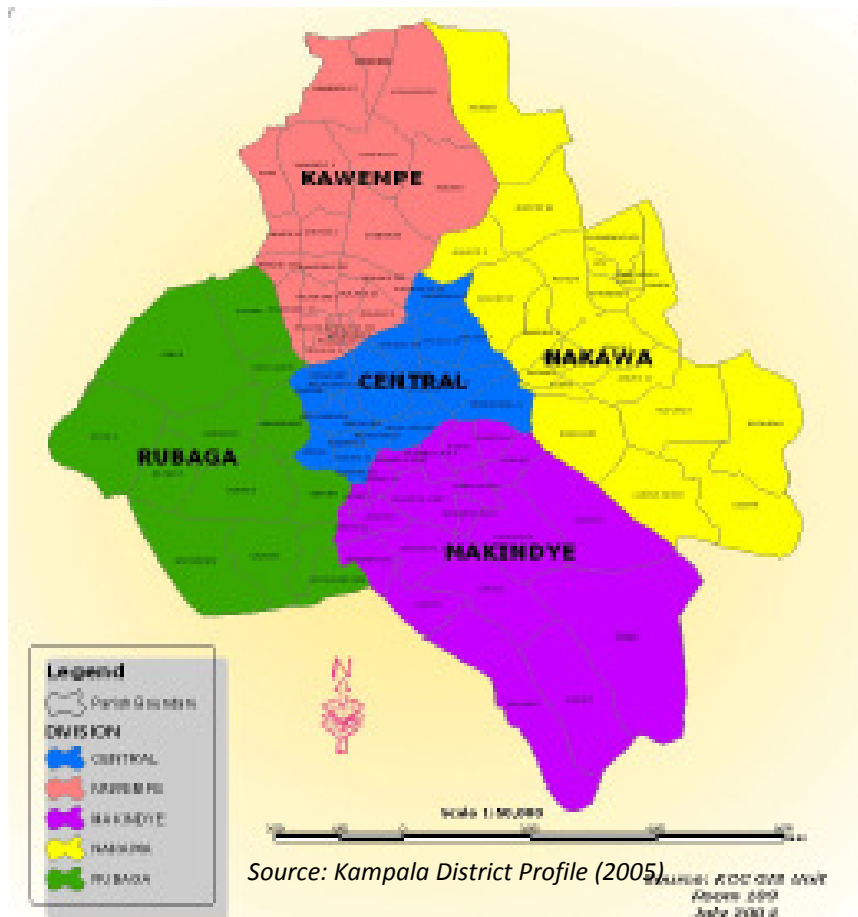
1.7. The Research Area

This section is about the overview of the research area. As a matter of coherence, it has its starting point as a presentation respect of the Kampala metropolitan area that hosts Kawempe Division. This presentation mainly focuses on growth, structure and change. After that, specific information about the division is provided.

Kampala, the capital city of Uganda is situated almost in the middle of the country and is administratively divided into five divisions namely: Central, Kawempe, Makindye, Lubaga and Nakawa. The Metropolitan Kampala has expanded (from 170 acres gazetted in 1902), mainly through annexation of adjacent townships and rural areas and currently spreads over 839 km² (Nyakaana, Sengendo *et al.* 2004)

Kawempe Division is one of the five Divisions forming Kampala District in Uganda. The Division is located in the Northern part of Kampala District between latitudes 32°33' - 31°35' East of the Greenwich and longitudes 0°20' - 0°24' North of the Equator.

It has an area of 32.45 square kilometers and borders with Wakiso District in the North-West Rubaga Division in the Southeast, Nakawa Division in the Northeast and Central Division in the Southwest. Administratively the Division is made up of 22 parishes and 119 zones.



Population

The population of Kawempe Division according to the 2002 population and housing census provisional estimates was 268,659 of which 52% were female and 48% were male. The total number of households was 67,132. The most densely populated areas include Bwaise, Kyebando, Kawempe, Makerere and Mulago which are characterized by uncontrolled developments and slum conditions.

Rainfall and Climate

The meteorological data for Kampala District is typical of Kawempe Division. The Division is characterized by comparatively small seasonal variations in temperature.

Due to a high rate of evaporation from the lake surface and to regular winds which drift across lake Victoria from east to west all seasons, the average rainfall is high (1548mm). There is a tendency for the rainfall to decrease as one move northwards the lakeshores. The rainfalls for 160 - 170 days each year with two peaks from March - May and October - November. The temperature averages between 22°C- 27°C.

CHAPTER TWO

2.0 LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

In this chapter, the concept of urbanization and its relationship to agriculture land use is defined to understand the research context. The chapter provides an overview of land use and the environment, fundamental definitions of urbanization, factors that lead to urbanization, land use practices and the relationship between urbanization and agricultural land use.

2.2 Overview of urbanization as a Development Indicator

A number of definitions have been offered to explain the concept of urbanization. For example, the UN (1996) defines the concept as the shift from a rural to an urban society which involves an increase in the number of people in urban areas during a particular year. According to the UN, urbanization is the outcome of social, economic and political developments that lead to urban concentration and growth of large cities, changes in land use, and transformation from rural to metropolitan pattern of organization and governance.

Urbanization is also defined as the process by which cities and towns develop and grow into larger areas. It includes the movement of people from rural to urban areas as well as movements among towns and cities (UNHABITAT *et al*, 2002). Besides the growth of world population, urbanization is the dominant demographic trend of the late 20th century (Brown *et al.*, 1987).

Urbanization is increasing in both the developed and developing countries. Even if in some cases the increase is looked at as an indicator of development, it is also undeniable that rapid urbanization, particularly the growth of large cities, and the associated problems of unemployment, poverty, inadequate health, poor sanitation, urban slums and environmental degradation pose a formidable challenge to sustainable development efforts in many developing countries. Available statistics show that more than half of the world's 6.6 billion people live in urban areas, crowded into 3 percent of the earth's land area (Angotti, 1993; UNFPA, 1993). The proportion of the world's population living in urban areas, which was less than 5 percent in 1800 increased to 47 percent in 2000 and is

expected to reach 65 percent in 2030 (United Nations, 1990; 1991). However, more than 90 percent of future population growth will be concentrated in cities in developing countries and a large percentage of this population will be poor. In Africa and Asia where urbanization is still considerably lower (40 percent), both are expected to be 54 percent urban by 2025 (UN 1995; 2002). Arguably, this is likely to pose a strain on urban social services and resources like land which is not as elastic as to accommodate the increasing population

The process of urbanization has occurred differently in much of the developing world. Historically many of these countries were former colonies which have the highest rates of population growth and the largest urban areas (McDade & Adair, 2001). They are characterized by high poverty levels, low levels of technological development, and very rapid transition from rural to urban societies as compared to the developed world. . In practice the reasons for this rapid transition are also several; for example, in the United States the rural to urban migration was facilitated by large-scale industrialization and the need for labor. In the developing world this is not the case but instead high population is placing a great deal of pressure on urban areas and without having the benefit of industrialization, the lack of employment opportunities for the mass of urban migrants is undermining the ability of cities to incorporate people. Due to inadequate employment opportunities, many people in cities live in poverty and unsanitary squatter settlements.

As rapid urbanization brings opportunities to new urban developments, it also comes with serious loss of arable land, degradation of ecosystems as well as social and environmental changes to the urban populations.

According McDade & Adair (2001) urban environments have a strong linkage to a range of human health issues, and as the pace of urbanization accelerates, new challenges arise to characterize these environments, and to understand their positive and negative implications for health. The most rapidly urbanizing cities are in less-wealthy nations, and the pace of growth varies among regions (Vlahov & Galea, 2002). Nearly half the world's population now lives in urban settlements. Cities offer the lure of better employment, education, health care, and culture; and they contribute disproportionately to national economies. However, rapid and often unplanned urban growth is often associated with poverty, environmental degradation and population demands that outstrip

service capacity (Moore *et al.*, 2003). Lastly, according to Frey and Zimmer (2001), in defining the term urbanization, the social element and the functional aspect of the urban area itself are paramount.

Although different definitions have been offered for urbanization, they all seem to point to the fact that the concept involves increased mobility of people from rural to urban areas. This therefore will adopt the definition of urbanization as such. The study thus also perceived an area to be urban based on population size within a bounded area as the basic criterion separating urban from rural places. This study sought to understand the status of urbanization in Kawempe division and the challenges associated with it.

2.3 Rapid Urbanization Trends and Its Causes

Urbanization is a major change taking place globally. The urban global tipping point was reached in 2007 when for the first time in history over half of the world's population i.e.3.3 billion people were living in urban areas. It is estimated that a further 500 million people will be urbanized in the next five years and projections indicate that 60% of the world's population will be urbanized by 2030.

Whereas the rate of urbanization has been rapid and tremendous, it is crucial to note that, the growth of urban areas is not uniform worldwide. According to the United Nations figures: in the Americas, Europe and Oceania about 70% of the population live in urban areas whereas in Asia and Africa it is estimated to be about 39% and 37% respectively (Tryzna, 2007). Urbanization rates are expected to increase to 70% in 2050; with Africa and Asia being projected as the regions that will experience the largest growth in urban populations (United Nations, 2008). By 2050 over six billion people, representing two thirds of humanity, would be living in towns and cities. This means the rate at which urbanization is occurring is very rapid and alarming. Consequently, this phenomenal growth requires much attention by policy makers both in Africa and the world at large.

Despite that record growth, the majority of urban dwellers (about 61%) live in small to medium-sized cities of up to one million inhabitants. This holds for developed and developing countries, and is not expected to change in the long term. Yet, small to medium-sized cities, particularly in developing countries, often lack infrastructure and

basic services-like water, sanitation, electricity, health care, and waste disposal-to absorb and ever increasing number of people (Cohen 2006; Montgomery 2008). This frequently leads to the development of city slums, which are defined as low-income, overcrowded settlements with poor human living conditions (UN-HABITAT 2003). In fact, in 2005, 51 percent of Africa's population lived in slums with as many as 86 and 94 percent in Angola and Sudan, respectively (United Nations, 2007).

The growth of cities is a concern because of the effect of urban development processes. By and large, urban populations exert tremendous and ever increasing pressure on the surrounding environment. (Esbah, Deniz & Kara, 2007; Ling, 2005). To show the pressures that originate from cities, consider that although cities occupy only 2% of the land surface on earth, they use 75% of the natural resources on the earth (UNEP, 2007). In essence cities need more space than they literally occupy in order to survive, this is what is referred to as the urban ecological footprint (UNEP, 2007).

Uncontrolled urbanization and low absorption capacities by cities also have a strong effect on poverty rates. A recent study by Chen and Ravallion (2007), which used time-series data of more than 200 countries from 1981 to 2004 to compare rural urban poverty rates, found that poverty rates are becoming more and more urbanized. The authors established that, despite the fact that the majority of the poor continues to reside in rural areas, the incidence of urban poverty in comparison to total poverty incidence increased with urbanization. This essentially signifies that the poor urbanized faster and/or that urban poverty decreases slower in comparison to rural areas (Chen and Ravallion 2007).

2.3.1 Causes of Urbanization

Why do cities grow? Contrary to popular belief, 60 percent of urban growth are due to natural growth (i.e. a higher birth than death rate), and 40 percent to rural-urban migration and areas expansion (Montgomery 2008). Even though the share of migration in total urban growth is smaller than natural growth rates, the absolute number of people pouring into cities every year is enormous. Rural-urban migration is often caused by a

mix of pull and push factors. *Pull factors* make cities attractive to rural migrants: cities often offer higher wages and better employment options. In addition, cities tend to have a better and greater availability of services, like health care and education, than rural areas. Finally cities are centers of modern living: they offer large varieties of cultural and social opportunities (Overman and Venables 2005; Cohen 2006). *Push factors*, on the other hand force migrants to leave rural areas. Examples of push factors include displacement by conflict, disasters, or droughts; land degradation and desertification; population pressure in rural areas; and flight from discrimination and social stigma in rural areas (FAO, 2008).

2.3.2 Urbanization and Development

Many assume that urbanization is linked to economic as well as social development, whose results manifest through modernization (Rostow, 1960). Most industries in Africa are found within urban centres, resulting in rapid rural-urban migration by rural dwellers (Hope and Lekorwe, 1999). This tends to concentrate economic activities in urban areas and thereby promoting urban bias in development policies.

Lipton (1977) argues that the policies of central governments in most developing countries focus on the development of urban centres at the expense of rural dwellers. This leads to the 'urban bias' hypothesis, which states that most resources in most poor countries are systematically allocated to urban areas rather than rural areas where most people live. This means that investments are likely to be concentrated in urban areas or cities than rural areas. This situation has accorded an undue advantage to urban dwellers, with the disparity manifesting through the fact that urban residents have higher average personal incomes and greater average consumption levels than rural dwellers. Also, urban wages are higher than rural (farm) pay levels. The ratio of output per worker outside the agricultural sector by valuing output at prevailing prices is well over one, indicating that urban workers are more productive than rural labourers (Lipton, 1977). The main point is that this disparity is created and maintained by central governments' policies designed to assist metropolitan centres at the expense of rural areas.

2.4 Urbanization Trends in Developing Countries

The share of urban to total world population increased from 29 percent in 1950 to 50 percent in 2008, and the lion share of this raise is attributed to developing countries. This rapid-and often uncontrolled-urbanization is unprecedented by historical standards (Van Ginkel, 2008). Yet, urbanization rates in developing regions differ widely: While in Latin America and Caribbean urbanization rates stand at 78 percent, only 38 percent of the African population lives in urban areas. Urbanization rates are expected to increase to 70% in 2050; with Africa and Asia being projected as the regions that will experience the largest growth in urban populations (United Nations, 2008). What is also without any historical parallel is the growth of the so-called “megacities”: from 1975 to 2007, the number of mega cities with more than 10 million inhabitants increased more than six times from 3 to 19 cities worldwide (United Nations, 2008).

Despite that record growth, the majority of urban dwellers (about 61%) live in small to medium-sized cities of up to one million inhabitants. This holds for developed and developing countries, and is not expected to change in the long term. Yet, small to medium-sized cities, particularly in developing countries, often lack infrastructure and basic services-like water, sanitation, electricity, health care, and waste disposal-to absorb and ever increasing number of people (Cohen 2006; Montgomery 2008). This frequently leads to the development of city slums, which are defined as low-income, overcrowded settlements with poor human living conditions (UN-HABITAT 2003). In fact, in 2005, 51 percent of Africa’s population lived in slums with as many as 86 and 94 percent in Angola and Sudan, respectively (United Nations, 2007).

Uncontrolled urbanization and low absorption capacities by cities have a strong effect on poverty rates. A recent study by Chen and Ravallion (2007), which used time-series data of more than 200 countries from 1981 to 2004 to compare rural urban poverty rates, found that poverty rates are becoming more and more urbanized. The authors established that, despite the fact that the majority of the poor continues to reside in rural areas, the incidence of urban poverty in comparison to total poverty incidence increased with urbanization. This essentially signifies that the poor urbanized faster and/or that urban poverty decreases slower in comparison to rural areas (Chen and Ravallion, 2007).

Why cities grow

So far, a number of scholars have advanced various explanations for the growth of cities. For example, Montgomery (2008) argues that 60 percent of urban growths are due to natural growth (i.e. a higher birth than death rate), and 40 percent to rural-urban migration and areas expansion. Even though the share of migration in total urban growth is smaller than natural growth rates, the absolute number of people pouring into cities every year is enormous. Rural-urban migration is often caused by a mix of pull and push factors. *Pull factors* make cities attractive to rural migrants: cities often offer higher wages and better employment options. In addition, cities tend to have a better and greater availability of services, like health care and education, than rural areas. Finally cities are centers of modern living: they offer large varieties of cultural and social opportunities (Overman and Venables 2005; Cohen 2006). *Push factors*, on the other hand force migrants to leave rural areas. Examples of push factors include displacement by conflict, disasters, or droughts; land degradation and desertification; population pressure in rural areas; and flight from discrimination and social stigma in rural areas (FAO, 2008).

2.5 Theories of Urbanization

Space constraints preclude a thorough discussion of every theory of urban development in the Third World. For this reason, I present constellations of theoretical thought categorized by the institutional frameworks they stress. Although the presentation of theories as constellations focuses on similarities rather than differences, each theoretical family is fairly cohesive and lacks irreconcilable contradiction. Three key theories are thus presented; modernization theory, dependency theory, urban bias theory,

Modernization/Ecology

Modernization/ecological theory explains Third World urbanization with reference to the modern/traditional economic dichotomy and demographic transition theory. According to this view, city-building in the Third World can be attributed to cultural lag in equilibrating fertility and mortality differentials and massive rural-to-urban migration stemming from rural-push and urban-pull factors (Berliner 1977, Spengler & Myers

1977, Hawley 1981). Two principles are involved here. First, although mortality-reducing technology is easily diffused throughout most Third World nations, this is not the case for the institutional/industrial web of modernity in general. For a variety of reasons associated with agglomeration economies and the inertia of infrastructural development, Third World nations at the onset of modernization concentrate investment and therefore population into one or a few large cities (Alonso 1980). Constrained opportunities in rural areas and the allure of modern cities lead to rural-to-urban migration. Moreover, the age-selectivity of migrants and an overall high rate of fertility swell urban areas beyond their capacities to provide infrastructure, housing, social services, and employment.

Dependency Theory

The unifying concept shared by all dependency and world-systems theorists is that either through intentional coercion or through the inherent logic of capitalism certain areas and their populations have been "underdeveloped" (Wallerstein 1980 and Timberlake 1985b). The dependency theory lays importance on historical processes in explaining the changes which have occurred in the structure of cities as a result of the switch from the pre-capitalist to capitalist mode of production. It also lays emphasis on the dependent nature of capitalist development in the Third World which places emphasis on external economic forces in the study of cities. The dependency school argues that the developed countries use the developing countries as a source of input (raw material supplier) for their factories. This results in foreign investment in large-scale agricultural production which displaces peasant farmers in the rural areas.

The displaced farmers then move to the urban areas to seek employment (Firebaugh, 1979; Walton, 1977; Bradshaw, 1987). Also large foreign investments in capital-intensive manufacturing in the urban areas resulted in increased output and industrialization in the urban areas. This then does have a multiplier effect since businesses spring up to provide services that are linked either directly or indirectly to the manufacturing activities in the urban areas. This creates the false impression for the rural dwellers that there are high-paying employment opportunities for them in the urban areas

hence their migration to the urban areas. On their arrival in the urban areas and to their dismay they cannot get the high paying employment; they end up in the informal sector.

Urban Bias Theory

Another approach to understanding urban development in developing countries is through the application of urban bias theory. This theory shifts the emphasis of urban development from the economic perspective to political perspective. This perspective, spearheaded by Lipton (1977), argues that policies favor the urban areas to the detriment of the rural areas, hence the concentration of facilities and the creation of favorable conditions in the urban areas. In addition, governments in the developing countries tend to invest domestic capital on the provision of development facilities. These facilities are largely located in the urban areas while a larger proportion of the population is found in the rural areas. The facilities include hospitals, schools, libraries and other government/semi-government facilities. Investable resource in favor of the rural dwellers, who are basically farmers, in the form of roads, small-scale irrigation facilities, agricultural machinery and storage facilities are often downplayed by the policy makers. Higher standards of living are created in the urban areas resulting in the creation of disparity between the urban and the rural areas. As a result, the rural dwellers tend to migrate to the urban areas to take advantage of the favorable policies.

As the city boundaries were extended the population increased from 2,850 in 1912 to 24,000 in 1948 to 458,000 by 1980 and to 1,208,000 in 2002, at average annual growth rates ranging between 3.14 percent and 5.61 percent. The estimated 2008 population in Kampala is 1,770,000, about 7 percent of the country as a whole, and the growth rate remains somewhat greater than 4 percent per year. By 2017, the population is estimated to grow to over 2.1 million. Although there are some similar expansion processes of Kampala to those of developed countries, the processes in Kampala are largely dissimilar due to the nature of and the product of the expansion. Whereas urban expansion in developed countries is driven by private development interests, globalization, deregulation and a tax system forcing municipalities into competition against each other for tax-paying residents and businesses (Wegener 2001), urban expansion of Kampala is driven by demographic shifts in the form of rural-urban migration that has led to creation

of unplanned settlements within the city and at its periphery (Wegener 2001; Lwasa 2002).

2.6 Overview of Land Use and the Environment

Land use denotes the human use of land. It involves the management and modification of natural environment or wilderness into built environment such as fields, pastures, and settlements. It has also been defined as "the arrangements, activities and inputs people undertake in a certain land cover type to produce, change or maintain it" (FAO/UNEP, 1999).

Land use and land management practices have a major impact on natural resources including water, soil, nutrients, plants and animals. Land use information can be used to develop solutions for natural resource management issues such as salinity and water quality. For instance, water bodies in a region that has been deforested or having erosion may have different water quality than those in areas that are forested.

More recent significant effects of land use include urban sprawl, soil erosion, soil degradation, salinization, and desertification (UN, 2007a). Land-use change, together with use of fossil fuels, is the major anthropogenic sources of carbon dioxide, a dominant greenhouse gas (UN, 2007b).

Land use in Kampala district and particularly in Kawempe is dominated by human settlement plus urban farming. The different land uses however have different effects on the environment. Urbanization greatly impacts on the land use patterns. As such this study looked at the impact of urbanization on the agricultural land use in Kawempe Division.

2.7 Driving forces of Kampala's Urbanization

Several drivers of urbanization are responsible for the fast growth of the city which are summarized in this section.

In the first instance population dynamics manifested in urban population growth and rural to urban migration are by far the most significant driving forces of urban expansion of Kampala. Through natural increase (due to high fertility rate 7.1 decline in mortality,

internal migration and international migration (Nyakaana, Sengendo *et al.* 2004) the population of Kampala has steadily grown in the last three decades faster than the pace at which urban services and housing are provided. Secondly policies for the economic transformation of Uganda which have mainly been pursued from and around the city through industrialization are also responsible for the urban expansion of Kampala. As a primate city, Kampala has continued to absorb 40% of the total country's urban population. This is because the city also acts as the major industrial and commercial center in the country.

But the unique feature of urbanization due to economic transformations is the informal sector proliferation which is dissimilar from developed countries and significant in employment generation within the city. Although the informal sector is considered an expression of the need and provider for employment in Kampala, it has also come with serious environmental and health implications in Kampala since many of the activities including industrial activities occur in residential neighborhoods. Associated with economic transformations are the market forces of consumption derived from the population. Market forces are influencing urbanization of the city in two distinctive ways. First the consumption by the urban population for products produced both within the city and in the country. In this respect the high consumption of Kampala's population is further driving the expansion of the city through establishment of numerous industrial establishments, commercial centers and general urban developments within the city (Lwasa and Nyakaana 2004). Secondly through exchange of land for development in the city, this has intensified recently leading to commodification of land and informalization of the land acquisition processes. The consequence of informalization and commodification has been the conversion of environmentally sensitive land to urban uses with serious social and health consequences mainly at the fringes of the city. Due to these factors, the expansion in Kampala is steadily advancing at fast pace leading to engulfing of adjacent rural landscape and urban centers.

2.8 Urban Agriculture and land access in Kampala

2.8.1 Synopsis of Urban Agriculture

In recent times, urban agriculture seems to have gained importance especially in developing economies basically because it has been discovered to be a viable intervention strategy for the urban poor to earn extra income and therefore reduces their reliance on cash income for food by growing their own food. It is a major component of the urban foods system by providing the diversity needed to ensure dietary quality, which is an important aspect of food security.

Conceptually, urban agriculture is not the same as but is complementary to rural agriculture; it is integrated into the local urban economic and ecological system. The term was originally used only by scholars and media, but now been adopted by even international agencies like the UN agencies such as the UNDP (Smith *et al*; 1996) and FAO (FAO, 1996; COAG/FAO, 1999).

Smit *et al*, (1996) claims that an estimated 800 million people are engaged in urban agriculture worldwide; of these, 200 million are market producers, employing 150 million people full time. Despite limited support and heavy losses, urban agriculture is generating produce valued in the tens of millions of US Dollars, year in year out, in major LDC's urban centres (Mougeut, 2000).

It is an important source of supply in urban food systems and only one of several food security options for households. According to the most widely accepted estimate, about 200 million urban dwellers participate in urban farming (Nelson, 1996). Similarly, it is one of the several tools for making productive use of urban open spaces, treating and/or recovering urban solid and liquid wastes, saving or generating income and employment and managing fresh water resources more effectively.

Most of the food consumed in cities must be purchased, and poor families can spend as much as 60 - 80 % of their income on food (Tabatabai 1993, Maxwell *et al*. 1999). The ability to earn cash income is a significant determinant of poverty reduction and perhaps the biggest challenge urban dwellers face is that the majority of them work in sectors where wages are low, working conditions precarious and job tenure insecure. In urban

sub-Saharan Africa, employment in sectors that pay regular wages accounts for less than 10 % of total employment.

In fact, most governments are awakening to one undeniable and gathering trend, but need to better cope with its far-reaching economic, social and political underpinning: poverty and malnutrition are becoming increasingly urban. More of the rural poor are migrating to the cities, more of the people in cities are being born in poor families and more urban middle class residents gravitate around the poverty line. If in 1988 at least 25 per cent of the developing world's absolute poor were living in urban areas, by year 2020 these are expected to comprise 65 per cent of the world's poor households (UNICEF 1993).

2.8.2 Definition of Urban Agriculture

There are no concise definitions of urban agriculture but it is widely acknowledged that efforts to define it should bear purpose in order to give it a distinct content and form.

Mougeot, (1996) insists that urban agriculture definitions should uphold the critical trait that makes urban agriculture to be urban, which is that it is integrated into the local urban economic and ecological system, and stresses that unless this dimension is enhanced and made operational, the concept will be of no use on the scientific, technological and policy fronts.

However, Stevenson et al (1996) insist on the need to distinguish between agriculture 'in the peri-urban zone and peri-urban agriculture. The more common conceptual building blocks of urban agriculture identified are: types of economic activities, food/non food categories of products and subcategories, intra-urban and peri-urban character of location, types of areas where it is practices, types of production systems, product destination and production scales.

By far the element most common to reviewed definitions in literature is location in (within) and around cities or urban areas for example (Ganapathi 1983, Sawio 1993, Smit et al. 1996b, COAD/FAO 1999). Most urban agriculture field studies have been carried out in large urban centers, national capitals or secondary cities, thus, few can be assumed to have largely dealt with agriculture located in rural areas 'typical' of respective countries. However, few actually differentiate between intra and peri-urban locations. Those who did, used as criteria for intra-urban agriculture, population sizes, density

thresholds, official city limits (Gumbo & Ndiripo 1996, Murray 1997), municipal boundaries of the city (Maxwell & Armar Klemesu 1998), agricultural use of land zoned for other use (Mbiba 1994), and agriculture within the legal and regulatory purview of urban authorities (Aldington 1997).

In a comparison between rural and urban agriculture, Moustier (1998), defined urban agriculture as agriculture that is carried out within or on the outskirts of a city where a non-agricultural use of local resources is real option; rural agriculture is found in areas where this option is not an issue. In the Agri-Congo study of (open space) market vegetable farming in Brazzaville for example gardens within the city limit are known as 'intra-urban' whereas that off-limit are called 'peri-urban' (Moustier, 1999).

The current study looked at urban agriculture by describing the activities and practices involved.

2.8.3 Urban Agriculture in Kampala City

Urban agriculture has always been part of Kampala's economy and an important livelihood strategy for the city's urban poor, especially women (Hooton *et al.*, 2007). But the policy environment has been unfavorable or hostile because of perceived nuisance and public health risks. Also, until 2005 it has been illegal to carry out farming in the City. In the early 1990s there were few activities to support urban agriculture but after decentralization in 1993 the Kampala District Agricultural Extension Officer started building capacity for urban agriculture work, mainly through collaboration with NGOs such as Environmental Alert. Much as many people still regarded urban agriculture as illegal, there was more open collaboration between Kampala City Council (KCC), NGOs and researchers (NEMA, 2000).

According to the Kampala District Profile (2005), urban agriculture through policy provisions and ordinances was approved. This was after realization that the city was established in the interlacustrine region with very fertile soils. Secondly, as the city grows it is sprawling into agricultural land, there is a lot of farming, agro-processing and value-addition of agricultural produce in many cities all over the world.

Regarding access to land, Lillian *et al* (2003) pointed out that many poor people in Kampala lack land ownership rights and instead gain access to land in poor areas like

wetlands, road and railway reservations and waste disposal sites while others utilize their backyards or encroach on undeveloped land left to fallow by landowners. It is important to note that these spaces are too small to produce significant amount of food. It is further noted that city authorities and utility service providers keep on tampering these areas by slashing crops to give way for the services. This all undermines food production in the metropolitan area.

Additionally, Sardik (2002) points out that land fragmentation affects food production and is a direct result of rapid population growth in many poor countries. He further points out that very small landholdings which are too small to provide a tolerable livelihood turn into part-time farms, with some household members staying at home to tend crops while others migrate in search of wage employment. Sirte (2008) further stressed that increased food production and consumption is undermined by rapid population growth, unequal land distribution, shrinking landholdings and widespread land degradation. The reduction in man power and reduced fertility of the land automatically reduces acreage of land that would be put to growing crops.

In some cases the poor have sold out land to prospective developers and moved to cheaper places outside Kampala. The new landlords have changed the use to built-up by putting up commercial shops, residential premises, and institutions. This has led to the decline in available land for agricultural. Sardik, (2002) additionally observes that on small land holdings there is over use of the land through use of agrochemicals which eventually degrades the soil. The land holder will opt to put it to other use which in most cases would not be agricultural use. This continues to reduce agricultural land, food production and thus impacting negatively on agricultural biodiversity in the region.

Urban agriculture provides a broad range of socio-ecological benefits, from putting vacant urban sites to productive use as community spaces to absorbing storm water that would otherwise be discharged untreated into nearby waterways. The most common risk of growing food in the city is from soil that is contaminated with lead and other heavy metals. But most agricultural colleges offer low-cost soil testing, and if contamination is a problem, building raised beds is a simple solution. Another environmental concern that

will become more significant as urban agriculture expands is the use of potable water for irrigation (Smit *et al.*, 1996).

Urban agriculture's projected economic and social benefits may or may not align with a specific government's own economic and social agendas, such that urban agriculture becomes another tool to use to fulfill its agenda. If a government is already trying to do or support efforts associated with food access, job training, business formation, environmental remediation, neighborhood stabilization, or social capital building, for example, urban agriculture initiatives may be seen as contributing to such objectives, and thus government support may be justified in such cases.

A government's role in supporting urban agriculture needs to be properly vetted because there are likely tradeoffs among alternative uses of urban land. Compared to land typically used for agriculture, urban land is usually more likely to have other, competing uses, and therefore the opportunity cost of reserving a parcel for agriculture may be high. This therefore requires investigating what is currently taking place in the Urban Kampala, and the opportunities so as to balance urban agriculture and other land use objectives.

2.9 Land Use Dilemmas through Different Angles

Development is re-organizing the use of space that can produce displacement. Displacement can be direct or indirect. Indirect displacement occurs "when people are not physically forced to move, but development planning and policy undermine or constrain livelihoods to such a degree that people decide to move" (Vandergeest, p136). Rapid urban population growth and considerable urban sprawl in developing countries have demanded enormous tracts of land for residential, industrial, commercial or other spaces necessary for urban development. Under this pressure, agricultural land on the peripheries of cities has been converted to urban use (Douglas, 1992; Bernstein, 1993; Mbina, 1995), which inherently displaces farming households. Displacement in agricultural land could also be caused by policies that do not provide resources, infrastructure, and services facilitating farming. The "land war" in cities can be viewed from different respects, among which are discussed below.

2.9.1 Urban Planners' Point of View: Availability, Accessibility and Usability of land

Land is a very important resource for urban agriculture and its availability, accessibility and suitability for agriculture should be of particular concern to those who want to promote urban farming as a strategy for social inclusion, enhanced food security, poverty reduction and local economic development. Nevertheless, agriculture cannot benefit the economic development of cities to the extent that industry or housing does. At household levels, urban development pressure (e.g., land conversion, speculation and high land price) may lead to the loss of cultivating land (Mbina, 1995; Quon, 1999). These issues are imposed by urban planning policy through a lack of formal recognition of peri-urban agriculture, a lack of awareness about its roles, and/or attitudes of resistance to peri-urban agriculture (Tinker, 1994; Helmore and Ratta, 1995; Maxwell *et al.*, 1998; Quon, 1999; Drescher, 2000). Quon also asserts that the amount of land available for farming in urban areas remains unknown, partly due to the state-of-the-art in land description and classification (i.e. air photo interpretation), due to miscalculating the amount of land available and the extent of peri-urban agriculture, and due to a lack of ownership records.

The second importance of land to urban farmers is accessibility. Land may be available, but farmers may not be able to access due to socio-political constraints. For instance, land may be off-plot (far away from farmers' residence) where transportation is not convenient or accessible. Land may be too expensive for farmers to purchase or rent. Farmers, particularly the newcomers, may lack the social or political networks necessary to contend for land. Their accessibility to land may also be impeded by the ingrained resistance to farming in cities resulting from a conceptualization of peri-urban agriculture as "temporary". Socio-cultural restrictions on who can own land and who can use land and different kinds of land tenures in these areas, may also contribute to the issue of accessibility (Tinker, 1994; Helmore and Ratta, 1995; Maxwell *et al.*, 1998; Quon, 1999).

Additionally, land may be available and accessible but not usable due to its inherent characteristics as well as facilities and services available for it. Biophysical features of land parcels such as soil, water, and microclimate may prevent farming activities or make

land non-arable. Similarly, physical dimensions (i.e., size, shape and location) and the amount of time available may hinder farmers by narrowing the selection of crops and technology used. Agricultural inputs and services, and market facilities may also have tremendous impact on the usability of land. As a result of bearing greater economic and environmental pressure than rural agriculture, urban agriculture demands a more intensive and effective production system in order to gain a competitive and safe survival. Otherwise, small plots without other facilities would not be worthwhile to strive for (Mougeot, 1998; Quon, 1999; Drescher, 2000).

While not all urban agriculture activities require land (for example, land may not be of primary concern for zero-grazing livestock-keeping, mushroom farming and food-processing activities), land is a crucial factor for many urban agriculture horticultural and cropping activities. Ellis and Sumberg (1998) observed that the existence, prevalence and growth, if it occurs, of food production in urban environments is seen as being predominantly about the use of space in densely settled locations. With the exception of small numbers of animals kept in buildings and backyard plots, land is the fundamental resource required for farming, and issues of zoning, access and tenure are seen as critical to the contributions it may be able to make to household food security and to the livelihood composition of the urban poor.

In cases of rapid urbanization, undeveloped land for agricultural use may not be available or may be difficult to identify. Urbanization may displace farming activity (by replacing farming with more economically lucrative land uses), or prevent new farming from starting (by erecting buildings and structures that effectively preclude farming). Agriculture usually cannot provide the economic returns of industry or housing, and urban development pressures may compel or even force land holders to sell their urban plots (Aziz, 1997). Land speculation may lead to the purchase of city lands, distorted land prices and strange development patterns (Menezes 1983).

Displacement from central plots may mean that farmers must farm at a distance from their homes, markets and transportation routes. Because planning decisions, such as locating transportation routes or permitting land uses in particular areas, can influence the

value of urban land (Tempesta and Thiene 1997), planners can influence the pattern of urbanization, and consequently, influence urban agriculture opportunities.

How much land is available for farming in a community may not be known. Traditional techniques for land description and classification, such as aerial photo interpretation, may underestimate or miscalculate available lands and the extent and prevalence of urban agriculture (Mougeot 1994a, b). Not knowing the ownership or tenure arrangement of properties, because of a lack of records or frequent change of hands, can further confuse of how much land is available for farming in a community, or how prevalent is the practice of urban agriculture.

A lack of available plots of land does not often dissuade urban farmers, especially where urban agriculture is officially illegal anyway. Urban farmers tend to be opportunistic, and find ways to use the smallest plots or strips of land and water in creative ways. This leads to farming on land originally set aside for other purposes (e.g., ditches, road verges, parks and buffers), or lands that are hazardous and therefore undevelopable (e.g., steep slopes, flood-prone, erosion-prone), or lands that have been abandoned or contaminated by past uses (de Zeeuw *et al.* 1998), sometimes without the farmer being aware of the hazard (Freeman 1991). Such opportunistic use of land can undermine community planning and lead to conflicts between competing users, environmental degradation, and unregulated production and processing that may be hazardous to consumers.

Maxwell and Armar-Klemesu (1998), assert that land availability is less a problem than access to land, where access means “capable of being reached” by farmers. Access to land is one of the most, if not the most, significant constraint to urban farmers. Access to land must be distinguished from availability of land; land may be available or present in a city but not accessible to farmers because of political or social constraints to its use and/or redistribution (Helmore and Ratta 1995).

Access may refer to the land itself, or to the use of the land. Land may be far from where farmers live, and public transportation and roads inconvenient or not available. Worse still, the available land may be too costly for farmers to rent moreover farmers may lack

the social or political connections necessary to learn about or gain access to the plots that are available. Drakakis-Smith (1996) noted that the poor have a limited range of coping mechanisms in cities, especially newcomers lacking an extended network of support, and therefore have restricted access to land for food and fuel. Often farmers rely on a complex network of social and political connections to contend for available land (Drakakis-Smith 1996), which may in part explain why the people of all income levels and long-term residents are involved in urban agriculture (Smit 1996).

Inequitable land distribution systems, ingrained resistance to farming in cities, or planning policies and legislation that make urban agriculture an illegal land use can all prevent farmers' access to land (Zallé 1998). In some communities, limited credit or financing opportunities and discrimination based on gender may prevent equal access by women and men to land. There may be socio-cultural restrictions on who can own or use land, and different kinds of land tenures available. Land access may be further constrained by missing or inaccurate records of who uses or has the right to use particular plots.

2.9.2 Policy makers' Point of view: Land Market and Related Problems

Land, from the perspective of policy makers, functions as a market commodity and an environmental resource. However, environmental issues perpetuating land use problems are not discussed in this thesis. Instead, land market is disaggregated since it is directly and more related to urban farmers' livelihood and land base. Several researchers (e.g. Farvacque and McAuslan, 1992; UNESCAP, 1995; Drescher, 2003) conclude that a well- or poorly-functioning land market, beside its geographic features, is strongly affected by the security over property rights, land regulations, and direct interventions (i.e. land acquisition).

2.9.3 Security of Property Rights

The property rights of land are represented through land tenure systems. Every system of tenurial rights is founded upon different cultural, social, political and economic concepts. In traditional societies governed by custom, land can be considered a part of social

relations between an individual and the society. In modern societies dominated by the market, land is a part of an economic relationship between people – it becomes a commodity and a factor of production. And the constraints and opportunities for improving access to land for Urban Agriculture are related to the type of land regimes in place.

In Kampala, there are four principle types of land tenure systems: - freehold, leasehold, mailo land and customary land (Nuwagaba *et al.* 2004). Today, more than 52 percent of the land in Kampala is privately owned under *mailo tenure*¹, about 30 percent is public land administered by the Kampala City council (on which an applicant can be allocated long-term, renewable leasehold), about eight percent is owned by the government for its use, and about seven percent is freehold. In the Kampala suburbs, even higher percentages are held under *mailo* tenure. However, Kampala City Council does not issue a lease if the proposed land use is agricultural.

2.9.4 Land use Regulatory Framework

The regulatory framework of a city is the one of most serious obstacles to its agricultural activities along with access to land. Zoning can significantly impact the availability of land use types by skewed designs in favor of some activities more than others. In this sense, agricultural zones may be squeezed out under the pressure of city development. Furthermore, the regulatory environment may financially burden the poor by enforcing a cost for meeting minimum standards, e.g. for getting land use certificates, transaction, land use taxes. There can also be costs for time and labor spending to obtain indispensable documents and permits. Whatever the cost is, the affordability is often beyond the reach of most urban poor, including urban farmers (Maxwell *et al.*, 1998).

2.10 Urbanization, Urban Agriculture and Access to Land

Urbanization impacts on agriculture and agricultural land use in several ways including: conversion of farmland to urban uses, farm fragmentation and creating of hostile farming climates (Berry 1978; Coughlin 1980; Lockeretz 1989; Bradshaw and Muller

¹ Mailo tenure originally known as crown tenure refers to ownership of land that was previously owned by the King of Buganda

1998; Heimlich and Anderson 2001), and idling of farmland in anticipation of future conversion to urban uses—because of land speculation or because of spillover effects generated by urbanization.

Evidence available suggests that access to farmland by the urban poor has been identified as a critical factor in the development and sustainability of Urban Agriculture (Dennery, 1996; Flynn-Dapaah, 2002; Maxwell, 1998; Mougeot, 2000; MDP, 2001; Quon, 1999; Schiere, Tegegne, and Van Veenhuizen, 2003). With urbanization, land becomes a valuable and scarce resource for which a multitude of actors compete to gain access for different uses. Available evidence suggests that urban expansion involves direct conversion of farmland to provide land needed for housing, commercial development, and transportation. For example, the rate of land-use conversion from agriculture to housing is in the range of 2,600 hectares per year in the peri-urban periphery of Accra, Ghana. This is in part attributable to the rapidly growing population which also places enormous strains on subsistence agriculture as the primary livelihood.

Existing literature also suggests that farmers near cities also often have trouble getting more land, either because it is completely unavailable or is too expensive (Lockeretz, 1989). This may prevent them from expanding their operations to generate enough income in the face of low net returns per unit of production and from taking advantage of newer technologies that require more land to achieve full economies of scale. Even if the farmer can assemble enough land, it might be available only as small, scattered parcels.

Urbanization is also associated with the “impermanence syndrome.” The impermanence syndrome occurs when farmers see land being developed around them and consider it inevitable that their land will be developed too, either because it will become more profitable to sell it than to farm it, or because the problems mentioned above will become so severe that they will not be able to remain in farming (Berry, 1978). Besides land speculation, impermanence syndrome may also be as a result the spillover-effects of urbanization especially those that create hostile farming climates. For example, with respect to the later, the increasing density of nonfarm population may bring new problems for the farmer, such as damage to crops caused by air pollution, mischievous

destruction of farm equipment or crops, or harassment of farm animals by both children and adults. The combination of spillover effects, and land speculation leads the farmer to regard the future of agriculture in his community as an impermanent part of the landscape (Miner, 1976) or at least generates an uncertainty about the future of agriculture. This uncertainty has identifiable spatial expressions. Given strong pressures from urbanization the tendency is for farmers to idle their farmland.

2.11 Access to Agricultural Land in Kampala

Lillian, *et.al* (2003) pointed out that many poor people in Kampala lack land ownership rights and instead gain access to land in poor areas like wetlands, road and railway reservations and waste disposal sites while Others utilize their backyards or encroach on undeveloped land left to fallow by landowners. It is important to note that these spaces are too small to produce significant amount of food. It is further noted that city authorities and utility service providers keep on tampering these areas by slashing crops to give way for the services. This all undermines food production in the region.

Urbanization has also increased Land fragmentation in Kampala region. Sardik, N. (2002) points out that land fragmentation affects food production and is a direct result of rapid population growth in many poor countries. He further points out that very small landholdings which are too small to provide a tolerable livelihood turn into part-time farms, with some household members staying at home to tend crops while others migrate in search of wage employment. Sirte. L (2008) further stressed that increased food production and consumption is undermined by rapid population growth, unequal land distribution, shrinking landholdings and widespread land degradation. The reduction in man power and reduced fertility of the land automatically reduces acreage of land that would be put to growing crops.

In some cases the poor have sold out land to prospective developers and moved to cheaper places outside Kampala. The new landlords have changed the use to built-up by putting up commercial shops, residential and institution. This has led to the decline in available land for agricultural. Sardik, N. (2002) also argues that on small land holdings there is over use of the land through use of agrochemicals which eventually degrades the

soil. In this fertility of the soil is reduced and so productivity of the land. The land holder will opt to put it to other use which in most cases would not be agricultural use. This continues to reduce agricultural land, food production and thus impacting negatively on agricultural biodiversity in the region.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

In this chapter, a presentation is made about the methodology that the researcher used during the study. In a more specific way, the chapter outlines the research strategy, the research design, the study population and sampling strategy, methods of data collection, presentation and analysis, ethical considerations and the main challenges faced during the study.

3.1 The Mixed Methods of Research Strategy

In this study, mixed methods strategy of doing research was employed. This strategy uses procedures for conducting research that are typically applied in both quantitative and qualitative studies (Brannen, 2005). The purpose of this strategy is to build upon the synergy and strength that exists between quantitative and qualitative methods in order to more fully understand a given phenomenon than is possible using either quantitative or qualitative methods alone. Besides, narrow views of the world are often misleading, so approaching a subject from different perspectives or paradigms may help to gain a holistic perspective. For the case of this study, semi structured interviews were conducted to ascertain the critical issues bothering urban land users and a Focus group discussions were later held using these issues as variables.

3.2 Research Design

Yin (2003) defines research design as “the logical sequence that connects the empirical data to a study’s initial research questions and, ultimately, to its conclusions”. According to him, research design deals with a study’s questions, data relevance and collection, and data analysis and interpretation of findings. The multifaceted nature of this research requires a holistic framework for collecting and analyzing information.

The nature of research questions in the thesis, which describes and explores agricultural land use change in the context of urbanization in one of the divisions on Kampala city, favours the case study strategy – an empirical inquiry that examines a contemporary phenomenon within the real-life context beyond researchers’ control (Yin, 2003).

The case study design was used because it is important in *understanding some* particular problem or situation in great depth and where one can identify cases rich in information. It is rich in the sense that, great deal can be learned from few exemplars on the phenomena in question.

3.3 Study Scope

This study was strictly conducted in Kawempe division only one of the five divisions that make Kampala district. In terms of study population, the study looked at the people that reside in the Division irrespective of their class in the society. The study employed a case study approach with both quantitative and qualitative research methods. It was done only in 12 months and sought to assess the impacts of urbanization on agricultural land use in Kawempe Division, Kampala district.

3.3 Sample Population and Sampling Design

The residents of Kawempe Division who practice urban agriculture were the sample population of this study irrespective of the size of the practice.

The study used predominantly a purposive sampling strategy. Purposive sampling, also known as *judgmental, selective* or *subjective* sampling, is a type of *non-probability sampling* technique. Non-probability sampling focuses on sampling techniques where the units that are investigated are based on the judgment of the researcher (Bernard, 2002). Due to the fact that land in Kawempe is used for various land uses, this strategy was used purposely to get informants that use land for agriculture. It was used to select Kawempe urban farmers and key informants. In total 15 key informants and 45 farmers were selected.

3.4 Data Collection Methods

Data for this study was collected using three methods: document review, unstructured interviews and observation.

3.4.1 Interviews

Semi-structured interviews were conducted with urban farmers and selected key informant to identify the impacts the urbanization of Kawempe Division on their agricultural practice.

A semi-structured interview is a method of research that is used in the social sciences. It was used because it is flexible and allows new questions to be brought up during the interview as a result of what the interviewee says. Changes in land use and challenges they face in urban agriculture were also captured through these interviews.

3.4.2 Observation

Observation is a method of data gathering in which a qualified person watches, or walks through, the actual processing associated with a system. The study valued observation as one area where information relating to urbanization and agriculture land use practice study phenomena information could be collected. On spot observation also helped mapping the ongoing urban agriculture activities, plot use and coverage the study settlements. This helped in identifying the actual agricultural practices that are done in Kawempe Division. This method helped in collecting original data at the time it occurs. It also secures information that participants would ignore because it's so common it is not seen as relevant. Lastly, subjects seem to accept an observational intrusion better than they respond to questioning.

3.4.3 Focus Group Discussion (FGD)

The focus group discussion (FGD) is a rapid assessment, semi-structured data gathering method in which a purposively selected set of participants gather to discuss issues and concerns based on a list of key themes drawn up by the researcher/facilitator (Kumar 1987). FGD offer that fine opportunity to interact within groups and to identify the joint construction of meaning made by the people in reference to the concepts under investigation. For the purposes of information control, tape recorders and a small portion of people particularly the urban farmers, key informants and the elderly were engaged in the discussion. FGDs were held with 5 urban farmers and 5 elderly persons and the selection was done randomly irrespective of gender.

3.4.4 Document Review

Written sources are a means of widening the understanding of the context and scale, and entry into the contemporary experiences or the group under study (Creswell, 1994). This source of data inquiry allows for familiarization or, better yet, for the elaboration and

personal interrogation. In this context the written source is reviewed throughout which enabling the investigator to understand the subject matter. This source was treated as part of secondary data collection method. Secondary sources mainly comprised of journal articles, books, and grey literature relating to urbanization and agricultural land use and this method was used especially in the literature review.

3.5 Type of Data Collected

Data collection was based on the key variables identified according to the set objectives on what was needed to know and how to comprehend the objective of the study set. The first objective was to find out factors that lead to urbanization in Kawempe, the second was to find out the current land use practices in Kawempe and how they impact on agriculture.

And the third was to find out the extent at which urbanization has impacted on the agricultural land use in Kawempe and the fourth was to suggest feasible land management techniques/measures that can contribute to sustainable land usage.

3.6 Unit of Analysis

Higson-Smith *et al*, (1995) defines widely a unit of analysis. They show that it is the person or unit from which the social researcher collects data. He adds that, data from such a unit can only describe that unit, but when combined with similar data collected from a group of similar units, provide an accurate picture of the group to which the unit belongs. In this respect urban farmers are considered as a unit of analysis in this study. Urban farmers will be divided into two groups namely landholders and tenants involved in urban farming.

3.7 Validity and Reliability of Research Instruments

A measurement must have validity and reliability. Validity means relevance or adequacy of the measuring instrument to measure what it is alleged to measure (Lundequist, 1999). Reliability, i.e. dependability means that the method of measuring is unaffected by chance. In order to ensure validity, the researcher deployed multiple sources of evidence namely documentation, records of local community feelings, interviews, direct observation and triangulation. Yin (1994) accentuates that the significance of using multiple sources is to triangulate the converging lines of evidence. According to Patton

(1987) there are four types of triangulation namely; data sources (data triangulation), among different evaluators (investigation triangulation), of perspective on the same data set (theory triangulation) and of methods (methodological triangulation).

Additionally, the interview guides and the observation guides were pretested in Nakawa Division to understand how well they can collect the data and were edited accordingly in terms of language, length and coverage of issues for study.

3.8 Data Presentation and Analysis

All data collected using the above methods, was input and processed using the SPSS program and analyzed to generate frequencies and percentages. This analysis has yielded tables, graphs and relationships of urban agriculture activities and land use in Kawempe division as shown in the next chapter.

3.9 Ethical Considerations

Under this, the researcher organized an introductory meeting with key local officials in the study area where the study was introduced and purpose for which it was done. This aimed at addressing fears that would arise during the undertaking. In these meetings possible questions from respondents were addressed by the researcher and this greatly improved the response rate

Secondly, the research questionnaire had a section that focused on the confidentiality that would be used during the study. This section assured respondents that the responses would be kept confidential.

3.10. Limitations of the Study

There was lack of adequate information from the respondents the fact that respondents were certain as to why the researcher needed the information. For this case, the researcher fully introduced herself to the respondents and assured them that the information needed was purely for academic purposes and their responses would be kept confidential.

There was poor record keeping at the Kawempe Division offices and therefore some information especially the extent of urban agriculture was not captured as records were unavailable

CHAPTER FOUR

RESEARCH FINDINGS

4.0 Introduction

This study sought to assess the impacts of urbanization on agricultural land use in Kawempe Division, Kampala District. This chapter presents the study findings based on the study objectives; including characteristics of respondents, existing land use patterns, and impacts of agriculture on land use, factors that have led to urbanization in Kawempe and the current land use practices.

4.1 Respondents' Characteristics

Respondent characteristics usually have a great bearing on the responses from research and therefore, the study considered them as key for purposes of addressing the target objectives.

Table 1: Respondent characteristics

Respondent attributes	Frequency	Percentage (%)
Sex		
Male	33	55
Female	27	45
Marital status		
Single	23	38
Married	37	62
Number of people in household		
Less than 4	41	68
4 -7	19	32
Education level		
None	7	12
Primary	14	23
Secondary	21	35
Tertiary	18	30

Source: Research data from the field

From table 1, majority of the respondents were males (55%) and these were married

(62%). concerning the household sizes, majority of the households had less than 4 persons (68%). It is also shown that most of the respondents had attained education levels higher than primary that is, secondary (35%) and tertiary (30%).

4.2 Main sources of Income

Land use studies usually relate greatly with sources of income. This is true in cases where sources of income are hinged on land as it will be severely worked and could even result in land degradation. This study therefore sought the major economic activities of the respondents that participated and the results are shown in the table below.

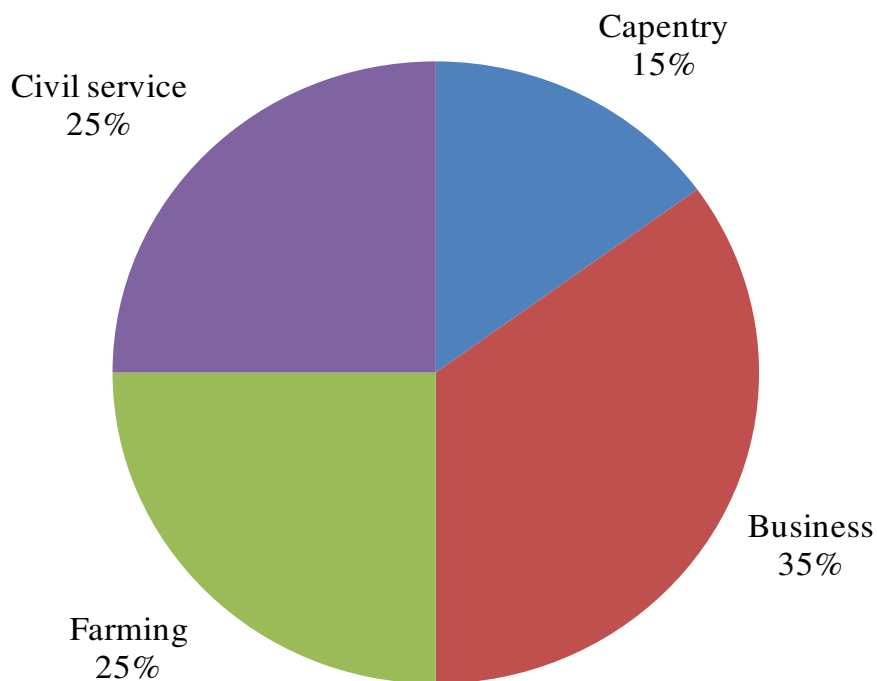


Figure 1: Main economic activity of the respondents

Figure 2 indicates that majority of the respondents (35%) were engaged in business irrespective of the areas while an equal number of respondents (25%) are civil servants and also doing farming as the main economic activity.

4.3 Environmental/ Societal Changes

Land use and management have a close linkage with environmental changes and therefore study also asked about whether respondents were noticing any environmental or societal changes.

Table 2: Observed environment changes

Whether observed changes	Frequency	Percentage
Yes	40	67.0
No	20	33.0
Total	60	100.0

Source: Research data from the field

From table 2, it is clear that majority of the respondents had indeed observed some environmental changes (67%) while only 33% had not noticed any change.

Figure 2 below, shows the observed environmental changes and it is clearly shown that majority of the respondents (46%) noted reduced vegetation cover while increased flooding and increased air pollution/dust were ranked equally, i.e. 27%.

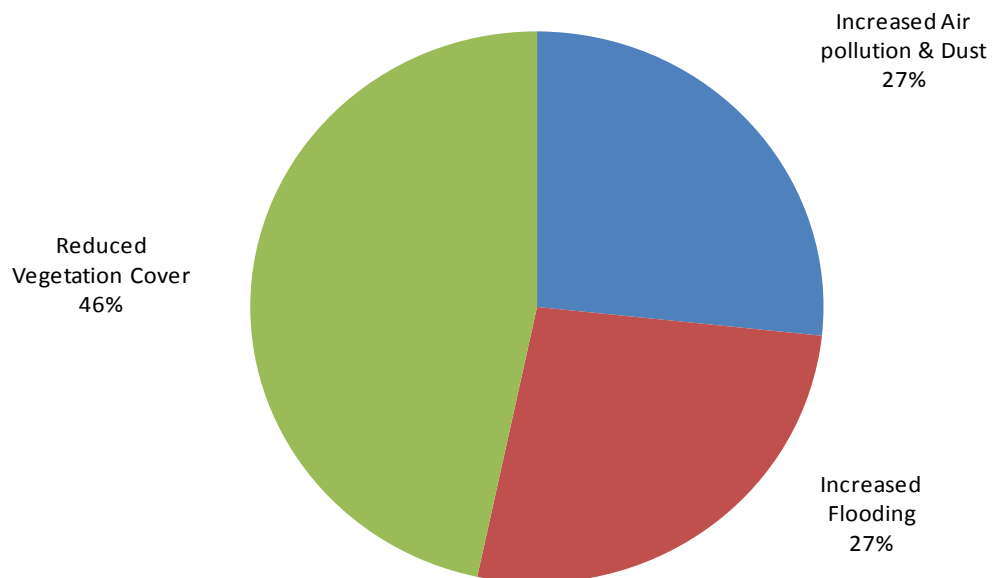


Figure 2: Observed environment changes

4.4 Urban Farming in Kawempe Division

This study sought to assess the impacts of urbanization on land use. Consequently, it was found that urban farming can be one of the prevalent land use practices in Kawempe. It was therefore important to understand whether respondents are engaged in urban farming or not.

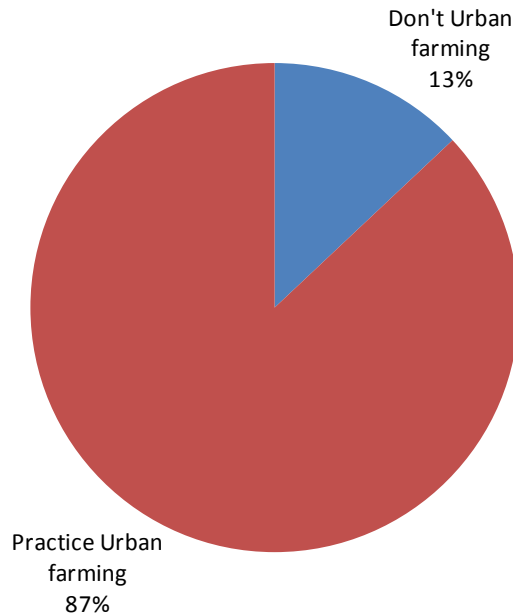


Figure 2: Urban farming practice

Figure 4 shows that majority of the respondents (87%) were involved in urban farming while a minority (13%) were not.

Respondents were further asked whether in the farming operations they had observed changes in output, and many of them (72.5%) noted that there were remarkable changes in their farm outputs.



Photo 1: Urban livestock rearing

4.4.1 Causes of Changes in Agriculture out Put

Respondents were further asked about the causes of the changes in output and the results are shown the graph below.

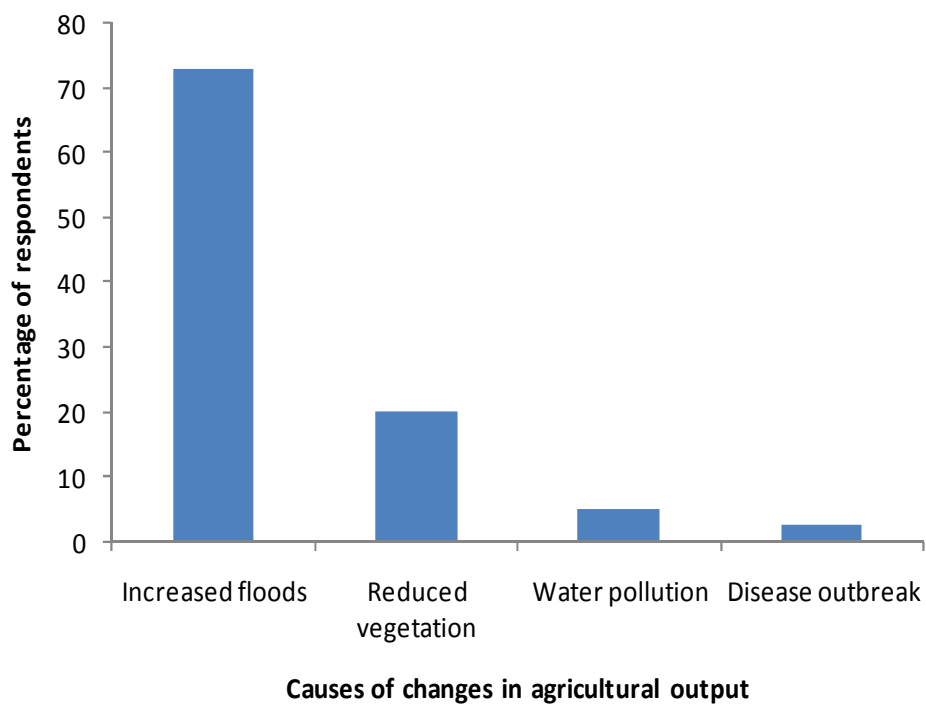


Figure 3: Causes of changes in agricultural output

Majority of the respondents (73%) noted that increased floods in Kawempe Division is the leading cause of the changes in output followed by reduced vegetation (20%) then water pollution (5%) and finally increased disease outbreak (2.5%).

4.5 Land Use in Kawempe Division

In order to understand how urbanization has impacted the land use, it was though necessary to first understand the present land uses in Kawempe Division. Majority of the respondents noted human settlement (65%) as the dominant land use followed by the agriculture (22.5%), then recreation (7.5%) and lastly the industrial activity (5.0%) as reflected in the table below

Table 3: Present land use in Kawempe Division

Land use	Frequency	Percentage
Agriculture	14	22.5
Human settlement	39	65
Recreation	5	7.5
Industrial activity	2	3.3
Total	60	100.0

Source: Research data from the field

In relation to farming, the respondents were asked about the agriculture practices they are engaged in and majority of them revealed animal farming as the dominant practice (57%) followed by crop farming (35%) and poultry farming (8%) as shown in the figure 4.

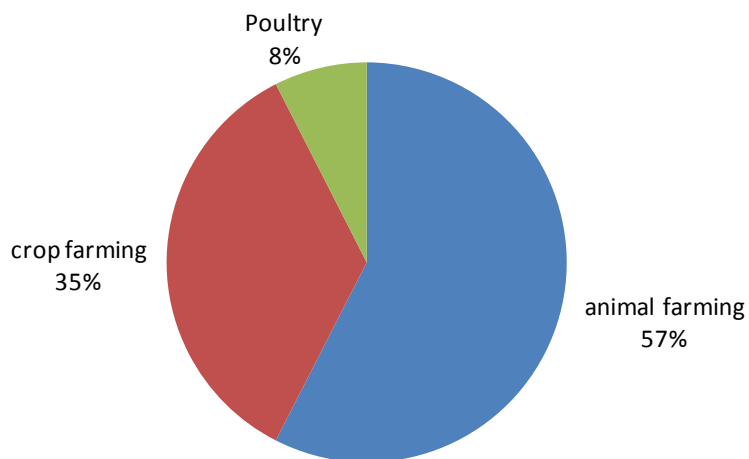


Figure 4: Agriculture practices for Urban Farmers in Kawempe Division

Respondents were further asked reasons why they were engaged in such agriculture practices as shown above and results are in the table 5 below.



Photo 2: Small scale backyard urban farming

Table 4: Reasons for engaging in certain agriculture practices

Reasons	Frequency	Percentage
Less land available	26	43
Most profitable	19	32
Only available land	9	15
Others	6	10

Source: Research data from the field

Table 4 shows that majority of the respondents engage in specific agriculture practices because of less land available (43%) followed by the fact that those practices are the most profitable in urban areas such as Kawempe Division (32.0%). For some, it is because it's the only land available for farming (15%).

Due to small land sizes, there are so many farming practices that are even done within the compounds in the urban areas of Kawempe Division such as one shown below.



Photo 3: Vegetable farming in Kawempe Division



Photo 4: Farming and human settlement in a wetland

4.6 Urbanization in Kawempe Division

Since the study sought to assess the impacts of urbanization on agricultural land use, it thought necessary to get respondents' perceptions on the factors that could have led to urbanization in Kawempe Division.

Table 5: Factors that have led to urbanization in Kawempe Division

Factors	Frequency	Percentage (%)
Industrialization	26	43.3
Rural urban migration	14	23.3
Presence of services	12	20.0
Others	8	13.3
Total	60	100

Source: Research data from the field

From table 5, it is shown that industrialization in Kawempe Division is the leading factor (43.3%) that has led to urbanization followed by rural urban migration (23.3%) and then the presence of social services (20.0%).

Kawempe Division boasts of hosting a number of industries both small and large

scale that could be a lead factor for its rapid urbanization. Industries have a potential of attracting social services in the area and the infrastructure itself greatly promotes urbanization.

4.7 Impacts of Urbanization on Land Use/Agriculture Practices

In attempt to understand the impacts of urbanization on agriculture practices, respondents were asked about the development activities that were expanding rapidly in Kawempe. In response to this, majority of them (50%) noted that agriculture is widely expanding followed by commercial developments (40%) then residential development (35%) and lastly recreational and industrial development that were noted by 25% of the respondents.

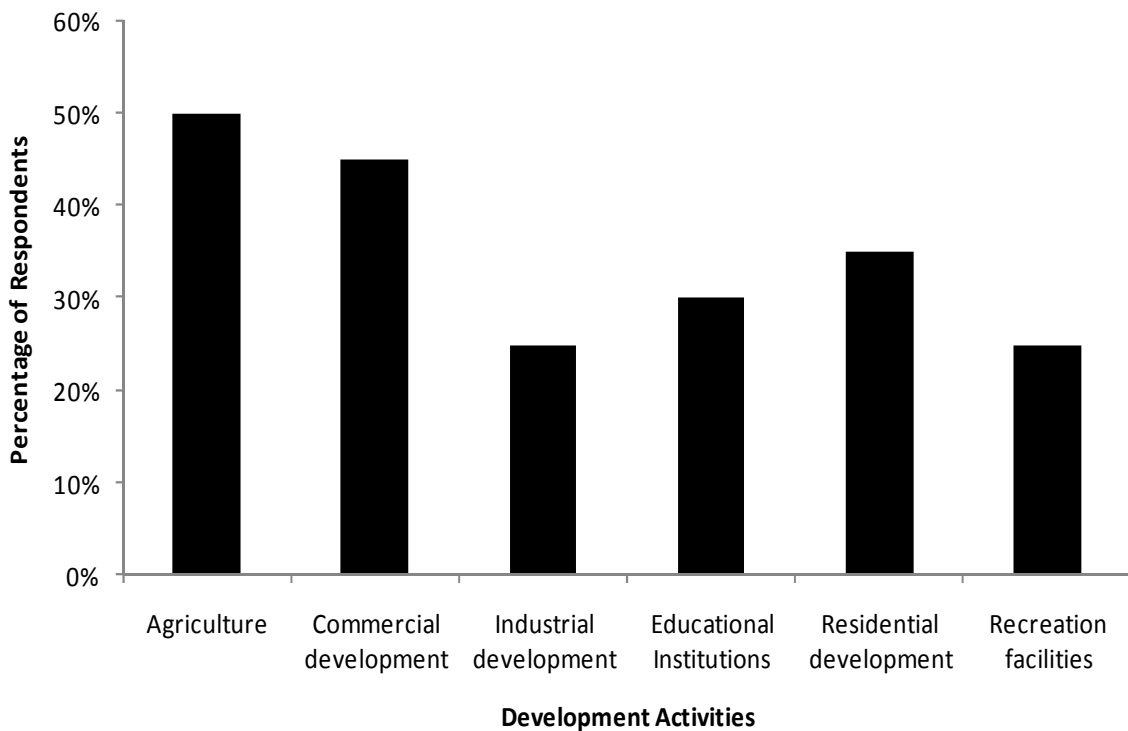


Figure 6: Developmental activities observed in Kawempe

Additionally, respondents were also asked about what they considered to be the land use that is greatly affecting the agriculture practices in the division and their responses are displayed in the table 6 below.

Table 6: Land use that affects agriculture practices in Kawempe Division

Land use	Frequency	Percentage (%)
Human settlement	39	65.0
Farming	14	23.3
Recreation	5	8.3
Industrial activity	2	3.3
Total	60	100

Table 6 shows that majority of the respondents noted human settlement (65.0%) as the dominant land use that is affecting on agriculture practices followed by farming (23.3%), then recreation (8.3%) and lastly the industrial activity (3.3%).

The development activities shown in figure 6 are varied and they have different effects on land use whether directly or indirectly as shown in figure 7 below.

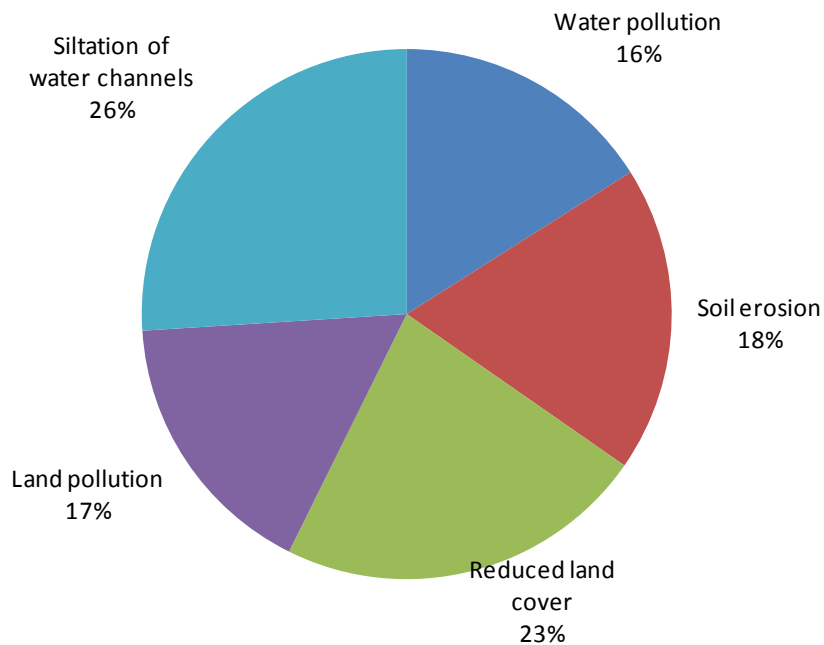


Figure 7: Effects of Developmental Activities on the Environment

According to responses revealed by respondents, the development activities have had various environmental impacts on land. Majority of the respondents (26%) noted the siltation of water channels as the major impact followed by reduced land cover (23%) and soil erosion (18%). Soil and water pollution were almost equally mentioned as impacts brought about by urbanization related developments.

Urbanization threatens food supply drawing from the fact that, as it grows, it affects agriculture because it expands into surrounding areas of agriculture and this greatly affects food production. As people continue to pour into urban areas due to pull factors among others like employment, security, and good social amenities, adequate housing becomes insufficient and this has resulted into slum development that has spread in Kawempe Division like a disease. City dwellers normally look at rich agricultural lands and only think of buying off the farmers. It is internationally noted that urban growth “removes hundreds and thousands of acres from farm production each year” (Ehrlich *et al* 1973).

Food deficit is on the rise as migration of subsistence and small scale farmers from rural areas to the cities undermines food production capacities yet urban economies cannot absorb the huge influx of people looking for jobs.



Photo 4: Human settlement in one of the wetlands in Kawempe Division

4.8 Suggestions for Sustainable Land Use Management

In view of the above effects of development activities on the environment, several suggestions were raised to improve the land use and management in Kawempe Division.

Majority of respondents suggested a capacity building campaign on sustainable practices while others proposed instituting an environmental police force that can assist in the law enforcement. This would solve the prevailing encroachment on wetlands that for long been responsible for floods in Kawempe Division as the wetlands can no longer contain the large quantities of storm water.

Decision making on the land management should not be left with only higher authorities but should also involve the local persons who are the sole beneficiaries of proper land management. In other words, stakeholder involvement in land use and management needs due consideration.

There is also need for proper implementation of the land use plans as designed and should be done wholesomely to avoid some residents becoming homeless.

CHAPTER FIVE

DISCUSSION AND ANALYSIS OF FINDINGS

5.0 Introduction

In this chapter, key findings from the study as well as emerging themes from them are identified, discussed and analyzed

5.1 Urbanization and its Impacts on Agricultural Land use in Kawempe Division

This study has shown that industrialization is the leading cause of urbanization as revealed by the 40% of the respondents with rural urban migration being the next. This industrialization has increased largely due to the tolerant investment policy and other macro-economic policies (Lwasa 2004). The environment has also attracted industrial investments due to existence of infrastructure for industrialization. The industries in Kawempe Division range from small to large scale and include food processing and packaging, soft drinks making and all these are contributing to direct and indirect employment.

The finding above concurs with Vlahov & Galea, 2002 who noted that urban environments relate greatly with a range of human health issues. They also asserted that urbanization lures rural population of better employment, education, health care, and culture; and they contribute disproportionately to national economies. However, in their study, they concluded that rapid and often unplanned urbanization is often associated with poverty, environmental degradation and population demands that outstrip service capacity. This means that even with better employment, the standards of living are not maintained and therefore urban poverty crops in.

Much as this growth in industrial activity indicates development opportunities, it has had severe environmental shortcomings that include wetland degradation, soil and water pollution among others. Land use in Kampala district and particularly in Kawempe is dominated by human settlement plus urban farming. The different land uses however have different effects on the environment. Urbanization greatly impacts on the land use patterns. As such this study looked at the impact of urbanization on the agricultural land

use in Kawempe Division. In this regard, UN (2007b) noted that the land use effects on the environment are varied and include urban sprawl, soil erosion, soil degradation, salinization, and desertification. Basing on the fact that the land uses affect environment differently, industrialization which this study has singled out as a major development activity, the impacts that accrue from this, include among others, pollution of the environment that ultimately alter the land use accordingly.

Results have also shown that majority of the respondents think that agriculture seems to be widely expanding followed by commercial developments then residential development with recreational and industrial development coming last.

Most of the urban agriculture that is being done in Kawempe involves use of wetlands which are greatly being degraded. This practice is largely done by the urban poor that have migrated from the rural areas. This has a direct relationship between urbanization and the environment as well as its management.

The Urban Poor and Land Use Patterns

This study has revealed that there is still majority of residents that are still classified as the urban poor. These are largely dependent on the environment for survival. According to Nyakaana (2003), as the environment deteriorates, so is the increase in poverty due to reliance by the urban poor on natural resources through urban agriculture, natural resource extraction, informal production and trade as coping strategies.

The increased urbanization characterized by increased building construction has seen various evictions of the urban poor either for construction of transport infrastructure and private investments. This has forced most of the urban to encroach on the fragile ecosystems such as wetlands. No wonder, 43% of the urban poor are much more disadvantaged than their rural counterparts since they live in poor conditions, with persistent environmental burdens of flooding and accumulated wastes (KCC 2003). In terms of employment, the informal sector and self-employment are dominant and largely gendered.

5.2 Human Settlement in Kawempe Division

During the study, it was revealed that human settlement is the leading land use in Kawempe Division. Majority of the respondents noted human settlement (65.0%) as the dominant land use followed by the agriculture (22.5%), then recreation (7.5%) and lastly the industrial activity. Although this study has indicated human settlement to be the leading land use, it must be noted that these different land uses are changing rapidly from one form to another. This implies that much of the previously bare land has been converted into residential areas.

The above scenario results from the fact that urbanization normally displaces some land uses such as farming. This is supported by Aziz (1997) who noted that urbanization replaces less production with more lucrative land uses such as erection of building structures that effectively rule out urban farming. This is further supported by Maxwell and Armar-Klemesu (1998) who noted that land availability is an outstanding constraint to urban dwellers and therefore land will always be put to the most productive use and in this case, increased demand for housing driven by growth in urban population has resulted in human settlement being the dominant land use.

For Kawempe division, this holds truth since it is the taken to an industrial area of the city as it houses more than half of the industrial firms in the whole of Kampala city.

5.3 The Changing Land Use Patterns in Kawempe Division

Like in many parts of cities, land patterns are always changing and this usually results from a host of aspects. In Kawempe Division, land use changes were attributed to increase in urban population, industrialization and the corresponding demand for housing has resulted in land use change.

According to MWLE (2002) most of the wetlands in Kawempe division have been greatly degraded due to high population density and the industrial development. It is also noted that housing, industrialization and infrastructure development play an important role in land use change in general.

In Kawempe, most of the wetlands for instance have been converted into built up areas a land use that degrades them even more.

Additionally, Azuz (1997) noted that land use patterns will always change since some land uses will continually replace others based on the ones that are more lucrative and highly beneficial to the user.

5.4 Land use Practices in Kawempe Division

This study has shown that majority of the respondents do farming in Kawempe and precisely, the majority of them revealed animal farming as the dominant practice (57 %) followed by crop farming (35.0%) and poultry farming (8 %). Although most urban dwellers who do farming are the urban poor, there are some people who practice farming as an additional source of income. This scenario is usually characterized by subsistence practices that are highly degrading. For instance, crop farming in urban areas is done in fragile areas such as wetlands which end up being degraded.

According to FAO/UNEP (1999), land use practices differ in as far as management and modification natural environment or wilderness is concerned. In this case, the different land use practices as shown above have varying impacts on natural resources including water, soil, nutrients, plants and animals.

5.5 Loss of Agricultural Land

It was revealed that loss of agricultural lands, over the years, had occurred in a piecemeal fashion, going relatively unnoticed by the public until recently. Further discussions revealed that land, particularly in peri-urban areas of Kawempe was increasingly being converted from agriculture use to residential (housing use). This view is made further clearer when study participants were asked purposes for which they will acquire additional land.

Through consensus, it was also revealed that housing needs was the main purpose for which residents would acquire additional land. This is not surprising, given the massive urban sprawl in recent years. Urbanization has resulted in spillover which has induced rapid growth and high demand for residential houses, particularly in peri-urban areas such as Mpererwe. Some voices from FGD participants make the foregoing view abundantly clear:

For farming, it is relatively more difficult to get land as much is being converted for residential use. It is for this reason that some farmers are even using the wetlands for farming. But they are always disturbed by the heavy flooding. I wish the government could regulate this activity (Urban Farmer, Mpererwe, Kawempe)

Mpererwe used to be a farming area. Now housing and trading have taken over. It is no longer easy to get a farm area however small it is. (Urban Farmer, Mpererwe, Kawempe Division).

5.6 Challenges Faced in Urban Agriculture

Although some urban dwellers still derive their livelihood from urban agriculture, it was noted that urban farmers face a lot of challenges. Through focus group discussion, the following were noted:-

In some cases, urban farmers divert municipal water supplies meant for other uses in the city, contributing to water shortages.

There is great risk of chemical contamination in dense urban settlements as soils near the roadways and industries risk heavy metal pollution. Intensive livestock rearing is another form of urban agriculture that risks harm to urban residents, leaching of solid and liquid waste can lead to ground water contamination.

One urban farmer said,

“The major challenge I have faced in this practice is lack of space to dispose off the livestock waste. They have accumulated for a long time and my neighbors have been complaining but I am still stuck on what I should do”.

5.7 Level of Education and Agricultural Land use

This study has shown that most of the respondents had attained education levels higher than primary that is, secondary and tertiary. Although education may not influence greatly the agricultural land use, lack of information on correct practices is a great concern as far as sustainability is concerned.

This finding is pertinent in countries that are less wealthy and whose populations are largely illiterate. This agrees with Vlahov & Galea (2002) who noted that most rapidly urbanizing cities are in less-wealthy nations, and the pace of growth varies among

regions. They also asserted that education levels play a crucial role when it comes to land resource management.

The finding deviates slightly with Cohen (2006), who noted that education influences the employment situation in any country and sometimes dictates on who will be employed in the agriculture sector and in this case urban farming.

5.8 Level of Income and Land Use Patterns

This study has revealed that many urban dwellers derive their income through various occupations. The different occupations have serious implications on land use. The larger the population that is employed in service sector that is, with white collar jobs, the less the impact on land use patterns. Likewise the larger the population that is solely employed in farming sector, the greater the impact on land use patterns.

This finding agrees to some extent with Tabatabai (1993), who noted that most of the food consumed in cities is purchased and 60 - 80% of the incomes is spent on food. More so, majority of the urban dwellers are employed in sectors where wages are low with precarious working conditions (Maxwell et al, 1999), which may trigger land use pattern change in a bid to complement food source via farming.

5.9 Changes in Farm Output and the Effect on Livelihoods

The study has revealed that changes in farm output have resulted largely from increased floods followed by reduced vegetation and water pollution. In summary, there is reduction in ecological services. This finding agrees with NEMA 2001 and Matagi 2001 who asserted that population increase and the corresponding urbanization in Kampala are responsible for increased demand for land and therefore land use change. They further noted that unsustainable utilization of natural resources within Kampala; result in environmental degradation through solid waste accumulation, wetland degradation and water pollution that ultimately lead to reduced ecological services from the natural environment of which urban farming in this case is part and parcel.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.0 Introduction

6.1 Summary of Findings

This study which was conducted in Kawempe Division, Kampala District has shown that the different development activities have had far reaching impacts on agricultural land use in the area.

The various activities, that is, human settlement, farming, recreation and industrial activity all have serious negative significant impacts. These include: increased floods that don't favour farming, pollution such as from industrial activities and above all decreased land available for farming.

Industrialization was noted as the leading cause of urbanization in Kawempe Division and this alone has associated changes in land use. First of all, construction of industries reduces on the available land for farming as most of these constructions usually consume huge chunks of land.

Secondly, most of the industries dispose their wastes into the environment and under this, there is change of land use as the land that could be used for recreation is usually polluted and eventually loses its inherent value. In summary, urbanization converts agricultural land use both to a built up area and an industrial area as different land uses.

Concerning the factors that lead to urbanization in Kawempe Division, this study has shown that industrialization coupled with the increased rates of rural urban migration are the leading factors for the increased urbanization in Kawempe.

Finally regarding the land use practices, animal farming has been found out to be the leading practice following by crop farming and poultry farming being the least.

6.2 Conclusion and Recommendations

This study demonstrated when there is rapid urbanization, what follows is shortage of land for development. The characteristics of urban growth such as fast switch from certain economic activities like agriculture to others like commercial requires increase land for investment. In response to increased demand for land, users compete for the most accessible locations. In an urban setting the highest intake of land goes mostly for residential use. Although urban expansion cannot be stopped, with proper management and planning it can be restricted and directed in a desirable and sustainable way, protecting fertile agricultural lands.

As such, realistic, long-term planning goals that take the benefits and drawbacks of agriculture into account are vital. Saving agricultural lands may be achieved through a comprehensive system of land use, economic policy, and political strategies. Land use policies are an important component of this strategy in that they save the actual lands, separate incompatible land uses, give farmers the opportunity to continue farming even as development pressures increase, provide economic incentives to remain in the agricultural industry.

The strategies recommended below must be utilized within the context of a comprehensive planning system and recognition of current urban uses and how the developing urban area affects agricultural land use.

Such broader efforts should be accompanied by efforts to adopt land use and zoning regulations;

Land use planning is one tool that can be paired with other strategies to help save vital agricultural lands, so that the benefits of farming can be realized in our communities for the future. In addition, strong emphasis must be placed on the role of zoning restrictions as centerpiece of land use regulations. Zoning involves designation of land to different related land uses and the regulation of the use of the land in those areas. It is sometimes used in tandem with regional urban containment planning. Agricultural zoning be done with the aid of Geographic Information Systems (GIS). This will entail mapping land for

urban agriculture, for registration purposes and for improving land use monitoring and evaluation. Utilization of GIS in conjunction with remote sensing is appropriate for looking at urban and agricultural land conversions because of variability between the land cover textures of open space, rangeland, farmland and urban areas (Warner, 2005). It should however be noted that local governments cannot, adopt land use and zoning regulations that infringe on private property rights; therefore, a number of legal issues must be considered when developing an agricultural preservation strategy.

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APPENDIX I: Semi-structured Interview guide

Date of interview

Dear Sir/ Madam,

I am a student in my final year of study pursuing MSc. Degree in Development Management, University of Agder, Norway. I am undertaking a research study entitled: **The Impacts of Urbanization on the Agricultural Land Use**, Specifically looking at Kawempe division in Kampala. I identified you as some of the respondents and hereby kindly request you provide answers to the questions as honestly as possible. Please note that the researcher respects your privacy and will therefore not share the information you provide with any person or organization without your consent.

Thanking you for your cooperation.

.....

Harriet Namara

RESEARCHER

SECTION A: INTRODUCTION

- 1 Name (Optional).
- 2 Sex
- 3 How old are you?
- 4 Marital status (i)
Single (ii)
Married
(iii) Widowed (female or male headed household) (iv)
Any other
- 5 How many people are you in your household?
- 6 What is the level of your education?
- 7 What is your economic activity?
- 8 How long have you stayed in this area?
- 9 Have you noticed any environmental or societal changes since your stay here?
Yes..... No.....
- 10 If yes, explain how?
.....
.....

Section B: Effects of urbanization on the agricultural land in Kawempe

- 10. How long have been in Kawempe Division?
- 11. How do you compare the surrounding environment(in terms of industries, number of people in neighborhood etc) from when you migrated to this area to what is happening now?
- 12. Have you ever been involved in any urban farming?
- 13. Have you had any changes in the out put since you started?
- 14. What has been the main cause of these changes?
- 15. How have the changes affected how hold income

Section C: The current land use practices in Kawempe

16. Which agricultural practices are you involved in?
17. Why are you involved in such practices?
18. How has the growth of towns been responsible for such practices?
19. What are the positive and negative effects of the current land use practices?
(Environmental, social and economic)

Section D: Effects of urbanization on the local farming household?

20. How has the growth of towns affected you or supported your household?
21. Which of the following development activities are undertaken near your residence?

Agriculture
Commercial developments
Residential developments
Educational institutions
Recreational facilities Industrial
developments
Others (please specify) -----

22. Which of the activities is expanding more rapidly in this area than others?
23. Why is it increasing more rapidly than the rest?
24. What are the impacts (positive and negative) that are being brought about by the increase in this kind of development?
25. What crops are currently being grown in your neighborhood?
26. What is the average size of farms that are located in your area?
Small Medium
Large

SECTION E: Land Owners

27. How big is the land that you own that is located within Kawempe Division?
28. What is your main source of income?
29. What part income is generated from agriculture?
31. Do you get enough money from agriculture to cover your basic needs and also be able to save some?
32. Do you plan to continue using this land for agricultural activities in the next 5 –
10 years?

33. If no why?

SECTION F: Local Leaders

- 34. What is the proportion of the people in this area that are involved in agriculture?
- 35. What is the proportion of the indigenous people to immigrants that are living in this area?
- 36. What is the major attraction of the immigrants to this area?
- 37. What is the major effect/impact of the immigrants to this area?

SECTION F: Land Management Measures/Techniques

- 38. What has been the major problems faced in carrying out urban agriculture?
- 39. What do you think can be done to improve on your agriculture output?
- 40. Give any suggestions on how you can be helped to increase on your household Income

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