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The Political Ecology of unplanned land use changes in Kampala City, Uganda. A case of  
selected parishes of Kawempe Division

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## **Dedication**

I dedicate this thesis to my family members most especially my beautiful wife Catherine, our two adorable daughters Winsome and Wendy and my Mzee Deodati. Your endless support has been the source of my inspiration to walk and finish this two year education journey. If it wasn't for you, honestly, I wouldn't have made it this far. May God bless you all and may He continue to bless me.

Thank you very much



## **Abstract**

Kampala City is undergoing massive unplanned urban land use changes caused by political, social, economic and environmental push and pull factors. Both local and transnational companies are rapidly locating in Kampala due to its emerging markets for produced goods and services, cheap labor costs, tax holidays offered by the government to encourage foreign investments and other economies of scale. Furthermore, rural-urban migration and high birthrates result in rapid urban population growth which influences the land use in the area. Increasing demand for urban land has led to land scarcity and maximum utilization of any available land.

This thesis aimed at exploring unplanned land use changes in some parishes of Kawempe Division in Kampala. The objective was to show how land use has changed in these areas over time, the causes of such changes and the perceptions of unplanned land use changes by various stakeholders. This was done using a multiple methods approach involving GIS, a survey and structured interviews with various stakeholders. The thesis made use of theories within the framework of Political Ecology (PE) to analyse historical, environmental, social, economic and political factors influencing land use and perceptions of land use change.

The study found that land use change in the area was changing in unplanned manner leading to incompatible land use activities in the study area. Wetlands and swamps in the area had for example been increasingly settled, both informally by the urban poor and formerly by industrial and commercial actors. This was seen as problematic in several ways. One is environmental degradation of the wetlands and swamps which are meant for conservation and biodiversity. Another is the risks people who have settled there face in terms of environmental hazards such as flooding, sanitation and disease outbreaks. When it rains for example, the low lying areas, swamps and wetlands flood something that leads to health problems, poor solid waste management thus raising safety and health concerns. Nevertheless, many urban poor see no other alternative than settling in low lands with wetlands and swamps to keep close to the city, commercial and industrial centres where they work. Most people in the study area cannot afford plots of land through the formal land acquisition system. They have therefore created informal settlements and developments where every kind of activity is mixed together on extremely small pieces of land as people try to maximize land use. This has led to tension and social stress between people living in the informal settlements and government agencies such as

the National Environment Management Authority (NEMA) charged with protecting ecological and conservation areas in the country. At the same time, commercial and industrial developers are also increasingly building in the area often disregarding existing Physical Development Plan (PDP) and other land use plans such as detailed plans by Kampala Capital City Authority (KCCA). Both informal and formal land use activities are enabled and supported by political interests, favors and corruption that undermine the implementation of urban land use policies, laws and bylaws thus resulting into unplanned land use changes.

The unplanned land use change was perceived differently by the local community and the technocrats responsible for urban planning. People settled in the area did not see the unplanned land use change as problematic. Where there were issues, they blamed the local government for not prioritizing resources to deal with water, sanitation and waste in the area. In many ways this reflected a concern with the more “brown agenda” in urban planning. The technocrats on the other hand saw the unplanned land use change as very problematic particularly in terms of environmental damage. This points to the wider discussion around on what considerations should take priority and if there were ways for the brown and green agenda to be reconciled when dealing with unplanned land use change.

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## **Acronyms**

CBD	Central Business District
GS	Global South
KCC	Kampala Capital City
KCCA	Kampala Capital City Authority
NEMA	National Environmental Management Authority
PE	Political Ecology
PDP	Physical Development Plan
UBOS	Uganda Bureau Of Statistics



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# Chapter One:

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## 1.0 INTRODUCTION CHAPTER

### 1.1 Overview

Studies in urban land use change have evolved out of efforts to identify, predict and manage the ecologically and environmentally changing urban land use activities such as deforestation, establishment of incompatible land use activities, fragmentation of urban habitats, destruction of ecosystems and changes in vegetation species among others (Olson, 2004). Unplanned Urban Land use changes in developing countries has created environmental changes, modifications in eco-system structures and the loss of biodiversity arousing worldwide public concern. It has also led to socio-economic transformations thus prompting the instigation of laws and policies to guide urban land use activities. Interests in Urban land use studies have of late increased and improved due to availability of remotely sensed data most especially multi-spectral satellite images and facilitated interpretation technology of using Geographical Information Systems (GIS) such as Esri's ArcGIS. This has increased number of studies and projects using land use change analysis (Nunes & Auge, 1999; Olson, 2004; Turner et al., 1995). Building on this work, the research which this thesis is based on had several aims. One was to document land use changes in the study area over time using Geographical Information System tools. Another was to investigate the causational factors for unplanned land use changes in the area. Thirdly, the research aimed at exploring how unplanned land use changes are perceived by various actors involved in the area. The years under study of unplanned land use changes seventeen (17). That is; from 1996 to 2013.

### 1.2 Statement of the problem

The current rapid urbanization trend in developing countries is characterized by increasing unplanned urban growth and sprawl, informal land use developments as well as weak institutions for regulating and controlling urban land use activities. Unplanned land use change which refers to establishment of uncoordinated and incompatible land use activities on land is one of challenges facing developing countries. This is because unplanned environment makes it difficult for the local authorities to easily provide social services such as schools, makes it difficult to put in place development infrastructures such as roads, and last but not least results into serious health and environmental problems such as disease outbreak resulting from too much human

congestion and flooding because of occupying low-lands. For example, in the whole of Kampala City, only 55% of the total population is supplied by piped water out of which only 9% is connected to sewage system as argued by (Haruna et al. 2005). One of the reasons for this low water and sewage distribution is because the area is not planned making it harder to extend these services to some areas and connect interested individuals. Doing this would mean demolishing some of the already established property such as houses which have serious compensation implications and meet resistance from people. Unplanned land use changes in Kampala City are so dynamic and spontaneous thus leading to development of haphazard and incompatible urban land use activities. Haphazard land use activities means disorganised land use activities in terms of their location whereas incompatible land use activities refer to those activities which do not support or relate to each other but occupy the same land.

Unplanned political, social, economic and environmental factors have resulted into these unplanned urban land use changes not only in Kampala but also in other cities of developing countries - Global South. However it should be noted that both urban land use planning and lack of it serve the interests of different groups of people. For example, before the eyes of urban planners, managers and technocrats, unplanned environment is undesirable situation in cities. This is because a planned environment makes it easy to manage the city in terms of social service provisions and related urban development. On the other hand, unplanned environment is a blessing in disguise to the majority of urban poor not only in Kampala but also in most of other cities of developing countries. This is because planning increases land and housing prices which the poor can't afford; it also pushes them out of environmental sensitive areas. It further abolishes informal settlements thus destroying accommodation of the urban poor who mostly stay in such areas that are affordable to them. The population pressure has led to excessive pressure and stress on land and other natural resources such as safe water, swamps, wetlands and flood plains within Kawempe Division. Land and other resources are constant yet human population is increasing daily thus fragmenting it and turning current land uses into new ones prior to any form of physical planning.

Davidoff and Reiner (1962) defines planning as a process for determining appropriate future action through a sequence of choices. This therefore means that before an activity is conducted or established on land, orderly sequence of actions needs to be thought about to ensure efficiency, harmony and compatibility with the surrounding land use activities. This leads to sustainable land use where land is used in a way that does not destroy it for the future generation.

Sustainable development operates on the core principles which include ecology, economy, politics and culture - social relations (Hopwood et al. 2005; Smit & Pilifosova, 2003). The effects of unplanned and uncontrolled land use activities and changes in most of developing countries have resulted into serious sanitation, environmental and health issues. These include careless dumping of household garbage and hazardous pollutants mainly from industries and poor sanitary living condition due to poor solid waste management methods and lack of necessary handling equipment (*see Figures 4, 11-16*). Addressing these challenges require appropriate approach. McGranahan and Satterthwaite (2000) approach the environmentally related problems from the “*brown agenda*” perspective. This is an approach focusing on social aspects of environmental problems and strategies. Most of environmental problems affect the marginalized individuals and groups of people with low incomes (urban poor).

### **1.3 Research Theme and research objectives**

The theme of the study was “*The Political Ecology of unplanned land use changes in Kampala City, Uganda. A case of selected parishes of Kawempe Division*”.

The overall research objective was “*to analyse the causes of unplanned land use changes in Kawempe Division and explore how the change is perceived by different stakeholders*”.

The specific research objectives included;

- i. To map land use changes in the study area using GIS,
- ii. To find out the causes of unplanned land use changes in Bwaise I, II, III, and Makerere III parishes, parts of Kyebando and Mulago III parishes of Kawempe Division from 1996 to 2013,
- iii. To find out stakeholders’ perceptions on unplanned land use changes in Bwaise I, II, III parishes Makerere III parish, parts of Kyebando and Mulago III parishes -Kawempe Division.

*The first objective was to map land use changes in the study area using GIS.* Land use change in this context was taken to mean human modification of earth’s surface through different human activities. Clearing a forested land in favor of a housing estate or industrial and commercial developments is an example of land use change. The aim of this exercise was to explore how land use activities in Kawempe Division had changed over time and how for example wetlands, swamps and forest areas had been reduced in this process.

*The second objective was to find out the causes of unplanned land use changes in the study area.* This meant investigating political, social, economical and environmental factors causing

unplanned land use changes in the area. Unplanned land use changes in this context refer to the establishment of uncoordinated and incompatible land use activities on land. The unprecedented rate of change where the establishment of new land use activities replaces the old and existing ones in haphazard, incompatible and unsustainable manner is what is meant by unplanned land use changes. However, it is not necessarily that unplanned land use change is bad or good. This depends on varying perceptions which lead to the third study objective which seeks to *find out people's perceptions on unplanned land use changes*. Perceptions in this context are taken to mean different views and opinions held by different people regarding unplanned land use changes in the area. The views of local community, technocrats and relevant literature were considered in addressing this research objective.

#### **1.4 Study area**

The research was conducted in Kampala, the Capital City of Uganda. Uganda is one of the five East African Countries which include Uganda itself, Kenya, Tanzania, Rwanda and Burundi. Kampala Capital City (KCC) is the fountain of administrative, political, commercial, social and environmental activities in Uganda. Kampala City covers approximately 190km<sup>2</sup> (Matagi, 2002) with five divisions which include Central, Kawempe, Rubaga, Nakawa and Makindye Divisions. The population of KCC varies; the day population - approximately 3.15million people is far more than the night population – approximately over 1.7 million people (Nyakaana et al. 2007; UBOS, 2012) – (see Table 2).

The original plan was to take and consider the whole of Kawempe Division as a study area. However, this was not realistic given resource and time limitations thus narrowing down the scope of study area operation. Therefore, the study area was carefully selected after considering the available resources, time and the area where unplanned land use changes were more pronounced, rapid and dynamic in Kawempe Division. Furthermore, I chose this area because it is one of dominant centres of social and economic activities in Kampala City. The study area was therefore narrowed down to few selected four parishes which included Bwaise I, II, III and Makerere III parishes and parts of Kybando and Mulago III parishes of Kawempe Division which are centres of rapid social and economic activities. This helped the researcher to conduct a much more detailed study.

## **1.5 Relevancy of the study**

One of the ways of understanding the dynamics of urban areas in developing countries is through urban land use change analysis (J. Maitima et al., 2004; J. M. Maitima & Olson, 2001; Olson, 2004). One of the ways of analyzing these dynamics usually involves interpretation of geographical / spatial information from aerial photographs, satellite images, ground measurements or maps (Gao et al., 2011). By interpreting geographical data from different time periods remarkable changes in land use or a particular area can be determined. Linking land use data and activities to other spatial data such as roads, elevation, administrative or physical features in a Geographical Information System (GIS) allows for enhanced interpretation of urban land use change information (Olson, 2004, p. 2). Urban land use change is the pure reflection of the interplay of socio-economic, environmental and political factors in an urban setting. Analysis of urban land use change is of great importance because it provides information on; wide societal forces leading to physical urban transformation, degradation, loss of biodiversity and further provides information on the type and the scope of urban land use changes-both planned and unplanned.

The study aimed at unpacking the factors behind rapid unplanned land use changes that occur mostly in cities of developing countries such as Kampala in Uganda. Rapid land use changes in most of Global South cities are not guided and thought about seriously before their establishment. That is; not planned for thus resulting into the emergence of incompatible land uses within the cities. It is against this background that this study sought to mainly use the Political Ecology Framework (PEF) to investigate the reasons for these radical urban land use changes. GIS was used as a key method to find out how, where and when these changes took place. The study findings could help city dwellers and managers adapt to better and sustainable urban land use choices and decisions.



## Chapter Two

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### 2.0 URBANIZATION AND URBAN LAND USE CHANGE IN UGANDA

#### 2.1 Introduction

In Uganda and elsewhere in developing countries and the whole world at large, urbanization levels are very high (Angotti, 1993). Most of these emerging towns and cities in developing countries are unplanned and therefore experience uncontrolled urban land use changes. Over the last twenty (20) years, most parts of the developing Countries have experienced tremendous urban growth. It is estimated that three (3) billion people world over now live in cities and towns. However, this rapid urban growth in most of developing countries like Uganda is putting a lot of stress for most cities to provide adequate social services for their citizens (Cohen, 2006).

#### 2.2 Urbanization and Urban land use changes

Urbanization occurs when large numbers of people become permanently concentrated in relatively small areas, forming cities or towns. Montgomery (2008) discusses several causes or urbanization and urban developments. He urges that cities and towns grow as a result of natural growth through higher birthrates against death rates. 70% of urban growth is due to natural growth whereas 40% is due to is due to migrations mainly rural-urban migrations due to the number of socio-economic, political and environmental pull and push factors. Cohen (2006) gives some of the factors that lead to rural-urban migrations which include; *higher wages, availability of employment opportunities, disasters, social stigma, security & insecurity, improved healthcare, social and infrastructure services, land degradation among other factors.* A country is considered to be urbanized when over 50 per cent of its population lives in the urban areas. Urban agglomeration improves productivity and promotes economic growth (Uganda, 2010). Urban areas are dynamic and represent growing centers of industry, financial services, trade, education and other services. Urban people enjoy better incomes, a higher life expectancy and tend to maintain smaller families. As they grow, urban areas become centers of entrepreneurship and innovation that attract talented and skilled workers. However, if not properly planned and controlled, urbanization can cause congestion, environmental degradation, housing shortages, and formation of informal settlements and slums.

Rapid urbanization therefore comes with associated urban land use change problems. Land use change can generally be defined as the alteration of the physical land surface and biotic component on it (Narayanan & Hanjagi, 2009). In case of my study area (*selected parishes of Kawempe Division-Kampala City*), rapid urbanization came with massive unemployment, poverty, inadequate health care, poor sanitation, slums and informal settlements and above all, unplanned urban land use change which has led to environmental degradation (UNFPA., 1993).

### **2.3 Marginalization**

Olson (2004) describes marginalization as the process leading to simultaneous impoverishment of people and land degradation. This is majorly applicable in areas of environmental degradation and where most people face economic hardships with little social and political power and unable to access resources. Majority of the people in Kawempe Division are poor leaving below poverty line and thus have limited social and political access to power and this little access to land in better areas. As a result most of these are forced to occupy low lying and swampy areas prone to flooding and diseases. Uganda consists of a large number of diverse ethnic and languages. Uganda's governments right from the colonial era to date have used this diversity to divide and rule the people. This has kept some of the ethnic groups under marginalization from power, better educational services, resources and economy no matter where such people go or live. This has led to persistence in regional conflicts, uneven development, imbalanced political participation, inadequate healthcare and poor education provision (Baker, 2001). This explains for the most of the poor people in Kampala stay in environmentally complex areas (Swamps & wetlands, rangelands, forests, etc) not because they wish so but because they cannot afford decent and better places. Furthermore, there is serious marginalization of the environment and natural resources in Uganda which caused undermining of the economic base and thus entrench poverty in both rural and urban areas (Mugenyi, 2011). Environmental degradation and mismanagement of natural resources has reduced urban agricultural production which has caused food shortages and health related problems in the area which mainly include disease break down, emergency of informal settlements and business activities.

### **2.4 Effects of urbanization and unplanned urban land use changes**

Rapid and unplanned for urbanization mostly in developing Countries put excessive pressure on infrastructure and basic services like water, sanitation, electricity, healthcare and

waste disposal facilities among others (Esbah et al. 2007). This is because local governments in the developing countries lack adequate resources (personnel and financial) to ever increasing number of people (Cohen, 2006; Montgomery, 2008). This ends into unplanned urban land use activities such as slum developments, encroachment on environmentally sensitive areas, and emergency of various economic activities, political and social struggles among other challenges. Large concentrations of people require huge amounts of natural and other resources. This means cities need more space than what they literally seem to be occupying in order to survive – urban ecological footprint (Safriel, 2007). Unplanned land use changes as a result of uncontrolled urbanization and low absorption capacities are so much related to urban poverty. Chen and Ravallion (2007) argue that urban poverty are becoming more and more urbanized. Their study revealed that despite the fact the majority of the poor being in rural areas, the incidence of the urban poverty in comparison to the total poverty incidence have increased with urbanization. Urban poverty has direct linkage with food insecurity as people rely on money for food and do not have the same social networks. Furthermore, the lack of housing provision and the malfunction of housing markets are other factors that make people settle in these places. Realistically, they do not have access to other types of houses not only because of poverty but also because of complicated procedures.

## **2.5 Brief history of Land use change in Uganda**

Land use change is not a new phenomenon in Uganda. In early 1940's for example the then British Colonial Government encouraged people to reclaim and drain swamps containing *Cyperus papyrus* and other swamp vegetation to increase land for Agriculture in Western parts of Uganda (Carswell, 1996). Many towns in Uganda as in some other parts of the world grew historically out of some natural advantages in transport or raw material supplies (Cohen, 2006). The study area grew as a result of historical events where by this area was the King's hunting area prior to the coming of the colonial rule. During the colonial rule, Kawempe division was made industrial area which attracted many low income earners to settle in the area so as to get employment opportunities in the factories.

Agriculture is the major livelihood activity that support majority of Ugandan in Kampala both in rural areas and the urban and peri-urban areas. However, land for Agriculture in both urban and peri-urban areas is getting scarce due to increase in human population and introduction of other income generating activities which mainly include industrialization and large shopping malls. In the absence of alternatives, most upland areas have been exhausted leading to

encroachment in wetlands, swamps and other environmentally sensitive areas for agriculture and human settlements (Mafabi, 2000). Most of the crops grown in wetlands are both for sale (*economy*) and for subsistence (*social*). Poor management practices (*political*) coupled with increased demand for cash (*economy*) has led to the opening up of more wetlands and encroaching on other environmentally sensitive areas (*environmental*). The economic potential of wetlands arises from the fact that they are a vital water resource and can also have high productivity if properly managed. However, there is rising concern about the long-term viability of the present use of wetlands, the extent to which communities benefit from the utilization and the nature and consequences of the environmental impacts of encroachment on these environmentally sensitive areas (Mafabi, 2000). Since environmentally sensitive areas such as swamps, wetlands, steep slopes and valleys among others are common or public property resources, they are areas with open access. This makes them easily encroached on by the community looking for shelter, agriculture land and by those evicted from land elsewhere. However, recent trends involve individual ownership and leases. This has resulted into land use changes in urban areas.

## **2.6 Key land use stakeholders and players in Kampala**

These are agents of land use change in the study area as they control and influence urban land use activities in the area. Furthermore, these formed a major component of respondents on my research question on perceptions of unplanned land use changes in the area. There is a complex key stakeholder and player framework operating in the area in relation to land use control and management. These stakeholders and key players form the umbrella under which city management and control operates. These include the government both the local authority (KCCA) and central government, Land lords (*Buganda Land Board-BLB, Kampala Archdiocese, Institutions, and private land owners*), the Technocrats (Architect Registration Board, Engineers, Urban and Physical Planners, Environmentalists among others), Property Agents and the local community. These key stakeholders are charged with the prime role of ensuring that land is utilized in a planned and coordinated manner. However, is not always the case as it will be seen in this and subsequent chapters, due to political, social and economic constraints.

## **2.7 Land use policies and laws in Uganda**

Several policies have influenced land development and utilization patterns in several parts of Uganda. Land is a fundamental factor of production and livelihood and indeed it is Uganda's

prime and critical asset in development. Kawempe Division has a land mass of 6.07.km<sup>2</sup> and the population of approximately over 152,600 (UBOS, 2012), and non-compliance with land use policies has been a big problem in the area.

### **2.7.1 Policies**

a) **National Land use Policy:** In May 2007, Uganda through the Ministry of Lands, Housing and Urban Development (MLHUD) launched its first ever National Land Use Policy (MLHUD, 2007). The main theme of its policy was “*Modernization through planned land use, urbanization, industrialization and developed services sector*”. The main purpose of this policy is to provide a framework for sustainable land utilization to enable the Ugandan Society to move from a largely agrarian society to a modern, industrialized society with a developed sector services. According to this policy, land and land-based resources form the back bone on which most Ugandans depend for food, shelter and employment opportunities (***social & economic factors***). The policy further emphasizes the careful assessment activities that are already conducted or are intended to be conducted on land so as to ensure proper land use and land use change (***political power***). However, the same policy is quick to note that Land in Uganda is undergoing continuous change. The forces being this change include complex mixture of social, physical, economic and political factors magnified by high rate of population growth and urbanization.

b) **Urban Land use Policy:** Currently the Ugandan Government of Uganda is developing the National Urban Land use policy. The first Draft was published this year (January 2014) and is yet to be finalized. The main aim of this policy is to provide a framework to guide the rapid urbanization process in Uganda by ensuring the orderly growth of urban centers. The policy provides ***political and power*** direction for government agencies and other stakeholders to plan, implement and effectively manage urban growth. In addition, the policy is intended to tackle ***social*** problems associated with the rapid urbanization which include: high population growth, urban poverty, poor solid waste management, unemployment, pollution, urban crime, and ***environmental*** challenges which include; degradation, urban disasters, housing the poor, congestion, inadequate infrastructure services, and poor urban governance.

c) **National Physical Planning Standards and guidelines:** The Government of Uganda in 2011 through its Ministry of Lands, Housing and Urban Development (MLHUD) launched the land use development standards for the whole country (MLHUD, 2011). The prime purpose of these standards and guidelines are (1) guide physical development, (2) Control the on-going

unplanned urban land use changes which has been responsible for informal settlements and land fragmentations in Uganda's town and (3) to guide the preparation and implementation of Physical development plans with the basic aim of ensuring orderly, coordinated and inefficient developments (p.vi). This is because Uganda is undergoing fast socio-economic transformation and this has come with unseen socio-economic, physical and environmental challenges that require concerted efforts to regulate land use and development in general to achieve sustainable development.

### **2.7.2 Statutory Acts of Parliament**

a) ***The Constitution of Uganda (1995)***: The Constitution of Uganda is the mother of all laws in this Country. In other words it is the supreme law of Uganda and forms the apex activities such as land use activities in Uganda. All policies and statutory Acts of parliament must relate to the constitution. Various chapters of the constitution specify the social, economic, political and environmental factors that influence physical and land use activities in Uganda. Chapter 15 of the constitution protects land and environment, Chapter 11 vests power in local governments to control their own development affairs and chapter 4 offers protection and promotion of fundamental and other human rights and freedoms. Under chapter 4, social and economic aspects are offered through; rights to development, specifying role of people (society) and state (political) in development, protection of natural resources (environment) as well as emphasizing balanced and equitable development (Parliament, 1995a).

b) ***Physical Planning Act***: In 2010, the Government of Uganda finalized and passed the long awaited Physical Planning Act into a law to guide and regulate land use developments in Uganda. This was fully effected when the president of Uganda endorsed the bill into the law on 28<sup>th</sup> April 2010. The Article mainly provides technical framework of guiding urban development from National, Regional up to Local levels of administration (Parliament, 2010b). All urban land use activities and changes must be conducted as per this Act.

c) ***Local Government Act (CAP 243)***: The local Governments Act CAP 243 provides for the system of local governments based on the District, Cities, Municipalities and other smaller towns. Under the District there are lower local governments and other administrative units. The Act provides different functions for different levels of local Government such as Kampala Capital City Authority. Regulation of urban land use activities is vested in the local authorities. The following provisions of this Act are relevant to urban land use activities; land surveying, land administration, Physical & urban Planning and environmental management. Local

Authorities are charged with enforcement of building standards and plans to ensure planned urban land use activities and changes. This Act makes it easy for the local Governments to have their in-puts and ideas incorporated within urban land use plan thus owning these plans for smooth implementation and sustainability.

d) **Kampala Capital City Authority Act:** In 2010, the parliament of Uganda enacted and passed the KCCA Act to specifically manage the City (Parliament, 2010a, p. 6). Part III under the governance of Kampala Capital City section 7 of the Act, specifies political, socio-economic and environmental functions of the authority. KCCA is charged with mobilization of local community to pay taxes, protect the environmentally sensitive areas, formulate urban policies and by-laws, carry out physical and urban planning, control urban developments and land use activities just to mention but a few.

e) **National Planning Authority Act:** The National Planning Authority Act (2002) provides for the composition and functions of the National Planning Authority in accordance with article 125 of the Constitution and for other related matters. It provides for operational linkages between the Authority (*Political*) and other bodies (*stakeholders - social*) charged with planning functions including the National physical Planning Board. The Act envisages a wide scope of planning body anchored in the Ministry responsible for Finance and Economic Planning (*economy*). The relationship between this law and the research problem (*unplanned urban land use change*) is that it requires conformity of land use activities to the National Planning guidelines, principles and standards since now the whole of Uganda is declared a planning area. It further ensures National *social* interests; including access to social services and infrastructure to all people Ugandans.

f) **National Environment Management Act (CAP 153):** This is the law that provides for the protection, conservation and sustainable utilization of environmentally sensitive areas in both rural and urban areas of Uganda. National Environment Management Authority (NEMA) which is referred to as the Authority under the supervision of the Minister in charge of the Environment is the principal agency in Uganda for the management of the environment. It empowers the local authorities like KCCA to prepare a National Environmental Action plan after every five (5) years. The Act also mandates every district such as Kampala local governments to prepare a district environmental plan provided under section nine (9) as may be considered by the entity. This law empowers the authority to carry out Environment Impact Assessment (EIA). Therefore all land use changes in Uganda should conform to the set guidelines for protection and

management of environmentally sensitive areas as well as providing the possible strategies for preventing, controlling, or mitigating any deleterious effects in accordance with the set measures by NEMA.

g) **Land Act:** The land Act was passed in 1998 to implement the constitutional provisions on ownership and management of land. Articles 237(8) and (9) guarantee security of occupancy of lawful and *bonafide* occupants of *mailo*, and other registered land and oblige parliament to enact a law regulating the relationship between them and the registered owners of the land they occupy. Parliament was also enjoined to enact a law providing for the acquisition of registrable interest in land by lawful or bonafide occupants. The Act, was thus aimed at regulating land ownership, management and use, simplification of ownership and occupancy systems, and to liberalize the land market. The Land Law clarifies and provides for secure land tenure, providing for government support to support poor people involved in land litigation (*Social*). The Law also provides for the protection of land inhabited by fragile ecosystems (*environmental*). According to this law, the Government or local governments (local authorities such as KCCA) shall hold in trust for the people and protect natural lakes, rivers, ground water, natural ponds, natural streams, and wetlands, any other land reserved for ecological and touristic purposes for the common good of the citizens of Uganda. Any use of land shall conform to the provisions of the law relating to the Physical Planning Act, 2010. The National Environment Statute (1995) and any other law, implying that no person can use his land unsustainably without committing an offence. In effect the Land Law precludes acquisition of land gazetted as protected areas and wetlands and introduces incentives for the better management of land resources by improving security of tenure, and precluding the conditions of open access to land resources through provision for communal land associations to manage the resources. Sections 43, 44 and 45(1) and (2) of the Land Act (1998) Government or local government may acquire land in accordance with the provisions of Article 26 and clause (2) of Article 237 of the Constitution of the republic of Uganda. The Land Regulations (2001) were put in place to operationalize the Land Act. The Regulations give details on how matters such as application for certificate of occupancy, converting leasehold into freehold system, formation of Community land Associations, procedures for paying annual ground rent by bon fide occupants to land lords, etc.

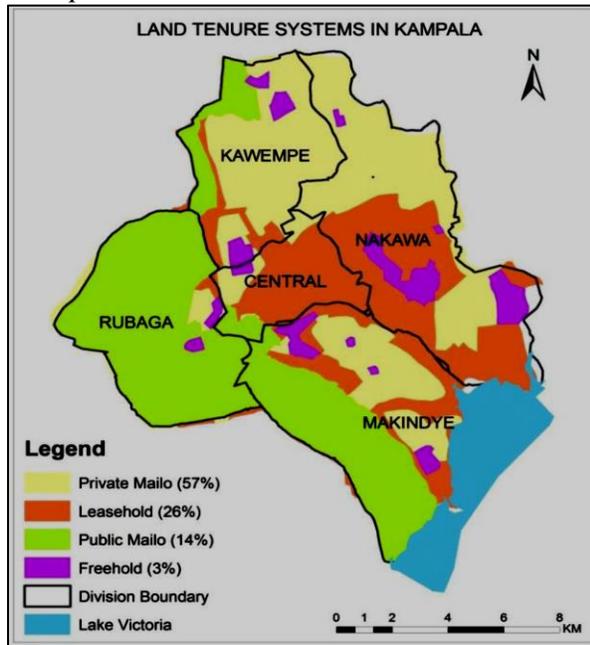
## **2.8 Land Tenure System**

Nyamugasira (1996, p. 347) defines Land tenure as the institutional arrangements (economic, social and political) through which individuals and groups gain access to land. From

1900, many land tenure systems existed in Uganda. The land reforms of 1975 reduced the existing land tenure systems to only two: leasehold and customary tenures.

However, this was only on paper. In fact the four main land tenure systems – mailo, freehold,

*Map 1: General Land tenure systems in Kampala*



Source: KCCA GIS unit 2013

leasehold and customary remained in force to date. Land tenure in Uganda is characterized by a multiplicity of influences regarding to legal, socio-cultural, ecological, formal and informal arrangements. The Constitution of Uganda (Parliament, 1995b) defines the current land tenure system to comprise four systems of land tenure which include; *Freehold, Leasehold, Mailo and Customary*. Most of the land in Buganda region where the study area is located and parts of Bunyoro region is mostly under Mailo resulting from 1900 Buganda Agreement. Most of Mailo land belongs to the king of Buganda known as Kabaka and the absentee landlords. Mailo tenure system has been condemned for making people (about 99% of the population in the area) squatters on their own land (Kayemba, 1995). Therefore, most people lack security of tenure yet the land itself lacks clear management in terms of monitoring and development. This is why such land is at high risk of being grabbed and its residents are easily evicted. The map above shows the general land tenure system in Kampala showing much of land in Kawempe (study area) under mailo system-King’s land. Under the freehold tenure, land ownership and absolute. Individuals have a right to sell or pass on land to their heirs. This is however less spread in most parts of Uganda. Leasehold on the other hand is where an individual is awarded a contract or grant of exclusive rights and possession over an estate in land by the owner of the land. Majority of leasehold titles are granted by the Uganda Land Commission over public land in rural areas and urban authorities over land under statutory leases in their urban areas. This enables the government to maintain some control over the use and ownership of land and property through the imposition of development terms and conditions in the offered leases (Nyamugasira, 1996).

## **2.9 Land grabbing and forced evictions**

Forced eviction is not a recent phenomenon in Uganda. It started way back before 1928 whereby land lords would use rent increments to evict their land tenants thus creating insecurity among the people (Nyamugasira, 1996). Currently a number of people in towns of Uganda and a few more others in rural areas are landless as a result of forced evictions from the land they have occupied for a long time. There are motivations behind land evictions. For example, people in Kampala are evicted from land they occupy because such land is to be developed by establishing new land use activities. Landlords, Buganda kingdom and KCCA often sells and leases out occupied land to developers and investors who then evict people. The evicted poor and land less people find themselves in desperate situation. As an alternative, these encroach and settle in environmentally sensitive areas which include flood plains, swamps and wetland and other illegal areas such as road reserves, railways lines and river banks among others thus establishing new land use activities in new places. However, KCCA and National Environment Management Authority (NEMA) have on a number of occasions evicted people forcefully from the environmentally sensitive areas and the illegal areas which also create new land use changes. As Baker argues, the dispossession and forced evictions is due to the environmental conservation and ecological protection measures of the Ugandan Government and international agencies (Baker, 2001). These forced evictions have caused political, social and economic stress and human-environmental conflicts resulting into brown and green agenda conflicts. For example the eviction of Batwa people from Mgahinga and Bwindi Forests disrupted the Batwa's traditional forest-based lifestyle.

## Chapter Three

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### 3.0 THEORETICAL APPROACH

As described in the previous chapter, rapid urban land use changes have taken place in Uganda over the last decades due to economic reforms that started with her independence in 1962 from the British Colonial Government. Urban sprawl has been considered as one of the most direct physical form of land use change in cities of the developing countries (Gao et al., 2011). With a population of over 152,600 people confined within 4.2km<sup>2</sup>, the study area is one of most densely populated parts of Kampala City in Kawempe Division (UBOS, 2006b, 2012). Much as the area appears economically vibrant, it suffers from many problems that almost every urban town in the developing countries faces. Poverty, marginalization of the poor, pollution, uncontrolled birth rates, in-migrations, numerous environmental and ecological problems, unplanned land use changes, land tenure insecurity and inappropriate urban land use policies are among other serious problems affecting the area most of the people in Kampala. This thesis used the Political Ecology Framework (PEF) not only to analyze the causes of unplanned urban land use changes in Kampala in relation to political, social, economic and environmental factors but also to explain the differing perceptions of unplanned land use changes by various stakeholders using the lenses of the green and the brown agenda. The research adopted the Political Ecology Framework as a major analytical approach for the study. The framework will be supported by elements from Hybrid Land Use and Land Rent Theories relevant for the research problem.

### 3.1 Political Ecology as a Framework

The field of political ecology has produced a number of high quality but dispersed studies that have significantly contributed to our understanding of nature and society relationships from a geographical perspectives (Zimmerer & Bassett, 2003). This chapter therefore, presents these relationships within a dynamic urban setting of the developing countries. It is widely accepted that political ecology is about social and political conditions surrounding the causes, experiences and management of environmental problems (Blaikie & Brookfield, 1987; Forsyth, 2003). The analysis of urban land use change in developing countries is greatly enhanced when the current situation (*Economic, Political, Social and Physical*) is examined at several scales.

Political ecology framework looks at the environmental problems such rapid urbanization amidst unplanned land use changes, population explosion, pollution and degradation among others that face the developing countries like Uganda. This is not necessarily as a reflection of

national policies or local economic failures but rather as a manifestation of broader political and economic forces (Bailey & Bryant, 1997). It is obvious that in addition to local and regional factors, urban forces that alter urban environment are further associated with world wide spread of capitalism. Political ecology framework also emphasizes the ways in which the states in developing countries intervene in economic and social activities to promote environmentally destructive activities through unplanned urban land use changes (Bailey & Bryant, 1997). Political ecology is literally about resource use, control and power / authority within a particular geographical scope. Using this framework therefore enables the researcher to identify power relations and influence over urban resources such as land. Therefore, by looking at these policies and urban regulating laws within this framework can help one understand the power relations and how urban land use is governed and controlled, how land is acquired or allocated and who has control over its allocation which lead to urban land use change

PEF evolved out of efforts to understand, predict and manage ecologically damaging urban land use changes such as deforestation and degradations. The framework was further meant to inform policy makers of the complexities surrounding environment and development thereby contributing to better environmental governance. It was further meant to understand the decisions that communities make about the natural environment in relation to their political environment, economic pressure and society regulations. It was also meant to look at how unequal societies affect the natural environment especially in the context of government policies. This is because of their global impact on biodiversity, carbon storage, environmental and economic resources (Lambin et al., 2001). Many approaches attempt to understand, manage and regulate these factors but PE tries to see how these are linked to politics and particularly politics of marginalization and inequality. This framework helps to identify complex drivers, temporal patterns of society-environment change that underlie the urban land use changes. Temporal aspects of the drivers include long-term processes such as population increase or economic development and shocks such as policy mandates or seasonal changes and natural disasters that trigger new directions and rates of urban land use change (Robbins, 2012). This approach places varying emphasis on the role of individual actors versus the broader socio-economic context (structure versus agency), the importance of population dynamism or technology versus policy or other factors and the effect of differential power and access to resources (Ewel, 2001; Peet & Watts, 2002; Watts & Peet, 1996). The phrase “*Political Ecology*” combines the concerns of ecology (environment) and a broadly defined political economy. Together they encompass the

constantly shifting tension between society and land-based resources within classes and groups within society itself (Blaikie & Brookfield, 1987; Walker, 2005). This framework emphasizes that urban land use change results from interactions between society, economic performance, social and political processes as well as the physical environment. One of the aims of political ecology is the identification and emancipation of the disadvantaged within a given society (Blaikie & Brookfield, 1987; Zimmer, 2010). It is also concerned with conservation of the environment (Peet & Watts, 2002). According to (Heynen et al .2006) urban political ecology is a project intending to investigate the dynamics which produce certain socio-economic conditions within a given urban setting. This is through asking who produces what kinds of conditions and in whose interest allows formulating claims towards a more democratic handling of environmental problems. The framework does not only represent power relations between human actors but also the relationship and interactions with non-human actors- nature. This therefore presents a clear societal and social relationship with nature. Societal relationship with nature is the expression of social systems and changes in political regime which modify society's interaction with the environment (Heynen et al., 2006).

### **3.1.1 Brown and Green Agenda Equities**

There a number of brown and green agenda equities that are standpoints points with the Political Ecology Framework that particularly focus on urban environmental challenges. Graham Haughton identified five interconnected brown and green agenda equity principles that apply to environmental problems in urban areas and which can help to clarify the different perspectives from which the proponents of these two agendas can work (McGranahan & Satterthwaite, 2000; Pugh, 2013). These conflicting equities include are;

- i. *Intragenerational equity*: Which emphasises the fact that all urban dwellers have needs for healthy and safe living and working environments, the infrastructure and the services they require to meet their urban livelihood opportunities.
- ii. *Procedural equity*: This equity ensures people's rights to among other things a safe and healthy living and work environment are respected that they are fairly treated and that they can engage in democratic decision-making processes about management of the urban Centre in which they live.
- iii. *Intergenerational equity*: This includes a concern that urban development does not draw on finite bases and degrade ecological systems in ways that compromise the ability of future generations to meet their own needs.

- iv. *Transfrontier equity*: This aims at preventing urban consumers and producers transferring their environmental costs to other people or other ecosystems for instance disposing of wastes in the region around the city.
- v. *Interspecies equity*: This ensures that the rights of other species are recognized.

Working from the point of view of different aspects these two agendas priorities allows a better understanding of how progress on both agendas can proceed and how potential environmental conflicts can be minimized. This will further provide a common language for addressing both sets of concerns and potentially a common goal of reducing inequity in any urban environment. It also helps to identify the conditions under which pursuing one agenda is likely to undermine the other – if for example, the needs of low income groups are ignored, they are likely to bear a disproportionate burden of any efforts to protect future generations and vice versa.

### **3.2 Relevancy of Political Ecology Framework (PEF) to the research problem**

Using a Political ecology framework as a theoretical entry point is relevant to this kind of research problem because of its focus on the relationships and the influences of policies, society, economy and environment on the urban environment and on underlying factors which include poverty, marginalization and globalization which are evident within Kampala City. PEF helps us to show how costs and benefits associated with environmental changes and preservations are not distributed equally. Political, social and economic differences account for this. When for example the study area floods, it is the poor and marginalized people who mostly suffer loss of property and lives because these stay in flood prone areas and their nature of accommodation facilities cannot protect them against such hazards as compared to the same rich people who have constructed stronger houses which offer protection and security to them in the same area. The people settled in hazard prone areas are also suffering if they are evicted from this land sue to it being disaster prone or environmentally sensitive and conservation area. This un distribution of both environmental costs and benefits has as argued by Bryant and Bailey has widened the social and economic gap between poor and rich people not only in the study area but also throughout Kampala and is most likely the case in most cities in developing countries. Bryant and Bailey further point out that the widening social and economic inequality among people has serious political implications in terms of unbalanced power relations which is now evident in the study area (Bailey & Bryant, 1997, p. 28). Unequal power relations relate to and result into conflicts over access to and use of resources such as land and conflicting discourses and

knowledge claims about the environment (Bryant, 1991). Lastly PEF attempts to provide critique as well as alternatives in the relationship between the environment and political, economic and social factors. This is so because people's actions in a society are largely influenced by the environment around them (Robbins, 2004, p. 12).

### **3.3 The Political Ecology and Land use Change**

The conceptualization of society (human)-environment interaction reflected by the political ecology framework shows four (4) main factors that have an influence in urban land use change. These include government policies, economic forces of demand and supply, social influences and environmental or ecological factors. These directly influence and trigger off urban land use changes within a given urban area.

#### **3.3.1 Environment**

For many, political ecology became a recognized field of environmental studies in 1980s. Its emphasis on politics is as a result of interaction of political economy and several existing fields of environmental studies which include cultural ecology, human ecology and critical human geography all of which shape urban environment and influence urban land use activities (Agrawal, 2005, p. 302; Bailey & Bryant, 1997, pp. 1-10; Watts & Peet, 1996, p. 4). The relationship between the state (power) and the local people, transform nature into environment. Agrawal points out that the state and the local community entered into a partnership to save and protect the environment by assessing and evaluating Indian forests and then defining appropriate mechanism of governance (Agrawal, 2005). Some authors have approached political ecology by looking at environmental problems as the interaction of biophysical processes, human needs and wider political systems (Forsyth, 2003)

#### **3.3.2 Economy**

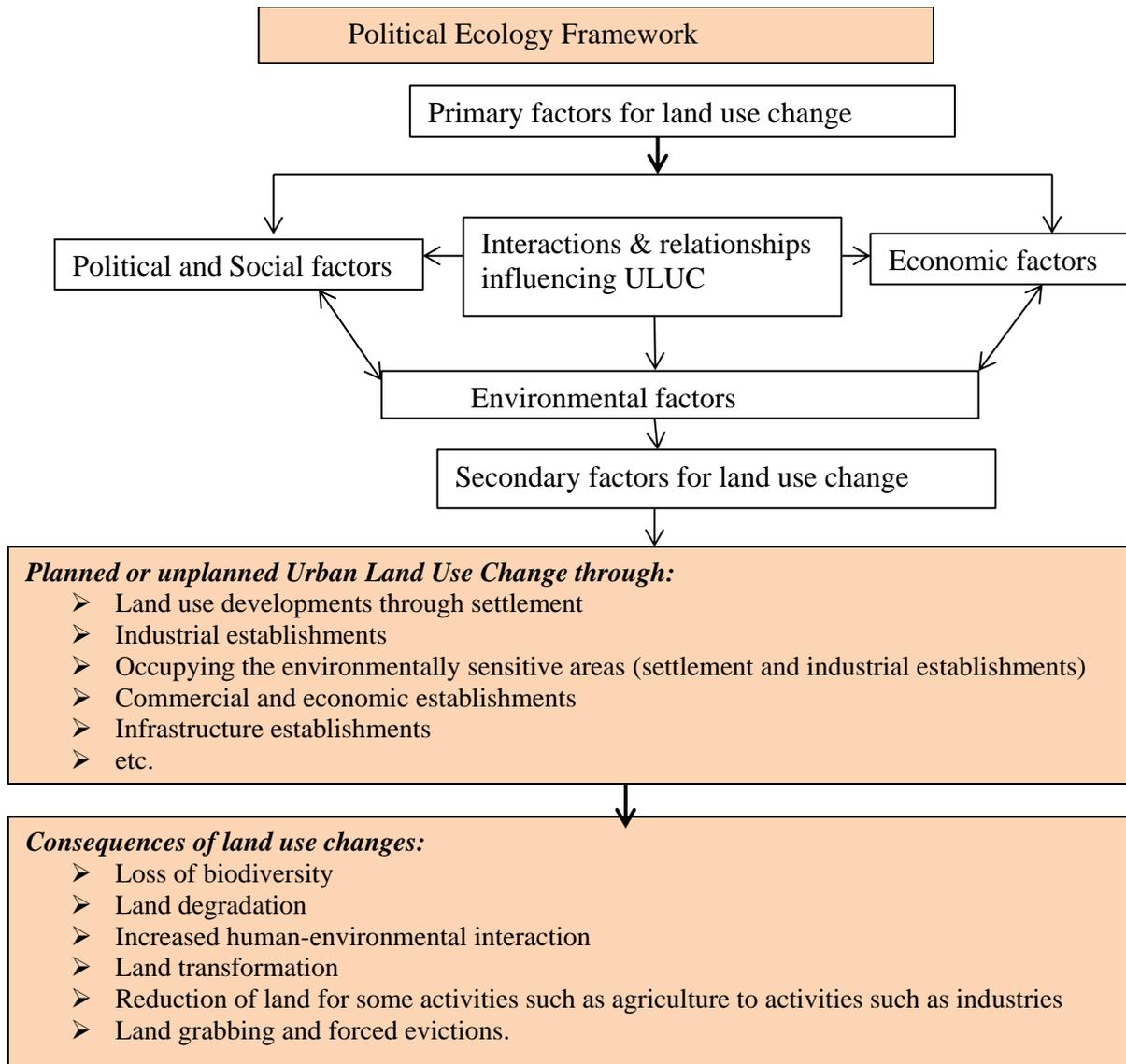
Agricultural economists have explained urban land use change as due to individuals responding to market opportunities affecting the potential value of land's production (Ewel, 2001). The establishment of business entities such as shopping malls, super-markets, markets, industries and factories among others are profit driven. Factors such as cheap land, strategic location in terms of market and labor, less strict laws and low production costs are prime factors considered before they are established. Developing countries like Uganda have these conditions which encourage agglomeration of industries and other economic establishments in unplanned manner. (Forsyth, 2003) suggests that there are discussions on capitalism as a primary cause of

environmental degradation. These discussions look at human nature as being dominated by instrumental rationality and exploitation of modern industrial developments.

### **3.3.3 Political and Social factors**

Political and social factors are closely interlinked with economic factors. Neoliberalism is about free market, trade, deregulation and reduction of government's influence into economic and social affairs. In case of Uganda, this was effected during the 1996 privatization program where the central government sold off all its public enterprises to private individuals and firms (Rutega, 1996). In relation to this research and to narrow down the scope of the research, this concept was used to look at the economic performance and land use activities independent of political interferences (Brenner & Theodore, 2002; Harvey, 2005). Before the 1960s, city governments were very powerful in controlling urban affairs. These governments controlled urban resources mainly land and actively conserved the environments (Gottdiener & Budd, 2005). Agrawal (2005) urges that variations in how the households are involved in different levels of power critically influences who bears the brunt to environmental and land use regulations. He further urges that human conduct is generally shaped through the mechanism of power. Unequal power relations among the stakeholders give advantage to strong resource holders to define, marginalize and influence urban land use activities at the expense of the poor urban dwellers which subsequently result into undesired urban land use changes (Peet et al. 2010). Political factors include resource control and allocation, globalization, neoliberalism, urban management and control, land use policies, bribery and corruption, land grabbing and forced evictions, delivery and distribution of social services among others. On the other hand social factors include human needs, perceptions and awareness of land use changes, security of tenure, individual and household incomes among others. The modal below (figure 1) reflects political, social and environmental factors together with secondary factors as active agents of urban activity changes.

Figure 1: Political Ecology Framework model



*Source: Modified from the Kite Framework (Campbell & Olson, 1991)*

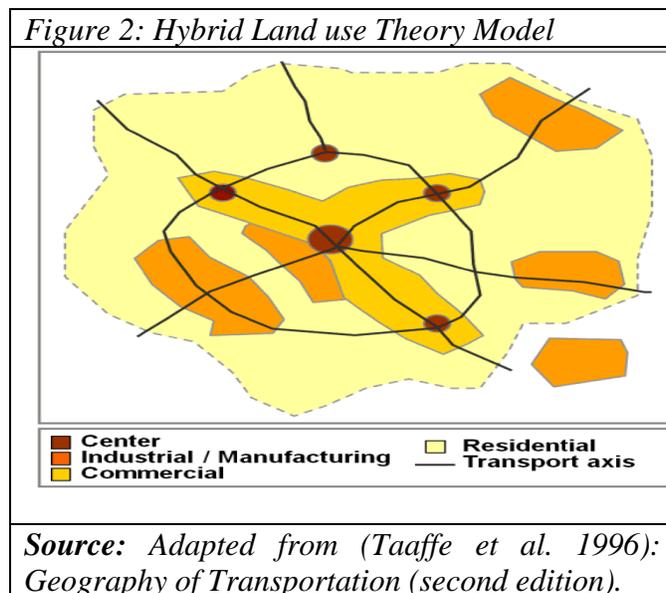
These three sets of factors can be taken to be primary (independent) factors in studies of urban land use changes. This is because their influence and interplay initiates or triggers off secondary factors (dependent factors) such as rural-urban migration, increased land demand and shortage and population growth, among others which have direct impact on urban livelihood thus triggering changes – planned and unplanned in urban land use activities.

### 3.4 Hybrid Land use Theory

This theory was first developed by Isard in 1955 as he attempted to merge the concentric sector and Nuclei land use models together to explain land use activities. He developed this model to integrate the strengths of all classical land use models since none of them appeared to provide.

satisfactory explanation of urban land use changes. Both the Concentric Sector and Nuclei land use models help to explain where different social classes of people tend to live within a city like Kampala. The **concentric zone** modal (see Table 10 No.1) was developed in by Burgessin E W in 1923. According to this modal, cities grow outwards in series of five concentric rings whereby commercial activities are concentrated in the Centre then become less through the zone of transition where residential activities begin emerging usually with areas occupied by the urban poor and become more as one moves away into the periphery of the city into commuter residential zone for the urban rich. Contrary to concentric zone Modal is **Sector Modal** developed by Hoyt in 1939 which states that cities develop in sectors but not rings (see Table 10 No.2). This is because as the city expands, its activities expand from the CBD outward in a wedge but not rings. However in 1945, Harris and Ullman developed a **Multiple Nuclei Model** (see Table 10 No.3.) which states that a city is a complex structure which include more than one Centre or land use activities around which other activities revolve based on transportation access needs (Steiner et al. 2012).

The Hybrid Land use theory combines the elements and strengths of all the models above.

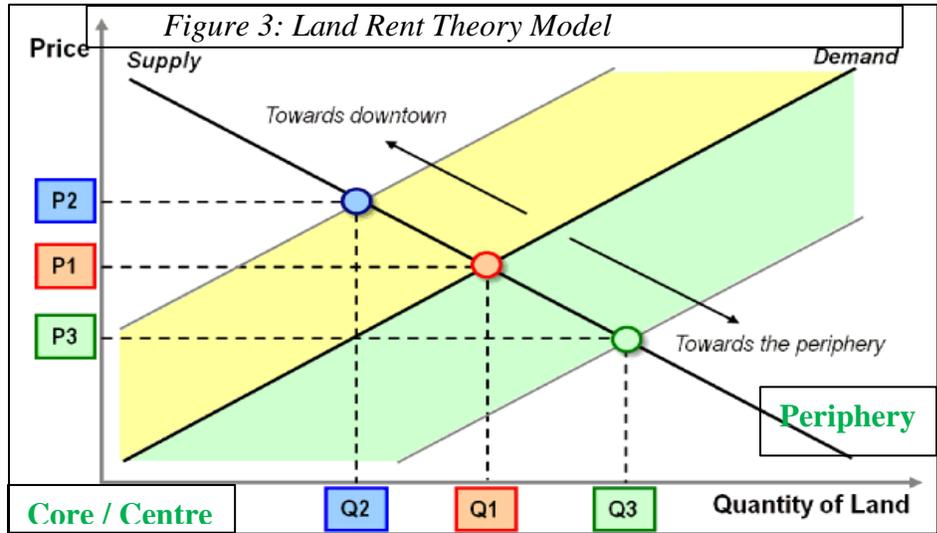


The concentric effect of central locations (CBD) and the radial effect of transport axis are all overlaid to form urban land use pattern. This makes it suitable for explaining the evolution of the urban spatial structure as they combine different spatial impacts of transportation on urban land use (Rodrigue et al. 2009). The theory illustrates how influential urban land use activities are located along the major transport axis and others locate in center of cities due to agglomeration benefits which

result into land use changes. Figure 2 shows hybrid land use theory model which show urban land use as an overlay of different transport effects, regardless of being spectral, zonal or nuclear. Using this theory supported my study because; I used its lens as a guide to social area analysis in terms of land use activities and their location as these have a direct effect on unplanned land use activities in the area.

### 3.5 Land Rent Theory

This Theory explains land use as a market where different land uses are competing for a given location (Alonso, 1964). It is based on market principle of spatial competition where actors are bidding to secure and maintain their presence at a specific location (Möhrling, 2001). The



more desirable a location is in terms of its economic gains, proximity to the city center, strategically located in terms of access, etc. the higher its rent value. Transportation,

Accessibility and distance are strong factors determining land rent and impacts on land use (Abrams, 1965). Figure 3 below illustrates the relationship between the core or city Centre with the periphery in terms of land demand and the costs at every particular location.

Most of urban land in Uganda can be freely sold or purchased. The figure above provided some basic relationships between the quantity of land and its price and assumes free land market. Much as this is true, land market is different in Kampala. This is because not all people can access land and most people lack the security of tenure. This makes the centre – periphery scale not applicable the same way as for example land in areas such as flood plains, wetland and swamps is cheaper in terms of cost for its acquisition. However, in general when land is reasonably available (Q1), the price (P1) will be moderate. The nearer the land is to town (Q2), the higher the price (P2). Moving towards the periphery more land becomes available and demand drops (Q3) and so does the price (P3). Not every type of activities is willing to pay P1 price. Some land use activities need prices lower than P3 and these move further in periphery thus displacing the traditional land use activities. Higher land values as it is in Kawempe today, impose a more intensive usage of space which has made unplanned urban land use changes in the area very inevitable.

### **3.6 Critics of political ecology framework**

(Robbins, 2004) urge that the interdisciplinary field of political ecology ignores the urban areas within the third world countries. Therefore, as a critique political ecology seeks to expose flaws in dominant approaches to the environment favored by corporate, state and international authorities demonstrating the undesirable impact of policies and market conditions from the point of view of local people, marginalized groups and those that are vulnerable (Enzensberger, 1974, pp. 3 - 31). Furthermore, (Swyngedouw & Heynen, 2003) point out that when discussing political ecology, much of the literature only examines Global North situations. Therefore, very little has been done regarding the developing countries from political ecology point of view. Nevertheless, the urban setting of the developing countries like Kawempe Division in Kampala City cannot be overlooked. This is because as (Neumann, 2005) point out, urban environments or the developing countries are the products of political, social and ecological interactions. The exposure to urban environmental hazards and access to environmental amenities are the products of political, economic and ecological processes that produce a geographic pattern of uneven development and unplanned land use changes. In most of emerging literature on political ecology, little attention has been given to urban setting as an inter-play of socio-ecological changes. Technical aspects of urban environmental management fail to acknowledge the very close relationship between the economic forces and the ecological injustices. However, environmental issues have been central to urban changes such as land use changes and urban politics (Swyngedouw & Heynen, 2003).

### **3.7 Conclusion**

Political ecology framework and the supporting theories (Land rent and Hybrid theories) used in this research provide a better way of analyzing human-environment interactions at local, national and global scales. Within these interactions, of PEF there are issues of power relations, marginalization, poverty, ecological and economic factors that are very important factors when discussing any modern urban setting and dynamics especially in developing countries which bring about unplanned urban land use changes (Swyngedouw & Heynen, 2003). The influential land use activities such as commercial and industrials establishments are strategically located along the transport routes and within the CBD against less influential land use activities such as agriculture and forestry as reflected by Hybrid Land use Theory. The location and establishment of different land use activities result from competition for a given location as emphasized by the

Land Rent Theory. The Location of new land use activities and the competition for strategic locations result from social, economic, political and environmental influences which increase human-environmental interactions, land developments, land grabbing and forced evictions among other land use change consequences.



## Chapter Four

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### 4.0 METHODOLOGY

#### 4.1 Introduction

A mixed approach of data collection and data analysis approaches were used. That is; (1) Geographical Information Systems (GIS) method of spatial mapping-based on x, y coordinates, (2) a small survey which included the use of questionnaires to gather information from local residents and (3) Interviews with key Stakeholder and technocrats. The mixed methods approach as Kitchin and Tate (2000, p. 168) argue, was chosen to be able to identify land use changes, the causes of unplanned urban land use changes and how the unplanned land use changes are perceived amongst various stakeholders in Kampala-Uganda. The Geographical Information System (GIS) based on X,Y location coordinates of land use activities was used to map and show land use changes in the study area. The analysis of the causes of unplanned land use changes was done using a small socio-economic survey supported by the in-depth inquiry of events and causational factors lead to a deeper understanding of how and why rapid unplanned urban land use changes occur. The interviews were also used to explore how different land use changes were perceived among the various stakeholders. The period under study was seventeen years from 1996 to 2013. The cut off year of 1996 was based on of GIS data. It was also because of the limited time and the resources which could not allow me to consider a very long period. Also observation was key a method in data collection. The field work took place between 17<sup>th</sup> June and 12<sup>th</sup> August 2013. Given this background, this chapter therefore presents the methods a researcher used in this study.

#### 4.2 Mixed approach to the study problem (a case study approach)

This is a case study which uses research questions which are diverse and the political ecology framework lenses to analyze the causes of unplanned urban land use changes thus making it complex. Being complex therefore such a study requires a strategic approach which can help unpack this complexity. I therefore adopted the use of a case study approach with mixed methods because the research is focusing more deeply on one specific area or place. A mixed method approach including Interviews with key stakeholders, a small survey and use of GIS was used to address the research questions which include;

- i. What are land use changes in the study area? This was addressed using GIS mapping of land use changes over a period of time – 1996 to 2013
- ii. What are the causes of land use change in: Bwaise I, II, III parishes, Makerere III parish, parts of Kyebando and Mulago III parishes -Kawempe Division from 1996 to 2013?. This was addressed using the key stakeholder interviews and the small survey conducted among the community members.
- iii. What are people's perceptions on land use change in Bwaise I, II, III parishes Makerere III parish, parts of Kyebando and Mulago III parishes -Kawempe Division?. This was addressed using the survey findings

### **4.3 Mixed approach as a research strategy (Methodological choices)**

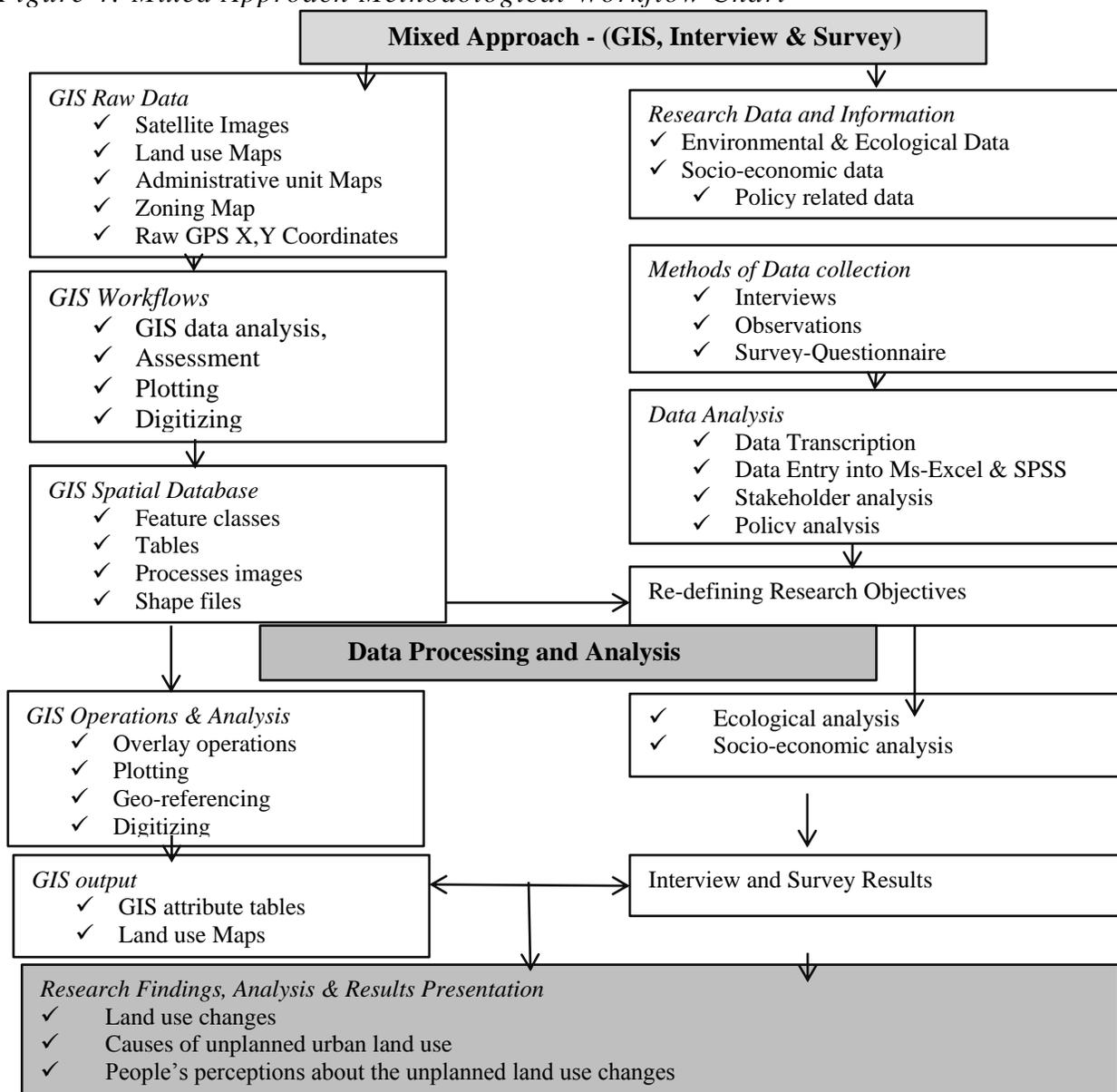
The complexity of the research questions that I had to deal with made it me adopt the mixed approach strategy. Therefore, a mixed approach strategy that use Key stakeholder interviews a small survey among the local people and Geographical Information Systems (GIS) approaches was used to undertake the study (Brannen, 2005; Fielding, 2010; Mason, 2006). The purpose of the mixed approach was to exploit the benefits of each of the methods - Interviews, survey and GIS to address the complex research questions as each of them is suited to a given method (Creswell, 1994, pp. 23-24). The use of mixed methods approach ensures more rigorous results and greatly improves interpretation (Rocheleau, 1995). Adopting this approach provided me with a better interpretation of the study problem than I would have got if I used sole independent method (Flyvbjerg, 2006). To better understand and analyze results from conducted interviews and the survey often entail using other demonstrative methods such as GIS (Olson, 2004, p. 20). Mixed method approach is therefore relevant in determining the relationships and patterns of the dynamic phenomenon like this (land use change) that are under study (Rudestam, 2007; Rudestam & Newton, 2007).

### **4.4 Methodological workflow and operations**

The combination of GIS operations together with the socio-economic data from a small survey and secondary data sources and the in-depth information from interviews with key stakeholders resulted into a comprehensive workflow as illustrated in the figure 1 above. Various GIS datasets and formats were used. These included satellite images, Land use Maps, Administrative unit maps, Zoning maps of Kawempe, and Some raw GIS data (X,Y coordinates). The collected and acquired GIS data was, processed and analyzed using ArcMap

10.1 to come up with attribute information and GIS maps. On the other hand also a small survey was conducted to get socio-economic, ecological and environmental to collect and analyzed to come up with the results. Data analysis of GIS data included geo-referencing, digitizing and overlays operations of different years-1994, 2004 and 2012. On the other hand data from interviews and the survey was processed in excel & SPSS to derive response tables, graphs and charts. Furthermore transcription was also done to process the collected information. Finally the analysis of unplanned land use changes was done. Changes shown on different maps were more understood by using the processed responses from both interviews and the survey. The combination of this led to final data analysis, discussion and conclusion.

Figure 4: Mixed Approach Methodological Workflow Chart



Source: Peter Wandera 2013

## **4.5 Interview and Survey Methods**

There many different schools of thought and opinions concerning how case study research should be conducted in human geography (Flyvbjerg, 2006). The complexity of the research problem made me adopt various data collection methods-GPS X,Y coordinates, Interviews with key stakeholders, a small socio-economic survey among the community members and from secondary data sources and field observations as illustrated below;

### **4.5.1 Interviews (Structured and semi-structured) with key stakeholders**

The interview is a common occurrence in social life because there are many different forms of interview. Smith (2001) argues that interviews are seen as democratic social research method because it offers a platform to different people to express their feelings, perceptions and understanding over a given matter in this case unplanned urban land use changes. Among the many forms of interview available, there are research interviews with which I am concerned in this thesis. I used both structured and semi-focused structured interviews so as to be very specific and get both affixed and diverse range of answers corresponding to asked questions. A *structured interview* entails the administration of an interview schedule by an interviewer (Bryman, 2012, p. 210). The aim of this choice of interview type was to subject the respondents to same context of questioning. The goal of this style was to get responses against the same and identical questions asked and analyze the varied responses regarding the research problem from the same context of questioning. Questions were read exactly and in the same order the way they were designed in the interview guide. In total fifty (50) interviews was conducted-*see table 1 above for details*. Among the people I interviewed they include, the local politicians most especially the parish and Kawempe division Councilors, some of the Kampala Capital City Authority (KCCA) Technical staff (Urban Planner of Kawempe Division, Kawempe Division Town Clerk, Kawempe Division Environmentalist, GIS staff and law enforcement officials among others), Officials from the department of urban development in Ministry of Lands, Housing and Urban Development. Key stakeholders and players including the elders (*people of elderly age and who have lived in the study area for a long time believed to have sufficient knowledge about the land use changes in the area*), prominent business people and Industrial developers were also interviewed to get their points of views on the matters regarding unplanned urban land use changes in the study area. The use of this method brought the researcher into close contact with the informants getting the first hand information from the very actors and agents of land use changes in the area. All the interviewed elders, landlords, developers, business

men and women are residents of the study area. Furthermore, *Focused semi-structured interviews* were conducted among the technical people of the KCCA. This method employs the use of open questions to ask respondents questions about specific land use change questions that were relevant to them and of interest to me. For example, the Kawempe Division Urban Planner was specifically about planning process in the relation to unplanned land use changes, GIS officials were asked how and whether GIS is being used to plan and monitor land use changes in the area.

*Informal conversations* were also held though at a very minimal scale. During these conversations, the researcher typically has only a list of topics or issues that are to be covered. The style of questioning is usually informal whereby the phrasing and sequencing of questions vary from interview to interview (Bryman, 2012, p. 213). I had informal conversations with my friends and a few other local people I knew that were staying in the study area during various interactions just to get what they knew or thought about unplanned urban land use changes in the study area. The medium of recording the responses was note taking by myself and asking the interview questions while filling in the interview forms and guides was done by most of my respondents.

#### **4.5.2 Socio-Economic Survey using a questionnaire**

Socio-economic data was collected by the use of a questionnaire administered by my research assistants and in some cases by myself. A small survey was conducted focusing on socio-economic activities among the community (UBOS, 2006a). This was important because it is the social and economic activities that trigger environmental changes, policy and law formulations which thus has a great effect on land use changes. A fixed questionnaire that was administered the same way word for word for each respondent was used in order to get consistent research findings. Questionnaire method was used to capture socio-economic information related to the sex, age, education Level, Land ownership status, Occupation and the residence status of the respondents. Questioners was also used to investigate the causes of unplanned land use changes from the respondents point of views, their perceptions to these changes, ways of addressing land use changes, environmental, ecological and planning awareness in relation to unplanned urban land use changes in the study area. In total one hundred and sixty (160) questionnaires were administered. I trained my assistants to ensure that we all had the same approach. We met every after two (2) days to harmonies our work and also to have the completed questionnaires kept. The decision of who to include was based random

selection restricted to the adults in different parts of the study area ranging from homes to the work places. The time of data collection was day time inclusive of weekends. That is from 9 am to 6pm. This enabled us the administered questionnaires to both working and non-working respondents. The original plan was to administer 200 questioners. However, time and resources couldn't allow this number so I was forced to reduce the number to 160. This helped to get varying views from a quite large sample of people covering all parishes within the study area. The respondents included family heads, house wives / men, the working people and the unemployed within the study area. This arrangement made it possible for me to get varied responses from different social classes of people found at different times of the days. The example of characteristics of the general community that answered the questionnaire included sex, age, and education level among others. These are showed in the figure 23 below;

*Figure 5: Graphs showing the distribution of survey respondents*

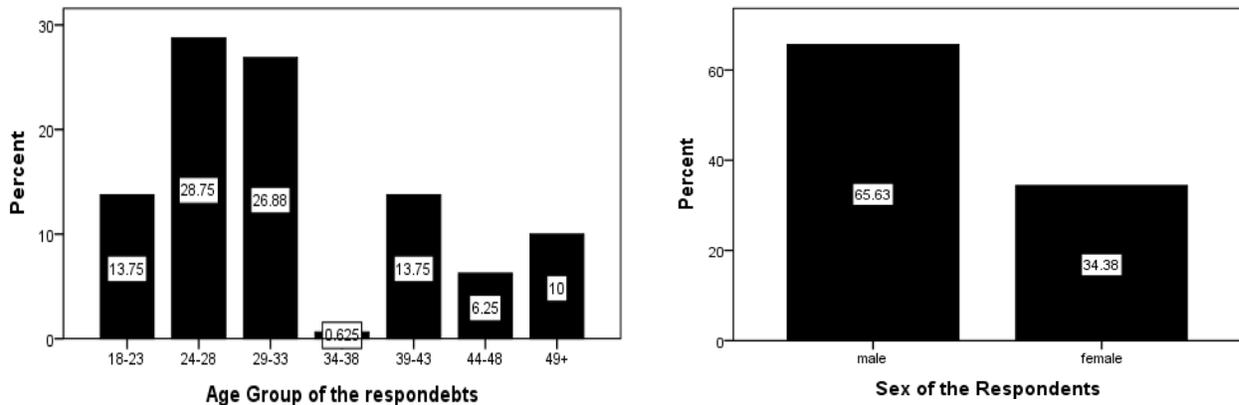


Figure 5 above shows the sex (gender) and the age group of the respondents of the small survey that was conducted. Most of the respondents were between 18 and 33 years. Very few respondents fell under age group of 34-38. The reason for this is quite unclear but since the selection of the respondents was randomly done, it could have been the reason for this. Furthermore, 65% of the men and 35% of women were interviewed. Men were most willing to respond to questionnaires than women did yet practically there many women in the area as compared to men (UBOS, 2006b, 2012).

#### **4.6 Sampling**

Choosing of respondents for the small survey and the interviews was based on sampling Techniques. Political ecology studies are often concerned with ensuring that different segments (policy makers, environmentalists, community and economical players) of society are

represented and have a voice in the research (Robbins, 2012). This was a critical aspect in this research as it had to take both ecological and socio-economic factors into consideration. The study area is one of the highly populated areas in Kampala city as described under the description of the Area chapter. Random samples of the survey respondents were drawn from various parts of the study area. This was done by moving around the area, identify a respondent on spot and then ask him or her to participate in the survey. Both Random and Non-probability sampling techniques were applied to get respondents for this research. Random sampling was applied to the key stakeholders for interviews while none probability sampling was applied to the local population to get respondents for the survey. The researcher randomly selected the interview respondents based on chance of availability and acceptance of respondents to take part in the study. *Random sampling* is a procedure for sampling from a population in which (a) the selection of a sample unit is based on chance and (b) every element of the population has a known, non-zero probability of being selected. Random sampling helped the researcher to produce representative samples by eliminating voluntary response bias and guarding against under-coverage bias. Under none-probability sampling, the individuals in the community who participated in the survey were chosen by hand picking also based on their availability and acceptance to participate in the survey. It was hoped that at least 200 people from within the study area were to respond to the survey questionnaire and 50 to interviews. It was expected that obtaining a minimum of 200 respondents would result in a good cross section of subjects in terms of gender, age, land use activities, economy, policy awareness and environmental factors. Interviews were conducted with mainly the experts – technical people in land, environment, economic, political and social matters. The 50 number of interviews were deemed sufficient to get professional views and local knowledge about the research problem from varied groups of people. Therefore, a checklist was prepared to interview the key informants (bureaucrats) about their awareness, knowledge and perception concerning unplanned urban land use changes in the study area. Responses from different sources which included; existing literature, elderly people, politicians, business community, environmentalists, NGOs, Institutions, Kampala Capital City Authority (KCCA) officials, ministry of lands, housing and urban development, department of mapping and survey, land lords and opinion leaders among others (*See table 1 below*) was collected. Field observation was also done to assess the then current situation regarding land use in that area. Also secondary data sources mainly as policies and statutory Acts of parliament on urban land use control and management were used as data sources.

Table 1: Categories and number of respondents

Item	Respondents' Organization	Gender	Number	Remarks
<b>Interview Respondents</b>				
1	Kampala Capital City Authority (KCCA)	Female	4	Kawempe Division: (Town Clerk, Urban Planner, Environmentalist) Law Enforcement officers, GIS personnel
		Males	5	
2	Ministry of Lands, Housing and Urban Development	Female	1	Urban Development Officers and Physical Planner
		Males	2	
3	Department of Mapping and Survey	Male	1	Senior Cartographer
4	National Environmental Management Authority	Female	1	Environment Officer
5	Politicians	Female	3	Kawempe Division Councilors, LCS
		Male	3	
6	Key stakeholders and Players	Female	15	Land Lords, Elders, Developers, Business Community, Institutions, Lecturers, etc
		Male	15	
<b>Total</b>			<b>50</b>	
<b>Questionnaire Respondents</b>				
7	General Community within the study area	Male	96	Households, Business people and others
		Female	64	
<b>Total</b>			<b>160</b>	

Source: Peter Wandera 2013

#### 4.7 Using Research Assistants for the Survey

Due to limited time against a wider scope of research area, the researcher employed the services of the research assistants who only worked on the surveys. Two research assistants very familiar with the study area were hired to more specifically administer the questionnaires (see Annex 10.3) and take photographs of the existing situation. The selected research assistants were qualified and experienced urban planners and were very familiar with urban dynamics and had lots of the much needed local area contacts. These assistants were specially trained on how to conduct the research and what kind of data to look for while interviewing the local community. The use of the research assistants enabled the researcher to cover a wider research area within a very short period of time - 2 months (12<sup>th</sup> June – 13<sup>th</sup> August 2013).

However using research assistants had some challenges that I noted long after the field work. The challenge was that in some instances some questionnaires were not filled properly thus making it difficult to derive sense out of them. This was the case where some of the respondents persisted on filled the questionnaires by themselves thus making errors. As a result twenty (20) questionnaire responses were not used in this research. Furthermore, due to limited

time and resources, research assistants could not push on to achieve the two hundred (200) numbers of questionnaires that were to be administered. To sum it all, research assistants and I managed to administer One Hundred and Sixty (160) Questionnaires.

#### **4.8 Field Observation**

Observation entails the systematic noting and recording of events, behaviors and artifacts in a social setting (Marshall & Rossman, 2010). In particular observation focused upon people's behavior and daily activities in an attempt to learn about the meanings behind and attached to the actions (Kitchin & Tate, 2000, p. 220) that have triggered un planned land use changes in the area. I used direct observation type. Under direct observation, I simply observed what is going on without taking active part or working with the community under study. Field surveys including transect walks were conducted throughout their area of study. The researcher moved throughout the field observing the current land use activities and general environmental observations. I didn't allocate particular time on this method as it was done concurrently while using the above methods primarily used. It was also very useful because it enabled me to know the current physical activities some of which are responsible for land use changes in the area. Such activities included road and sewer plant constructions into the wetlands, building constructions and open dumping of wastes.

#### **4.9 Secondary data sources**

Secondary data was mainly in form of content review and analysis under which I sought objectively and quantifiably to identify land use change patterns, policies (laws & by-laws). Much secondary data never existed especially on land use and urban planning. There were lots of gaps in written literature of land use changes in Kawempe Division. I looked at National land use policies of Uganda, the National Physical Planning Standards and Guidelines, the Land Act, The Local Government Act, and the Physical Planning Regulations of 2011. The use of secondary data helped to further analyze the context in which land use changes take place accordance to the laws and those considered as unlawful land use practices.

#### **4.10 Data analysis methods for interviews, survey and Literature Review**

There are different ways to analyze of data acquired using mixed approach just as there various ways of data production as described above (Kitchin & Tate, 2000, p. 229). Dey (2003) argues that despite the fact that there various ways of approach to data analysis, all approaches seek to make sense of data produced through categorization and connection. I used interpretative

and Inductive approaches to analyze the gathered data. Interpretative approach according to Patton (1990) emphasizes the role of patterns, categories and basic descriptive units. This is the approach I followed to combine different aspects of various approaches to gain a deeper understanding of the collected data regarding land use changes. Dey (2003) suggests that the core of qualitative data analysis consists of the description of data, the classification of data and seeing how the concepts connect. On the other hand, Inductive approach was used to analyze research findings. This approach includes open coding, creating categories and abstraction (Elo & Kyngäs, 2008, p. 109). The inductive approach is a systematic procedure for analyzing qualitative data where the analysis is guided by specific objectives (Thomas, 2003, p. 2). This approach was applied because the researcher had limited previous knowledge about unplanned land use changes in the area of study. The available knowledge was fragmented (Lauri & Kyngas, 2005). Reasons for choosing this approach included (1) to condense extensive and varied raw text data into a brief summary format and (2) to establish clear links between the research objectives and the summary findings derived from the new raw data (Thomas, 2003, pp. 1-2). The general inductive approach provided a convenient and efficient way of analyzing the gathered data. Therefore, I relied on the patterns, categories and the themes of the responses generated by each question from both the interview and questionnaires.

#### **4.11 The geographical Information System (GIS)**

Part of this study is temporal mapping and spatial analysis of land use changes and a Geographical Information System provides input, management, analysis and display of spatial phenomenon the use of spatial information and thus the performance of spatial analysis (Kitchin & Tate, 2000, p. 156) . This involved the mapping of the spatial phenomenon in this case; land use changes over time. Using GIS method would address research question; “*What are land are land use changes in the study area?* “ GIS is a system that runs on computers and includes all parts involved in that system which include hardware, software, data, people, procedures, and network among others (Bernhardsen, 2002; Longley et al. 2005). The system is capable of mapping features based on x, y coordinate system. It can also perform spatial analysis. These tasks require and information system for data entry, selection, analysis and graphic display. The software used was Esri’s ArcGIS Desktop 10.1 – ArcInfo platform.

#### **4.11.1 Maps**

The traditional role of the map has been to represent spatial information usually in relation to the surface of the earth. Maps as Kitchin and Tate (2000, pp. 156-157) argue are powerful graphical tools that classify, represent and communicate spatial relationships. Maps represent a concentrated database of information on location, shape and size of key features of the landscape and the connections between them (Hodgkiss, 1981) and are a method of easy visualizing a complex world (MacEachren, 1995). Therefore, I used GIS maps in my analysis to facilitate understanding of land use changes because maps exploit the mind's ability to see the relationship in physical structures providing a clear understanding of a complex environment within the study area and reveal the spatial relations that may otherwise not be noticed. Maps were developed using a Geography Information System (GIS).

#### **4.11.2 Geographical Information System (GIS)**

Geographical Information Systems have been developed over the last 30 years as tools for analysis of spatial data. Longley et al. (2005) provides a variety of definitions of GIS which for example include;

- i. A system for capturing, storing, checking, manipulating, analyzing and displaying data which are spatially referenced to the earth
- ii. An organized collection of computer hardware, software and geographic data designed to efficiently capture, store, update, manipulate and display all forms of geographically referenced information (Dangermond, 1992)

These two definitions and many others are typical of a more mechanistic view of GIS emphasizing the technological element and the data transformations which can take place in any geographical setting.

#### **4.11.3 What did I use GIS for?**

GIS was used to answer spatial questions related to;

- i. Location (what is at...?) For example what is at the road junction of Bombo and Nabweru Roads?
- ii. Trend (what has changed...? For example what land use type has changed between 1996 and 2002?) and
- iii. Pattern (*what is the pattern...?*) For example, what is the pattern of unplanned land use changes in the study area?

Furthermore, I used GIS to derive some descriptive analysis of the land uses changes based on attribute tables for individual land use category. The software I used allows for the calculation of the sum, mean, minimum; maximum and standard deviation of a selection of attribute data which gave me the opportunity to statistically analyze the different attributes of land use data.

#### **4.11.4 GIS Spatial Data analysis Methods**

Addressing the spatial questions above, I performed spatial analysis on the spatial data. The spatial analysis tasks included mapping and visualization of location and land use change patterns. Different overlay tools can be used to join, extract and select relevant data. For example, logical overlay based on Boolean algebra makes it possible to select various combinations of elements of spatially coincident data sets. The most common forms of logical overlays used are the logical “AND” (Union) and the logical “OR” (Intersection) (Kitchin & Tate, 2000, pp. 168-172; Longley et al. 2005, pp. 351-363).

#### **4.11.5 Sources of GIS Data**

The researcher had different sources for spatial or geographical data. The various data sources both digital and analogues (paper maps) were used. These included;

a) *Analogue GIS sources:* I used the 1996 land use map for Kampala obtained from the GIS section of Kampala Capital City Authority (KCCA). This was scanned, digitized and geo-referenced into a GIS system.

b) *Digital GIS Sources:* These sources included Shapefiles and feature classes, Raster and satellite images obtained from Google Earth. Shapefiles and feature class datasets were obtained from Kampala Capital City Authority. They included administrative boundaries, Major Roads, some landmark features like institutions, industries and wetlands. Using Google Earth pro, I was able to get clear images (Image Landsat, Image IBCAO) of 2004 and 2012. I also acquired 2012 satellite imagery from the ministry of Lands, Housing and urban Development. The 2012 Satellite Image obtained from Google earth pro was visually compared to that obtained from the Ministry of Lands, Housing and Urban Development in the department of urban Land use to ensure data reliability. I found no difference between these two satellite images from these two different data sources.

c) *Primary Data:* Primary GPS coordinates were captured by the using Geographical Positioning System (GPS) devices. This was done through the ground-truthing exercise to ensure the accuracy of the acquired data and also to guide the researcher to orient himself with

data and also during the process of geo-referencing and spatial alignment that were performed on both rasters and feature classes respectively.

#### **4.11.6 Procedures taken to process GIS data**

This section presents step by step procedure taken by the researcher to enter or manipulate, store, process and derive required data.

*a) Creating a project Folder and a Geo-Database:* An ordinary folder was created within which a geo-database was to be created. Using ArcCatalog application, I designed a project file geo-database. This was used as the storage container for all data that was part and partial of this research. The relevancy of this was to consolidate all my GIS data in one place and also maximize the functionality of ArcGIS through quick referencing of my data files. A File geo-database has additional storage capacity and functionality as opposed to the Personal geo-database. All feature classes as a rule are supposed to reside in geo-databases.

*b) Data management performance:* This stage involved checking and ensuring that all acquired data are in the same format mainly in terms of Geographical Coordinate System (GCS) and Projection System (GPS), Projection, Datum and Map units. Furthermore the researcher converted all the shapefiles into feature classes so as to have enhanced and more functionality in ArcGIS. Data management processes was mainly done from the ArcCatalog 10.1 ArcGIS application.

*c) Adding Data (Feature class acquired from KCCA):* Data was then added into ArcGIS view to explore it and get a visual view about it. This way the researcher became familiar with his data. Using the common landmark features such as roads, common places such as Bwaise junction, Round-about, industries and institutions, the researcher was able to identify his study area.

*d) Identification and Selection of the data falling in the study area:* The acquired digital data was huge and complex as it was for the whole City. Therefore, there was a need to identify and select only the required data within the study area. The researcher used two analysis tools located under extract toolset of analysis tools. These included select tool and the clip tool. Using the select tool and then running Structured Query Language (SQL) data. This operation was performed on administrative boundary layer which was used as a basis for clipping other layers. The type of selection used was “*Select By Attributes*” within ArcMap application. The selected data was exported into various new feature classes and then added as a layer to the ArcMap. This was a very important step because it enabled the researcher to precisely narrow

down from the whole City to just his study area boundaries. The next operation was to run a Clip tool. Layers such as existing roads were treated as in-put features whereas the new derived study area boundary area layer was used as a clip feature so as to create new feature classes that fit exactly within the study area boundary.

*e) Creation of feature classes:* New feature classes were created within a project geo-database. These were to store mainly land use coverages as of 1996, 2004 and 2012 among others. The digitized information was assigned and stored into these feature classes.

*f) Geo-reference Data:* Geo-referencing is the process of assigning spatial reference (X,Y) to the geographic data without the reference. This operation is mainly done on scanned maps and some digital satellite remotely sensed data. The 1996 Land use Map acquired from KCCA was geo-referenced after scan.

*g) Digitize the Raster Data and Entering the attribute Information:* The process of digitizing and scanning is frequently used in student research. Kitchin and Tate (2000, p. 185) define digitizing as “*the process of automating the location of geographic objects by converting their position on a map to a series of X, Y (Cartesian) coordinates*”. This was a very time consuming process. The 1996 land use map was the first one to be digitized, this was followed by the 2004 and 2012 LANDSAT images respectively imported from google Earth Pro to produce three (3) different land use change maps at the interval of eight (8) years. Entry of attribute information was concurrently done at the same time of digitizing process. The attributes included land use types. Specific land use Area coverages for polygon features were automatically generated by ArcMap during digitizing and running other geo-processes. Generalization of land use features was done as a map is always at a smaller scale than the phenomenon it represents, the elements it contains must therefore be restricted by what can be presented graphically at given map scale (Jones, Bundy, & Ware, 1995). The International Cartographic Association defines map generalization as the selection and simplified representation of detail appropriate to the scale and the purpose of the map (ICA, 1967). My purpose of generalization was to acquire the simplified information and the feature details level appropriate for my research and interpretation of land use changes. This was based on the need, the density, distribution, size and the diversity of geographical data, readability rules and the resources in terms of time, money and techniques. Therefore, the borders between different land use types were drawn based on the feature density and proximity principle. That is the dominant feature within an area of 450m<sup>2</sup> proximity was considered for that land use. I chose an area of

450m<sup>2</sup> because it is the minimum standard plot size in Uganda with the plot dimension of (15 x 30) m.

*h) Editing Errors in digitized data:* Once I finished digitizing I edited any errors in the digitized and acquired data sets. For example, the overshoots and undershoots which normally create hanging or protruding nodes were dealt with accordingly. I used point, End and vertex snapping options together with Intersection snapping with a tolerance of 10 pixels to ensure maximum accuracy.

#### **4.11.7 GIS Data Presentation**

The researcher presented GIS results in form of maps as per selected choice of years. That is 1996, 2004 and 2013. Map presentation was by Symbology based on unique values of land use types in each of land use layer properties to clearly show the pattern. Land use change patterns within these study periods were derived at by overlying maps using the overlay tool under proximity tool set of analysis tools. Symbology was done under each layer's properties. Unique values under categories were selected. The value field used was land use type as pre-designed at the time of feature class creation. Basic Random color ramp was first used and then edited to assign convention colors to various land use types.

#### **4.11.8 Spatial Statistics**

Land use change spatial statistics were derived in order to make it possible to explicitly examine the nature of spatial variation. These statistics are all descriptive in nature based on individual land use total area coverage (polygon covered by each land use type) as per given period of time. Individual land use area coverages were automatically calculated by the GIS system during the process of digitizing and running geo-processing tools.

#### **4.11.9 Limitations of Using GIS method in Socio-economic Research**

a) *Presentation and modeling problem:* The representation and modeling of socio-economic phenomena in a GIS is both diverse and problematic. The representation and modeling of spatial phenomena such as population, economic activities, income, level of education, land use changes, and built-up environment among others rises questions and challenges as to whether this could be done using a collection of points, a set of lines or zones, areas or a surface (Martin, 1999, pp. 74-78). Above all, there is a lot of dynamism among socio-economic phenomena say population is never constant as people come and go, Income rise and fall quite often and many

other constant changes. Kawempe division is mired with these volatile characteristics. It was therefore challenging how to model there dynamic social characteristics in the study area.

b) ***Modifiable areal unit problem:*** This problem possesses two components which include a scale problem and a zoning problem. The scale problem describes the variation in results due to progressive aggregation of smaller land use zones into larger ones. In contrast, the zoning problem describes the variation in statistical results due to different arrangements of a fixed set of zones while keeping the scale fixed (Openshaw, 1984; Wrigley, 1995). In this manner, there were small land use zones throughout out the area which made land use zoning a bit problematic. Generalization was therefore unavoidable.

c) ***Error and spatial data accuracy:*** The GIS input data has some errors and these cause analysis problems primarily due to conflict between accuracy and precision of the data. It should be remembered that GIS is as accurate and as precise as the data itself. Accuracy refers to the relationship between a measurement and reality whereas precision refers to the degree of detail in the reporting of a measurement. This was the case in most cases during the process of digitizing the scanned maps. These were dealt with by ensuring that all GIS datasets were in the same units-meters in this case, same Geographical Coordinate System (GCS)-*Arc1960* in this case, Datum-*D\_Arc\_1960* in this case, Projection-*Transverse Mercator* in this case and same projection Coordinate system-*Arc1960-UTM-Zone 36N* in this case.

d) ***Map distortions:*** Both Google maps and the scanned land use map acquired from KCCA had some distortions. Map distortions were dealt with accordingly by the researcher through geo-referencing and spatial alignment processes. The researcher was aware of the various types of map distortions since he was using maps as a data source and particularly digitized maps as an input to a GIS. Sources of distortion in maps include scale, projection and cartographic generalization among others (Goodchild, Longley, Majurie, & Rhaid, 2001; Kitchin & Tate, 2000, pp. 159-164). Variations in scale can be introduced by the choice of a map projection and the choice of a scale controls the degree of generalization and hence the degree of information present in a map. Distortions are manifested as changes in areas, angles, shapes, distances and directions. In any given projection, only one or two of these can be preserved at the expense of the others. In order to determine accurate descriptive statistics such as area, I used equal-area projections to preserve areas so as to determine the actual area coverage of the study area and that occupied by various land use in different years. Then for the purposes of displaying the land use maps I used the Universal Transverse Mercator Projection to preserve the shape of the

produced maps. This is because this projection is conformal projection which preserves small shapes and directions of small features to get the real shape of the study area map and the land use zones that are presented herein (P. Longley & al, 2005, pp. 138-139). The researcher used both semantic generalization and geometric generalization. Under semantic generalization features to include in the map were selected based on hierarchical structures based on land use classifications. See the maps. Geometric generalization was used with a purpose of making symbolization and map features visible on the map.

#### **4.12 Relevancy and quality of data**

The possibilities of a good data collection plan lie in the fact that the researcher was familiar with the study area and had some necessary contacts on the ground with the necessary logistics for conducting this research. The limitations however included large scope of geographical space of study (6.07km<sup>2</sup>), accessing some key political and technical people in the field of urban land use change against very so limited time. It was further very costly to purchase latest satellite images which are a good source of GIS data for my case. This is the reason I used a free source but of a much less resolution satellite images from google pro maps.

#### **4.13 Data validity and reliability of research instruments**

Validity and reliability are two important concepts and aspects necessary to ensure accuracy in a case study and mixed research. Moskal, Leydens, and Pavelich (2002, pp. 351-354) define validity as “*the degree to which the evidence supports that the interpretations of the data are correct and that the manner in which the interpretations used are appropriate*”. The weakness of the study is based on the fact that only a small survey was conducted meaning that the views of only a small portion (160 people) out of the entire population which is over 98300 people were gathered (UBOS, 2002, 2006b). Furthermore only 50 interviews with experts, technocrats and professional were very few compared overall number of people falling into this category. It is important to also note that the interviews and the survey questionnaires used had some weaknesses as most of the questions were close-ended thereby not giving respondents much freedom to express their diverse views about the research problem. Another weakness was the lack of female respondents. The effect of these weaknesses was that a small data sample was used to analyze the causes and draw conclusions which may not necessarily depict the causes 100%. However, the strengths of the research lies in the fact that combining GIS with other methods gave me a greater push into understanding the complexity of unplanned urban land use

changes. With the help of GIS, I was able to get a visual trend of land use changes over time, and then other methods (interview, survey, literature review and observation) helped me explain factors behind these unplanned land use changes. This expanded my knowledge base about the research problem.

The vast diversity of this study in terms of its scope, time, resources and other related variables made it necessary to delimit the geographical setting from which a sample of the study area was drawn. The study area is geographically located in four (4) parishes which include Bwaise I, Bwaise II, Bwaise III, Makerere III and parts of Kyebando and Mulago III parishes within Kawempe Division (See Map 3). The total area coverage of the study area was 6.07km<sup>2</sup>. I chose this area because I was a bit familiar with it and it is one of the areas in Kampala experiencing rapid unplanned urban land use changes. That is why I got interested in this particular area. Choosing this particular area helped to quickly acquire the relevant data to my research problem. The smaller area had an effect on validity and the scope for generalization in a sense the views of very few people were captured and only dominating land use activities considered thus leaving a very big gap in conclusions of the study findings.

#### **4.14 Unreliable Informants**

Some of the key informants such as the technocrats, politicians and top government officials were not easily found for interviews. Many appointments failed and others kept postponing the interview meetings. However, I insisted on making the appointments with more respondents until I reached my target of fifty (50) interviews. Choosing 50 interviews was deemed enough in regards to available time and research resources. Furthermore, it was also hoped that by interviewing 50 technocrats, a general idea regarding the research problem would be achieved. In the same way administering the survey questioners had similar challenges. Some people did not want to answer the questionnaires and even encouraged others not to. My research assistants quite often called me in to come and personally explain more what my research was all about. Reasons for some people not willing to answer questionnaire was because they are assumed that my research findings to would be used as a basis for their eviction from this area as most of them don't own land on which they have settled. Therefore, more and honesty explanation made people believe in me and let me continue with the research work.

#### **4.15 Positionality of the researcher**

Researchers have to think about Positionality because it affects the research designs, processes, outcomes and the ethical practices are inevitably present throughout studies involving people (Stenhouse, 1975). As Hopkins (2007, p. 387) argues, it is important for researchers to consider what they are doing and how and why they are doing it as well as thinking about who they are. This determines the level of involvement, consultation and participation between the researcher and the different groups involved in a given research (Pain, 2004; Pain & Francis, 2003). This research was conducted in a country and town with differing cultural and ethnicity background and norms. Uganda is known for its diversity in tribes, ethnicity, and education levels thus resulting into gender and perception differences towards the research questions. Myself being from Uganda therefore, thought of myself as both an insider and outsider (Mullings, 1999) in area of research. This had an effect on answers and other responses during the field work. Being familiar with the study area and having lived in the same area for some time during my undergraduate studies made me feel like an insider. I had the much need local knowledge and contacts essential for conducting this research. However, the fact that my educational level was quite higher than majority of my respondents and that I am studying from abroad, made me feel like an outsider before some of my respondents.

My experience as an urban planner for over 5 years also had an impact on the way this research was conducted and structured. My background affected my research design, ethics and the results. For example, the entire data collection process was largely conducted based on urban planning perspectives whose aim is only to see the cities well planned and organized. However, as I moved deeper and deeper into the study, I discovered diverging perspectives which make urban planning difficult and at times almost impossible.

The research changed my own perception towards land use planning and management during the course of the study. This is because, before, this study, I did not pay full attention to underlying factors of unplanned land use changes and activities. My major concern had always been to have well planned spatial activities and advocating for evictions of those who settled in environmentally sensitive areas. Little did I have considerations for the poor and marginalized people who live in urban slums (informal settlements) and in environmentally condemned areas. However, this has now changed, as I have to integrate quite a number of considerations such as finding out why people live where they live in future planning works.

Some of the respondents perceived me as an urban planner while others as a student. To some people I was seen as a channel through which land use challenges could be heard by those in authority once the research was complete. Therefore, respondents answered in accordance to their perception of me as the researcher obviously had an effect on the collected data. Some people's response might not have been true and others could have withheld valuable information in fear of the end result of the research might cause to them.

#### **4.16 Ethical Considerations**

First and foremost, I had an obligation to respect the rights, personality, values and the desires of the informants. Ethical considerations were seriously taken into full account so as not to harm, negatively affect or offend the respondents in anyway. This was done by ensuring their anonymity, not asking for their names and recording personal details. A researcher in urban environment may encounter cultural differences and different ethnic background. These arise from disparities in education, income and experience, tribal and cultural differences. My study area fits exactly into this description as the area has so many people coming from various parts of Uganda and outside the country from countries such as Rwanda, Kenya, Tanzania, DR Congo, Southern Sudan and many others. However the dominant tribes from Uganda included Baganda, followed by Banyankole, Basoga and Bafumbira among others. Some people and tribes especially the Sudanese and Rwandese migrants among others are regarded as inferior by the community, others are in the area illegally and others prefer their social, economic and cultural background not to be talked about. This therefore, called for maximum ethical considerations in this research so as to minimize chances of conflict or harming the respondents while gathering data (Doucet). The research questionnaire had an introductory section on confidentiality and this assured the respondents that the collected information will be kept confidential and only be used for only study purposes. My ability to speak about nine (9) local languages was of great asset in this research and to go about ethical issues.

The most critical ethical issue is potential use of data from this thesis. The thesis and GIS maps can be used by the local authority (KCCA) and development partners to plan the area and make critical development decisions. These developments could introduce tough bylaws and policies against unplanned land use activities, eviction from environmentally sensitive areas and resettling people from the area among other actions by the local authority.

My responsibility as a researcher is to try and minimize harm that might result from this research. I do this by presenting different perceptions of land use changes. According to the

perceptions discovered, unplanned land use changes are not necessarily bad and neither is planning necessarily good depending on the situation at hand. There are multiple causes and reasons for unplanned land use changes in Kawempe Division and the rest of Kampala. This calls for serious considerations in decision making by city managers and development partners.

#### **4.17 Conclusion**

The complexity of the research problem and the research questions described above, was the driving force for the researcher to use a survey approach in a mixed research to address these issues. The strengths of the study is in combination of methods which included interviews with key stakeholders, conducting a small survey among the local community and using GIS to capture different data for different research questions. This was of great importance as the strategy was meant to gather responses from different players (community and technocrats) that have a direct relationship with the research problem. GIS was to show how far and where the land use changes have occurred in the period of last 17 years. GIS trend was then explained by the responses from the interviews and the survey.



## Chapter Five:

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### 5.0 DESCRIPTION OF THE STUDY AREA

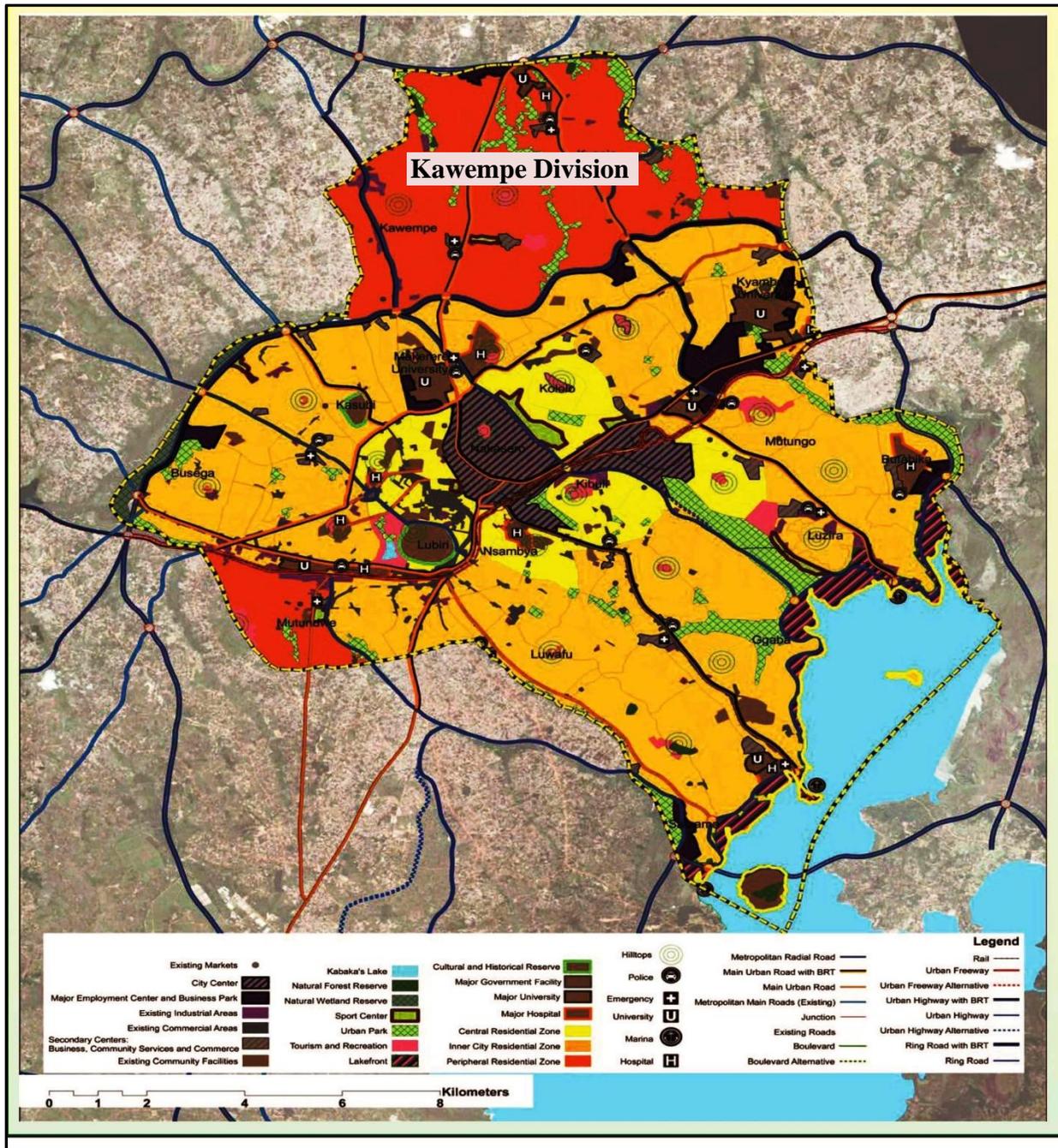
#### 5.1 Background to urban growth and unplanned urban land use changes

Africa and in particular Uganda is rapidly urbanizing and urban growth is the highest in the medium and smaller cities of Africa (UN, 2010). The rapid urban growth rates in developing countries like Uganda are mainly as a result of natural growth of urban population through high birth rates and increased migrations which include rural-urban, city to city and regional migrations (Cohen, 2004; Redman & Jones, 2005). The greatest challenge however, is that this rapid urban growth is not prepared for by majority of African cities like Kampala. Unplanned land use activities have erupted and affected the orderly urban growth (Vermeiren, Van Rompaey, Loopmans, Serwajja, & Mukwaya, 2012, p. 199) thus the emergence of slums and other informal developments, land fragmentations, environmental and climatic changes, economic, social and political changes. One of the causes of unplanned land use changes in developing countries is because governments over centralize employment opportunities, security and social services such as government ministries, education services, and health facilities among others in capital cities such as Kampala. Insecurity of tenure, proximity to working places and attractions by low housing costs, land grabbing and evictions in most of developing countries are also among reasons for the emergence of unplanned urban land use activities and changes (Davis, 2003).

#### 5.2 Study Area in a broad context

The research was conducted in Uganda- East Africa. The study area included the following selected parishes of Kawempe Division; Bwaise I, II, III, Makerere III, parts of Kyebando and Mulago III parishes. Kawempe division is one of the five divisions that make up Kampala city. Other city divisions include Nakawa, Rubaga, Central, and Makindye. Map 2 below shows the Physical Development Plan for Kampala. According to Kampala's Physical development plan, Kawempe Division was designated at a peripheral residential zone.

Map 2: Map of KCCA Physical Development Plan



Source: KCCA 2013

The area has gentle slopes, three (3) remarkable hills and two (2) valleys – flood plains. These are low lying hills with flat hill tops a common characteristic of hills in Buganda region of central Uganda (Matagi, 2002). The area receives an average annual rainfall varying between 1250 to 2000mm. The rainfall is received throughout the year with two peaks. That is April-June and October-November and this is influenced by its proximity to Lake Victoria (NEMA, 2009).

The study area is normally affected by the floods during the rain seasons. As a consequence a lot of property and at times human life is lost and damaged (*see Figures 17 and 54*). The study area covers 6.07km<sup>2</sup> with a population of approximately 152,600 people (UBOS, 2002, 2006b, 2012) as shown in table 1 below;

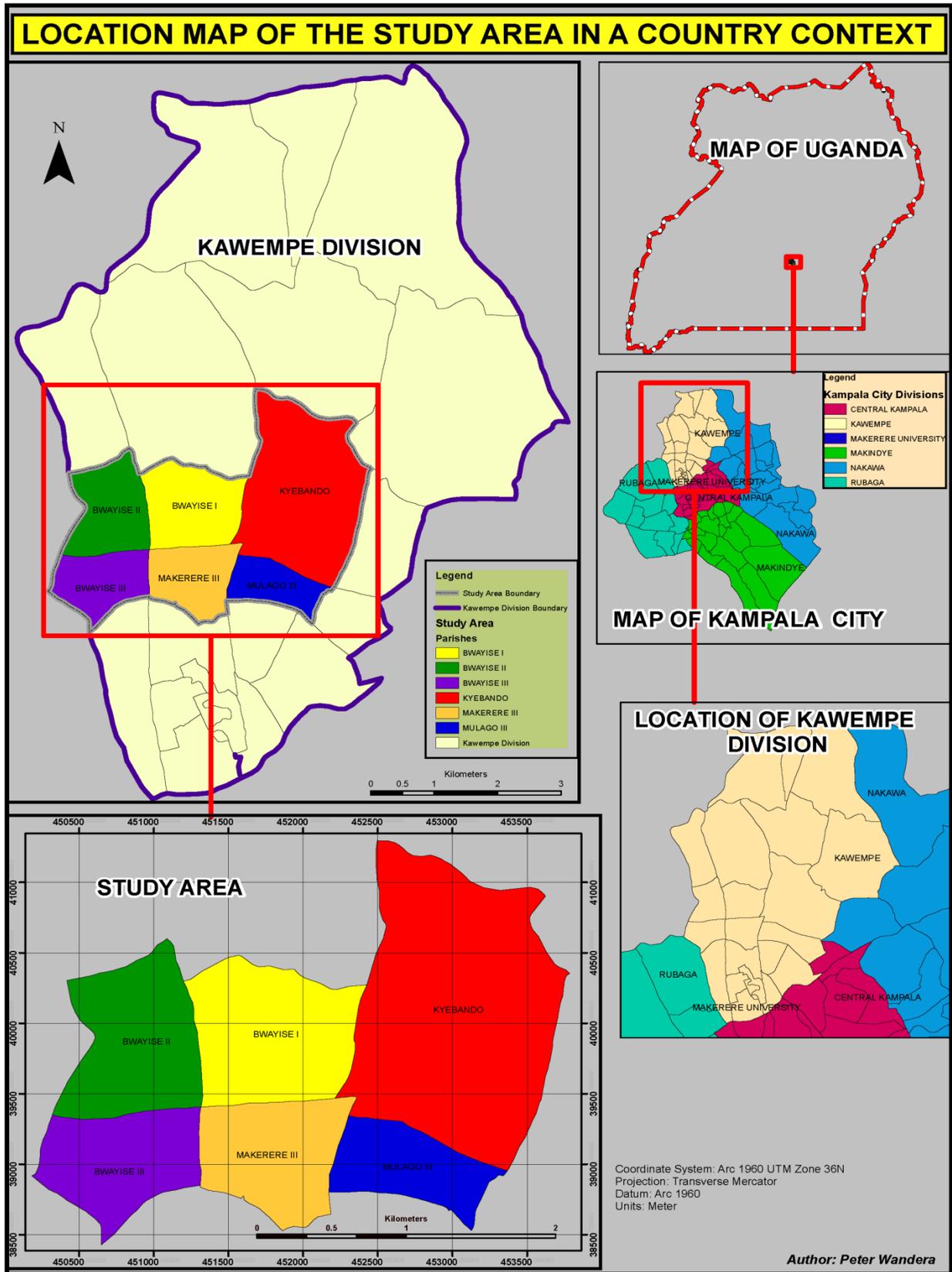
*Table 2: Population Figures*

<b>Population of Kampala City, Kawempe Division and the study area</b>						
<b>Area</b>		<b>Years</b>				
		<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Kampala City		1,480,200	1,533,600	1,597,800	1,659,500	1,723,200
Kawempe Division		326,400	338,100	352,300	365,900	379,900
<b>Study Parishes</b>	Bwaise I	22,400	23,200	24,100	25,100	26,100
	Bwaise II	21,000	21,700	22,600	23,400	24,400
	Bwaise III	13,100	13,600	14,200	14,700	15,300
	Makerere III	16,900	17,500	18,300	18,900	19,600
	Mulago III	16,700	17,300	18,000	18,700	19,400
	Kyebando	41,100	42,500	44,300	46,100	47,800
<b>Total</b>		<b>131,200</b>	<b>135,800</b>	<b>141,500</b>	<b>146,900</b>	<b>152,600</b>

*Source:* (UBOS, 2012)

Kawempe Division is located North of Kampala City. The study area borders Wakiso District in the west, Kazo parish in north west, Kawempe I and Kanyanya parishes in north, Kikaya parish in north east, Kyebando parish in east, Mulago III parish in south east, Mulago II and Makerere I & II in south and Kasubi in its south east. The geographical extent of the study area is between 449800 – 454600 Eastings and 38400 – 41500 Northings as shown in Map 3 below;

Map 3 : Location of the study area



Source: Peter Wandera, 2013

### 5.3 Land use activities in the study area

This section presents existing land use activities cutting across social, economic, political and environmental factors. These parameters include; built up area, road network, waste management, drainage, sanitation, and existing land use activities among others.

The study area is one of densely built up areas of Kawempe division with different types of housing facilities which include temporary, semi-permanent and permanent building structures. Both the planned and unplanned structures do exist in the area (*see the figures 6 - 9 below*). The area is densely built with both commercial and residential buildings. Commercial building developments follow a distinctive linear pattern along the infrastructure facilities especially roads. On the other hand, residential developments are spread all over the area in a dispersed pattern

*Figure 6: Upcoming permanent commercial structures*



*Figure 7: Existing Temporary buildings*



*Figure 8: Semi- Permanent Residential Tenements*



*Figure 9: A permanent Residential House*



*Source: Peter Wandera, 2013*

The study area has a variety of land use activities being carried out. These include both formal and informal land use activities depending on the way a particular activity is being

structured and conducted. Land use activities mainly include, trade and commerce (retail and wholesale), residential, transportation, social services (education, and health), constructions, agriculture, processing and manufacturing industries, etc. Below are a few photos of recent land use activities in the area. Some of the land is under swamps, and wetland, vegetation, institution, civic, etc (refer to 10.2 for description of land use categories used)

*Figure 10: Infrastructure Constructions*



*Figure 11: Urban Agriculture*



*Figure 12: Brick lying and making*



*Figure 13: Entertainment & social gatherings*



*Figure 14: Institutional – School*



*Figure 15: Metal works & Fabrication*



*Source: Peter Wandera, 2013*

## 5.4 General Environment and Ecological issues

The term environment in this research is taken to mean man and his surroundings including the landscape, topography and relief, and spatial or geographical location of land use features.

Most of the wetlands, swamps, flood plains especially the valleys, forested areas and steep slopes areas have been converted to human activities which mainly include; commercial, residential, transportation and industrial among others. This is because of increased demand for land whose supply is constant and thus scarce amidst increasing human population and various land use activities. This situation has made it cheaper to purchase land in ecologically sensitive areas than elsewhere within the study area as there is hardly any vacant land left. This has resulted into environmental degradation and interference with drainage system of the area leading to endless floods, and increased pollution, destruction of ecological life and the related problems. Swamp and wetland reclamations have resulted into drainage and flooding complications ending into loss of lives and property. In addition, the ecological organisms have been largely destroyed and the few remaining ones are at the verge of extinction. The current ecological and environmental damage within the study area have contributed to wider and deep felt current global environmental problems. Swamps and wetlands are at the verge/ edge of distinction due to human encroachment. The details of this factor will be discussed later in the subsequent chapters of this thesis. The figures below show some of the environmentally related problems.

*Figure 16: Swamp reclamation*



*Source: Peter Wandera, 2013*

*Figure 17: Flooding*



## 5.5 Waste disposal and management

There is a high degree of poor solid waste disposal and management. The main types of solid wastes in the study area included domestic refuse, market refuse and commercial /

industrial refuse. Open dumping and burning are common waste disposal methods in the area as shown in figures 11 to 14. Solid wastes were not sorted to separate them into classes such as food left overs, polythene and paper wastes. Broken bottles, industrial wastes such as steel, polythene bags, carpentry wastes, human and animal excreta were evident everywhere in most parts of the study area. The situation is no good in residential areas most of which are slummy and informal settlements. Most of the households do not have toilets / pit latrines. Because of lack of toilets and pit latrines, most people use polythene bags to “*answer nature’s call*” and then afterwards dispose-off these into the drainage channels, trenches, bunkers and open dumps. This has been one of the many causes of drainage, environmental and human health problems within the area. There is a greater and continued risk of disease outbreak such as cholera and subsequent deaths. The figures below show some of the current solid waste management and disposal methods within the study area.

*Figure 18: Open dumping of wastes*



*Figure 19: Dumping in Drainage channels*



*Figure 20: Burning of wastes in the open air*



*Figure 21: Solid waste dumping site*



*Source: Peter Wandera, 2013*

## **5.6 Road Network**

The study area is well accessed from all major roads using the newly constructed Northern bypass. The Northern Highway, which is the only gateway route to Northern Uganda and Southern Sudan, runs through the middle of the study area. There are also other major roads

which run within the study area which include Gayaza-Mperewe, Nabweru Road, Bwaise-Kazo among others which serve the area. However, most of these roads are in critical conditions as the ones shown in figure 22 below;

*Figure 22: Some of seriously damaged roads*



*Source: Peter Wandera, 2013*

## **5.7 Economic Situation**

There are lots and diversity of economic activities which include both formal and informal activities. Economic activities in the area mainly include trade and commerce, food markets, industrial developments, transport and communication activities among others.

### **5.7.1 Trade and Commerce**

The economic activities in the study area are growing rapidly mostly in of Bwaise I, II, and Kyebando parishes. The local people are involved in many different kinds of income generating activities in form of trade and commerce such as retail & wholesale shops, supermarkets, kiosks, agent works, workshops hawking and vending activities among others. Figures 23 and 24 show some of income generating activities practiced in the area.

*Figure 23: Retail and Wholesale shops*



*Source: Peter Wandera, 2013*

*Figure 24: Offloading of trade commodities*



### **5.7.2 Food and Road side Markets**

These include both formal and informal market activities depending on the organization and structure. A considerable number of the local people and mostly women are involved in food market business selling food stuffs such as matooke (plantain / banana), potatoes, vegetables, Irish potatoes, yams, and cabbages, beef, chicken and pork among others. Most of these food items are brought in from the western and central districts of Uganda all year around. The food markets in this area include; Bwaise Lufula Zone Market, Kutawo market, Kalererwe market and Kazo market.

Roadside markets especially during evening hours do exist in the area. These are largely informal and operate illegally as selling goods alongside the road networks is not allowed by law in Kampala City. Figure 25 below shows the food market whereas figure 26 shows road side commercial activities which include selling of merchandise.

*Figure 25: Food Market*



*Figure 26: Road side selling of goods*



*Source: Peter Wandera, 2013*

### **5.7.3 Industrial Developments**

The area has quite a number of manufacturing and processing factories and industries. The industrial developments in the area started way back in 1960s. The large concentration of these factories and industries are located in Bwaise II parish in industrial, Kawempe kutaano and police zones among others. Most of industrial products are consumer goods targeting the local population and they include beverages like juice and other refreshments, food stuffs such as bread, flour, shoes, steel, polythene bags, and mattresses like turfform, detergents, garments and clothing among others. Below in figure 27 are some of the examples of the processing Industries within the study area.

*Figure 27: Some of the processing and manufacturing Industries in the area*



*Source: Peter Wandera, 2013*

#### **5.7.4 Transport and Communication Network**

A large number of the youth in the study area is involved in the transportation industry whose growth was accelerated by the improvements in infrastructure and communication facilities such the construction of the Northern Bypass and other major roads which include Gayaza-Mperewe Road, Bombo road, Nabweru Road, Sir Apolo-Kagwa Road, Nabweru Road and countless feeder roads. The booming transport industry has facilitated the economic growth of the area in a way market goods and merchandise are easily ferried into the area from nearby and distant places. For example most of the animals (cows, goats, pigs, chicken and sheep) regularly come from very far and rural areas of Uganda. This is only possible by having a reliable network of roads, related infrastructure and communication networks. Transport sector has facilitated quick mobility of labor and services by those living within and outside the study area which has led to its tremendous economic growth. Below are photos showing some of the transportation modes and facilities within the area

*Figure 28: Boda-boda means of transport*



*Figure 29: Private and public means of transport*



*Figure 30: Newly constructed Northern Bypass Highway*



*Source: Peter Wandera, 2013*

## **5.8 Social Characteristics**

Social characteristics deal with the information regarding the relationship that people have with one another individually, or as a group. It also involves social networks, political and social affiliations to given groups, lifestyles, social status and identity among others. People in the study area have mixed social life in terms of tribes and ethnicity, religious and political and social affiliations, social status, varying income levels, formal and informal activities are all mixed together. Few people are in gainful employment but majority are not especially in areas of Katala, Erisa and Nsooba zones. The population of the study area is very high and is on increase. There is largely a co-existence of all classes of people ranging from the very poor to the very rich with different political and religious affiliations, uneducated and the very educated, those in formal and informal sectors. Social characteristics and factors form one of the important factors regarding unplanned urban land use changes in this area and will be discussed in detail in chapters 5 and 6.

## **5.9 Congestion and Noise**

The study area suffers from much congestion and noise due to rapid industrial developments and related activities located everywhere within the area, traffic jams caused by both green and red modes of transport, slum development and associated activities, population explosion, poor allocation and location land use activities. This is mainly due to narrow and improperly constructed roads and drainage channels, lack of decent housing facilities, lack of physical plan implementation, high birth and in-migration rates. Congestion has caused a lot of

psychological stress among people, stress on natural resources especially land and clean water, electricity and many others.

### **5.10 Institutions dealing with land use change**

Uganda is currently under multi-party political system with a number of registered political parties operating in the country. Political offices are occupied after being elected democratically. Therefore, people in the study area are affiliated and pay allegiance to various political parties which include National Resistance Movement (NRM) which has been the ruling party for the last 25 years, Democratic Party (DP), Forum for Democratic Change (FDC) and Uganda People's Congress (UPC) party among others.

The administration of Kampala City is anchored on two wings. That is a political wing and the Technical wing. The publically elected Lord Mayor is the head of the political wing. Under him there are councilors elected from all the parishes of Kampala. On the other hand, the executive director is the head of Technical wing. Under the executive director, there all employees of the City. At a division level, like Kawempe, the elected Mayor is head of political wing while the Town clerk heads the technical wing. These two sides work together and act as checks and balances for each other regarding the running of the affairs of the City. The mandate of the KCCA to manage Kampala city was through Acts of parliament such as the Urban Authorities Act 1964, the Public Health ACT 1964, the Town and Country Planning Act 1964 and the Trade and Licensing Act 1969 among others (Matagi, 2002, p. 123).

The sole responsibility of controlling urban development in Kampala Capital City lies in the hands of Kampala Capital City Authority (KCCA). However, other stake holders such as the central government through its ministries and agencies / authorities such as ministry of lands housing and urban development, NEMA and the Department of Mapping and Survey. Other stakeholders include developers and landlords who are also responsible towards establishments of well-planned urban facilities culminating into planned urban land use changes. KCCA is enforcing orderly and planned land use changes through its enforcement department, it approves buildings of all proposed constructions, carries out land use planning and also conducts urban planning and development sensitization to the general public as ways of addressing unplanned land use changes in the area;



## Chapter Six:

### 6.0 DATA PRESENTATION AND ANALYSIS

#### 6.1 Introduction

The ultimate aim of this study was to map and analyse the land use changes through GIS and explore the causes of unplanned urban land use changes and explore perceptions of unplanned land use changes in Kampala City taking some parishes (*Bwaise I, II & III, parts of Kyebando, Mulago III and Makerere III Parishes – See Map 1*) of Kawempe Division as case study. This chapter therefore, presents and analyzes the data with an ultimate goal of addressing the research questions as specified in the introduction and Methodology chapters. The chapter further links the research findings to the Political Ecology Framework and supporting theories used (see Chapter 4). This and subsequent chapters discuss mainly the power relations and struggles over the resource allocation and distribution manifested in the role that politics, economy, society and ecological environment play to bring about unplanned urban land use changes. Urban Land use change in Kampala has created environmental changes, modifications in eco-system structures and the loss of biodiversity arousing worldwide public concern. Urban land use change is one of the most important human and nature induced environmental changes. When compared to its past status, the present land use in Kawempe Division clearly denotes the mounting pressure of some classes of land use which are under stress by other land use activities.

#### 6.2 General Characteristics of survey respondents

The characteristics of the research respondents (in my case the local community and the technocrats) are of great importance in any social research. This is because their characteristics in terms of land use activities they do have a direct relationship with the research problem in this case unplanned urban land use changes. The characteristics of the local community include sex, age, education level, land ownership status, residence status, occupation and duration of residence within the study area. The following components were considered as presented below;

##### 6.2.1 Sex

A total of 160 respondents participated in the small survey that was conducted. 105 (65.6%)

Sex		
Gender	Respondents	Percent (%)
male	105	65.6
female	55	34.4
Total	160	100.0

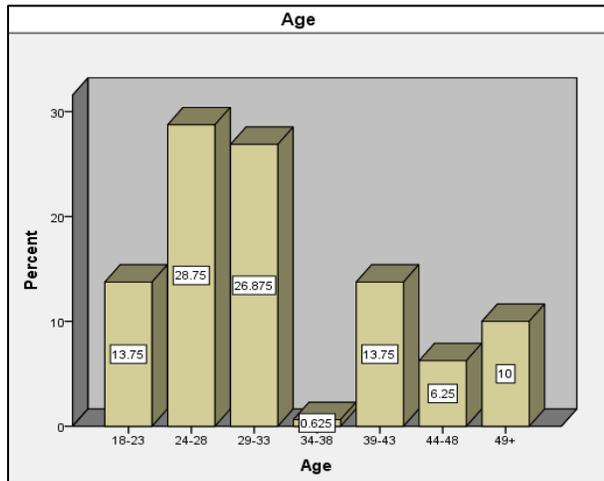
Table 3: Socio-Economic survey respondents

respondents were men while 55 (34.4%) were women. A 50-50 % of each gender could not be achieved because most females were unwilling to participate in this survey due to social reasons

which include limited knowledge on land matters and cultural and religious beliefs which prohibit housewives to freely interact with strangers among others. On the other hand, men were more than ready to answer the survey questions.

### 6.2.2 Age

The survey was conducted among the community members aged 18 and above as shown in in



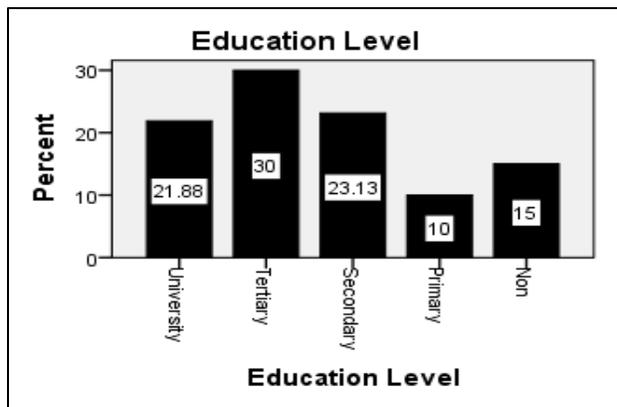
graph 1. In Uganda the age of 18 is considered the minimum age of consent, that is why I chose it as a minimum age of respondents to be included in the survey. The respondents' age was grouped into seven groups of (5) year interval ranging between 18-23 and 49+. Most of the respondents were from the age groups of 24-28 (28.75%) and 29-33 (26.88%). The least was from 34-38 (0.63%). This means that people living and working in the study area are mainly the youth (aged 18 – 33 years). This is

Graph 1: Age variations of socio-economic respondents

supported by the Uganda National Bureau of Statistics (UBOS, 2006b, 2012) reports. They argue that the young population in the area reflects the general population composition in Uganda but is exacerbated by young people migrating there in search for cheap housing facilities and formal and informal employment opportunities in industrial, civil, public and economic sectors.

### 6.2.3 Education Levels

The respondents were of varied education levels - see graph 2. The education levels ranged



from none (15%) to university (21.88%). Most people (over 75%) had sufficient levels of education- Secondary, Tertiary and University levels. This education level further explains the existence of large youth number in the area. Many are fresh graduates and students from Makerere University which is located less than a kilometer from here and other tertiary institutions plus the drop puts

Graph 2: Education Levels of survey respondents

from primary and secondary schools who come into this area to search for jobs and cheaper housing options.

#### **6.2.4 Land ownership status**

Most of the respondents (72.5%) were tenants while 26.25% only owned land. 1.25% were between these two categories. They included children, and household employees doing casual work. The existence of such huge numbers of people without security of tenure has direct impact on rapid land use changes as will be discussed shortly within this chapter. Most of the land belongs to Buganda Kingdom under Kabaka (refer to Section 2.8).

#### **Residence Status**

66.9% of the total survey respondents were residents of the study area while 33.1% were

<b>Residence Status</b>		
<b>Residence Status</b>	<b>Respondents</b>	<b>Percent (%)</b>
Residents	107	66.9
Non-Residents	53	33.1
Total	160	100.0

*Table 4: Residential Status*

non-residents. The residents lived and worked in the area. Non-residents were those people who only worked in the area but lived outside. Knowing the residence status is of great importance in this study because it shows the

level of stability or the rate at which land used change because of in-coming or out-going residents. Table 4 above gives a summary of the residence status among the survey respondents.

#### **6.2.5 Occupation and Income generating activities**

<b>Employment Sector</b>	<b>Respondents</b>	<b>Percent (%)</b>
Trade & Commerce	49	30.6
Property Agent	9	5.6
Environmentalist	1	0.6
Politician	5	3.1
Industrialist	14	8.8
Construction	3	1.9
Transport	25	15.6
Civil Servant	14	8.8
Non-Worker	26	16.3
Others	14	8.8
Total	160	100.0

*Table 5: Occupation and Income generation activities*

There were a number of economic sectors in which the local people participated for their daily source of incomes. Table 5 summarizes some of employment sectors in the area. Most people (30.6%) were in Trade and Commerce. This was followed by those in Transport industry (15.6%). However, the percentage of unemployed people is also high

(16.3%). This is relevant for my research because employment sectors manifest in into land use activities and policies that hence cause land use changes.

**6.2.6 Duration of residence**

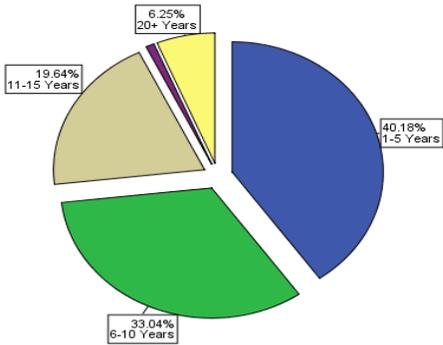


Figure 31: Duration of residence

Most of the survey residents were new in the area in a sense that they were not native residents and had not stayed here for a very long time as per figure 27. In the survey over 58% of the respondents had lived in the area for less than ten (10) years. The area is experiencing high levels of in-migration. The high level of in-migration is because of rural-urban migration as well as internal city migrations.

**6.2.7 Bias and Representativity**

Bias is unavoidable in most cases. This research had some bias which rose from the failure to take into account all of the possible variables of unplanned land use changes. Such possible valuables include entire population, house hold income levels, gender issues, seasonal activities among others all of which have a significant effect on unplanned land use changes. There was also inclusive bias which came as a result of selecting respondents based on convenience. This is where only the willing and available people at the time of research were considered thus representing a small geographic, demographic and response range whose results cannot extrapolate the ideas and views of the entire population. There was also procedural bias which rose from the fact that most of the interviews with the technocrats, stakeholders and key players were conducted hurriedly thereby leaving some of the questions unanswered and some also giving responses they were unsure of. This was because most of the interview respondents did not have much time given the fact that most of them hold offices of so many responsibilities to attend to.. However, bias was minimized using random sampling to determine respondents as described in methodology chapter section 4.6.

It is important for researchers to make sure that the data sample is a representative enough of the study population. A representative sample is a sample that resembles the total population under study and this is important when your goal is to understand and generalize the factors and characteristics behind a certain phenomenon such as unplanned land use changes as in my case. This is important because it enables researchers to make valid analysis and conclusions (Seale et al. 2004). I ensured that my data sample was representative enough by

using random selection of the interview respondents (stakeholders and technocrats) and by using Non-probability sampling and in particular convenience sampling method for the survey respondents (local community) as described under the methodology chapter to ensure that each individual of the local community had the same chance of being selected (Kitto et al. 2008). Random selection was very important in my case because I needed a representative sample from the population for valid analysis and conclusions.

However, in social research, the generalizability of findings is quite problematic because it is objectively very difficult to check to see if at the end of the study, the findings from the sample actually mirror the rest of the population. This is because the purpose of such studies is to learn about individuals specifically, their knowledge, beliefs and practices all of which quite differ from an individual to an individual (Strauss & Corbin, 1990). The fact that a very small portion of both stakeholders and the local people were involved in the survey makes this study not to be fully representative but rather reflect thoughts and feelings of few individuals at the expense of others. Therefore, the research findings of this study does not necessarily capture all the stakeholders' perceptions on unplanned land use changes and the alleged causes of unplanned land use changes that local people who participated in the survey pointed out. For example, with GIS operations, only dominant land use activities were considered thus undermining the less dominant activities.

### **6.3 Research Question 1: Land use changes in the study area**

The dynamic land use changes in Kawempe Division have in 17 years occurred independent of physical and urban planning. This is in a sense that they occur naturally, spontaneously and regardless of any physical and urban development guidelines, control and interventions. For example, it will not stop an investor to establish a factory or an industry in the areas where there are residential settlements at any particular time provided he or she is able to displace people who have been staying on that particular piece of land. This is due to current environmental, political, economic and social dynamics at play which will be discussed more thoroughly in subsequent sections of this and the next chapter. Therefore Kawempe has a number of mixed land use activities spread all over. There were no designated zones for particular land use activities but rather everything is mixed up together. Furthermore, the actual land use changes have not been documented and analysed. This is a knowledge gap that this study seeks to address. For the purposes of simplifying the study and GIS map production, only dominant land use activities were considered thus making the collected data, its presentation and

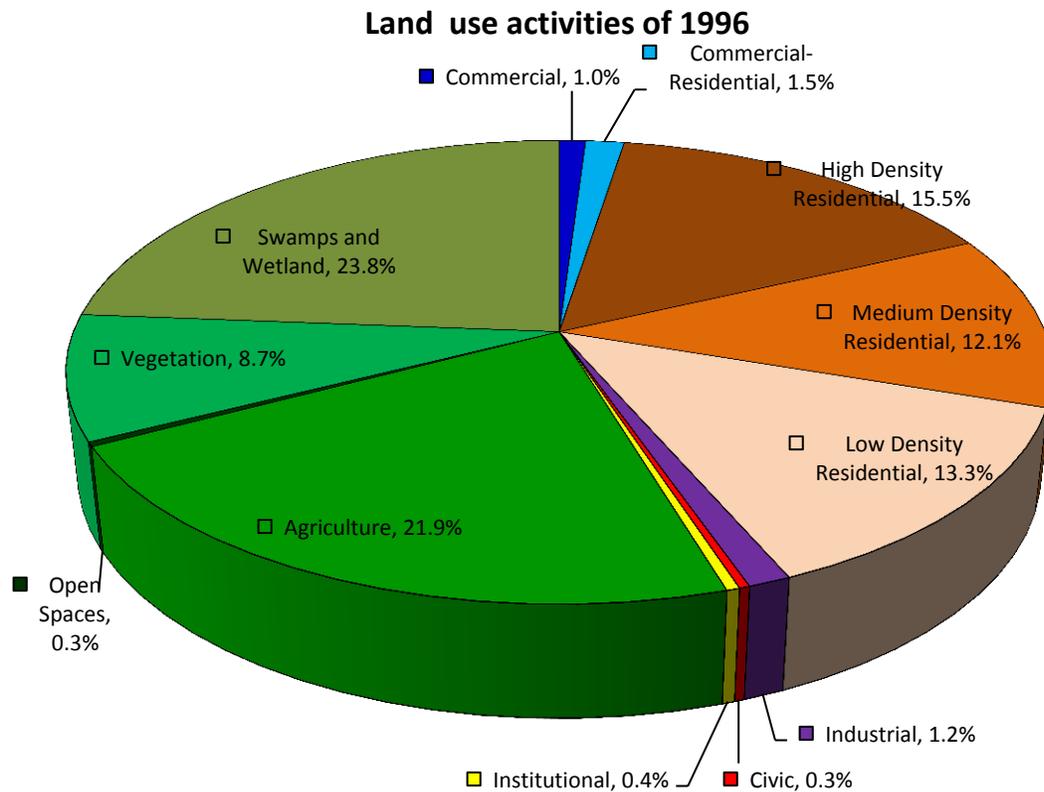
analysis to be largely generalized. Significant land use changes have occurred over the years of study right from the study base year of 1996 to date – 2013. This 17 year period has seen major traditional land use activities - Land use activities that have been in place for a long time, shrink and get over run by new and considered more economically relevant and viable land use activities. Examples of traditional land use activities in the study area mainly include agriculture, forestry, swamps and wetland. The new land use activities mainly include industrial, commercial and settlement developments. This sub-section of the chapter basically seeks to address the research question of “*What are the land use changes in Kawempe between 1996 and 2013?*”.

### **6.3.1 Past land use activities**

A number of land use activities existed in the area long before the colonial period. According to literature reviews, the major land use activities in the area were agriculture, Swamps and Wetland and forestry (Olson, 2004; Tukahirwa, 2002). Land use activities started changing with the coming of colonial rule in Kampala when Uganda became a British protectorate in 1894 as the area was gazetted as a residential and commercial area for the blacks who worked to the city and other industrial areas (Maxwell, 1995). Through, literature reviews of the past land use maps, related literature and GIS operations, it was found out that prior to year 2000 Kawempe had the then dominant land use activities which included; Residential (24%) and Commercial (16%) land use activities among others. Most of other land use activities were sort of balanced covering between 4 and 9% of the total land as seen from figure 32 above.

### **6.3.2 The land use activities of 1996 – (Base year of study)**

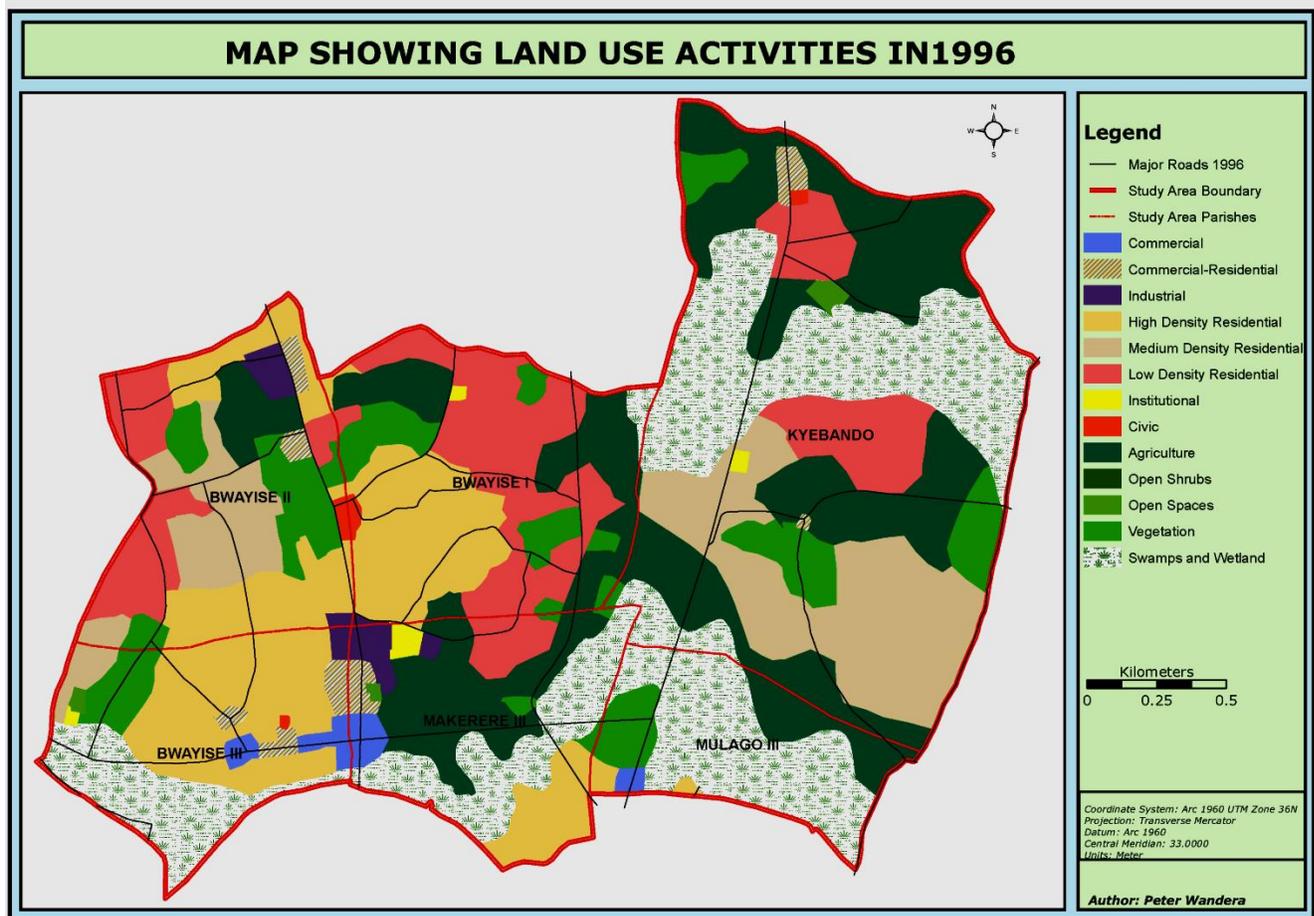
Using GIS operations as explained under the methodology chapter, a 1996 land use map was developed (*map 4*) after which its descriptive statistics were used to develop the pie-chart below (*figure 32*) showing area coverage each of the then land use activity. In 1996 (base year) the dominant land use activity was Agriculture covering 21.9% of the total land within the area. This was followed by Swamps and Wetland (23.8%), High Density Residential (15.5%) and Low Density Residential (13.3%) among others. The least dominant land use activities were Open Spaces and Civic each covering 0.3% of the total land use area. Figure 33 below shows a detailed summary of land use types of 1996 based on their percentages.



*Figure 32: Land use activities of 1996*

Map 4 below further shows the visual the location and varied extent of individual land use activities and zones as they existed in 1996. The established land use zones were 56 in this year (see the table above). As seen from this map, in 1996, most of the Eastern and Southern parts of the study area was mainly under Swamps & wetlands, Agriculture and forestry. On the other hand, most of the Central and Western parts were largely under residential and commercial activities.

Map 4: 1996 Land use activities



Source: Peter Wandera 2013

### 6.3.3 2004 Land use and land use changes

The 2004 land use map revealed complex dynamic changes in land use activities within the area. The period of eight years saw serious land fragmentation within the area resulting into 136 zones compared to 56 land use zones which existed in 1996 (see table 6 in annex for details). High and Medium Residential land use activities covering 32.2% and 22% respectively had become dominant land use activities in the area as compared to 15.5% and 13.3% in 1996. Much of both agriculture and swamps & wetlands land had been drastically reduced to 9.5 % and 10.8% from 21.9% and 23.8% respectively as of 1996 thus resulting into serious environmental degradation in the area. The civic land use remained unchanged at 0.3% as the least land use activity. By this year, Commercial-Industrial (a mixture of shops and Industrial activities operating the same land use zone) - a new and a unique land use activity had emerged covering 0.8% of the total land. Figure 33 below shows the details of individual land use activity and its

area coverages as of 2004. See table 7 in annexes for details on land use zones and area coverages within the period of eight years (1996 – 2004).

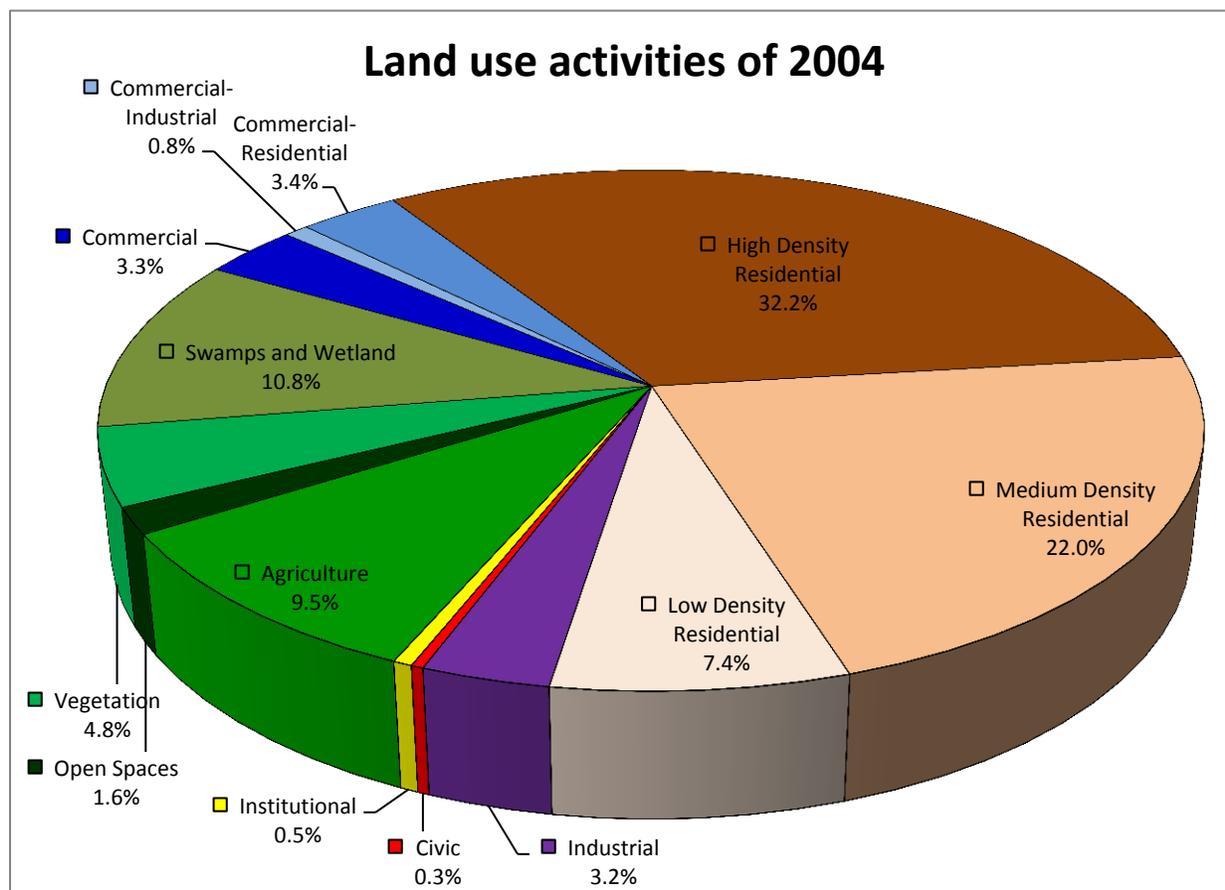
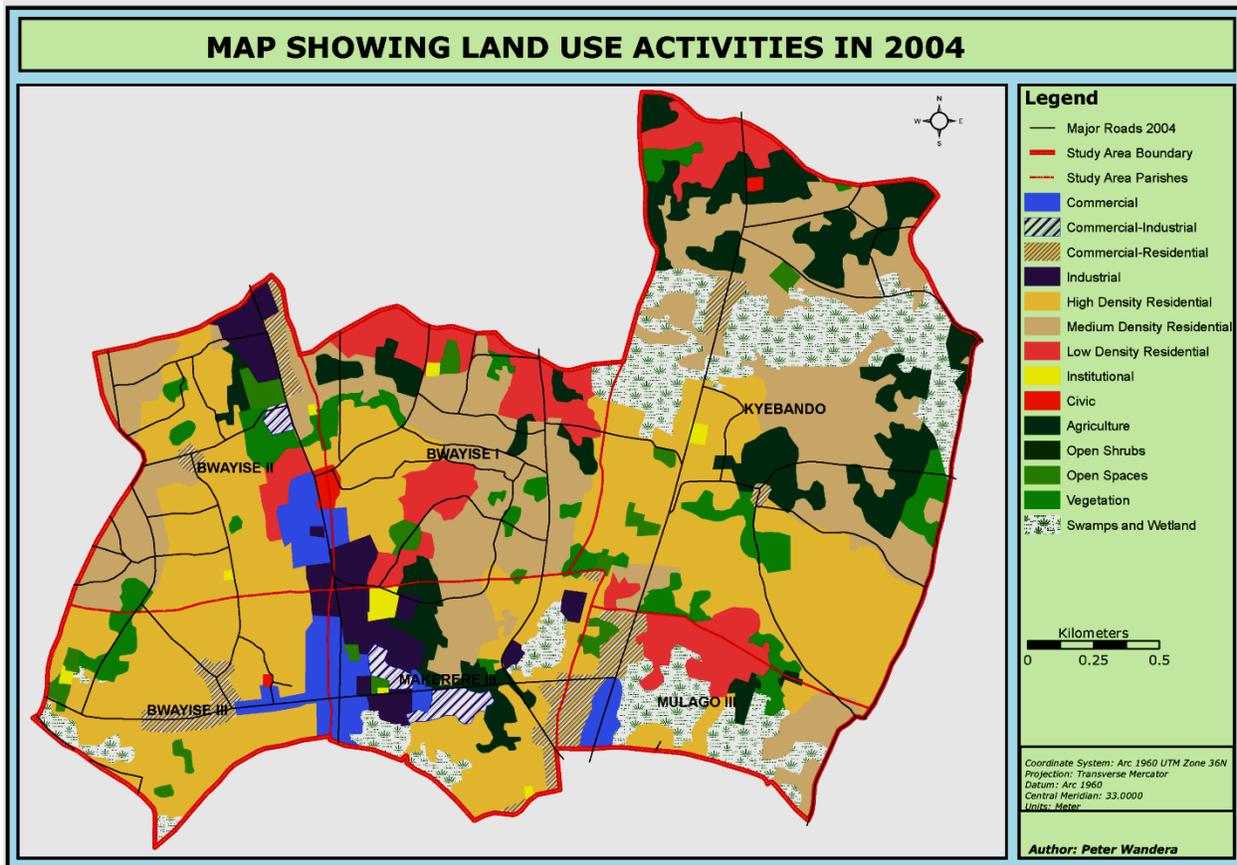


Figure 33: Land use activities of 2004

The 2004 land use map below revealed a big change in the land use pattern whereby land use activities which included Residential, Commercial and Industrial zones saw significant growth and expansion against other land use zones. Commercial and Industrial developments have increased so much since environmental degradation in such areas are often blamed mainly on settlement rather than other activities. The most affected land use activities included Agriculture, Forestry and Swamps and Wetland. New land use activity – a mixture of commercial and Industrial had emerged by this time. It was also noted that the major road network in the area had more than doubled since 1996 to 2004. From the planning point of view most of these changes occurred in unplanned manner which is based on the fact that most of these land use changes are incompatible with existing land use activities. For example Industrial developments have of late been locating within residential and ecologically sensitive areas without prior planning and crying out Environmental Impact Assessment (EIA). Much of the

once green Eastern and Southern parts as of 1996 - map 4 had been replaced by mostly residential developments. See the details in map 5 below;

*Map 5: 2004 land use activities*



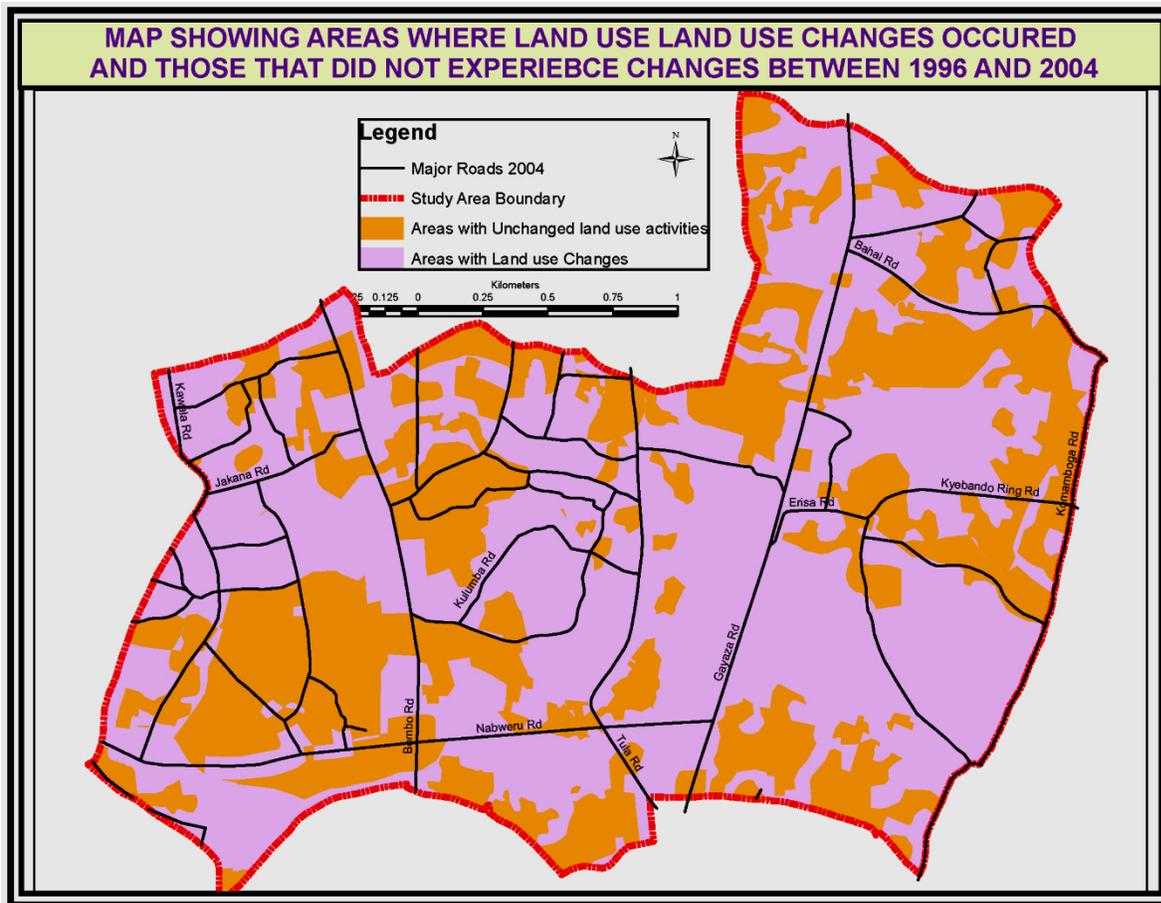
*Source: Peter Wandera 2013*

#### **6.3.4 Areas where significant land use changes occurred between 1996 to 2004**

The GIS overlay results of the two maps - that of 1996 with that of 2004 below exposed areas where significant land use changes occurred and those where little or no changes were recorded. It was observed that 3.78km<sup>2</sup> of land did experience these land use changes as opposed to 2.30km<sup>2</sup> of land that did experienced little or no land use changes as shown in the map below.

It should be noted that not all these land use changes were unplanned, the fact is some but of course very few of the land use changes that took place were in conformity with land use planning of KCCA based on its master physical development plan of the city. However, majority of these land use changes were not in accordance to the plan and thus against city development policies and regulations. Map 6 below shows areas where significant land use changes occurred between 1996 and 2004.

Map 6: Areas with significant land use changes between 1996 and 2004



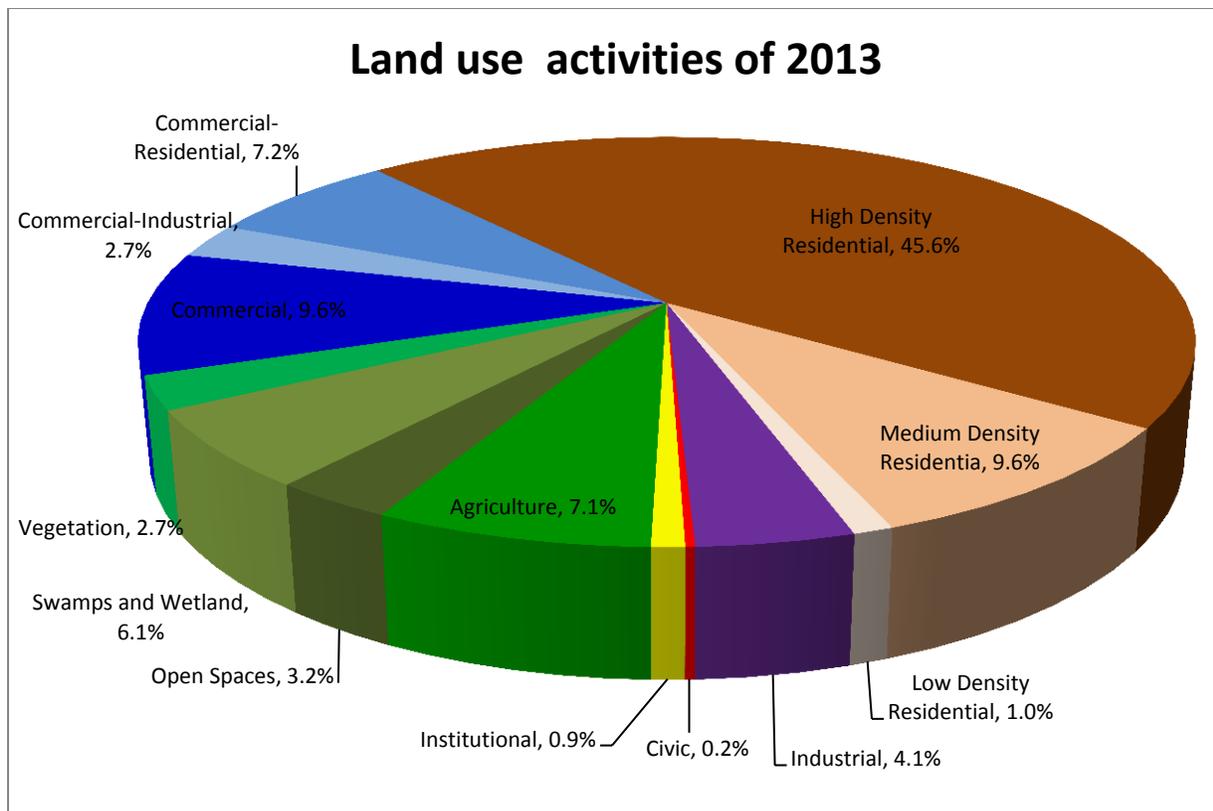
Source: Peter Wandera 2013

### 6.3.5 Land use activities and changes in 2013

There are quite a number of land use activities that were being practiced in the area as shown in figure 34 and map 7 below. The current dominant land use activities include residential and commercial activities as these accounted for total of over 56.2% and 19.5% respectively as compared to a total of 40.9% and 2.5% in 1996. However, by 2013, residential land use growth had from a total of 61.6% as of 2004 as compared to 56.2% as of 2013 as opposed to commercial land use developments which have claimed more land and grew from 7.5% in 2004 to 19.5% in 2013. Industrial land use development has been on steady increase from 1996 with 1.2% through 2004 with 3.2% up to 2013 with 4.1%. The combined current income generating land use activities which include commercial and industrial land use activities cover a total of 28% of the total land within the study area. Throughout the study period, Wetland and Swamps, agriculture and vegetation land use activities have suffered land loss to other activities. For example in 1996 wetland and swamps occupied 23.8%, agriculture 21.9% while vegetation

covered 8.7% of the total land. By 2004 the wetland and swamps had been encroached on and reduced to 10.8%, agriculture to 9.5% and vegetation to 4.8%. Currently (2013) the wetland and swamps cover only 6.1%, agriculture 7.1% and vegetation 2.7% of the total land. Open spaces have seen a slow but a progressive land gain throughout the study period. For example in 1996, the area had only 0.3% of the open spaces. In 2004 open spaces increased to 1.5% and currently they cover 3.2% of the total land. This steady increase of the open spaces is attributed to economic motives and leisure activities. Most of the open spaces are play grounds used not only for social and political gatherings and concerts but are also used as weekly and monthly open markets where traders from different parts of the city and outside the city bring their commodities and items of trade. Institutional land use is also experiencing a very slow increase. For example in 1996 it covered 0.4%, in 2004 it covered 0.5% and currently, it covers 0.9% of the total land. This is because of slow but increasing religious, health and education facilities within the area. Lastly Civic land use activity has been stale in terms of growth and has experienced a slight reduction. In 1996 and 2004, it occupied 0.3% and currently occupies 0.2%. This is because there is no much public land in the area and the government and the local authorities have not expanded on their existing land. KCCA instead leased off some of its land for commercial and industrial development thus resulting into decline of civic land use activity.

Therefore it is currently very clear that Residential and Commercial land use activities have very much surpassed all other land use activities in the study area. It is imperative to note that the land gain by Residential and Commercial activities is at the expense of other land activities such as swamps and wetlands, vegetation and agriculture among others. Figure 35 below shows the current land types and their area coverages in terms of percentages. See table 8 in annexes for details.



*Figure 34: Land use activities of 2013*

The current land use activities are very complex. The land has been further fragmented from 136 as compared to 2004 with 220 zones due to increased land fragmentations in the area. High (45.6%) and Medium (9.6%) Density Residential activities saw rapid gain of land against all other land use zones. Residential land use activity virtually covers 56.2% of the total area. Swamps and wetland are currently at the point of total extinction as the area they used to occupy is currently under commercial and residential land use zones. The green and environmental areas have all been reduced to mere pockets scattered throughout the study area. The major road network development in the area has so much increased to link different land use activities within and beyond the study area. Economic developments (Commercial (9.6%), Commercial-Industrial (2.7%) and Commercial-Residential (7.2%)) are on rise and their development is in linear form following major roads within the study area.

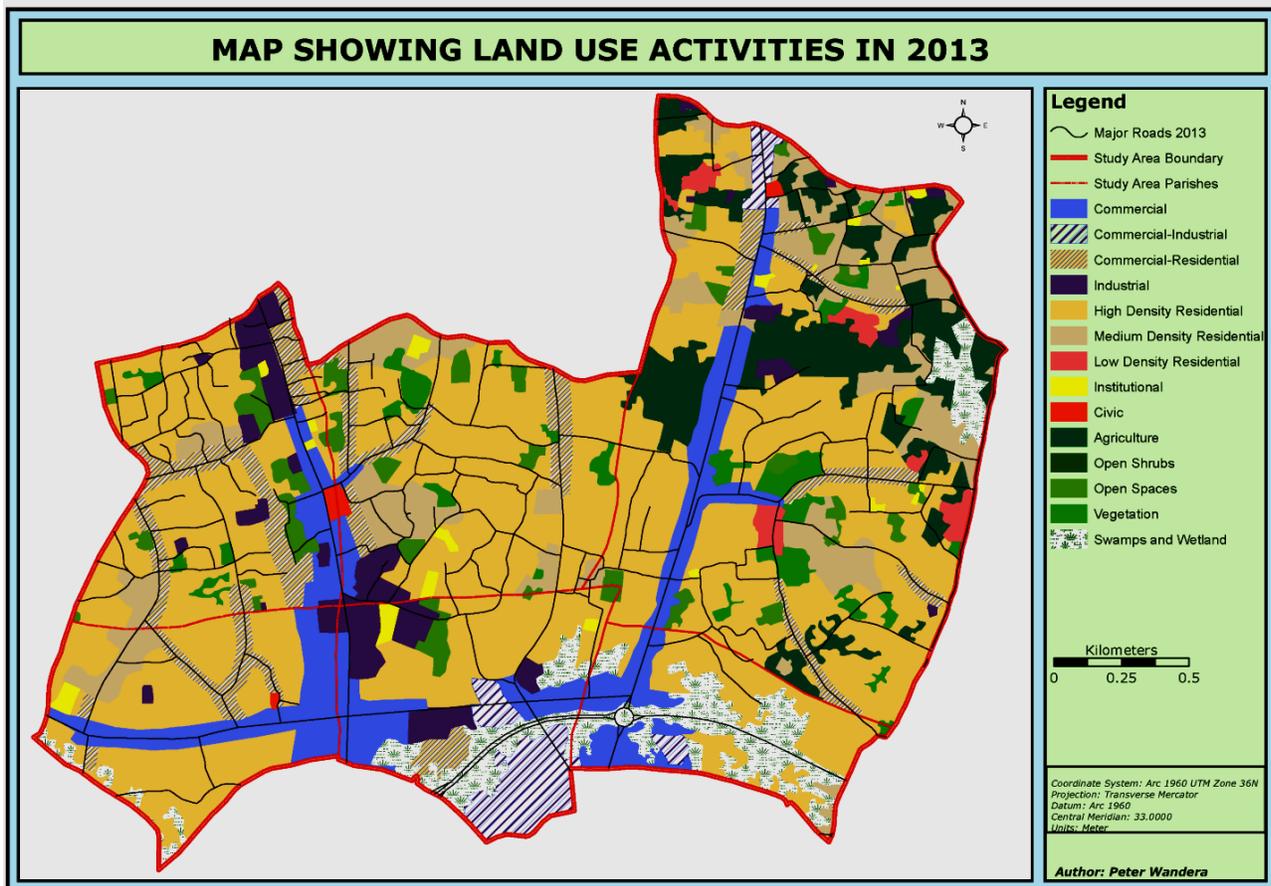
#### **6.3.6 Linear development pattern of Commercial and Industrial activities**

It is a common site in most cities of developing countries for major income generating developments to follow major roads and locate within and around city centers. All the three theories used in this research and the GIS exercise do support this fact. In the study area for example (see map 6 below), commercial and industrial establishments follow roads thus taking

on a linear pattern. This is because locations along the major roads offer quick access by both the customers and the workers. This has made land along major roads extremely expensive in terms of costs and also has accelerated land grabbing and forced evictions from the land squatters in these locations.

Map 7 below shows the current complexity of unplanned urban land use changes in the study area. Linear developments of commercial and Industrial developments along the major roads such as Bombo Road are very visible on the map below. Industrial pockets are scattered in throughout the study area. If this trend continues, it is most likely that the whole area will become industrial and commercial area. If industrial and commercial activities are not checked and guided they may force the settlements and few remaining green areas out of the area as their dominance increase rapidly.

*Map 7: 2013 land use activity map*

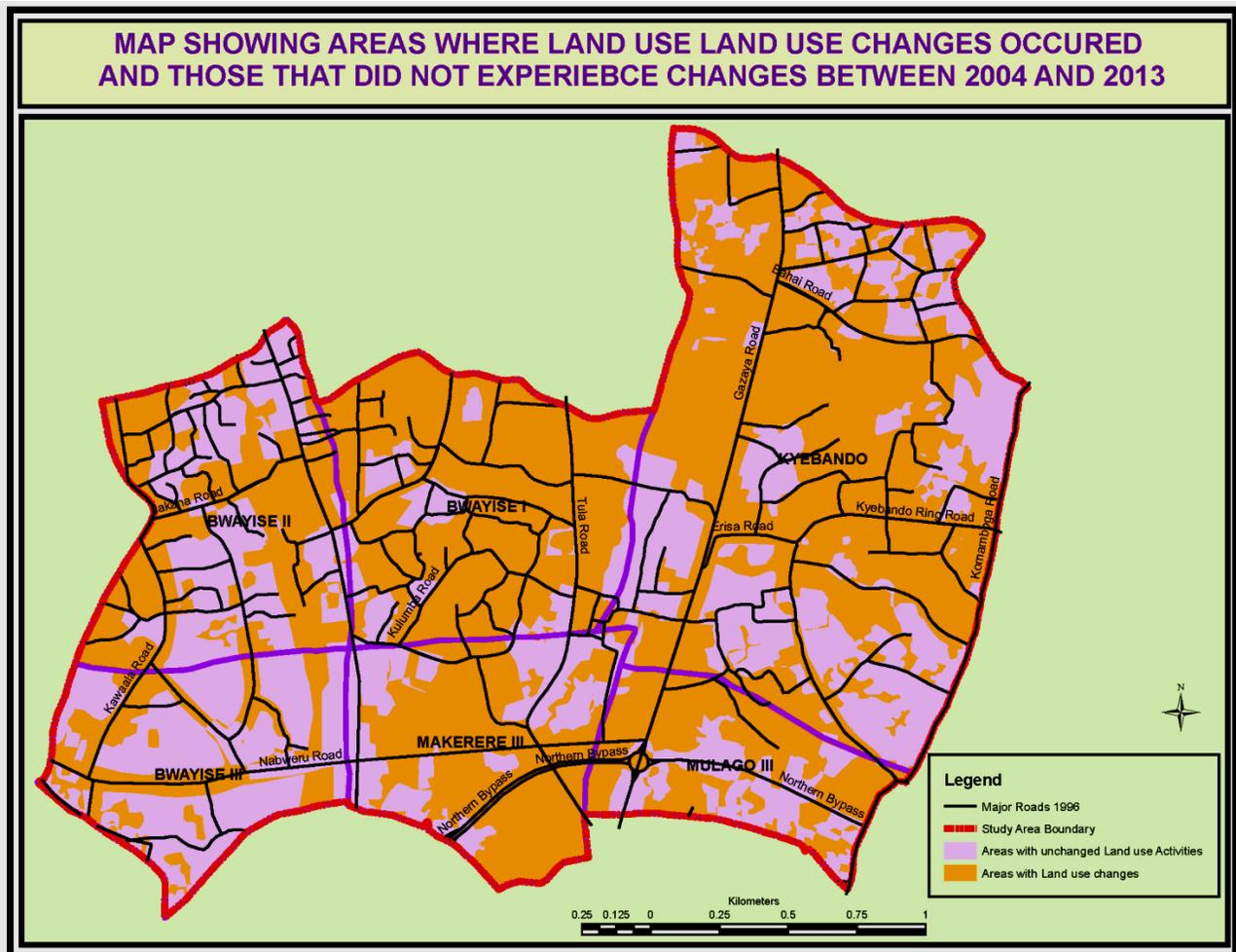


*Source: Peter Wandera 2013*

### 6.3.6.1 Areas with significant land use changes between 2004 and 2013

GIS data analysis between 2004 and 2013; that is nine year period revealed yet further steady occupancies of unplanned urban land use changes within the study area. A total of 3.94 Km<sup>2</sup> of land experienced the changes in land use activities as opposed to only 2.14km<sup>2</sup> that remained relatively with the same land use activities. Map 8 below confirms this finding as it shows the specific locations where significant land use changes occurred during this period;

*Map 8: Areas with significant land use changes between 2004 and 2013*

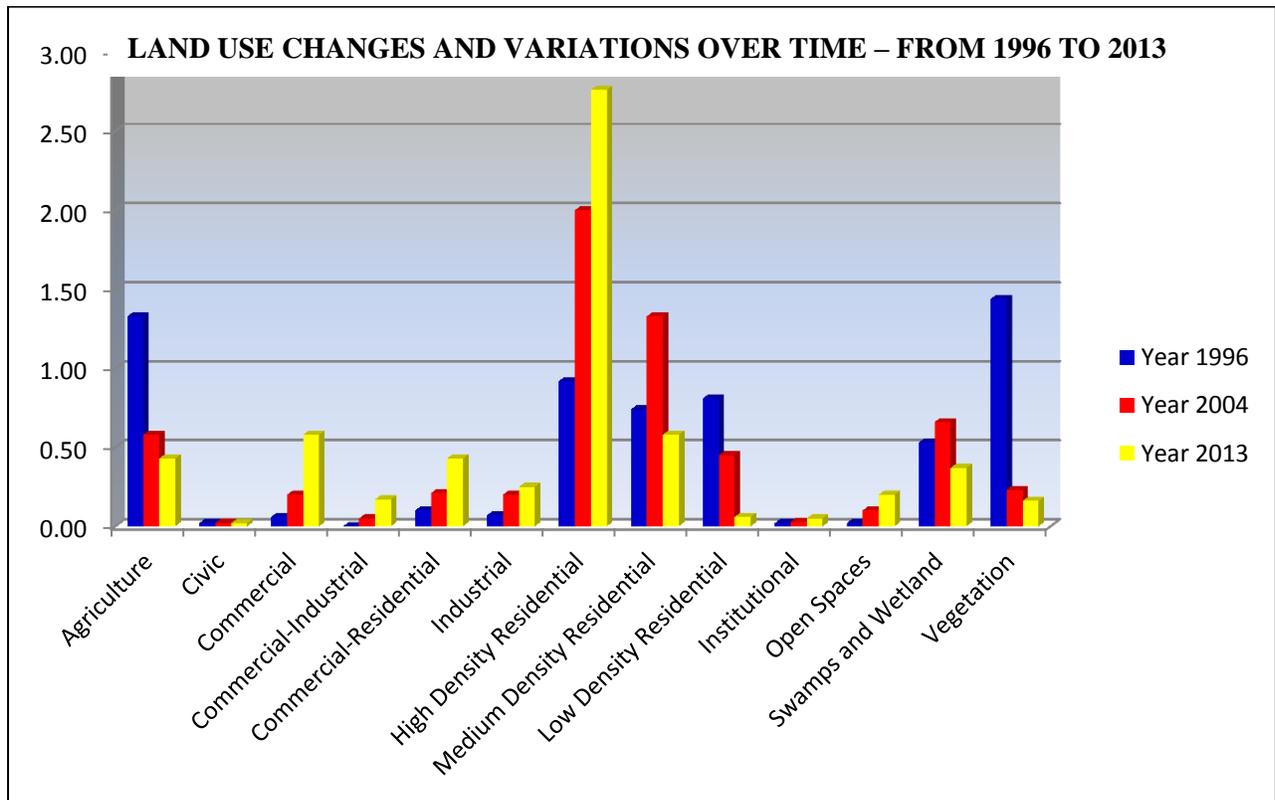


*Source: Peter Wandera 2013*

### 6.3.7 Land use changes in 17 years – from 1996 to 2013

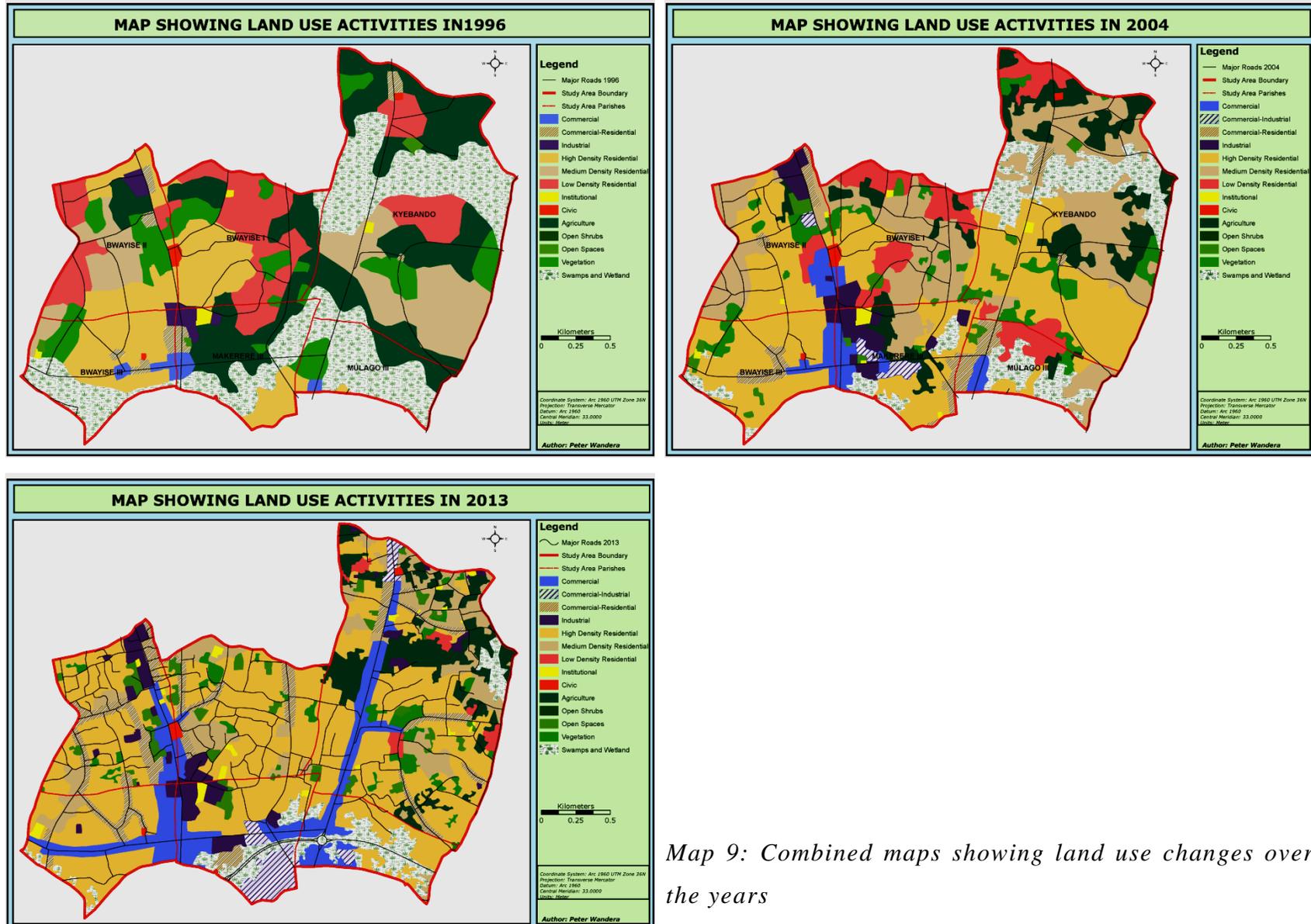
Land use activities in the study area have steadily changed over time as shown in graph 3 below and in the maps 5 to 8 above. GIS statistical analysis under appendices in table 9 for example revealed that agriculture and vegetation were dominating land use activities in 1996. These have now been undermined by residential and commercial developments as shown in

graph 3 below. Map 9 below shows land use activities per each of the selected years and how land use activities have changed over time.



Graph 3: Land use changes and variations over time

## COMBINED LAND USE MAPS OF THE STUDY AREA SHOWING LAND USE CHANGES OVER THE



Map 9: Combined maps showing land use changes over the years

## **6.4 Research Question 2: What are the causes of unplanned land use changes in the study area?**

This sub-section analyses the causes of unplanned urban land use changes within the study area in a bid to address the second research question – *“To explorer the causes of land use change in: Bwaise I, II, III parishes, Makerere III parish, parts of Kyebando and Mulago III parishes –Kawempe Division from 1996 to 2013”*. This analysis is based on interviews supported by observation and secondary data sources.

There are important factors explaining unplanned land use changes in the area based on political, social, economic and environmental settings. Both the survey and stakeholder interviews were used to answer this research question. The scarcity of alternative resources to urban livelihood sustainability has resulted into fierce conflict of interest and equities for land in terms of its uses. Land offers many mutually exclusive alternatives of use which include residential activities, industrial and commercial establishments, agricultural activities, communication and infrastructure developments, wildlife habitat and many others. When alternatives to urban livelihood sustainability are devoid and most of socio-economic and political factors attract virtually all land use activities in one particular geographical space, competition and conflict of interest emerge and environmental related problems of say encroachment to ecologically sensitive areas and poor solid waste management among others kick in. The perceived factors causing unplanned land use changes in the area were mainly analyzed within the Political Ecology framework and the supporting theories – land rent and hybrid land use theory as presented herein;

### **6.4.1 Economic causes**

Economy all over the world plays a very big role in transformation of cities, towns and other urban centers for example China, USA and European countries have all witnessed this (Ma, 2002). In fact all cities all over the world have witnessed this. This transformation takes place on land thus replacing the existing use at that particular point to a new land use. The transformation is explained well by the Land Rent Theory which explains land uses as a market where different land uses are competing for a given location (*Theory Chapter*). For example business enterprises and industrial developments in the study area compete for land that is near the city center (CBD) and those along or near roads for quick accessibility and being near other similar and related

business enterprises so as to enjoy economies of scale resulting from agglomerations such as market and reduced operational costs. Furthermore, land is also relatively cheaper since it is largely informal. It should be noted that land use change in terms of economic development and transformation is good and very necessary for the developing countries like Uganda once it takes place in a planned manner within the all-inclusive development guidelines and measures that take care of classes of people so as to cater for present and future economic needs of the society. This will serve to eliminate and minimize the negative outcomes of unplanned land use changes which include city developments into slums and the related problems as in case of Soweto in South Africa (Holland, 1994), environmental (air, water & Land) pollution for example as in the case of Shanghai in China (Kan & Chen, 2003) and depletion of non-renewable natural resources such as water, swamps and wetlands among others.

In Uganda and particularly in the study area economic development has brought about the urban dynamics which have resulted into massive unplanned land use changes. Economic boom has attracted many people in the area resulting into rampant in-migrations inclusive of rural-urban and inter-city migrations. Furthermore, push factors related to limited opportunities for employment, education and health among others from country side have contributed much to the rural-urban migrations thus increasing pressure on urban land resulting into unplanned land use changes in a bid to accommodate the ever increasing human population and its demands. The area has very high human population with over 152,600 people (UBOS, 2006b, 2012). High human population means availability of cheap labor force, ready market for most of the goods and services produced and sold in the study area. Economic growth has encouraged the government to improve on the infrastructure and communication networks thus improving accessibility within and surrounding areas. This has attracted a number of economic establishments which include industries and factories, retail & whole sale shops, supermarkets, and both informal & formal economic activities among others. However, the location and establishment of these business enterprises is not in accordance to the physical development plan of KCCA (Map 2). Their establishment is largely business and profit making driven. The end result is increased pressure and stress over the available land and thus making it scarce and fragmented into smaller land pieces each accommodating a different activity. The scarcity of land has resulted into a continuous competition (*Land Rent Theory*) where land use activities compete for vintage locations to be able to attract economic benefits (*Hybrid Land use Theory*)

thus leading to unplanned land use changes in the area. The strategic location of the area along the major routes (*Northern bypass, Bombo, Hoima and Mubende Roads*) presents it with a comparative advantage of conducting business and compared to other less strategically located areas. The situation is further accelerated by low household incomes among the local community. A large number of people in the area very poor and have a very low marginal propensity to save due to low incomes and massive unemployment rates (Kiiza & Pederson, 2001). Most people – both the private land owners and the squatters who have built without permission and have turned to any available land they can occupy as a means of generating the necessarily livelihood income. A number of residential and commercial buildings meant to be rentals are put up each day due to increasing demand by those looking for a place to stay in the city where they can access work and other urban amenities. Most of these establishments are without planning and therefore don't follow development regulations and guidelines. Figures 35 below shows the high density residential land use and how it is being overrun by commercial land use in figure 36.



*Figure 35: High density residential structures*



*Figure 36: Emerging Commercial Developments*

Figure 37 below summarizes the perceived factors from the interview respondents that cause unplanned urban land use change in the study area. When asked to tick which of the pre-defined factors they saw as causes of unplanned land use changes in the area, the respondents answered as shown in the figure below. The perceived factors for unplanned land use changes included availability of market for goods & services (19%), high human population (16%), comparative advantage arising from cheap labor and agglomeration of scales (15%), improved accessibility to market (15%) and infrastructure and communication network (14%). Other economic causes responsible for of unplanned land use activities in the area included poverty

driven migration into Kampala. For example, high and unemployed population in the area provides cheap labor and a large market for produced goods and services. This does not only encourage industrial and commercial establishments but also lead to increased population which consequently results into demand and establishment of more housing facilities subsequently causing unplanned land use changes.

### Perceived economic causes of unplanned land use changes

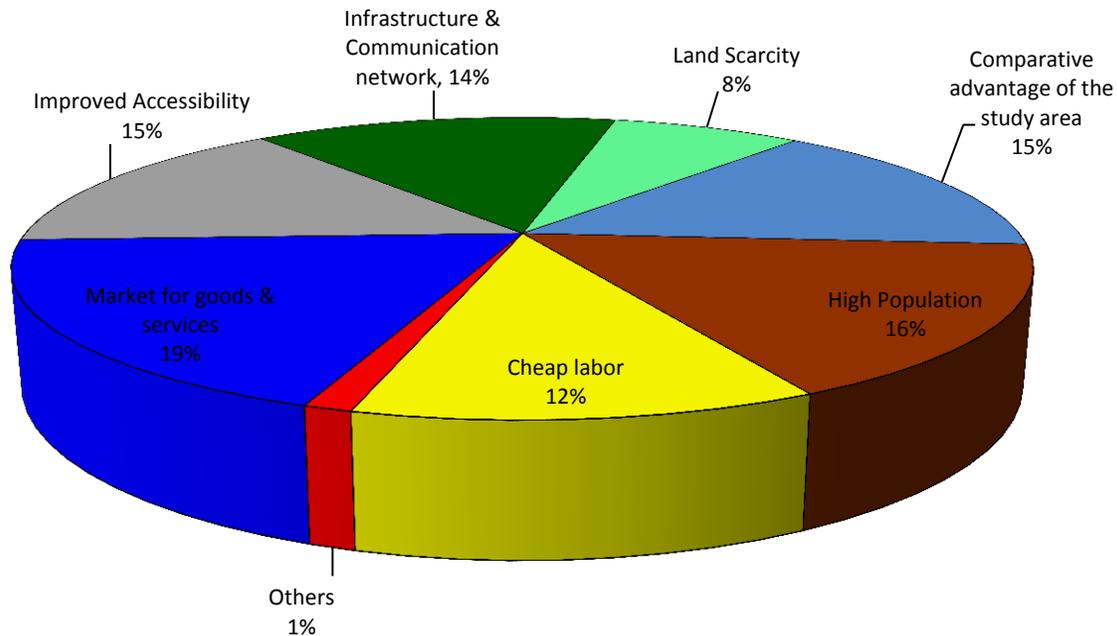


Figure 37: Perceived economic causes of unplanned land use changes

#### 6.4.2 Social causes

These are mainly factors related to people, their behavior, characteristics, available facilities to people and what they interact with that cause unplanned land use changes in the area. It should be noted that these social factors have an inseparable link with economic factors into what is commonly termed as socio-economic. For example Economic and Industrial developments are established in an area because of the available markets for the products and labor needed for production processes. The power of society is manifested through its actions either coordinated or uncoordinated. Human nature and cohesion have for long been driving forces that bring about changes on land and in land use activities wherever humans have settled. The day today human activities in the area which include trade & commerce, transportation, recreation, and various forms of interactions among others have caused unplanned urban land use

in the area. High human population in the area resulting from; natural population growth through high birth rates, migrations (*Rural-Urban, International & Inter-City Migrations*), and individual preferences because of its location in relation to the Kampala's CBD to stay in the area (UBOS, 2006b, 2012) have made it inevitable for land use activities to stay put or change according to physical development plans of the city authorities.

Historical and cultural factors accounting for (7%) of the responses have been key in attracting people to come and settle in the area. These based on land tenure and the affordable housing and accommodation facilities within the area. Much of the land in this area is under Mailo tenure system from the 1900 Buganda agreement (Low & Pratt, 1960). That is; most land in the area is for Buganda Kingdom under the Kabaka of Buganda (*see land tenure sub-section in literature review chapter for details*). Under this tenure system, the local people have no security of tenure but are allowed to construct temporarily and semi-permanent structures on land. However, since the kingdom has no well-established monitoring land means, a number of people have gone ahead to establish permanent buildings and other structures. Furthermore according to the tradition of Buganda, the Kabaka does not chase his people from land. One respondent was quoted "*Ssabasajja Kabaka waffe tagoba bantu be kuttaka*" meaning that Kabaka does not chase his own people. This therefore encourages people in one way or the other to establish unplanned land use activities in the area. The research further discovered that the existing amenities in place which include availability of consumer goods and services (14%), affordable housing prices (12%) and improved transport means (16%) have made the study area a socially popular area making it busy with all sorts of formal and informal land use developments which thus influence land use activities because of the need to address the ever increasing social demands. Figures 38 and 39 below show some of the socio-economic activities carried out in the study area.

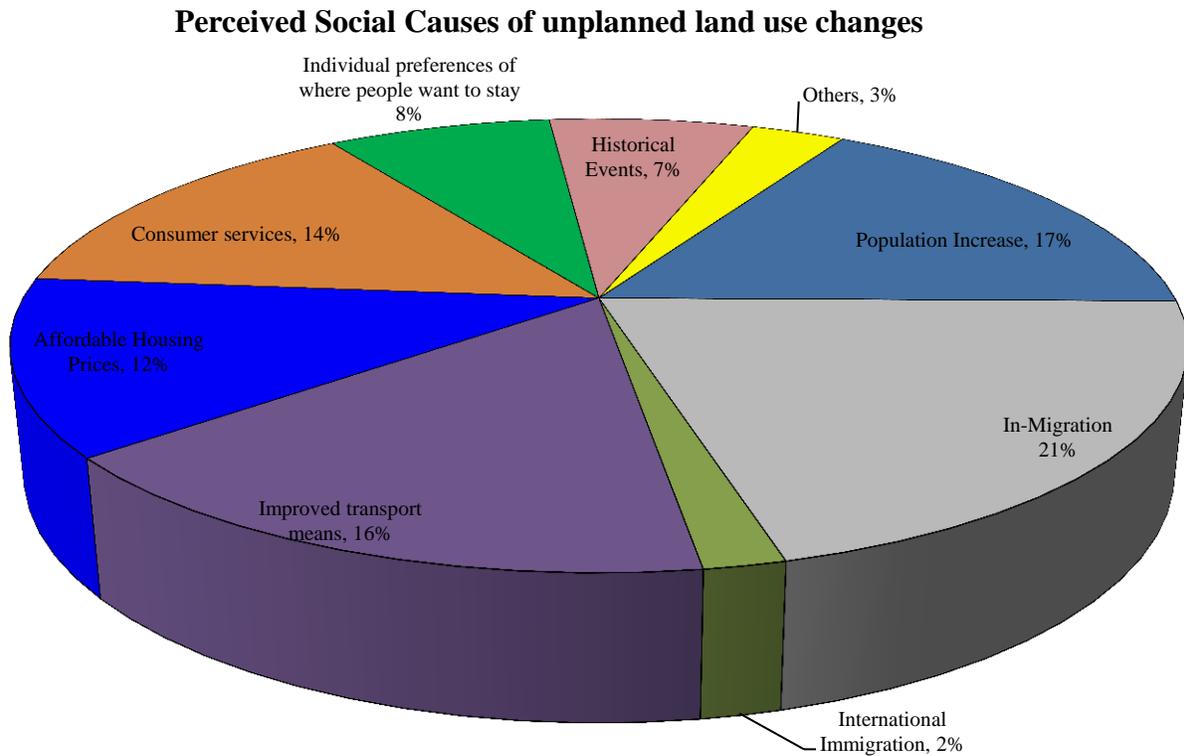


*Figure 38: Transportation & Mobility*



*Figure 39: Residential establishments*

Figure 40 below summarizes the perceived research findings on the social factors that are responsible for unplanned land use changes in the area. In-migration (migration from other towns, Rural-urban Migration, etc) accounts for 21%, human population increase 17% and improved transport means 16% are among the greatest social causes of unplanned land use changes in the area.



*Figure 40: Summary of social causes of unplanned land use changes*

### **6.4.3 Political and administrative causes**

Politics which is a theory and practice of influencing people on both civic and individual levels, plays a very key role in urban developments by guiding developments through set laws, policies, regulations and administrative structures that see to it that the urban developments don't take place in a messy way (Lauria, 1997). Losco (2010) narrows down the definition of politics as the means of achieving and exercising positions of governance which involve organized control over human community in a given state. In a large political sense, urbanization is not prioritized nationally and because resources are not well distributed among people are some of political factors influencing unplanned land use changes not only in the area but also in most of developing countries. For example, the marginalized groups of people and the poor ones living in

unfit urban environments such as slums and flood plains are often not recognized or supported in real terms outside of some few opportunistic initiatives from politicians just before elections.

In this research I take the politicians to be both elected people such as the area mayor and councilors into public offices and those appointed as employees such as the executive director of KCCA to manage and control urban developments and control urban resources. The different bodies within political scope influence the way resource distribution and land allocation is done and the degrees to which land use activities are recognized and land use change issues prioritized. One of the major roles of politicians therefore, is to define the vision of development of their areas of jurisdiction as Pagano (1997) argues. This is to be done through a balanced allocation and distribution of the scarce resources by ensuring that all urban sectors are well served, represented (Bryant, 1991, 1998). Politicians formulate and pass laws, policies and bylaws that regulate and control urban developments. They also monitor the implementation of government all programs and determine tax to be paid in their areas of jurisdiction. Politicians in the area included the Mayor, Councilors and Local Council Committees. One of the councilors said *“I propose and pass the land use policies, laws and by-laws but the implementation is the responsibility of KCCA”*. *“Politicians are our voices to the local authority and central government”* one woman said.

The study discovered a conflicts and loopholes among the laws, policies and bylaws meant to control and guide urban development as described under the Theoretical and Literature review chapter section No.6. One official in the Ministry of Lands, Housing and Urban Development said *“as a country we so far have sufficient laws and policies for urban development and control. These however are not implemented by the local authorities due to lack of technical capacity and budget constraints”* As expressed by a representative for the KCCA on the other hand, the KCCA feels that laws and policies in place are not sufficient and those that are in existence need to be reviewed and made more clear to eliminate an ambiguities as some of the existing laws are outdated to cope with current dynamics of urban land use changes. For example, the Kawempe division planner pointed out *“Access to Roads and Public Health Act”* as being too old and very insufficient to cope with the modern development pace. Most of the respondents pointed out corruption as the setback of implementing these laws and policies. It was further noted that some of the laws do conflict with one another thus making land use implementation changeful as far as laws and policies are concerned. Political offices all over the world are held with people’s

mandate in modern democratic times through voting (Boyer, 1991; Ibrahim & Egwu, 2005). Therefore this means that political power to act has its source from the society and their electorates. It is not all that laws, policies and bylaws that are in favor of all people. As a result some individuals if not communities find themselves under the oppression of development laws and control measures. Politicians in the study area will do anything to please the local community regardless of whether what is being done is good or bad so as to remain in political office. It is on record for some of influential political figures to encourage rural-urban migrations by freely transporting people into the city and other towns from rural regions for the political interests (Chant, 1998; Tacoli, 1998). This is normally during election periods. After the elections, most of the brought in rural people don't go back to their villages. They somehow find a way of staying in the city thus increasing pressure on land and increase demand for social services such as housing, healthcare, education among others as they increase the number of unemployed people in the city. Political offices come with lots privileges which include financial & political power and social prestige & honor among others. It so happens that the study area is one of densely populated parts of Kawempe Division and therefore seen as winning bases for the politicians who therefore distance themselves when it comes to proposing and implementing controlled urban land use changes in the area that the locals are against. Politicians in Kawempe recognize and give priority to informal settlements as a way of keeping themselves popular among the majority urban people.

Another political reason for unplanned urban land use changes is that of corruption among urban officers and the general public. There are high levels of corruption in Uganda (Nsibambi, 1987; Tangri & Mwenda, 2008) though the government through its agencies are trying to fight against this vice. Corruption is manifested through bribery, misuse and misappropriation of public funds and political individual favors over others. The consequences of the corruption is the devoid of implementation, monitoring and control resources together with misallocation of resources towards urban developments this leading to unplanned urban land use changes. The relationship of this corruption and the Political Ecology Framework is that bribery from the public (social) is given to those who have power to influence resource use, control and allocation. However, the political will and effort to implement and monitor urban developments in the study area are met with the snag due to on-going *administration, technical and financial* challenges with KCCA as briefly analyzed below;

#### **6.4.3.1 Challenges within KCCA as causes of unplanned land use changes**

KCCA face numerous and critical challenges when it comes to city development control, monitoring and implementation. They have their sources rooted in administration, technical and financial challenges as given below;

*a. Administrative Challenges – Political Vs Technical wings:* Equitable, Sustainable and Effective Urban administration should be a joint venture between the politicians, Technocrats and the Local community. This means urban governance partnerships (Beall, 1996; Elander, 2002) with appropriate urban approaches such as bottom-up and community participation (Haus, Heinelt, & Stewart, 2004) among others. However, this seems not to be the situation in case of the study area and Kampala city in general. The administration of KCCA (Political and Technical wing) is not at par as there are conflicts of interests based on roles and duties. The power struggle between these two sides which are supposed to administer the city culminated into the recent ousting of the publically elected city's Lord Mayor thus escalating the administration problems and putting the work within KCCA on standstill. Due to this most of the politicians (the KCCA councilors) don't see eye to eye with the technical staff. The urban developers amidst this case within KCCA take it to their advantage to set up unplanned urban land use changes such as constructing buildings without plans, invading the wetlands and other ecologically sensitive areas. Furthermore, community participation lacks because KCCA has not developed an approach through which the community can participate in the city's development. This explains why the local community is largely unaware of what roles KCCA has to play and also what people themselves have to do in relation to land use development matters. "I don't know the duties of KCCA" an elderly man said. It was not him alone, a number of respondents were very oblivious of their own responsibilities and that of the local authority (KCCA). The meaning of this is that people have continued to initiate unplanned urban land use changes in the area because of poor administration.

*b. Technical challenges:* KCCA is the Technical arm of Kampala City responsible for implementing and enforcing land use control and regulations in addition to the daily running of the City. However, the City lacks an adequate number of technical staff and technical equipment such as Computers and GIS labs which would assist much towards city planning, monitoring and controlling of urban land use activities. Furthermore, the complexity of the land tenure system poses yet another technical challenge. Private individual and Institutions especially the Buganda Land

Board (BLB) have a great influence over land use control and management as these own large chunks of land within the area. An official from BLB was quoted “*BLB is responsible for all Kabaka’s land. We allocate and manage the kingdom’s land for any land use activity whether planned or not. Normally the highest bidder wins the lease for a given piece of land*”. This brings back the Land Rent and Hybrid Land use Theories into focus of urban land use dynamics. An official from the ministry of lands, housing and urban development, commented that “*private land and property developers of late taken charge of land control and management and thus have become agents of unplanned land use changes*”. This land tenure empowers land owners with social and economic power over the distribution of land resources. KCCA virtually has no direct control of private land or that owned by institutions making it hard for it to enforce planned urban land use changes.

c. **Financial Challenges:** KCCA lacks a strong financial base for physical planning, monitoring and regulating urban land use activities and changes. This is one of the reasons for on-going piece meal planning in some parts of the city as a desperate move to combat unplanned and undesired urban land use activities. Lack of strong financial base accounts for the slow progress of resettling people from swamps and wetlands and also compensate those affected by key developments such as infrastructure developments in the area.

#### **6.4.4 Environmental and Ecological causes**

The environmental and ecological causes of unplanned urban land use changes have its origin in what seems to be a complicated land tenure system to the technocrats and a very friendly system to the local community. For the technocrats, land that belongs to the kingdom (Buganda), institutions such as Kampala Archdiocese and private individuals possess a very great challenge of managing and thus control developments undertaken on it. Most of environmentally and ecologically sensitive areas like the ones shown below are located in areas with mailo and customary land tenure systems. Under these land tenure systems, all people are responsible for that land and as the saying goes “*what belongs to all people is for no people*”. On the other hand the local community has adopted and adjusted to settling and living in these ecologically sensitive areas. The survey findings indicated that the local community perceived the availability of environmental and ecological areas as being areas of great importance both to people and the animals within the area of study. Among the environmental values pointed out included environment being responsible for esthetics (urban beauty), nature conservation and

preservation, water and air purification among others. The Kabaka of Buganda does not chase people from his land! This has given an opportunity to the local people most of whom are marginalized to occupy and establish any kind of land use activities in the ecologically and environmentally sensitive areas which include low lands, swamps & wetlands without any kind of checks and balances as shown in the figures 41 and 42 below;



*Figure 41: Swamp reclamation*



*Figure 42: Settlements in swamps and wetland*

The loopholes towards managing and controlling the environmentally sensitive areas have been exploited by the business community to establish shopping malls, factories & industries, infrastructure facilities such as roads, sewage treatment plants as shown in the figures below;



*Figure 43: Road Construction in the wetland*



*Figure 44: Filling the wetland for commercial & Industrial developments*



*Figure 45: Sewage Treatment Plant in the swamp*



*Figure 46: Fuel pump station located in low lying areas*

It is quite interesting, often when the poor and marginalized groups of people settle or use such areas as those shown in the figures above, they receive the blame of damaging the environment from both the local authorities and other urban development agencies. However, the biggest threats to the environment are these massive projects under taken within these areas and yet for such projects are always welcome and applauded.

In most cities of developing Countries, ecological environment is affected by rapid urban sprawl mainly due to rapid population growth and to the proliferation of low-income communities. This has both direct and indirect environment impacts. The direct consequences as found out during the study included the loss of often fertile and productive land, the depletion of water resources owing to urban and industrial demand and pollution caused by unsafe disposal of solid waste and sewerage (see Figures 9, 18 – 21) as well as un controlled industrial emissions. The indirect environmental consequences include social costs and risks associated with settlements located in precarious locations such as flood plains, swamps and wetland and also the high costs of extending infrastructure and services to these fragile areas (see Figures 38 -41,46). Balancing between the needs of the nature and ecological system on the one hand and the needs of humans inhabiting it on the other is well reflected in the discussions about the brown and green agenda. While the green agenda is concerned with equity between people and the nature and between current and future generations of people, the brown agenda is more concerned with procedural equity and equity within generations of people. The different agendas are also reflected in how different stakeholders perceive unplanned land use changes.

### **6.5 Research Question 3: People's perceptions of unplanned land use changes**

This sub-section seeks to address the third research objective “To find out people's perceptions on land use change in Bwaise I, II, III parishes Makerere III parish, parts of Kyebando and Mulago III parishes -Kawempe Division” Here the research investigated people's knowledge and attitude (Xu, Chen, Lu, & Fu, 2006) towards unplanned urban land use changes. Unplanned change in the survey was defined as an act of replacing the particular activity being carried out on a given piece of land with a new activity without any kind of formal planning for it. The researcher explained to each of the respondents what unplanned land use changes meant.

People in urban areas are aware of land use changes that occur around them. These people attribute the land use changes to many reasons based on the local knowledge. A research on land use changes in parts of Uganda by Tukahirwa (2002, p. 4) confirm the fact that people are aware

of land use changes and understand them differently. According to Tukahirwa, some people have expressed concerns about the environmental degradation and poverty as the key elements or land use changes in urban areas. Local people perceive changes in land use, they associate urban land use change with some indicators which include economic growth and expansion, deduction in agricultural land, increased human population, settling and use of environmentally sensitive areas and emergency of informal settlement among others (Mugisha, 2002, p. 17).

In relation to Tukahirwa's research, it was found out that 79.4% of the survey respondents were aware of unplanned land use changes taking place within the study area. 20.6% of the respondents were unaware of any unplanned land use changes. The most significant unplanned land use changes pointed out included; Agriculture land use being invaded by Industrial and commercial land activities prior to any form of planning. Public open, spaces Wetland & Swamps land use changing to unplanned residential, commercial, transport and industrial developments this fact was confirmed by the GIS maps as they showed same trends. However, the local community largely perceives the current situation positively as opposed to the technocrats who view it in a negative way. This means that there is need for the community participatory planning through a bottom-up approach which can enable the local community to contribute ideas and participate in urban sustainable means of development. This means taking in some of the ideas of the community which might make social concerns override environmental concerns depending on the community interest. For a common person most of whom are marginalized people see no problems of rapid occupancy of unplanned urban land use changes as long as they sleep and continue with their daily survival struggles. For example 80.8% of the survey respondents saw no environmental-land use conflicts within the study area. The major priorities according to most of the respondents were to have a place for residential and commercial facilities. This means that majority of people are comfortable with the existing incompatibility and spontaneous occurrences of unplanned land use changes. However, 19.2% of the survey respondents said that conflicts among land use activities existed in the area. These pointed out land use conflicts which included residential Vs swamps and wetlands, Transport and Communication networks (infrastructure) Vs wetlands, solid wastes Vs all land use activities, Industrial developments Vs Residential Zones and finally Commercial developments Vs Residential and wetland zones. The land use priorities by those who saw land use conflicts in the area include infrastructure developments, solid waste management facilities and environmental

conservations. The figures 47-50 below illustrate the incompatibilities of some of land use changes.



*Figure 47: Solid waste disposal in wetland*



*Figure 48: Encroachment on swamps and wetland*



*Figure 49: Power and Telecommunication installations within residential settlements*



*Figure 50: Car Mechanical workshop within residential area*

The local community has therefore taken physical development matters of the area in their hands. The general perception of spontaneous unplanned land use changes is of no worry to the local community. “When people use land and set up survival activities such as residential and commercial to make ends meet what crime have they committed?” the LC1 chairperson of one of the cells commented. “Land is all that is available for us and it is good that Kabaka does not stop us from developing it the way we like” he added. There is a high demand for housing and economic facilities in the area due to population “Tsunami” as defined by the area’s urban planner. The consequence of this is to utilize land maximally. However, this maximum land utilization has land use change complexities thus “a win-lose” situation. For majority of the local community land fragmentation and establishments of anything that crosses their mind, has been a serious source of income yet for the technocrats, it is unfortunate trend of urban development. The technocrats within KCCA, central government bodies and Non-government organizations for example perceive land use changes in the study area as unplanned and therefore undesirable.

*“The unplanned land use changes in your study area are completely out of ordinary” an official from the ministry of land said. He added, “the situation has completely run out of control for KCCA to handle”.* To restore order in this area there is therefore a need for a holistic approach by all key stakeholders and players by initiating dialogues which aimed at making all parties speak the same development language and have similar urban development goals and objectives (local community, local & central authorities, NGOs and other technocrats among others).

As reflected earlier, unplanned land use changes is not necessarily bad. For example the unplanned situation has enabled the marginalized and most of urban poor to find places to set up livelihood activities such as accommodation and small scale business enterprises as shown in figure51 below. Unplanned situation in Kawempe has further enabled industrial and commercial actors to find places to set up their businesses see Figure 52.below. All these unplanned land use changes have resulted into tremendous economic growth in the area.



*Figure 51: Unplanned Informal Economic activities*



*Figure 52: Commercial and Industrial developments in unplanned area*

On the other hand the unplanned urban environment result into complex challenges which include land and environmental degradation (see Figure 53 below), flooding due to lack of planned drains and water channels (see Figure 54 below), slums and informal settlements (see Figure 55 below) resulting into congestion and human health risks, makes it difficult for local authorities to provide basic infrastructure and social services such as roads, schools and health facilities and poor urban solid waste disposal and management (see Figure56) among others.



*Figure 53: Land degradation*



*Figure 54: Flooding*



*Figure 55: Slum settlements*



*Figure 56: Poor solid waste disposal*

*Source: Peter Wandera 2013*

## **6.6 Conclusion**

The study area has continued to face rapid and unplanned urban land use changes over the years. The once well-defined land use zones has become a matter of the past as the current land use activities have fragmented land parcels into small plots holding incompatible land use activities. The main research findings included the fact that unplanned urban land use changes

do exist in that area. The main causes of unplanned land use changes are due to unbalanced pull and push economic, social, political and environmental factors. These cause tension and conflicting equities and thus result into unplanned land use changes. As result, there is a remarkable trend in land use changes where some are steadily decreasing while others are increasing. For example, Forestry, wetland and swamps are on serious decrease as commercial and industrial developments are on rise. Others such as civic and institution land use activities have experienced very small changes over time. Graph 3 and maps 9 clearly show the trend in land use changes.

Another finding was that different stakeholders perceive these changes differently. The varying perceptions of unplanned urban land use changes are manifested in different ways key players and stakeholders attach priorities to different land use activities in relation ecological factors. To the most of local people, the unplanned land use changes are for the better yet to the city managers unplanned land use changes are a development disaster thus a saying “*one man’s meat is another man’s poison*”. Much as the green and brown agendas are not in strict opposition, the technocrats are however, more concerned with green agenda and creating order while the local people are more concerned with brown agenda for their livelihood means.

The findings answered the three research questions in a sense that GIS mapping processing showed various land use changes over time. The findings from socio-economic survey and interviews with key stakeholders and players were used to answer what causes unplanned urban land use changes and find out how different people perceived unplanned land use changes.

## Chapter Seven:

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### 7.0 ADDRESSING UNPLANNED LAND USE CHANGES

#### 7.1 Introduction – the Green and the Brown Agenda

This chapter discusses the research findings and attempts to situate them in relation to the research questions but also in relation to the wider development discourse using the geographical perspectives.

#### 7.2 Research findings

The study found out three (3) major findings which include rapid unplanned urban land use changes in the area, multiple causes of unplanned land use changes and the existence of varying perceptions of unplanned land use changes in the area.

##### ***7.2.1 Occurrence of continuous unplanned land use changes***

The seventeen (17) years considered for this study –from 1996 to 2013 discovered a progressive change in land use activities within the study area. It was observed that most traditional land use activities such as wetland and swamps, forestry and urban agriculture, natural vegetation, low density residential among others are fast dying away. It was further noted that specific land use types which included high-density residential, commercial and industrial establishments were replacing most of other land use activities. In late 1998 and early 2000, the government of Uganda through its environmental management agencies tried to recover and restore swamps and wetlands in the area unsustainable through forced evictions and arrests of culprits (NEMA, 2009) . This saw some land gain by swamps and wetlands by 2004. However, the evicted people were not given an alternative where to relocate and neither were destroyed property compensated. These have therefore have come back and have been joined by many other people to settle in these areas. That is why currently, swamps and wetland have rapidly been encroached on and thus being reduced each day that passes by. It was also noted that a few land use activities which included mainly civic and institutional remained more or less the same over time due to slow establishments of similar land use activities. Graph 3 and table 9 of descriptive statistics and Map 8 of combined land use changes illustrate land use changes and trends over time.

### **7.2.2 The multiple causes of unplanned land use changes**

The discovered multiple causes of unplanned land use changes have their roots in different social, political, economic, and environmental interests and equities among the stakeholders of land use activities in the study area. These wider factors were found to be influencing unplanned land use changes in the study area. These include the complex land tenure system which denies land access and private ownership to the urban poor and the marginalized groups, economic interests against environmental interests, and power struggles and imbalances among the stakeholders which result into management and resource allocation challenges. These and many others have opened the gate way to unplanned land use changes.

### **7.2.3 Existence of differing People's perceptions of land use changes**

Most of people staying in the areas of this case are desperate and therefore trying desperate means to survive within an unfair urban environment with lack of alternative choices. Abject and absolute Poverty, uncompromising and complicated land tenure systems, political, social and economic marginalization are some of examples that have forced people to perceive nature the way they do now. A number of people in the study area seem to have accepted their fate and settled for less as long as they keep close the capital city from where they get livelihood opportunities. Those who have found accommodation in places with land use activities that contradict their social life such as faith as in case of Muslims sharing housing facilities that contradict with their faith such as bars have come to accept that fate due to limited livelihood choices available to them.

It was an interesting discovery the way the locals perceive land use changes. To them any development that came up and got established seemed ok. On the other hand, the technocrats are very worried with the way unplanned land use changes are emerging. This confines with the old saying that goes "*one man's meat, is another man's poison*". This is one of the reasons why the local community quite often rejects most of suggestions by both the local and central governments that are meant to bring about changes in away land development is conducted. The locals feel threatened that new land use changes may have negative consequences on their livelihood. The question remains whether the local authority should sit back and let the development matters of the area lie in hands of the local community or do something about it. Sensitizing by KCCA would help much to resolve the fears and conflicts the community has.

In wake of globalization, global-South is experiencing rapid social, cultural, economic and development changes as the world is getting geographically smaller by being connected together through improved modern technology and communication networks. As a result some people, communities and key sectors have benefited out of the process but also so many people and some sectors most of which are from developing countries have gotten marginalized. These dynamic changes and consequences have resulted into tensions and complementarities where for example preservation of the environment is put in opposition to development described in the literature as the green and brown agendas (Allen & Atkinson, 2002; McGranahan & Satterthwaite, 2000). As described in the theory chapter, the principal concern of the green agenda is presented as ecosystem protection at both regional and global levels. On the other hand, the brown agenda focuses on human well-being, social justice and the immediate problems suffered by low-income earners mostly at local levels of society (Allen, 2001). For example as Greig, Hulme, and Turner (2007) argue, the relationship between poverty and inequality at various scales in most of developing countries is directly linked to Social, Economic and Political discriminations of the majority poor.

In a world of scarcity and conflict of interest, environmental and related land use problems generally stem from the asymmetry in perspectives on the declining resources between the local and global communities. The local community largely sees protected areas such as lowlands, wetland and swamps and protected areas among others as a wastage of land resources which is badly needed for economic and other livelihood benefits. This is in line with Wells and Bradon (1992, p. 237) who argue that economic benefits of protected areas are limited on a local scale and only substantial on a global scale. This is one of the reasons why environmentally sensitive areas have been rapidly degraded without a second thought. Land is a mother of all livelihood resources before the eyes of every one on a global scale. This is because most of the activities are done on land. Therefore having access to and using land, one can be able to generate a number of livelihood assets which include; natural, physical, human, financial and social capital (Rigg, 2007) which are vital for life sustainability, individual, family and community development.

How the green and brown agendas sometimes clash becomes very evident in the discussion about land use change. Land use change is one of the global indicators of physical, social and economic developments. Physical development occurs when land use change impacts social, cultural, economic and environmental setting within a defined geographic context such as a

country, city or smaller towns. For example land use change data are being used in many states to assess whether they are meeting their development goals and objectives (Hasse & Lathrop, 2003) such as establishments of low cost housing and social service facilities such as schools and health institutions. Contemporary processes of economic, social and political restructuring in Uganda and the rest of developing countries due to neoliberal macro-economic strategies not only accelerate competition over environmental resources resulting into urban challenges such unplanned land use changes as in my case but also promote the short-term maximization of profits through socially and environmentally unsustainable mechanisms. As a result, not only are local livelihoods negatively affected and environmental conditions worsened but also existing regulations governing natural resources, urban development and economic performance are weakened by new struggles between domestic and foreign capitals, and the state (Allen & Atkinson, 2002). By framing the unplanned land use change problem in terms of conflicting equities, it is easier to see why in some cities like Kampala where Intragenerational and procedural inequalities dominate; the brown agenda deserves more attention while others where other inequalities predominate the green agenda should prevail.

Both brown and green agenda proponents have a reason to criticize many approaches to urban environmental management even if their priorities differ. At a superficial level, the brown and green agenda are in direct opposition to each other. For example, the brown agenda would seem to call for more water use, more sewage connections, more waste collection, more land for urban land use activities such as residential and industries among others and more fossil fuel use to replace smoky biofuels which in turn will encourage urban land use changes whether planned or not. By the way of contrast, the green agenda would seem to call for water conservation, less water-borne sewage, less waste generation, less urban expansion and less fossil fuel use and thus largely preserve the existing land use activities of a given urban setting. While these potential contradictions should not be ignored, a review of existing policy problems indicate that the trade-offs need not be as sharp as such generalizations seem to imply. The UN environment-focused agenda 21 and urban-focused Habitat Agenda summits recognized that in an increasingly urbanized world, cities are the locus of critical social, economic and environmental problems as well as comprising unique opportunities for a more sustainable future. These agendas also pointed out the link between sustainability and governance (Allen & Atkinson, 2002).

#### **7.2.4 Addressing unplanned land use changes**

Currently, KCCA and its development partners are addressing unplanned land use changes through community sensitization though still on a small scale and enforcing planned land use activities such as enforcing the construction with approved building plans. “*Sensitization is being done but on a very small scale*” the Kawempe Division urban planner said. NEMA has undertaken quite a number of sensitization programs through media and community meetings. The common means of community sensitization include; community meetings, site visits and individual interactions with developers. However, the whole sensitization process is still very slow due to budgetary constraints as pointed out by the area’s urban planner. KCCA has further prepared a physical development plan (*see map 2*) to guide city developments. This plan is a development roadmap for every developer in the city. Through its GIS unit, KCCA is monitoring the physical developments and guide developers accordingly.

However, it is very important for all the stakeholders and key players in urban development including the local community to find a balance between the environmental, economic, social and political values as far as land use activities and land use changes are concerned. Urban planning of land use activities alone may not address challenges caused by unplanned land use changes. This is because land use planning will raise land values and rent costs which poor people cannot afford. Furthermore, new poor people will arrive in the area and these will need affordable places to settle as they look for economic and employment opportunities. Unplanned land use changes in these areas are therefore connected to large issues of poverty and marginalization in Uganda. Without some kind of economic and political empowerment and reforms, the root cause of the problem will not be solved.

Evicting the urban poor from the slums and other informal settlements without alternative options for them is not sustainable and may instead worsen the situation. Since the urban poor form the highest number of people, they have an impact on economy. All of them combined, provide a wide market for most of produced goods and services, and are the cheap source of labor in factories and industries. The politicians will also suffer the consequences as these urban poor are the people who mostly vote.

The on-going decentralization process (bottom-up approach) needs fine-tuning to cope with the rapidly changing Uganda. This will speed up the process of community participation & empowerment, involvement of civil societies and Non-Government organizations among other

development partners (Azfar, Livingston, & Meagher, 2006). This will not only improve on better service delivery by the government to its people but also will increase the social and financial capital, increase awareness especially towards environment among people. Some of the root causes of poverty and unequal distribution of resources will also be addressed through decentralization. This will result into making of environmentally sound and sustainable decisions, ease social and political tensions, and guide the allocation of development resources, provide a streamline physical development roadmap, minimize the marginalization and vulnerability levels and provide a plat form for good relationship between the landlords, developers and the settlers and thus laed to planned land use changes in the area.

## Chapter Eight

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### 8.0 RECOMMENDATION AND CONCLUSION

Unplanned urban land use change is an indicator of weak social, economic, political and environmental protection and sustainability frameworks in most of developing Countries. One of the root causes are the conflicts which quite often arise between proponents of brown and green agendas regarding which one should be accorded a priority. According to (Pugh, 2013) these problems are especially acute in the developing Countries like Uganda but they also arise in the developed World. The bridge between the two agendas in land use planning and development could be strengthened by a deeper contextualization of the principles against the underlying political, socio-economic and environmental contemporary processes that render urban development both environmentally unsustainable and socially inequitable (Allen & Atkinson, 2002). This for example should be done based on existing conflicting land use equities where all the concerned groups of people are brought to table to address the pressing urban land use and development issues.

The potential of Uganda just like any other developing countries of global South is in emerging markets, increasing human population and largely untapped natural resources. Land is one of the natural resources that its management and use need reconsidered so as to make it very productive and the land use activities to be converted into higher income based and thus minimize poverty and marginalization. Therefore, the equity assessment of various political, social, economic and environmental structure is required to understand and prioritize the trade-offs and to understand conditions where one agenda is likely to undermine the other.

There is need for adopting new approaches to sensitizing the local communities about the dangers of establishing new land use activities that contradict the physical development plans. Long term sensitization and awareness programs to the local community against the environmentally and ecologically damaging land use activities will help to preserve and conserve such fragile areas and enable them to use such land in sustainable manner that caters for both present and future generation. This will then contribute not only to the local environmental protection and conservation but also to the wide scale global environmental conservation and protection programs.

## 8.1 Recommendation

In order to create social justice and indeed environmental justice in urban land use planning and development, it is very important to understand and acknowledge the potential for urban land use conflicts in order to develop strategies for minimizing them. Urban land use development conflicts can best be minimized if both the brown and green agendas are taken seriously (Pugh, 2013). Allen and Atkinson (2002) argue that promoting one agenda over the other has had the counterproductive effect of placing them in opposition to each other, competing for recognition, resources and practitioner support. For example as agriculture land surrounding the study area is converted into sub-urban developments, the comparative advantage of food produced in proximity to urban markets is lost thus creating a food vacuum which increases the ecological footprint of cities often resulting in more energy being consumed transporting food than the calorific value of food itself. This brings in globalization trends where food is to be shipped from far places. Furthermore, unplanned urban land use changes threatens and destroys natural eco-systems and watershed surrounding cities world over (Allen & Atkinson, 2002).

Current urban land use planning and development trends and their sustainability assessment in developing countries, need to be re-embedded into a wider consideration of the political economy, social and environmental factors driving such trends. Development strategies should ensure that today's gains do not result in cities that will need radical restructuring in future as such processes require massive resources and also have great impact on environment. However, sustainable forms of urban land use planning and development requires more coherent approaches

As presented and discussed throughout this thesis, much of the focus has been on different equities of P.E framework. The concepts of brown and green agendas were used to highlight conflicting equities that cause tension in urban land use planning and sustainable development. The brown agenda has been on improving living conditions and the environment in the inner cities and slums whereas green agenda advocacy is on reminding planners that urbanization process is not restricted to cities but also involves more than the social and physical dimensions of housing, infrastructure and urban services.

Planning alone cannot address unplanned land use change and related challenges since there wider forces at play. Furthermore, planning will have a very negative impact on the poor

people who can only afford the low rents and low priced goods provided by unplanned urban settlements and commercial establishments. Therefore, it is important to economically and socially empower people through poverty alleviation and eradication programs. This will result into a number of people being able to purchase land and thus get a security of tenure from which they can establish formal developments.

## **8.2 Suggestions for future research**

Finally I would like to suggest future research areas which would improve land use activities and management in most cities of developing Countries. Research in persistence causes of abject poverty should be given a priority. This could look at the dynamics between poverty and slum development. This is so because as seen from the analysis and discussion, most of land use challenges and problems have their deep roots in poverty. Poverty leads to marginalization and push most people in developing countries off the bearable limits of living a decent life. Another field of research interest would be to look at the consequences of existing urban planning practices on people living in informal settlements and the urban environment,

It is very important to strike balance between conflicting interests and equities in urban development. Once the studies into causes and mitigation measures of different equities and interests of urban development are conducted, it may bring about harmonious land use developments and slowly begin impacting on the currently so much opposing perceptions of unplanned urban land use changes.

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## 10.0 Appendices

Below are detailed tables of land use activities derived from GIS operations

### 10.1 Land use tables

**Table 6: 1996 Land use activities**

1996 Land use Type and area coverage					
tem	Type	Zones	Area (sq.m)	Area (sq.km)	Percentage
1	Agriculture	5	1,327,380.8	1.327	21.9
2	Civic	3	17,761.0	0.018	0.3
3	Commercial	3	61,898.3	0.062	1.0
4	Commercial-Residential	7	90,703.0	0.091	1.5
5	High Density Residential	4	942,397.4	0.942	15.5
6	Industrial	3	72,900.5	0.073	1.2
7	Institutional	4	22,562.5	0.023	0.4
8	Low Density Residential	6	808,010.4	0.808	13.3
9	Medium Density Residential	3	736,769.7	0.737	12.1
10	Open Space	3	18,555.6	0.019	0.3
11	Vegetation	13	528,218.9	0.528	8.7
12	Swamps and Wetland	2	1,442,338.1	1.442	23.8
	<b>Total</b>	<b>56</b>	<b>6,069,496.1</b>	<b>6.069</b>	<b>100.0</b>

**Table 7: 2004 Land use Activities**

2004 Land use Type and area coverage					
	Type	Zones	Area (sq.m)	Area (sq.km)	Percentage
1	Agriculture	17	78,210.6	0.578	9.5
2	Civic	3	18,766.4	0.019	0.3
3	Commercial	4	199,346.9	0.199	3.3
4	Commercial-Industrial	3	50,564.7	0.051	0.8
5	Commercial-Residential	7	208,301.4	0.208	3.4
6	High Density Residential	7	1,955,689.5	1.956	32.2
7	Industrial	8	195,986.6	0.196	3.2
8	Institutional	8	29,410.3	0.029	0.5
9	Low Density Residential	8	449,654.4	0.450	7.4
10	Medium Density Residential	19	1,334,239.1	1.334	22.0
11	Open Space	16	99,967.1	0.100	1.6
12	Swamps and Wetland	13	658,091.2	0.658	10.8
13	Vegetation	23	291,267.8	0.291	4.8
	<b>Total</b>	<b>136</b>	<b>6,069,496.1</b>	<b>6.069</b>	<b>100.0</b>

**Table 8: 2013 Land use activities**

<b>Land use Type and coverage 2013</b>					
<b>Item</b>	<b>Type</b>	<b>Zones</b>	<b>Area (sq.m)</b>	<b>Area (sq.km)</b>	<b>Percentage</b>
1	Agriculture	26	433,727.0	0.434	7.1
2	Civic	3	14,936.1	0.015	0.2
3	Commercial	5	584,153.5	0.584	9.6
4	Commercial-Industrial	4	165,423.1	0.165	2.7
5	Commercial-Residential	13	434,090.7	0.434	7.2
6	High Density Residential	27	2,769,809.8	2.770	45.6
7	Industrial	23	246,772.6	0.247	4.1
8	Institutional	20	51,917.7	0.052	0.9
9	Low Density Residential	6	62,488.2	0.062	1.0
10	Medium Density Residential	24	583,454.6	0.583	9.6
11	Open Space	31	191,535.7	0.192	3.2
12	Swamps and Wetland	12	370,023.1	0.370	6.1
13	Vegetation	26	161,163.9	0.161	2.7
	<b>Total</b>	<b>220</b>	<b>6,069,496.1</b>	<b>6.069</b>	<b>100.0</b>

## **10.2 Meaning of land use types or categories**

**Agriculture:** This refers to areas largely used for agriculture activities such as gardens, animal farms and other related activities

**Civic:** These area areas occupied administrative facilities such as government offices, NGO offices, Police, and Local authority offices among others.

**Commercial:** These are areas where commercial activities are dominant

**Commercial-Industrial:** These refer to the area where a mixture of commercial and industrial activities dominates any other land use in the area.

**Commercial-Residential:** It refers to areas where both commercial and residential activities take place on same piece of land. For example one part of the house or plot may be used for commercial purposes and the other residential purposes.

**High Density Residential:** These are areas that are under extensive residential buildings. These areas hold significantly more people According to the physical planning standards and regulations of Uganda, a plot of 15 x 30m; that is 450m<sup>2</sup> is considered to be a high-density residential plot in case of planning for low income earners. High density residential activities reduce much of vegetation and soil resources in the city in favor of more homes.

**Medium-density housing** is a term used to describe residential developments that are at higher densities than a standard low-density, suburban subdivisions, but not so high that they might be regarded as high density housing. In Uganda a plots with a minimum of (20 x45) m, that is 800m<sup>2</sup> are considered a medium density residential areas. Medium density housing area can range from about 25 to 80 dwellings per hectare, though most commonly the density is between 30 and 40 dwellings/hectare. Such developments may consist of detached, semi-attached and attached (or multi-unit) housing.

**Low Density Residential:** are locations intended for housing that include a lot of open space. These zones are meant for a small number of residential homes, and exclude large industries, apartment complexes, and other large structures. Home businesses, community organizations, and some types of commercial and agricultural use are allowed if they meet specific standards. People who want a country feeling in an urban area often build or buy in low-density residential zones.

**Industrial:** This refers to the areas dominated by industrial activities which include processing, manufacturing and assembly among others.

**Institutional:** This is land under religious, educational, healthy and cultural facilities which include churches, schools, mosques, hospitals, health centres, schools and palaces

**Open Spaces:** This is land which is not occupied and is open for the daily use by the public. Such places include mainly the play grounds and city gardens

**Swamps and wetland:** This is land which is permanently or seasonally occupied by water. It also includes flood plains are very essential for the natural drainage system as they capture and store much of the storm and underground water.

**Vegetation:** This is land occupied by plants which include both natural and planted forests and trees, shrubs

**Land use zones:** These refer to the areas occupied a dominant land use activity covering a large area. A group of similar land use activities adjacent to one another form a land use zone. All cities of any significant size have planning departments and zoning ordinances. In fact, zoning is an essential component of effective city planning. Zoning is a type of land regulation imposed by municipalities through the power conferred upon them by state legislatures, dividing cities into zones with certain building restrictions. A simple zoning system may include residential zoning,

where only residential dwellings can be built; commercial zoning, where retail and other commercial structures can be built; and industrial zoning, where factories and plants can be built. Zoning laws outline such issues as minimum lot size, setbacks from streets and property lines, and business use of property.

**Table 9: A summary of GIS generated Land use change descriptive statistics**

<i>Descriptive Statistics of land Use Changes over a seventeen (17) year period</i>	
Mean	0.47
Standard Error	0.14
Median	0.28
Standard Deviation	0.51
Sample Variance	0.26
Kurtosis	4.59
Skewness	1.95
Range	1.87
Minimum	0.02
Maximum	1.89
Sum	6.06
Count	13.00
Confidence Level (95.0%)	0.31

Descriptive statistics in the table give the summary of land use change characteristics within the seventeen years of land use changes. For example, the average area coverage value of land use activities is 0.47sq.km. The standard deviation of 0.51sq.km shows that land use area coverages are not widely dispersed from the mean value. This means that land use changes in the area are taking a steady or simultaneous course of action. The positive kurtosis (4.59) indicates a relatively peaked distribution mainly caused by changes in agriculture, commercial, residential, swamps and wetlands and vegetation changes in the area.

### **10.3 Classical Land use modals of urban structure**

These were land use models developed in Chicago and created by Geographers, Economists and Sociologists to understand and explain the locations of people and other urban structures mainly the land use activities and transportation routes. These models included Concentric zone, Sector and Multiple Nuclei Modals. These models must be combined because when looked at separately, they are too simple to give reasons for urban dynamics such as unplanned urban land use changes in my case. That is there emerged the Hybrid Land use Theory which combines all the lenses of these three models to explain urban dynamism.

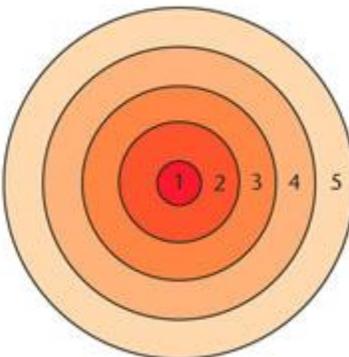
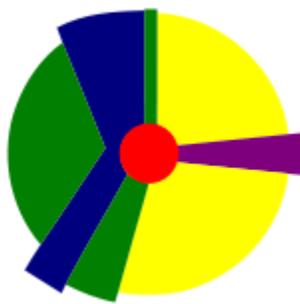
Classical Urban Land use Modals	
1. Concentric Zone Modal	 <ul style="list-style-type: none"> <li>1 CBD (central business district)</li> <li>2 Transition zone</li> <li>3 Blue-collar residential</li> <li>4 Middle-income residential</li> <li>5 Commuter residential</li> </ul>
2. Sector Modal	<p>Hoyt Sector Model Key</p>  <ul style="list-style-type: none"> <li>CBD</li> <li>Factories/Industry</li> <li>Low class residential</li> <li>Middle class residential</li> <li>High class residential</li> </ul>
3. Multiple Nuclei Modal	 <ul style="list-style-type: none"> <li>Central business district (CBD)</li> <li>Wholesale, light manufacturing</li> <li>Low class residential</li> <li>Medium class residential</li> <li>High class residential</li> <li>Heavy manufacturing</li> <li>Outlying business district</li> <li>Residential suburb</li> <li>Industrial suburb</li> </ul> <p>Harris &amp; Ullman's Multiple Nuclei Model</p>

Table 10: Classical Land Use Modals

## 10.4 Socio-Economic Survey Questionnaire

### Analysis of Urban Land use change using political ecology framework and GIS in Developing Countries: A case of Kawempe Division in Kampala City, Uganda.

#### Data Collection Tool: Questionnaire

##### **Purpose of the Survey:**

This survey seeks to find out the driving factors towards rapid land use change in Kawempe Division. This questionnaire is part of research that is being done towards a Master's degree. No personal identifying information will be included in the research results. Completion of the questionnaire should take around 15 minutes.

##### **General Information**

Questionnaire No.		Parish	
Date		Village /Cell	

##### **A: Respondent (Tick appropriate)**

1	Sex	<input type="checkbox"/>	Male	5	Occupation	<input type="checkbox"/>	Trade & Commerce
		<input type="checkbox"/>	Female			<input type="checkbox"/>	Property Agent
2	Age	<input type="checkbox"/>	18 - 23			<input type="checkbox"/>	Land developer
		<input type="checkbox"/>	24 - 28			<input type="checkbox"/>	Environmentalist
		<input type="checkbox"/>	29 - 33			<input type="checkbox"/>	Politician
		<input type="checkbox"/>	34 - 38			<input type="checkbox"/>	Industrial
		<input type="checkbox"/>	39 - 43			<input type="checkbox"/>	Construction
		<input type="checkbox"/>	44 - 48			<input type="checkbox"/>	Transport
		<input type="checkbox"/>	49+			<input type="checkbox"/>	Others (Specify).....
3	Education Level	<input type="checkbox"/>	University			6	Residence
		<input type="checkbox"/>	Tertiary	<input type="checkbox"/>	Non-Resident		
		<input type="checkbox"/>	Secondary	7	If Resident for how long have you stayed in this area	<input type="checkbox"/>	1 - 5 Years
		<input type="checkbox"/>	Primary			<input type="checkbox"/>	6 - 10 Years
4	Land ownership Status	<input type="checkbox"/>	Land owner	<input type="checkbox"/>	11 - 15 Years		
		<input type="checkbox"/>	Rent / Tennant	<input type="checkbox"/>	16 - 20 Years		
		<input type="checkbox"/>	Others (Specify).....	<input type="checkbox"/>	Over 20 Years		

##### **B: Factors for Urban Land Use Change in Kawempe Division from 1996 to 2013**

8 Which of the following land uses are currently being carried out in Kawempe Division?  
(Tick appropriate)

<b>No.</b>	<b>Land use Activity</b>	<b>No.</b>	<b>Land us Activity</b>
a	Residential	i	Wetland
b	Commercial (shops, market, gas stations etc)	j	Open Space / Bush land / Vacant land
c	Agriculture	k	Wetland

d	Industrial (Manufacturing & Processing	l	Transport
e	Institutional (Health, Schools, Religious)	m	Civic (Offices / Administration)
f	Forestry	n	Others (Specify...
g	Mining / Quarrying		
h	Recreation		

9. Which of these land use were existed in Kawempe Division before 2000? (*Tick appropriate*)

No.	Land use Activity	No.	Land us Activity
a	Residential	i	Wetland and swamps
b	Commercial (shops, market, gas stations etc)	j	Open Space / Bush land / Vacant land
c	Agriculture	k	Transport
d	Industrial (Manufacturing & Processing	l	Civic (Offices / Administration)
e	Institutional (Health, Schools, Religious)	m	Others (Specify...
f	Forestry		
g	Mining / Quarrying		
h	Recreation		

**10 Biophysical causes of land use change in Kawempe (*Tick the appropriate*)**

i	Loss of soil fertility	In case of Drainage;	a	Poor
ii	Drainage issues		b	Better
iii	Topography		a	Gentle slope
iv	Vacant land	In case of Topography	b	Flat
v	Others (Specify....)		c	Rugged / Steep

**11 Economic causes of land use change**

i	Location relative to the market	vi	Comparative advantage
ii	Improved accessibility	vii	Others (Specify)
iii	Better infrastructure & communication network		
iv	Land scarcity		
v	Opportunity cost		

**12 Social causes of land use change (*Tick the appropriate*)**

i	Natural Human Population increase	vii	Availability of consumer services
ii	Rural-Urban Migration	viii	Historical events
iii	International Immigration	ix	Site & Situation characteristics
iv	Improved transport means	xi	Others (Specify).....
v	Favorable housing prices		
vi	Individual preferences		

**13 Spatial causes of land use change**

i	Closeness to Kampala CBD	iii	Others (Specify).....
ii	Location of supporting land use activities		

**C: Effects / impacts of urban land use change in Kawempe Division.**

i	Land fragmentation	vi	Others (specify)
ii	Slum & informal developments		
iii	Uncontrolled urban sprawl		
iv	Environmental deterioration & pollution		
v	Incompatible developments		

**D: Addressing land use change in Kawempe.**

i	Enforce land use regulations	Others (specify)
ii	Sensitize the local community on land use issues	
iii	Prepare urban land use development plans	
iv	Restore environmentally destroyed areas	
v	Encourage Urban-Rural migrations	
vi	Adopt vertical development programs	

**E: Land use awareness questions**

***Policy awareness***

Are you aware of any land use development and regulation policies in Kawempe?

i	Yes
ii	No

If yes; have you adhered to them?

i	Yes
ii	No

***Power Vs land use activities in Kawempe (Tick the appropriate)***

Land ownership status and rights	Freehold
	Customary
	Mailo
	Public
Who Controls land use activities in Kawempe?	Local authority (KCCA)
	Land owners (Land lords)
	Investors and land developers
	Other (specify)
Who implements urban land use policies in Kawempe?	Local Authority (KCCA)
	Local community
	Land owners / Land lords
	Investors & Developers
	Others (Specify)

***Environmental / ecological awareness***

Are there environmental – land use conflicts in Kawempe?

i	Yes
ii	No

If yes; state / Name them:

.....

**Environmental / ecological issues in Kawempe (Tick appropriate)**

Availability of environmentally sensitive areas		Wetlands / Swamps	
		Forests (Planted & Natural)	
		General environmentally protected areas	
		Public open spaces	
		Others (specify)	
Value of environmentally sensitive areas		Environmental conservation and preservation	
		Aesthetics / Beauty	
		Environmental purification (Water, Air, Noise)	
		Home for wild and ecological organisms	
		Others (Specify)	
Is it necessary to protect the environment?	Yes	Why?	
	No		
Have you ever gotten involved in any environment campaign in Kawempe?	Yes	If Yes, specify	
	No		
Environmental related problems		Flooding	
		Environmental pollution (water, air, Noise)	
		Others (specify)	
Causes of environmental problems		Reclamation of environmentally sensitive areas	
		Poor solid waste management	
		Lack of environmental awareness	
		Others (specify)	

What strategies can be put in place to improve on environmental conservation and preservation in Kawempe?

.....

**Land use activities awareness**

Do you notice any land use changes in Kawempe? (a) Yes (b) No

If Yes, State the significant changes land use changes that you notice.

.....

Which land use activities are under greater threat in Kawempe?

.....

Why are they under threat?

.....

**Urban Planning awareness**

Do you have any knowledge about urban / town planning? (a) Yes (b) No

If Yes, Specify

.....

Any knowledge about any Physical Planning laws, regulations and policies? (a) Yes (b) No

If Yes, Specify

.....

Any Physical land use Sensitization ever carried out in Kawempe? (a) Yes (b) No

If **yes**, which media of sensitization was used?

(a) Community meetings (b) Local Radio Stations (c) Posters / Notices / Banners  
(d) others (specify)

Is urban planning and control of land use activities important? (a) Yes (b) No

Thank you for your time

## 10.5 Interview guide

**Analysis of Urban Land use change using political ecology framework and GIS in Developing Countries: A case of Kawempe Division in Kampala City, Uganda.**

### Data Collection Tool: Guided Interview Questions

#### **Purpose of the Survey:**

This survey seeks to find out the driving factors towards rapid land use change in Kawempe Division. This questionnaire is part of research that is being done towards a Master's degree. No personal identifying information will be included in the research results. Completion of the questionnaire should take around 15 minutes.

#### **Background of Urban land use and land use change**

Can you tell me the work of your department /office / organization towards land use activities?

.....

Can you tell me about the brief history of land use and land use change in Kawempe?

.....

Do you cooperate with other bodies/ offices/ organizations or departments in managing land urban land use activities?

(a) Yes            (b) No

If No, why not cooperate?

.....

If Yes, How do you cooperate?

.....

Name these other bodies/ offices/ organizations or departments that you cooperate with?

.....

#### **Land use change**

What are the main causes of land use change in Kawempe Division?

.....

What is your perception of land use change in Kawempe?

.....

What is being done to control and regulate land use change in Kawempe?

.....

#### **Land use change perception**

Would you perceive Kawempe Division as Planned?

(a) Yes                      (b) No

If Yes why?

.....

If No, why Not?

.....

What do you think is the proper land use in Kawempe Division?

.....

Have you ever conducted urban land use sensitization workshop and meetings in Kawempe?

(a) Yes                      (b) No

If Yes Why?

.....

If No, why not?

.....

**Land use change Control and Management**

Do you often enforce land use regulations, laws and policies in Kawempe?"

a. Yes                      (b) No

Why or why not?

.....

What laws are in place regulate urban land use in Kawempe?

.....

What bylaws do Kawempe Division has to address the rapid land use change?

.....

Are the existing laws and bylaws sufficient to address land use change in Kawempe?

.....

**C: Key stakeholders and Players in Land use development**

Which parishes in Kawempe have experienced rapid land use changes?

.....

Who has power and control over land use activities in Kawempe?

.....

***Elders and Opinion Leaders***

In 1996, what was a dominant land use in Kawempe?

.....

Is it still the dominant land use today?      (i) Yes      (ii) No

Why?

.....

Is there a remarkable change in land use activities in Kawempe?      (i) Yes      (ii) No

Why?

.....

How has the land use in Kawempe affected urban livelihood?

.....

How has land use change in Kawempe affected economic activities?

.....

What is the future land use challenge in Kawempe?

.....

**D: Anymore comment regarding land use change in the study area?**

.....

*THANK YOU FOR YOUR TIME:*