



**THE CHALLENGE OF SUSTAINABLE LAND USES IN A  
RURAL-URBAN FRINGE: A CASE STUDY OF THE  
NAIROBI-KIAMBU CORRIDOR.**

**Margaret Mwonjoria Ng'ayu**

A Thesis Presented in Fulfilment of the Requirement for the Degree  
of Doctor of Philosophy in the Department of Urban and Regional  
Planning, University of Nairobi.

June, 2015

## DECLARATION

This thesis is my original work and has not been presented for a degree in any other university.

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Margaret Mwonjoria Ng'ayu

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Date

This thesis has been submitted for examination with our approval/knowledge as University supervisors.

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Professor Elijah N. Ndegwa, Ph.D.

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Date

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Professor Paul M. Syagga., Ph.D.

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Date

## **DEDICATION**

For my parents. Rest in peace.

## ACKNOWLEDGEMENTS

The writing of this Doctoral Research Work has been an individual undertaking therefore responsibility for the mistakes, omissions or errors which remain in the final product is mine. However, I would like to acknowledge the support received from many individuals and institutions that contributed to its successful completion. While it is difficult to mention all, those who contributed are hereby acknowledged and greatly appreciated.

Foremost, I acknowledge the institutional support received from the University of Nairobi in the form of finance, supervision and other support services. The Centre for Sustainable Urban Development (CSUD), Columbia University, New York provided support in form of books, journal articles and professional support through Prof. Jackie Klopp. Special thanks to the study respondents of Nairobi-Kiambu corridor at Njathaini, Roysambu, Kamuthi (Nairobi County) and, Thindigwa and Kiamumbi (Kiambu County). They gave of their time and were comfortable in sharing their experiences, and ideas. We particularly single out the key informants: Ms. Rachel Mbugua, Mr. Edward Kibe and Wakabira, who shared their long history of the study area. I also thank the research assistants, for their data collection and mapping.

My supervisors, Prof. Elijah Ndegwa (Department of Urban and Regional Planning) and Prof. Paul Syagga (Department of Real Estate and Construction Management), formed a great and inspiring twosome. I deeply appreciate their professional guidance, supervision and enthusiasm which led to the successful and timely completion of this work. Others include, Prof. R. Rukwaro, Dr. R. Opiyo and Dr F. Mugo, who sharpened the research methods and the format section, your continuous and consistent support and encouragement was a source of strength.

It is difficult to find the right words to express my gratitude to my dear husband Ngayu Kioni, who supported me financially, and emotionally throughout the study

period, and to our children Wairimu, Kioni and Wandu for their love, understanding, support and patience with me.

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## **ABBREVIATIONS**

CCN	City Council of Nairobi (now City Government of Nairobi)
DPP	Director of Physical Planning
DfID	Department of International Development
EAs	Enumeration Area
FGDs	Focus Group Discussions
LA	Local Authority
MCK	Municipal Council of Kiambu (now Sub County of Kiambu)
NEMA	National Environment and Management Act
PPA	Physical Planning Act
RUF	Rural Urban Fringe
UN	United Nations
NLC	National Land Commission

## ABSTRACT

The development of the urban fringes is an inevitable consequence of urbanization given that as cities continue to grow, urban activities spread outwards in waves towards the rural areas. The rural-urban fringes of cities thus, are the exit points for residents relocating from major urban built areas, and entry points for rural migrants into the towns. The spatial development issues at the rural-urban fringes are many and varied. Firstly, rural-urban fringes are determined by two major factors; that is, administrative boundaries and the differences in the intensity of built up areas and the farmland. Secondly, policy and legal guidelines exhibit inadequacies in handling the dynamism of the fringes and thus the failure by planning agencies in managing the impending growth, resulting in the development of land in an un-sustainable manner. Thirdly, prospective land developers, businesses and communities fail to anticipate the results of development because they lack information on potential or approved development plans. This study applies urban development theories to explain the phenomenon at the rural-urban fringes. In this regard, this study draws heavily from a paper by Alonso and Wingo's explanations on the spatial structure in terms of how the market allocates space to users according to supply and demand; von Thunen's agricultural land use model whose building blocks are economic rent, distance from the centre and individual decision making explains how the urban structure is influenced by the locational behavior of households in the city. Systems theory as applied to cities reveals that the city is a dynamic system that evolves in response to many influences, processes and policies. The theory is applied in analysis of the urban areas which are viewed as systems with persistent human activities. A sample of 134 respondents, drawn from the five (5) neighborhoods located within the Nairobi-Kiambu development corridor informed the study. This was further informed by the rather heterogeneous nature of the neighborhoods in terms of physical characteristics, livelihoods and historical evolution. Observation, questionnaires, focus group discussions and interviews were the main methods applied in the collection of primary data. A synopsis of the findings reveals that,

contrary to conclusions in studies carried out elsewhere in Africa that periphery development accommodates low income residents, the Nairobi-Kiambu corridor presents an area interspersed with low and high income households; land use is a function of livelihoods, that is, land has been put into different uses that translate into family incomes; that there is limited connection between land owners and the planning authorities and; that opportunities for planning for sustainable land use exist where there are huge swathes of agricultural land and open spaces. The study recommends that the new legislative frameworks and resources at the county level need to be directed to planning authorities and departments, in order to enhance their capacity to implement and enforce regulations on land use; development of a framework evolving from and based on the principles of partnership, dialogue and collaboration with the key actors in land use; and to build upon good practices unfolding in the settlements, for example resident's associations.

## CHAPTER ONE: INTRODUCTION

### 1.1 Background of the study problem

‘Cities have become impossible to describe.  
Their centres are not as central as they used to be,  
their edges ambiguous,  
they have no beginning and apparently no end.’  
(Ingersoll, 1992)

Africa is the fastest urbanizing continent in the world. In 1980, only 28 percent of the African population lived in cities. Today, the population in African cities has risen to about 37 percent. The annual urban growth rate in Africa is 4.87 percent, twice that of Latin America and Asia. Cities and towns in Africa are also growing at twice the 2.5 percent growth rate of the rural population in Africa (Tibaijuka, 2006). The United Nations projects that the urban population will double in the next 30 years, from just fewer than 2 billion people, to nearly 4 billion. There are three causal factors for this phenomenon namely: migration from rural areas and other urban areas, which is a dominant factor in Kenya and other developing countries. Urban areas continue to attract people due to real or imagined opportunities; natural population increase in urban areas; and the reclassification of previously rural areas as urban areas, thus precipitating densification and thereby changing their physical landscapes.

The importance of urban centers in national development is evident in the fact that urban centers in most nations play crucial roles in the development towards a stronger and more stable economy, and has helped underpin improvements in the living standards for a considerable proportion of the world’s population (UN, 1996: xxv). There is a clear link between national economic development or a nation’s wealth and the growth of cities, this is evident in the simple fact that the world’s largest cities are also located in countries with the largest economies.

Another important status of the urban centre is that globally, cities are centers of artistic, scientific and technological innovations of culture and education (Ibid, 1996).



In Kenya, the urban population generates over 65 per cent of the national GDP. Nairobi alone, contributes 60 per cent of the GDP of the country's economy thus contributing to overall economic growth and poverty reduction. Notwithstanding the importance of Nairobi in national development, the city has not been immune from the negative impacts of urbanization namely: strained capacity of cities in the provision of requisite infrastructure and basic urban services to residents. This has resulted in an urban sprawl, with the middle social classes seeking more comfortable accommodation in outlying areas, (poor households also locate in distant city fringes), as overcrowded and impoverished informal settlements continue to flourish.

One of the most distinctive features of urbanization in developing countries is the indeterminate rural-urban fringe that surrounds the major cities and secondary towns. The growth of the fringe is often driven by market forces, rather than, regulation, which have shaped its character. Rapid population growth in large cities usually promotes the densification of less developed areas and expansion at the urban fringe, largely following either price constraints or the preferences of households acting within the housing market. Population density in the most central zones frequently decline as households are displaced by the expansion of other activities. Richer households typically, prefer larger dwelling units. Since housing prices and rents are lower on the periphery areas of cities than at the centre, richer households are more decentralized than poorer households. The formation of vast and ever-expanding metropolitan regions seems to be an inevitable feature of very large populous countries in the developing world.

The tremendous growth of towns into their hinterlands, and the consequent spatial, social and land use transformations provide for a case that it is not enough to classify urban and rural areas or their communities and territories, merely on the basis of physical boundaries. As planners and other urban development practitioners seek for a clearer definition of the urban fringe, the fact is that the sustainable land use of these

areas depends on the development of effective planning guidelines and management approaches. The fringes of the city as spaces are the product of the interaction of state intervention and policies on one hand, and the action and practices of the inhabitants on the other as evident in the everyday use and appropriation of spaces, land, housing strategies and self-building practices. In Kenya specifically, there is an obvious ambiguity in the locus of responsibility for fringe planning; the responsibility seems to lie somewhere between the state and the local government. Actually, there is only partial indirect or de facto reference to the fringes in the planning ideas and policy instruments, and therefore the influence of such plans and policies on the fringes can only be inferred.

There are varied dimensions which define the rural-urban fringes, with the key ones being, location, land use and population densities and characteristics. Alternatively, the fringe is viewed as a landscape type in its own right; one forged from the interaction of urban and rural land uses. This definition however shifts, depending on the global location, but typically in Europe, where urban areas are intensively managed to prevent urban sprawl and protect agricultural land, the urban fringe will be characterized by certain land uses which have either purposely moved away from the urban area, or require much larger tracts of land.

In studies carried out in England, the rural-urban fringe is referred to as 'no man's land, and lies between the town and country side. Gallent (2002), argues that the rural-urban fringe is an area with a distinct entity and also one that possess special characteristics that differentiate it from rural and urban areas. In 2003, the Department of Communities and Local Government (previously under the Office of the Deputy Prime Minister), the agency in charge of local government in England, delineated the fringe as a 500 meters girdle, surrounding any metropolitan or small town area. However, current research indicates that fringes are not uniform girdles, but rather, that they stretch and contract depending on factors such as topography, economy and politics.

The term, rural–urban fringe, is sometimes defined in terms of a city sprawl. Although there are many definitions of sprawl, a central component of most definitions is that sprawl is the spreading out of a city and its suburbs over more and more rural land, on the periphery of an urban area. This involves the conversion of open space (rural land) into built-up, developed land over time. From the standpoint of urban planning institutions, the style of that conversion can sometimes be more important than the amount of the conversion and hence the emphasis on the qualitative attributes of sprawl such as attractiveness, pedestrian-friendliness and compactness. Land conversion is best reflected by the land use and existence of livelihoods. For planning to be effective, it must recognize the fact that fringe livelihoods can best be understood if we take account of, and examine the locally specific contexts in which they occur. We need, for instance, to examine the interrelations between the processes which operate at various scale or levels, that impinge on livelihoods. (Carney, 1998; Scoones, 1999; and Ellis, 2000).

Secondly, a gradual shift in thinking about social change has led to a greater emphasis on peoples' perceptions of how to change their lives through individual and collective action and the structures of society. This study however, explores those perceptions in regard to how changes in land uses in different places ,at different times, take place, in order to seek explanations for these changes and how the changes can be made to contribute to sustainable land uses. Following this line of thinking, there is an increasing emphasis given to people's own activities whereas previously the focus of development studies was mostly on macro-economic structures and government policies. This module elaborates and provides an analytical framework for studying and understanding livelihoods and therefore the wide range of processes and factors that affect livelihoods.

## **1.2 Statement of the Problem**

The rural-urban fringe, presents a landscape where the formerly distinctive attributes of “rural” and “urban” become increasingly blurred. In terms of the physical fabric,

this is evident from the expansion of metropolitan areas; while at a functional level, it is seen in the spatial intrusion of urban activities into rural areas; while in family and household terms. It is viewed from the diversification of livelihoods and the increasing movement of people between the urban and rural fringe areas. The real challenge is evident when one is interpreting these dynamics.

Several challenges arise from the planning and desire for sustainable land use at the rural-urban fringes. Firstly, urban fringes are determined by two major factors namely: the administrative boundaries and the difference in intensity of the built up (formal planned) areas. The planning agencies in Kenya are extensively fragmented and also exhibit little interest or willingness to accommodate the fringes through planning. The problem is therefore that, though every zone belongs to a planning authority, the ambiguities in the administrative boundaries enables residents to take advantage and develop their spaces in an uncoordinated fashion. Further, most of the development is mixed land use and therefore without guidance, it results in incompatibility of land uses. The situation is further compounded by the poor service delivery mechanisms earmarked for the fringes.

Secondly, the policy and legal guidelines exhibit inadequacies in handling the dynamism of the fringes such that planning agencies fail to manage the impending growth facing the fringes and generally lack the capacity to develop adequate responses before the unplanned growth overwhelms them. The problem is compounded by the fact that much of the fringe growth transcends administrative boundaries, bringing into fore the authorities with their varied interests, priorities and resource base, which result in land development in a most un-sustainable manner. If planning does take place before development, the property owners' expectations for higher land values can exacerbate property rights, conflicts and complicate the subsequent growth-control efforts. The study explored the planning instruments, policy directions and local interventions that planning authorities may appropriately

apply in order to manage growth in the rural-urban fringe and therefore ensure the sustainability of land use.

Thirdly, prospective land developers, businesses and communities fail to anticipate the results of development because they lack information on potential or approved development plans (where they exist) for the surrounding developments. Where property owners intend to plan or to seek planning guidance, the development control frameworks within which development can proceed are lacking and there exists little or no information on which to anticipate growth. Whereas the capacity of most planning authorities is weak, information dissemination channels greatly inhibit any meaningful collaboration with property owners and prospective developers, thus compounding the planning challenges in the rural-urban fringe. Effective channels should be established to ensure that information, including planning issues are disseminated to residents; this is workable in the devolved centres of county government administration.

The study therefore sought answers to the issues stated above: what are the driving forces, spatial implications, role of planning and institutional frameworks that could manage ensuing land use directions and intensity and thus ensure the sustainability, growth and livelihoods of people caught up in the maelstrom of this change. On the one hand, use of land is closely connected to these changes, as people seek to consolidate and diversify these into coherent and synergetic activities and contribute to sustainable land uses in their own mode.

### **1.3 Research Gaps the study intends to fill**

Previous research on the rural- urban fringes (RUF) has focused on urban agriculture (Rakodi, 1988; Memon and Lee Smith, 1993). Attention has also been drawn to the proliferation of formal and informal land markets and related land use changes in the RUF's. Other studies have emphasized the conceptual descriptions as a mechanism to understanding the dynamics of change in parts of the RUF's and shifts in the position of the zone as a whole (McGregor, 2006). The study sought to fill the gap in literature

by revealing the pertinent role of land use planning, as a tool in the management of these changes.

Some researchers contend that despite the importance of rural-urban fringes, (Simon *et al.*, 2006; Huchzermeyer and Mbiba (2002), the area is still understudied. The reasons given for this include partly, the divisions in the academic disciplines that focus either on areas that have rural or urban aspects, and partly, the conceptual and operational separation of urban and rural areas in planning theory and practice. Additionally, the concept of urban sprawl, which seeks to explain the urban expansions in the rural-urban fringe, is cited as contributing to obscuring the complexity of the cultural, environmental, economic and social forces in research work in this area (Audirac 1999).

There is however agreement on two fronts: It is at the rural-urban interface, the site for current and future urban growth, that we can better understand the process of today's urbanization, as well as evolving conflicts over land uses. It is also the areas where opportunity to manage urban growth patterns, before they get imprinted on the landscape, exist. By investigating the land uses changes on the Kiambu-Nairobi corridor, the study envisaged to fill the above gaps viz a viz, the need to generate information for use by policy makers on the best way to manage potential land use conflicts, enhancement of livelihoods and guided growth to ensure sustainable land use.

#### **1.4 Research Goal and Objectives**

The goal of this study was to generate information that could contribute to the development of a land use planning policy framework to ensure sustainable land uses along the Kiambu-Nairobi development corridor.

## **Specific Objectives**

The specific objectives were:

- i) To investigate the pattern and characteristics of the rural-urban fringe development along the Nairobi- Kiambu corridor
- ii) To establish the process of growth and the reasons for settlement in the Nairobi-Kiambu corridor
- iii) To determine the forces that influence the type of development along this corridor
- iv) To determine appropriate and sustainable land use practices on this corridor

### **1.5 Research Questions**

- i) What are the major characteristics and patterns of growth of the rural-urban fringe on Nairobi- Kiambu corridor?
- ii) What has been the process of growth and what are the reasons for settlement in the Nairobi-Kiambu corridor?
- iii) How can we determine the appropriate and sustainable land use practices along this corridor?
- iv) What are the forces that influence the type of development on the Kiambu-Nairobi corridor?

### **1.6 Study Propositions**

- i) That land remains the most fundamental natural asset in the rural-urban fringes. Residents and households regard land as an investment and a value. Therefore, the rural-urban fringes will continue to be contested areas as different actors seek to meet these ideals.
- ii) That parcel characteristics and landowner's personal preferences cumulatively determine the character of the rural-urban fringes, and therefore adherence to planning regulations has a relationship to incomes derived from the household activities.

## **1.7 Justification of the Study**

Rarely are rural-urban fringes recognized as entities in planning and policy documents. In Kenya and other African countries, despite being an area of intense development, the fringe has received relatively little attention in literature. Yet, these zones have significance for both the understanding and planning of cities; for one, they actually have distinct characteristics and two, provide a frame of reference that articulates the physical make up of an urban area in relation to its history. In reference to the Nairobi-Kiambu corridor, the significance of this belt underlies a conceptual thinking about the nature of the urban physical growth and the city's transformation.

It is therefore important that potential residents of this zone, policy makers and development practitioners have adequate and useful information on the dynamics of the fringe. One, this has the relevance of preserving those areas that require preservation and intensifying those that need densification. Secondly, the people settled within this corridor will reap maximum benefits from their land and assets.

As a discipline, planning has the onus to develop ways that preserve the physical and natural environment and to determine the positive relationship between the two. For example, conservation creates aesthetically pleasing landscapes and provision of social opportunities, while at the same time protecting the biodiversity. In this regard, the study echoes the sentiments of McLoughlin that, ...'the profession, (planning) needs a far greater awareness of the processes of change in the human environment, the underlying reasons for them, their manner of accomplishment, the complex web of interactions between human groups and much greater skill in the techniques of foreseeing and guiding change (1969: 25). The study area is situated in an area with a rich biodiversity, which may be in danger of destruction if the rate of land subdivision and conversion continues unabated. The study thus sought to generate information necessary for this preservation of the national environment.



The urban fringes are determined by two major factors; namely: the administrative boundaries and the difference in intensity of the built up or formal planned areas. Griffiths (1994:14 as quoted by Gallent et al, 2004) refers to the urban fringe as “planning’s last frontier”, arguing that areas abutting towns and cities have been largely neglected by land use planners and by those public and private agencies with direct and indirect planning responsibilities. In Kenya, urban and regional planning has more or less treated the urban fringe as a no man’s land. The study seeks to explore the possibility of holding planning authorities accountable and responsible for guiding planning in the rural urban fringes. The ongoing implementation of the county government system, provides an opportunity in realizing this goal and this study will provides the requisite planning direction.

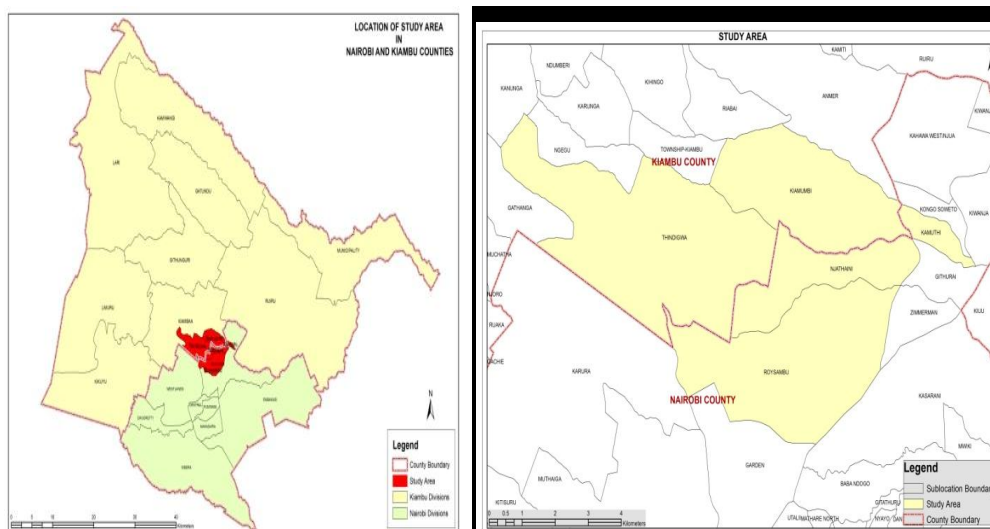
The Nairobi/Kiambu corridor presents a situation where the rural-urban fringe is an active zone in land use changes; basically due to the proximity of both zones, historical factors that encouraged private land ownership and the subsequent possibilities of enhanced economic returns from land. More importantly, the belt is not just viewed as a marker of the city edge but rather, as a translation of the significant demographic changes and economic structuring occurs. The dove-tailing of the rural-urban fringes, that is already taking place, should be managed more effectively, basically in order to ensure a balance between land uses and to guarantee access and realize the integration of social, economic and ecological uses, that is, optimize on the multi-functionality of the fringe. This is what Hoggart (2005), refers to as ‘mutations’, that is, planning that recognizes the interplay between existing uses and functions, and which therefore deals with the integration between ‘rural’ and ‘urban’. This phenomenon requires to be guided through spatial planning and this thus was the essence of this study

## **1.8 Scope of the study**

The research design focused on key factors that impact on land use in the urban fringes namely: market, social, and ecological, and how planning may intervene to

balance values and the interests that result from these and therefore ensure sustainability. The land use activities dominant on the Nairobi-Kiambu corridor are reflective of the dominant sources of wealth creation or what the study refers to as livelihoods. The study was an incisive assessment for informing the above values as reflected by the livelihoods. The study contended that landowners fail to realize expected returns due to the unsustainable manner in which land is developed devoid of adequate guidance from planning agencies.

The study was carried out in the residential neighbourhoods of Kiamumbi and Thindigwa (in Kiambu county) and Roysambu, Njathaini and Kamuthi (in Nairobi city county). These neighbourhoods are located approximately 15 kilometers from Nairobi City and Kiambu town, respectively.



**Figure 1.1:** *The county and local context of the study area*

Source: Survey of Kenya, 2012

The study applied the concept of neighborhoods (as clusters) to delineate the area for data collection purposes. The physical limits and scope of the study area is indicated in Figure 1-1, giving the two counties of Kiambu and Nairobi. The neighborhood is an important structuring element as it has social functions including the development of significant social primary relationships, socialization of children and the development

of informal social control; provision of personal support networks; and the facilitation of social integration into the larger society.

Household decisions are categorized into three facets namely: developmental or economic aspects since neighbourhoods are formed as a result of decisions made by many households; behavioural change; and, location change. The planning capacities of the Nairobi City County, Kiambu County and the Physical Planning department were assessed in order to inform the institutional framework and to explore the available options for partnerships in the planning and development of the fringes, specifically, the Kiambu-Nairobi corridor.

## **1.9 Definition of terms**

### **Corridor**

There are three perspectives from which the study applies this concept; i) elongated zone of development influenced by major transport routes and other forms of infrastructure and also referred to as lineal development ii) the extension of large cities; and iii) corridors are sometimes also economic development axis. The idea is that transport and infrastructure are not only derived from the social and economic process, but rather, to a large extent also determine these functions.

### **Neighbourhood**

The study did not limit this term to spatial connotations only; but also incorporated the aspect of people; people and place. This meant delimitation in terms of physical/natural characteristics, basic facilities, social structures (social networks) and cultural/sentimental aspects such as history and identity. However since this was a spatial planning study, delineation along spatial/geographical characteristics was established primarily using the administrative boundaries units of analysis.

### **Rural-urban fringe**

The study applied this concept in terms of that frontier astride dense rural and urban activities. This is the zone of development that is neither rural nor urban but one that incorporates both these characteristics.

### **Sprawl**

The concept of sprawl is defined as the spreading out of a city and its suburbs into rural land at the periphery of an urban area. This involves the conversion of rural land into built-up, developed land over time. In the study the concept was applied both as a process of development and a pattern of land use.

### **Urban and Rural**

These two terms can and must be treated together because they deal with one single geographic concept. Urban and rural are labels applied to different parts of space based upon its uses. Traditional urban activities are commerce and industry, such as wholesale and retail sales, banking, insurance and financial services, professional services, cultural and artistic endeavours, and public administration. Customary and traditional rural activities focus upon primary industries such as farming, forestry, and mining.

### **Urban**

The study defined urban as a relatively large, dense and permanent settlement of socially heterogeneous individuals based upon a certain concentration of population hence density considerations. In Kenya, a settlement with a resident population of 2,000 residents is considered urban (GOK, 1978). The study also recognized functional aspects, that is, the activities that differentiate an urban area from a rural area. These activities could be either economic, that is, manufacturing (secondary) and services (tertiary) as opposed to primary (mainly agricultural) sector as major types of employment. The political function of an urban area is as an administrative centre.

## **Rural**

The study defined a rural area as a relatively large, sparsely populated settlement of rather socially homogeneous households. The study also recognized the distinct functional aspects of rural areas such as social, economic, environmental activities that differentiate a rural area from the urban landscapes. Economic activities are primarily agricultural based with scattered basic services. Environmental and social activities are closely intertwined in terms of how and which resources are exploited; emphasis is on social capital and sustenance of the social moral fabric.

## **Sustainable land use**

Land is regarded as an asset. Land should therefore 'fulfil its role' in nourishing the users in terms of social, economic, physical and natural needs. However, this is only possible where this asset is exploited in a manner that recognizes its finite and depreciation nature. In this study, sustainable land use connotes utilization of land in cognizance of the present and future users. Unsustainable land use therefore, is utilization of land without due considerations of the trio-, that is, some environment, social and economic attributes. Such use hinders the land from fulfilling its mandate and the users are unable to reap the benefits accruing from the land.

### **1.10 Organization of the study**

The study is organized into nine chapters, each of which has been broken into sections and subsections for easy presentation, order and readership. This section provides the sequence of this organization.

Chapter one of introduction lays the foundation of the study and sets the tone of what the reader can expect from the rest of the work. It contains subsections on the introduction, statement of the research problem, research hypothesis, research objectives and questions and the research methodological approach.

Chapter two of literature review forms the theoretical and conceptual basis of the study; Land use planning practices in the peri-urban fringes: practice, highlights on

the policy and legal environment including planning institutions, structures and roles, land use planning principles and instruments, setting and locational characteristics.

Chapter three of research design and methodology presents the methodological framework of the study and comprises subsections on research design, methods of sampling, selection and characteristics of research subjects/units of analysis, types of data collected, and generalisation and data analysis strategies and presentation.

Chapter four of results and findings done through a descriptive format with graphs and photographs, and including the processes of planning, factors influencing land use planning and the role of actors, issues on land tenure and land use, adaptation of planning standards and building regulation, land use conflicts, challenges of development control.

Chapter five of study synthesis and interpretation provides the synthesis of the study findings. The chapter ties together the research arguments and provides interpretation of the relationship between the concepts and study variables. Subsections in this chapter include: implications to policy and land use planning practice, innovative practises, appropriate policies and legislation for rural-urban fringes, access to basic services and issues of a future policy agenda and development

Chapter six of conclusions and proposals for planning provide the recommended options for development in the rural-urban fringes.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

This chapter provides details of the theories and concepts of planning over time as are relevant to the study. In this regard, the concepts and theories are tied together to indicate their relevance to the understanding of the growth, development and management of the rural-urban fringes. Secondly, the chapter provides insight into the legal framework within which planning is carried out, outlines the setting on which the study has been carried out and finally the conceptual framework of the study.

### **2.2 Conceptualising the rural urban fringes: Theories and concepts**

#### **2.2.1 Urban development theories**

Planning as a discipline is rich with theories that provide important but incomplete procedural models for carrying out planning. Of these, the best and most widely known, the rational planning theory, is both normative as it describes a certain format for making planning decisions, and descriptive, as it describes the steps that most planning processes follow (Kaiser *et al*, 1995: 37). Strategic planning is a procedural theory that allows for more comprehensive analysis by focusing only on selected critical issues. It relies on rational models of accessing the environment and developing actions arising out of the analysis. The critical theories are resolute on the need for open communication among interests affected by the planning efforts.

The economic and ecological analysis of urban structures provides a number of explanations on the location behaviour of households in the city. These concepts are based on von Thunen's agricultural land use model, the building blocks for which are economic rent, distance from the centre and individual decision making (Alonso, 1964 as quoted by Mbiba & Huchzmeyer, 2002). With some variations, the assumption in the economic model is that land use reflects the value and profitability of a particular location or area. This thinking was followed later by those of such as Von Thunen and Losch (1966 as quoted by Mbiba & Huchzmeyer, 2002), which

define neighbourhood by distance, revealing how identical activities would emerge within cities. They continue to say that different income groups occupy entire rings around the centre and where well-defined sectors shape high income areas adjoining on one or both the middle income areas. In Africa however, historical and religious rather than geographical factors, determine the urban structure of many cities with the most dominant feature being the presence of old and dilapidated residential areas within the centre, while low income settlements are usually located on the outskirts of the cities. The mixed land use and income structure of residents in the rural-urban fringes pose new challenges for planning in many of these cities; as opposed to predetermined planning models, here people create the spaces they inhabit and draw their character from them, thus the need for understanding the livelihoods.

Walter Christaller (1933) demonstrated how under certain conditions, a hierarchy of central places would result, as determined by the rarity of a service, the population needed to support it and the size of the central place itself. Colby (1933), identified the centrifugal and centripetal forces at work in cities, which have the effect of concentrating certain activities and dispersing others (McLaughlin 1969). Two major factors run through the theories analyzed above, one is the idea of an equilibrium condition in which any change is explained as an outside disturbance after which a fresh equilibrium would be reached; and, two, that location decisions made by residents were rational, based on the need to select an optimal location for their activities. Thus, fringe belts are products of large numbers of separate decisions about individual and household spaces. These two factors are vital to any analysis of the urban fringe, and both are applicable for establishing the dynamism of the fringes.

Urban change content theories are however more relevant to this study. Again here, many such theories abound. These land market theories also describe the relationship between land owners, purchasers and developers. The classical economic theorists such as Alonso and Wingo, explain the spatial structure in terms of how the market allocates space to users, according to supply and demand; while human ecology



theories explain urban development through market-driven economic competition for urban space, and the Marxist theories explain urban development as the result of the exploitation of workers by capitalists (Kaiser *et al*, 1995). The study's main focus is the land use change as presented by the development of the rural-urban fringe, the exogenous and endogenous forces that determine this change and therefore the interest to utilize planning as a tool for managing these land use changes.

The human ecology and political-economic perspectives, arising from the social science theories, propounded by Rudel (1989), will be widely applied in this study; basically because they both provide structural and process variables. For example, human ecology assumes that as market changes, resulting from the construction of new highways, they produce both demographic changes and changes in the land regulations over time (Kaiser *et al*, 1995). Rudel (1989) confirms the above statement, thus; 'as land use changes, repeated dozens of times on different parcels of land, it gradually alters the configuration of interest in a community and this change in interest causes a change in policy' (quoted by Kaiser *et al* 1995).

The thesis of the systems theory, as applied to the cities is that, the city is a dynamic system that evolves in response to many influences, processes and policies. The theory can be applied to an analysis of the urban areas if one views urban areas as systems with persistent human activities, especially those that occur and recur at specific locations or within particular zones (McLaughlin 1969). A system, in the physical sense, refers to adapted spaces (parks, buildings, arenas, forests) described more by the conscious and regular use, rather than, the physical construction and development. The physical-construction approach refers to channels of forms of communication (footbridges, airports, rivers, roads). The most pertinent argument for the analysis of the systems theory, as applied throughout the study is that, many activities take place in adapted spaces that were not originally intended and equally activities may take place on the same space, or what planners call mixed use. In the same vein, the study agrees with the contention that the city evolves through time in ways which depend upon the sequences in which changes in land use and movement

facilities occur. The systems theory contends that the planning process must have a ‘similar shape’ to the human eco-system which it seeks to control, i.e., controlling the complex systematic changes which give rise to and arise from the human behaviour patterns.

The study sought to establish the link between utilization of land as an asset and the challenges associated with informal and un-coordinated land use activities. By doing this, the study intended to build upon the theories of rural-urban fringes by generating information necessary for maintaining the integrity and reliability of the system, to sustain the inhabitants.

### **2.2.2 Guiding Concepts**

This subsection presents a detailed assessment of the concepts and variables guiding this study. Discussions within the section attempt to link the concepts and provide their relevance to the study.

#### **Planning**

Historically, town planning was concerned with the orderly, aesthetic and healthy layout of buildings and land uses. According to Keeble (1964: 1 quoted by Ahmed nad Bagwa, 2005)

“...planning is the art and science of ordering the use of land, character and siting of buildings and communication routes in-order to secure and maximize the practicable degree of economy, convenience and beauty.”

Franklin, in his definition of planning introduces the concept of ‘balance’ of objectives or (in a sense) needs when he states that, physical planning is concerned with the design, growth and management of the physical environment, in accordance with predetermined and agreed policies, whereby balanced social and economic objectives may be achieved (Franklin 1979). Taylor and Williams echo the same idea and define planning as a mechanism to provide an environment for living which all

may desire but which would not be attained through the fragmented decisions of individuals. It is a means to organize the public goods of society, (Taylor and Williams (1982).

For the purposes of this study however, we have applied extensively, the definition by Rakodi and Devas (1993). Town planning has evolved and today incorporates broader social and political aspects that is, from the primary concern of the preparation of plan documents to concern with implementation and forces which influence and determine patterns of development, for example, systems of municipal management. Municipal management as a practice has its roots in the traditions of public administration, and in particular, the Weberian ideals of 'legal, rational and authority' (basically in regard to maintenance of public order and interests of those in power). With democratic influences over time, the concerns of public administration have widened to take into account the interests and needs of ordinary citizens.

However, in many developing countries, public administration is dominated by interpretation and enforcement of legislation with regulation and control of activities of the private sector and routine procedures about the provision of services and this is the realm that urban planning finds itself. Therefore, the integration of urban planning and management in developing countries is pertinent in the pursuit of developing innovative approaches towards resolving urban problems and improving urban conditions. The urgency for planning of the urban fringes is pertinent as it presents a rather presumptive situation of urban development in developing countries. This study agrees and builds upon Riggs contention that, the formerly distinctive attributes of "rural" and "urban" are becoming increasingly blurred. In terms of physical fabric this is evident in the expansion of Southeast Asia's metropolitan regions; at a functional level it can be seen in the spatial intrusion of industry into rural areas; and in human and household terms in the diversification of livelihoods and the increasing movement of people between regions and jobs. It is in interpreting these changes that the real challenge lies: the interpretation would consider what is driving the process and what

are its implications, particularly for the people who are caught up in the maelstrom of change (Riggs, 1997).

### **Sustainable Land Use**

This section approaches the discussion on sustainable land use by defining and providing a historical genesis of the concept and its use within the last two decades. At times the separation of terms that form the concept will be paramount and useful for analysis. The section also establishes the relationship between the concepts of sustainability, sustainable development, land-use, planning and enhanced livelihoods in rural-urban fringes.

### ***Sustainability***

The idea of sustainability comes from development considerations in the natural sciences, especially biology. Conceptually, the term initially applied in forestry when increasing population and consumption of wood (for fuel and building material) made forestry management a necessity. At the end of the eighteenth century, in Germany, a law was enacted to limit cutting down of trees to only that which is replaced with re-growth. The concept of sustainability is however associated with the Brundtland Report (1987), when the concept was used in an attempt to create an awareness of the disturbing relations between human activities and their impact on the natural environment. Sustainability is, however, not a clear cut homogeneous concept. The term today is commonly used in public discourse, but in effect the concept of sustainability is actively re-designed for the specific purpose, at any given time and context. Never the less, the birth of the concept has influenced environmental laws and planning, in a wide range of countries.

The work of the World Commission on Environment and Development, laid the groundwork for the convening of the Rio Declaration, at the 1992 Earth Summit, and the adoption of Agenda 21 and the establishment of the UN Commission on Sustainable Development. Primarily, the Rio Declaration, considered human beings at

the centre of concern for sustainable development and the fact that they are entitled to a healthy and productive life, in harmony with nature. The declaration's key vein was that the only way to achieve long-term economic progress is to link it to environmental protection. Therefore, nations were encouraged to develop new and equitable global partnerships involving governments, populations and key sectors of society and to build international agreements that protect the integrity of the global environmental and developmental systems.

Agenda 21 was a blueprint for ensuring that the future development of the world is economically, socially and environmentally sound and sustainable. All these major conferences and deliberations on environment and protection have shaped the way that nations view the exploitation and management of the earth's resources. In a way, this has influenced the direction and the emphasis of professional and academic schools with thoughts on new approaches to addressing the challenges in resource utilisation. Therefore, such concepts as sustainable development, sustainability, environmental management, and inclusive development, have become part and parcel of academic and professional discourses. The pertinent issue in the study is to fill the gap between mere discourse and practice. Therefore, the concept of sustainability is applied to this study, in an attempt to understand and effectively plan for the rural-urban fringes.

One element of sustainability is to understand the change (or impact), in either direction (degradation or improvement). The term "change indicators" has been used to describe the changes on land and also as a measurement of the quality and quantity of land resources. Indicators of change or sustainability indicators are necessary to guide land users in their decisions to manage land and water resources and inputs. Land qualities as used by FAO for many years in the context of land evaluation (FAO, 1976), was on one hand a complex attribute (for example, nutrient availability), that affects the suitability of the land for a specified use and in a distinct way. Land qualities care is also defined in negative terms, as "land limitations" (FAO, 1995).

On the other hand, the term sustainable development is generally taken to signify the harmonization of environmental, economic and social goals so that the needs of people living off the land today, are satisfied, without destroying opportunities for subsequent generations to choose their own life style. Unsustainable land use is more evident on the rural-urban fringes, in regard to the physical environment. According to studies carried out in Harare, agricultural practices with negative environmental impacts were viewed as the result of the unavailability of extension services to guide farming activities and possibly mitigate against the negative impacts of urban farming. It was the contention of the researchers therefore, that if extension services were availed to cultivators, then urban farming would not only be a secure livelihood option but that it would be carried out in an environmentally sustainable manner (McGregor *et al*, 2006).

Research carried out in Kano, Nigeria indicates different forms of unsustainable land use. Legality of land use and (in)security of tenure are vital considerations resulting in the (un)sustainability of peri-urban livelihoods (McGregor *et al*, 2006). Fears of government land policy initiatives, pressure to abide by expensive and lengthy planning regulations and enticement of high prices from developers, typically result in unsustainable land use.

Planning is an important tool that the actors interested in peri urban growth and development could utilize to address issues of un-sustainability. Innovative planning mechanisms that accommodate aspects such as coordination, consensus-building and negotiation have the ability to resolve conflicts arising from the exploitation of resources. This is because, most conflicts associated with resource exploitation, arise over the need to ensure social equity, sound physical environment and economic development.

### **Measuring sustainability**

Considerations for measuring sustainability by various agencies and researchers abound. The United Nations (1996), referred to sustainable development as development that incorporates economic, social, ecological and institutional considerations. In 1999, the UN elaborated these indicators further as; shelter, social development/eradication of poverty, environmental management, economic development and governance.

A thematic rather than a framework was developed by the researchers based on work carried out in Mexico City, Mexico which considered four (4) themes namely: social, productivity, environmental and quality of life (McGregor, 2006). Each of the indicators has detailed aspects to qualify and interpret the indicator. The importance of measuring, or at most understanding issues of sustainability, is to provide decision makers and development practitioners with relevant and adequate information for establishing the policy instruments for growth and enhanced quality of life.

The above understanding of sustainability, in reference to the rural-urban fringes is important. However, this study stretches the arguments further, beyond analysis of the physical environment, to establishing the pertinent link between the environment and human activities. The study's theoretical underpinning is that people residing at the fringes of the city should envisage use of their land in ways that ensure sustainability and therefore enhanced livelihoods.

### **Land: definitions and use**

The National Land Policy recognizes the need to ensure the sustainability of land and states that,

“ the Government shall ensure that all land is put into productive use on a sustainable basis by facilitating the implementation of key land policy principles on sectoral land

use, productivity targets and guidelines as well as conservation of land quality,” (GOK, 2007).

The UN agency, Food and Agriculture Organization (FAO) defines land broadly as, "a physical entity in terms of its topography and spatial nature"; often associated with an economic value, expressed in price per hectare at ownership transfer. This broader, integrative or holistic view of land takes into account the physio-biotic and socio-economic resources of the physical entity (1995).

The term land, from a natural resource perspective, can also be defined as : those components of land units that are of direct economic use for human population groups living in the area, or expected to move into the area: near-surface climatic conditions; soil and terrain conditions; freshwater conditions; and vegetation and animal conditions in so far as they provide produce. A key function of land is that it provides the physical basis for human settlements, industrial plants and social activities such as sports and recreation (the living space function). Land acts as a key natural asset for people living in the peri-urban fringes in Kenya and many developing countries. Due to the high land prices within city centers, majority of the urban residents have settled at the fringes where land is cheaper.

In Kenya, land is a central category of property in the lives of the citizens. It is the principal source of livelihood and material wealth, and invariably carries cultural significance. Primarily, land is critical to the economic, social and political development of the country. Its importance is recognized by various Government economic policies including the Poverty Reduction Strategy Paper (PRSP), Economic Recovery Strategy for Wealth and Employment Creation (2003-2007), the Constitution and political party manifestos. Land was a key reason for the independence struggle and land issues remain politically sensitive and culturally complex. The enactment of the National Land Policy, leading to the formation of the National Land Commission, articulates the government and national ideals on land



and addresses issues including constitutional reform, land tenure, land use management and administration.

Any discussion on land in Kenya may not be relevant and/or useful without reference to ownership. There are different forms of landownership but the pertinent concern is access and use. That is, whether communal, leasehold or freehold, what is important is the individual's right to utilize the land for private benefits. The land ownership systems were inherited from the feudal, English common-law system, with its differentiated property rights. Private land-ownership was defined as the right to possess, use, manage, benefit from, have secure title to and dispose of land. The composite rights represent *exclusive* rather than *absolute rights*, the latter, disregarding the interests of the public in the exercise of ownership. The only rights retained by government are sovereign rights, taxation rights, rights to acquire the land by eminent domain (public taking) with just compensation, and the right to regulate the use of land. Therefore, private land ownership is perceived as a bundle of rights that include the right to use or dispose of the land and any of its associated rights.

In Kenya, land ownership influences the system of use and to an extent determines its suitability. For instance, landscape units, as natural resource units have a dynamism of their own (the environment function), but human influences affect this dynamism to a great extent, in space and time. In the absence of an effective land use planning system, land degradation may be exacerbated. Broader perspectives in land ownership and use therefore, should be replaced by a technique for the planning and management of land resources that is integrated and holistic and where land users are the central players. This will ensure the long-term quality of the land for land users, the prevention or resolution of social conflicts related to land use, and the conservation of ecosystems of high biodiversity value.

### **Rural – urban fringes**

There are many definitions of an urban sprawl, and a central component of most of these definitions is that sprawl is unguided and unregulated development without

regard to the desired future states of rural areas or cities. This situation results in the spreading out of a city and its suburbs over more and more rural land at the periphery of an urban area. This involves the conversion of rural land into built-up, developed land, over time. From the standpoint of urban planning institutions, the style of that conversion can sometimes be more important than the amount of the conversion and therefore the emphasis on qualitative attributes of sprawl such as attractiveness, pedestrian-friendliness and compactness. But for those who are most concerned about the effect of a sprawl on the natural environment and agricultural resources, the more important overall measure of sprawl is the actual amount of land that has been urbanized.

Even in the developed world, urban sprawl is one of the most important types of land-use changes. It increasingly creates major impacts on the environment in terms of surface sealing, emissions by transport-based activities and ecosystem fragmentation. On the social structure, the effects include segregation, lifestyle changes and neglect of urban centres; while on the economic structures, it creates changes including aspects of levels of production and land prices. Drawing on the example of rural-urban development in the Brussels metropolitan area, Belgium's capital city Brussels, and its periphery, Vanempten, refer to the RUF as "rurbanity" in reference to the interface between the urban and the rural. He further indicates that this "rurbanity" materialises in a fragmented and dispersed way, creating diffuse heterogeneous tissue that is neither urban nor rural but rather both simultaneously (Vanempten, 2009).

According to Unwin and Porter, many regions in Asia have witnessed the emergence of functionally integrated (1995) structures where agricultural and non-agricultural activities are increasingly found in complex, spatial mixes. Evidence from other regions, particularly, in the Third World, may suggest that in physical terms the distinction between rural and urban landscapes is still relevant. Nevertheless in functional terms, the increasing and sustained integration is recognised (Potter and Unwin, 1995).

Aguilar and Ward (2003) discuss two forms of peri-urban development; firstly, urban corridors which are lineal developments that may concentrate a predominance of different activities along the way, i.e., corporate developments, industrial parks, residential areas, and the density varies from very compact areas to low-urban density with rural landscape in the middle. Second, urban sub-centres in the periphery that may be consolidating traditional towns once dominated by agricultural activities, or the result of new (low-income) residential developments in metropolitan municipalities of rapid growth incorporated into the wider metropolitan complex for the first time. According to Aguilar, the sub-centres play the role of small cities by providing cheap labour, concentrating a wide range of services, and serving as satellites or dormitory towns to the large city.

Urban fringe development can be triggered by the development of traditional towns in former rural areas that over time have been assimilated by expanding (metropolis) cities. In the United States of America context, there is obvious lack of urban and regional planning and intergovernmental collaboration between central city governments and surrounding jurisdictions, principally adjacent townships (Heimlich & Anderson, 2006). This has resulted in a decline in re-investment and renewal of key functions of the central city, financed largely by local taxes, and this has contributed to an urban exodus. Frequently, competition among adjacent units of government, such as cities and surrounding townships, extends beyond efforts to develop land and increase local property values, thereby raising local tax revenues. It increasingly includes efforts by the rapidly developing jurisdictions to annex land from its less-developed neighbours.

One of the major impacts of the urban sprawl is the increased tax burden. The costs of providing community services increase as homes and businesses spread farther and farther apart and local governments are forced to provide for widely spaced services. The owners of these dispersed developments seldom pay the full government costs of

serving them, forcing the rest of the settlements to subsidize them through higher taxes at the local and national level. A study carried out in the State of New Jersey (Heimlich & Anderson, 2006) evaluated the conventional sprawl growth patterns against a mix of "infill" development, higher density concentrated new developments and the traditional sprawl. This study came up with large projected differences; for example, that infill and higher density growth would result in a savings of \$1.18 billion in roads, water and sanitary sewer construction (or more than \$12,000 per new home) and \$400 million in direct annual savings to local governments. Over 15 years, it amounts to \$7.8 billion. (Ibid)

In Asia, as a result of the influence of the expanding city, the rural character of the fringe is gradually or sometimes very abruptly replaced by a more urban profile in terms of land use, employment and income, and culture. During this process of transformation, pressure on land is rising because of migration from the core city and rural areas and natural population growth. The pressure on land is characterized by building construction, garbage disposal and construction of highways. The result of this pressure on fringe villages is not only changing the land-use character, but also the degradation of natural resources. Households adapt their socio-economic behaviour by intensifying agriculture or leaving it, by seeking local non-agricultural employment and/or by out-migration. In their research work in the cities of Bangkok (Thailand), Jakarta (Indonesia) and Santiago (Chile), Browder et al, selected study samples in peri-urban areas, working with a definition of the metropolitan fringe characterized by temporal and location features. They defined the outer boundary of the urban fringe as the margin of the built-up area of the metropolitan centre. The fringe was defined from the boundary inwards, including all contiguous residential areas no older than 15 years (Browder, 1995).

In both William's and Rakodi's definitions, the idea of "shifts" or evolution of the edge of the cities moving "outwards" is clear. In a way a peri-urban area is thus considered a pre-urban area, as with time it will be put inside the city proper. This assumption seems to underpin the conception of the city as a central place, dense and

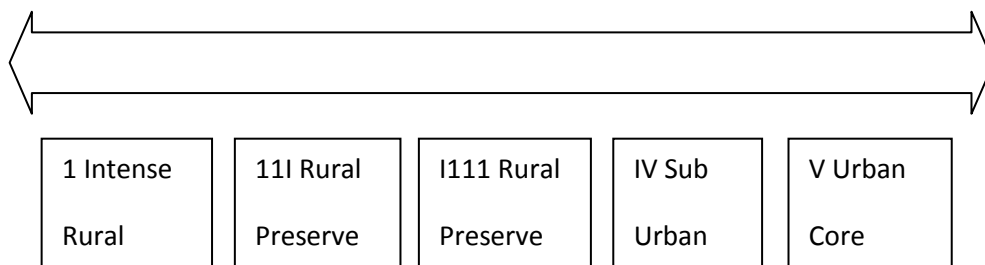
growing continuously over a static countryside. The peri-urban interface thus seems to be considered the result of urban driven processes, rather than, the territorial processes where rural and urban forces interact. This argument seems to agree with Ribeiro and Correa that, the periphery has ceased to be an open space, and in this sense it ceased to be a frontier, whose growth logic led to the spread of urban land ownership. This trend has thus coexisted with a diametrically opposing one: the production of privileged residential neighbourhoods whose target owners belong to higher-income groups, territorially separated from the rest of the city (Ribeiro & Correa, 1995). An influx of population into these peripheral areas, mainly middle-income groups, has boosted land speculation and a strong and dynamic activity of developers, not always under the regulation of the state in terms of planning or development control. This is a common phenomenon even in less developed nations like Kenya's rural-urban interface.

However, other researchers reflect peri-urban growth as composed of poor and marginalized households. For example, Simon et al , states that many fast growing large cities across the global south are surrounded by dense and generally impoverished shanty towns or other forms of informal and /or irregular housing, characterised by inadequate infrastructure, service provision and security of shelter.

Many researchers contend that it is important to consider the peri-urban fringe as an extension of the city rather than as an entirely separate area for the reason that the city/region functions in a more or less integrated way in terms of ecological footprints, economic and demographical processes (Simon *et al*, 2006). In certain cities in Africa, there is a clear link between the growth of the fringes and global systems where investment or intervention decisions are increasingly driven by globalized concerns rather than local conditions. Kombe (1999), attributes the growth of peri-urban Dar es Salaam to unfair international trade arrangements, decline in the prices of traditional cash crops such as coffee, cotton, cashew nuts, and escalating unemployment, which has led to unprecedented rural-urban migration and therefore

informal urbanization. In the case of Mombasa, investments continue to be made in elevating tourist facilities on the urban periphery, while the city itself deteriorates. Apart from the tourism facilities at scenic beaches, Mombasa’s urban periphery is characterized by informal settlements, with a third of the city’s population living below the poverty line (Rakodi *et al.*, 2000).

In Nairobi, rapid land use/cover changes have taken place over the last 40 years (Mundia, 2006). Urbanization has resulted in the loss of a significant amount of forest and other natural vegetation cover and has led to other land use changes. Because of the lack of appropriate land-use planning, in form zoning and uncoordinated subdivision schemes, poor enforcement mechanisms including limited political will, there is evidently a rampant urban growth sprawl and the massive disappearance of natural vegetation cover leading to environmental degradation within the city and its environs. The process of urbanization has been characterized not only by population growth, but also by industrial expansion, increasing economic and social activities and intensified use of land. Changes in land use/cover have accelerated, driven by a host of factors including population and economic growth. Urban sprawl, characterized by random and unplanned growth, has led to loss of forested and fertile agricultural land and has caused fragmentation, degradation and isolation of the remaining natural areas (Mundia, 2006).



**Figure 2-2: A conceptual presentation of the study area**

Source: Author, 2009

The intensity of land uses can be appropriately illustrated by the concept of peri-urban gradient. Simon et al 2004, expressed the gradient in terms of a peri-urban continuum, as presented by factors such as land conversion from farming to residential uses, inhabitants' occupations, infrastructure and complexity of markets for goods and services in respect to distance from the area. This study makes reference to these factors to explain land uses existing on the Nairobi-Kiambu corridors and at the same time conceptualise the study area. Figure 2:2 depicts the study area given the intensity of land uses.

Broadly speaking, the Roysambu neighbourhood (V) presents the core or complete built-up area with very high densities of residential development, while Kiu River, and areas along Kiambu road, represent a rural character (evident from the large scale coffee farming and subsistence farming).

- a) Administratively, this area is situated within Kiambu County. Kiu River, Ndumberi, Coffee estates - Kamaki, Sasini (on the Kiambu – Ruiru Road). This zone is characterised by large open spaces, natural habitats, sparse settlements, and subsistence and large-scale farming.
- b) Thindigwa (Kiambu); an area characterized by medium residential densities, larger lots of land and rural-urban character. The densities are however increasing on properties located along Kiambu Road.
- c) Njathaini (Nairobi) forms the boundary between Nairobi and Kiambu. The area presents diverse livelihoods of farming, high income and low income residential developments.
- d) Kiamumbi (Kiambu) and Kamuthi (Nairobi city county), These two zones are separated by Kamiti Road but exhibit similar residential developments of single family units, a large number of original owners and urban agriculture practices.
- e) Roysambu areas, USIU neighbourhood (more urban, smaller lots) and high residential and commercial densities.

The above illustration resonates throughout the study and is the baseline for the analysis and discussions. The illustration agrees with the theoretical framework that:

fringes are a zone of mixed land uses, blurred conceptual descriptions of areas into urban and rural and an area where rural and urban activities juxtapose.

### **2.3 Concerns for land use changes in the rural-urban fringes**

The discussion on the concerns of land use changes and therefore planning begins with some confusion on definitions and the use of terms. For example, researchers have argued in reference to this zone as to whether it is rural-urban fringes or urban-rural fringes, (Scott, *et al* 2013). Further, Scott (Ibid) argues that the use of either term denotes a perception of the space and how it is used. For instance, reference to rural-urban fringes is a challenge to the urban-centric values that portrays the fringes as a transition zone; whereas the rural-centric perspective denotes an area with new opportunities for natural based assets including growing food and developing bio-energy. Quoting from Hough, 1990, Scott refers to the latter observation that, urban planners portend urban development as the highest and best use of non-urban land, (Scott *et al*, 2013). The challenge in the definitions and perspectives of use has therefore resulted in disintegrated policy and decision making, despite the dynamic identity and character of the fringes. The policy disconnect between agricultural land use (which takes place intentionally or otherwise) and urban development (which is unplanned) or direction in planning processes has been researched on in Birmingham by Ilberry, 1999); Australia, by Low-Choy *et al*, 2008; and in Wales by Scott *et al* 2009.

Scott refers to the messy and complex spaces of the RUF as being clearly problematic for plan making and plan implementation. At the same time they contend that the correct governance structures can provide important opportunities for innovation (Scott *et al*, 2013). What is clear is that fringes reflect the socio-economic choices of individual households', capacities and commitments and thus are largely divorced from the normative urban land use planning models. This realization is important for this study which attempts to make plans within the context of the uses of land in existence along the Nairobi-Kiambu fringes. By doing this, the study avoids rigid



planning processes that encourage leap frog edge cities and green belt preservation, rather than encourage corridors and strategic space use. One such approach is to fuse ecological outcomes and spatial planning desires not just in the physical sense but in terms of relations and connections among residents and other agencies.

#### **2.4 Trends in urbanisation in Kenya**

The spatial framework of Kenya's current urban system was laid during the colonial period, especially after completion of the Kenya-Uganda railway in the early 1900s (Obudho & Aduwo, 1990). As the country experienced large-scale colonial European settlement and commercial cash crop farming in the fertile and temperate central highlands region, towns such as Eldoret, Kitale, Nakuru, and Nyahururu were established to serve as agricultural collection and distribution centers and as bases for European settlement and administration of the Kenya colony (Nyakaana, 1996 as quoted by Otiso & Owusu (2008)). The emerging urban centres grew at varying rates, depending on their location, accessibility, resource base, level of economic activity in their hinterlands, and the population of Europeans and Indians in the surrounding regions (Obudho & Aduwo 1990; Nyakaana 1996 as quoted by Otiso and Owusu 2008)).

The colonial period is also significant in Kenya's urban development because it introduced British urban planning, architectural designs, and building standards, and continues to dominate their urban landscapes. These planning guidelines were applied during construction of the new colonial towns such as Nairobi or superimposed on pre-existing indigenous cities including Mombasa. Either way, these instruments constrained the urban development of towns in the post-independence era because they were ill suited to the local socioeconomic conditions.

A key feature of Kenya's urbanization scene is the tremendous pace of growth experienced over the past four decades. It was expected that the country would urbanize at an average growth rate of 3.9 per cent per year in the period 2005-2010 (GOK; 2009). It was estimated that by 1999, the proportion of the urban population

was 34.5 per cent which is close to 10 million people, implying that one out of every three Kenyans lives in the urban areas. It is further estimated that by 2015, the level of urbanisation will have reached 44.5 per cent with an estimated 16.5 million people living in urban areas, and 54 per cent by 2030 with about 23.6 million people living in urban areas (GOK, 2005).

Coupled with the growth in urban population is the growth of suburbs. In developing countries, including Kenya, this growth does not resemble the affluence experienced in American and European urban areas. Due to extreme poverty, crime, and lack of infrastructure in Kenya, the suburbs are characterized by higher density and lower standards of living; and from the physical perspective, suburban growth is disorganized, uncoordinated, and characterised by poor basic services.

Specifically in Nairobi, hitherto low density neighbourhoods have experienced very high densities due to low land values at the periphery of the city, in comparison to those near the city's core. Like in other cities, a recent phenomenon in many suburbs is the advent of edge cities arising out of clusters of office buildings, erected around commercial strips, and shopping malls. With more and more jobs for suburbanites being located in these areas rather than in the main city core, the suburbs which formerly grew out of, traffic patterns, which for decades centred on people commuting into the centre of the city to work in the morning and then returning home in the evening, have become more complex, with the volume of intra-suburban traffic increasing tremendously.

The uncoordinated development of the periphery in Nairobi can be blamed on lack of guided planning and management frameworks, prepared for the city and its environs. One of the most comprehensive of the planning efforts was the preparation of the Nairobi Metropolitan Growth Strategy focusing on coordinating the decentralization of the city, creation of other growth centres and integration of race and income groups. The Nairobi Strategy, unlike the 1948 master plan, was a multi-sectoral

development plan with clear strategies for integrated urban development to accommodate growth. The strategy assumed great administrative, political and financial support by the central government; laying a framework for massive infrastructure investment. This support was not provided and thus the implementation of the strategy failed. Urban growth continued unabated and by 1979 it was estimated that 50 per cent of the city comprised unauthorized developments. Subsequent planning has been done achieved through Sectoral Development Plans but with limited spatial perspectives.

The Nairobi Metropolitan Development Plan, 2008 focused on the boundaries of the city (Nairobi Metropolitan Area), which were to be expanded to include adjoining towns and municipalities. The Key objectives of the plan included the development and enforcement of planning and zoning regulations; and preparation of a spatial plan for the Metropolitan Area. The plan covered 15 municipalities adjacent to the city of Nairobi including Kiambu. The ideals of the project were intensely objected to by certain county governments who it would seem were concerned about their sovereignty being interfered with. The concept of a metropolitan area has since fizzled out, with the creation of county governments by the Constitution and the subsequent general elections of March 2013.

From the review of the urban development and planning processes and experiences in Kenya, it is evident that over the past few decades, the conventional forms of urban development and planning regulations have failed to provide orderly and sustainable urban development. Despite various planning legislations being put in place to promote urban development; urban development has been haphazard and disjointed. The enforcement of planning regulations is affected by the lack of adequate manpower in municipal development control officers charged with implementing development control and further by inadequate finance, and equipment. The creation and operationalisation of county governments may ameliorate the situation.

## **2.5 The legal, institutional framework for planning**

Many laws and policies have been developed to guide physical developmental processes and how these impact on the urban fringes and other human settlement zones. There are three levels of institutions dealing with planning, namely: national, regional and local levels and this complexity poses both potential opportunities as well as challenges in plan preparation and implementation.

### **2.5.1 Planning institutions, structures and roles**

As indicated in the previous section, planning in Kenya has borrowed heavily from the British system, and these systems continued to be used even after independence. Although the post-colonial period encountered weak macro-economic performance especially during the 1970s and 1980s, urban infrastructure suffered because of the continued reliance on colonial urban planning regulations, by-laws, architectural styles, and housing standards (Hall, 1988). Ideally, these colonial instruments needed modifications in order to suit the new urban socioeconomic realities such as rapid urbanization (Oyugi & K'Akumu, 2007). Instead, post-independence urban managers were slow to make the necessary changes out of fear that they would be undermining the perception of 'modern development' of the cities and the general national development; thus, the state of cities and urban areas in Kenya and other sub-Saharan Africa countries.

A number of institutions carry out land use planning in one form or the other; or control the use of land directly or indirectly. The following discussion attempts to disaggregate these institutions indicating how they impact on the planning practices and procedures.

#### **a) National level planning institutions**

At the national level, the responsibility of planning falls under the Director of Physical Planning in the Ministry of Lands, Housing and Urban Development. The office of the Director is established under the Physical Planning Act Cap 286, and the

officer acts as the chief government advisor on matters relating to physical planning; is responsible for the formulation of planning policies, strategies and guidelines at national, regional and local levels.

The national physical planning liaison committee, another creation of the physical planning act, is a body composed of key government officers in charge of key resources such as water, forest, economy, agriculture, health and urban development. The major role of this committee is to arbitrate and resolve conflicts on issues related to development and planning. District liaison committees also exist at the regional level, and their role is the same as that of the national liaison committee. Other key national institutions that play key roles in planning include the National Land Commission, which is responsible for administration and management of land in the whole country. The Ministry of Devolution and Planning provides financial technical support to county governments on matters relating to planning. One of the challenges evident in the execution of planning at local and national level is the limited or complete lack of coordination, consultation or liaison, among these institutions.

**b) Regional level planning institutions**

The main planning activity at this level is the preparation of regional (and district) physical development plans taking into account the existing administrative boundaries. Special planning is delineated for a region with unique special spatial characteristics for example, a water-shed. The key institution at the regional level is the County Planning office. The office is given impetus by the fact that major development decisions are coordinated by county-based agencies and thus the county planning office is taken to be the centre for planning for the region. Regional Plans provide for the physical development of land, securing the suitable provision of infrastructure and services, and the orderly organization of development activities such as commerce, trade and industry.

The role of county governments is significant in spatial planning, as they are direct beneficiaries of planning activities and decisions. Most regional plans cover areas

administered by one or more of a county government sometimes covering a number of towns and urban centres. With the revision of laws on planning and the creation of new bodies, planning activities have been taken over by county governments, the National Land Commission and the Municipal Boards. Effective implementation of regional plans is therefore feasible only when there are intensive and deliberate consultations among all the institutions and the residents of the area. However, it is expected that the new governance structure will prosper and mainstream consultative processes, not only among the institutions, but also with the residents who are directly impacted upon by such plans, as the County Government Act and the Constitution provides for stakeholder consultation in development processes.

### **2.5.2 Legal Provisions on land use and planning**

#### **The Constitution 2012**

The Constitution of Kenya was promulgated on 27<sup>th</sup> August 2010 and forms the foundation of all other laws in Kenya as it is the supreme law of the land. Chapter Six Section 60 (1) spells out the principles under which the provisions on land use and management are made. They include equitable, efficient, sustainable and productive management of land resources, access and use of land; and further states that these principles will be implemented through a national land policy. Under the same section, the constitution provides for the formation of a National Land Commission which is to ‘monitor and have oversight responsibilities over land use planning throughout the country’ and ‘conduct research related to land and the use of natural resources, and make recommendations to the appropriate authorities’.

Article 60, Section 1, covers matters on land and states that land; ‘shall be held, used and managed in a manner that is equitable, efficient, productive and sustainable, and in accordance with the principles of equitable access to land; security of land rights; sustainable and productive management of land resources; transparent and cost effective administration of land; and sound conservation and protection of ecologically sensitive areas’

On the other hand Article 66, Section 1, provides for the role of the State to regulate the use of any land, or any interest in or right over any land, in the interest of defence, public safety, public order, public morality, public health, or land use planning. There is established the National Land Commission whose functions among others is to monitor and have oversight responsibilities over land use planning throughout the country.

Article 69 Section 1, makes provisions for the State to ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits; and the fact that all persons are expected to cooperate with State organs and other persons to protect and conserve the environment and ensure ecologically sustainable development and use of natural resources. Section 70, Subsection 1, provides for redress , in the case where a person alleges that the upon right to a clean and healthy environment, is likely to be, denied, violated, infringed or threatened.

### **The Urban Areas and Cities Act No 13 of 2011**

The act sets out the functions of the City and Municipal Boards. Among these include, a) to formulate and implement integrated development plans and, b), to control land use, land sub-division, land development and zoning by public and private sectors for any purpose. The land uses include but are not limited to industry, commerce, markets, shopping and other employment centres, residential areas, recreational areas, parks, entertainment, passenger transport, agriculture, and freight and transit stations within the framework of the spatial and master plans for the city or municipality as may be delegated by the county government.

The Act articulates the objects of the integrated urban areas and city development planning as preparation of environmental management plans and valuation rolls for property taxation. Most importantly, the Act provides for integrated urban or city

development plans that bind, guide and inform all planning development and decisions and ensures the comprehensive inclusion of all functions and the fact that a county government shall initiate an urban planning process for every settlement with a population of at least two thousand residents.

In a key departure from previous practice, the Act set out the rule that plan preparation, adoption and therefore implementation of spatial plans is a priority for county governments. The provision that, a board or town committee within the first year of its election must adopt a single, inclusive strategic plan for the development of the city or urban area for which it is responsible, ensures the cooperation of authorities in spatial planning. The Act sets out the content of integrated city and urban area development plan namely, the vision, an assessment of the existing level of development in the city or urban area, the board's development priorities and objectives, a spatial development framework and the basic guidelines for land use management system for the city or municipality.

### **The County Government Act 2012**

The Act provides for the functions of county governments and specifically Part XI elaborates on 'county planning'. According to the Act, the objectives of planning at the county level are many and varied and include; i) facilitating the development of a well-balanced system of settlements, productive use of scarce land, water and other resources for economic, social, ecological and other functions across a county; ii) developing urban and rural areas as integrated areas of economic and social activity; iii) designating county departments, cities and urban areas, sub-counties and wards for planning purposes.

In previous planning laws, the engagement of citizens in the planning process was implied, albeit, with limitations on the format of engagement. Section 4 (1) clearly states that public participation in the county planning processes is mandatory and is facilitated through mechanisms provided for in Part VIII of the Act. Sec 2 of the Act



also provides for the types of plans that should be developed to facilitate development within each county, naming them as, county integrated development plans; county sectoral plans; county spatial plan; and cities and urban areas plans as provided for under the Urban Areas and Cities Act. Specifically, the Act states that the spatial plan should have a life span of ten years to provide for accommodation of the dynamics of development, an aspect that planning authorities have been grappling with for many years.

Planning within the rural-urban fringes is catered for by Sec. 108 (2) f, where it states that a county “may delineate the urban edges of the municipalities within its jurisdiction and mechanisms of dealing with the rural urban interfaces”. This study makes an attempt to provide mechanisms on how best the fringes can be planned. Information generated hereto is expected to lay the foundation of this provision as it articulates the planning challenges and opportunities evident in the fringes.

The poor implementation of plans can be blamed on the inability of planning authorities to link financial budgeting and spatial plans. This aspect has been addressed by the act in Sec 110 (1) which provides that the county’s integrated development plan shall “inform the county’s budget which shall be based on the annual development priorities and objectives referred to in section 101 of this Act and the performance targets set by the county”. The on-going reforms in the country therefore promise not only changes in the political arena but also the planning profession and practice which may experience fundamental transformations.

### **The Physical Planning Act Cap 286**

In terms of preparation of plans, the Physical Planning Act provides for preparation of plans at different spatial levels including the steps and contents of such plans. Sec 16 (1) provides for the preparation of a regional physical development plan; ‘.....in reference to any Government land, trust land or private land within the area of

authority of a county council for the purpose of improving the land and providing for the proper physical development of such land.’

Sec 16 (2) states that; ‘...a regional physical development plan may provide for planning, re-planning, or reconstructing the whole or part of the area comprised in the plan, and for controlling the order, nature and direction of development in such an area.’

Sec 23, (1) gives the DPP powers to; ‘....declare an area with unique development potential or problems as a special planning area for the purpose of preparation of a physical development plan irrespective of whether such an area lies within or outside the area of a local authority.’ This implies that a plan may be prepared irrespective of the administrative boundary.

This implies that the law is explicit on circumstances under which a broad planning framework such as a regional physical plan to guide development may be prepared. Due to the expansiveness of fringe areas and the fact that such areas lie astride multiple jurisdictions, then such a plan would be most appropriate. The contested nature of space and conflicting land uses, particularly where they are watersheds or ecologically fragile areas, make the fringes good candidates for “special planning areas”. The law allows for planning for an area irrespective of land tenure system. Sec 24 (1) provides for the Director to prepare with reference; ‘..... to any Government land, trust land or private land.’

It is implied that a plan may be prepared to guide the development for public benefit in provisions such as Subsection (3) which gives the purpose for which the local physical plan is prepared as,

‘..... guiding and coordinating the development of infrastructural facilities and services for an area referred to in subsection (1), and for the specific control of the use and development of land or for the provision of any land- in such area for public purposes.’

In respect to developments that may have negative environmental impacts, such as excavations and alterations to an area and which result to change of land use and Sec 36 provides such recourse if:

‘..... any development activity will have injurious impact on the environment.....’

### **The Land Act 2012**

The essence of this Act was to consolidate and rationalize the numerous laws previously governing management and administration of land in Kenya. In regard to land use planning and management, Part II of the Act specifically provides for management of public land. The body charged with responsibility of making planning regulations and plan approvals is the National Land Commission. Section 17 provides for preparation of development plans (by a management authority); the key considerations for plan making are provided for under subsections 2 a-d; and finally Section 19 provides for making of rules and regulations for sustainable conservation of land based resources.

### **The National Land Commission Act 2012**

The object and purpose of the Act is to manage and administer land in accordance with the principles of land policy and Article 10 of the Constitution. Secondly it is to link the NLC with county governments and other institutions dealing with land and land related resources. Further, in section 5 (h) the Act provides for the Commission to have monitoring and oversight responsibility over land use planning throughout the country.

## **2.6 The Setting**

This section presents a summary of the character of the study area including the historical evolution, geographical and social issues. This chapter provides a detailed account of the geographical, historical and social processes of the study area from the pre-colonial period to the present. The proximity of the study area to Nairobi is pertinent as the area has served as a satellite residential area for the excess population

from the city. The geo-history of the area is therefore fundamental in the analysis and interpretation of the pattern and characteristics of land use and development in the area. In this regard, the section addresses the first two objectives of the study.

The study area falls astride the City of Nairobi (areas of Kamuthi and Roysambu) and Kiambu County (areas of Njathaini, Kiamumbi and Thindigwa). The latter is primarily inhabited by the Kikuyu, a branch of the eastern Bantu communities that inhabit the Mount Kenya region. According to Muriuki, proto-Bantu migrants settled in the Mount Kenya region during the eighteenth and the nineteenth centuries. By the latter half of the 19<sup>th</sup> century, the Kikuyu had effectively occupied the area between south Chania and Nairobi areas (as quoted by Kinyanjui, 2007). The former has a majority of residents being Kikuyu but with a sizeable population from other tribes thus presenting a more cosmopolitan characteristic.

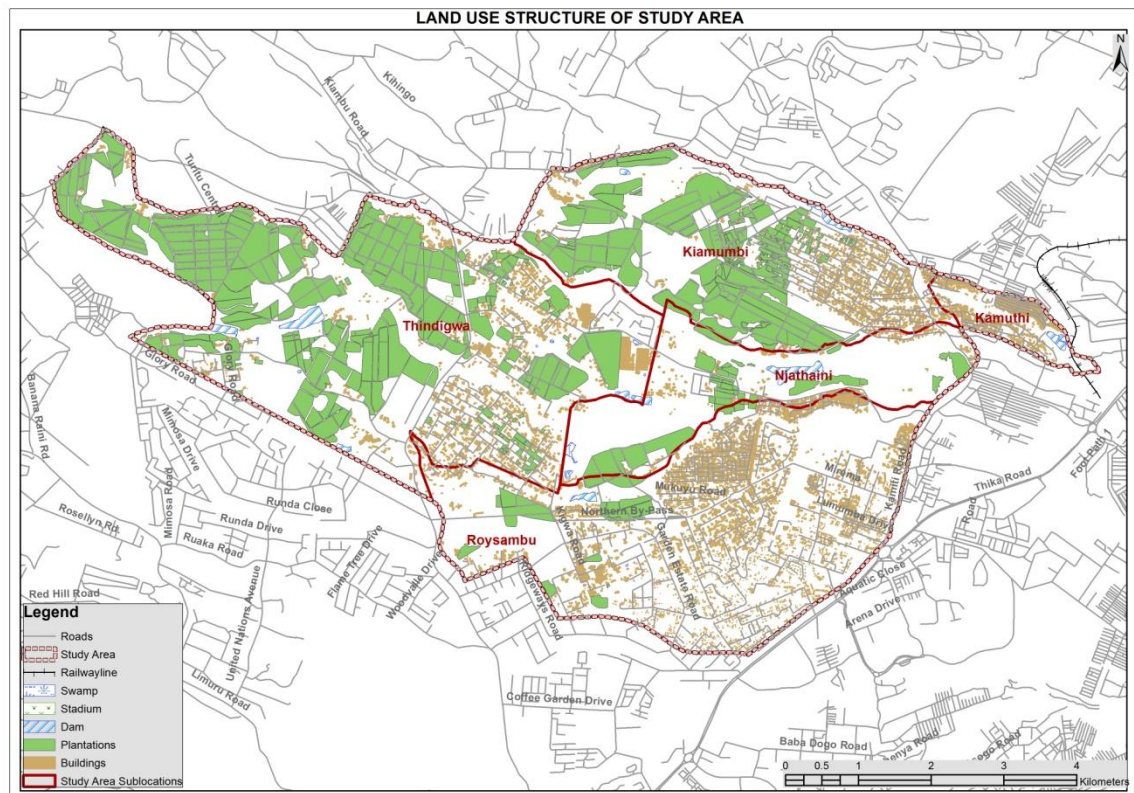
### **2.6.1 Physio-graphic and geological characteristics**

The study area forms part of the Kenya Highlands, a geo-climatic zone endowed with well-drained, deeply weathered and fertile soils suitable for a wide spectrum of agricultural activities. In physical geographical terms the area forms part of the larger southwards and south-eastwards part of the Aberdare ranges, giving way to the deeply dissected ridges and valleys of Gikuyu land. The climatic factor of greatest economic and social significance in Kenya is rainfall. Evaporation, radiation, temperature, wind speed, sunshine hours and humidity add detail to our understanding of the impact of climate on society. The study area is one of the most humid areas, being part of the Kenya Highlands and rainfall is concentrated into definite seasons in a year, giving rise to the popular terminology of the “long rains” and the “short rains”.

The genesis of land tenure in Gikuyu land and the impacts of the same on the land use patterns is important for our understanding of the Nairobi-Kiambu corridor. Land as a resource, plays a major role in the development of Gikuyu families and has been a source of major conflicts at community, family and individual levels. Those without land are considered poor and deprived.

## 2.6.2 Historical perspective of land

Kenya became a British sphere of influence in 1888 under the administration of the Imperial British East Africa Company (IBEAC). However, it was not until Kenya came under the direct control of British rule in 1895 that the impact of colonialism began to be felt. Colonial administrators considered Kenya, a territory to be developed into a white man's country and Europeans were encouraged to migrate into the country.



**Figure 2.2: Land use in the study area**

Source: Survey of Kenya, 2012

The immigrants were favoured by the state through mechanisms such as land alienation for settlement, settler-friendly labour and taxation policies. In 1902, for example, the first Crown Lands Ordinance allowed the colonial authority to issue settlers with ninety-nine year leases on land, designated as crown (state); in 1915 these land leases were extended to 999 years. The area that came to be known as the

White Highlands was set aside exclusively for European settlers while Africans were confined to land units known as native reserves.

Traditional Gikuyu land rights generally recognized a distinction between rights of control of land (which are usually held by a lineage authority) and rights of use and access (often determined by the needs of individual members of a community). Cultivation of the sub-clan holding was the clearest means of retaining land tenure rights. Until the time of European settlement, the sub-clan land holding system was reasonably secure. From the times of the earliest settlement in Gikuyu country, landholdings became progressively and extensively fragmented. Most households had several distinct and geographically separate plots within the sub-clan holding. This was partly because of the inheritance of exploitation rights, which basically meant that lineage holdings would become progressively smaller over time. Land consolidation (which was the precursor to villagization ) in Gikuyu land, was thought to be the key to an agricultural revolution in Kenya, and the granting of individual title was viewed as a mechanism for channelling loan funds, and other resources, to smallholder agriculture.

The Gikuyu had a complicated and effective concept of land ownership, which – by the system of '*Gethaka*' (land) – meant that certain areas belonged to certain families, and could be used in times of hardship. The devastating famine, rinderpest and smallpox epidemics of the 1890s had decimated not only the herds of the Maasai people, but also the human population of many other peoples. With their livestock and human population severely reduced, the Kikuyu withdrew from certain areas, particularly around Nairobi, Kiambu, Thika and Ruiru, vacating much of the land in what is now forms Kiambu county. Therefore, when the European land surveyors arrived, they found an apparently empty land. Delegations by Kikuyu elders on trespass of the settlers to the European administrator, John Ainsworth, did not bear much fruit. Incidentally this was the beginning of the Gikuyu people forming a considerable labour force on the white farms in areas around Nairobi and elsewhere. The Gikuyu, settled on the European farms and in return for their labour, were also

given small 2 to 3 acre plots on which to build their homes and graze their goats. Others, who still had cattle, came to other arrangements whereby they accepted to work for the European farmers for six months a year in return for a low wage, while the remaining six months of the year they were free from providing labour.

However, some researchers contend that, the claim that white settlement was the only source of Gikuyu displacement is not only wrong but incorrect. They rather suggest that the Gikuyu *athomi* (elite), by 1950, were also clearing the former dependents and tenants (*ahoi*) from their land. (Kinyanjui, 2007). By the 1930s, the idea of private ownership combined with outright sale and purchase of land (irredeemable sale), had proved detrimental to poor *mbari* members who lost their land to the politically and economically influential elites. Through this, the social harmony previously experienced among the Kiambu Gikuyu was on the verge of collapse (Ibid, 2007), and indeed it is this precarious land situation in Gikuyu-land which culminated to the struggles for land and political independence that came to be known as Mau Mau.

### **2.6.3 Land Speculation**

The debate on whether land speculation fosters an efficient land market, infill's development and therefore higher densities, or whether it contributes to an urban sprawl was a major issue in the literature of the 1960's and 1970's reflecting the emphasis on the causes of sprawl rather than the costs, and further emphasis discontinuous/scattered development rather than suburbanization (Chin, 2002). An important question at this point is whether land speculation is part of an efficient land market. In traditional theories of the land market, the expected pattern of development is continuous development from the urban centre, with efficient and use of the land closest to the centre (highest value) and which is most accessible and utilizes existing public services. Therefore discontinuous, scattered development can be viewed as the result of market failure. On the other side of the debate, scattered development is viewed as part of an efficient land market which provides the highest price for land

owners, and allows for the appropriate provision of infrastructure and services (Chin, 2002)

Land speculation is viewed as the cause of discontinuous development, at least in the short term (Chin, 2002). In the process, land is withdrawn from the market and its price is placed above its current market value in anticipation of future demand for higher value urban uses. The time at which the particular parcel is released onto the market depends on the rate of development of the surrounding tract of lands, the availability of capital to the speculator and the cost of holding land in taxes. When demand is high and profits are greater, more land parcels will come onto the market. Due to individual differences in parcel characteristics and landowners individual preferences, land development is haphazard, leading to fragmented and uncontrolled development. Inappropriate planning guidelines compound the problem of uncontrolled development. The withheld land is often vacant because land cannot be used for other purposes, such as farming, but it is necessary to maintain the flexibility of use so that the parcel is available for sale when prices are high. In the study area, for example, there is evidence of large tracts of unutilized land, particularly in Njathani area; this is land under coffee and horticulture; and land that is subdivided apparently awaiting residential development.

#### **2.6.4 Spatial relationship between Nairobi county and Kiambu county**

Nairobi started as a transit point for the Uganda Railway. The British colonial powers wanted to link Mombasa, on the Indian Ocean coast, with Lake Victoria, in the interior of East Africa. In 1926, a town planning committee was appointed to review Nairobi's structure and development. The committee recommended that the city's boundary be extended by 32 square miles, to create room for further urban development (Obudho and Aduwo, 1992).

Another plan developed in 1948 featured race-based segregation and reinforced the disparities between the communities living in the city, therefore reinforcing the colonial administrative structure. The plans undoubtedly resulted in the propagation



of a settler capital and the continued exclusionary practices of the previous years. This was especially so for the zoning policy which ensured a pattern of segregation and social stratification and so far laid the foundation for massive structural mal-development that perpetuated informal urbanization.

At independence, in 1963, the lessening of restrictions on the migration of Africans resulted in a large influx of people into the city. The unskilled and semi-skilled majority of Africans could only access accommodation in informal settlements on the outskirts of the city. Despite the massive and uncontrolled expansion of Nairobi into the hinterland, the administrative boundaries have only changed three times; in 1919 with the replacement of the Nairobi Municipal Community with Nairobi City Council (NCC); in 1927 to cover 30 square miles; and in 1963 to the current size of 690 square kilometres. (see locational map in Chapter one).

Nairobi city, borders Kiambu County to the north. The two spatial landscapes have always had a rather symbiotic relationship due to their proximity to one another, the former's reliance on the latter for food, fuel, water and labour and the latter as the market for high value agricultural produce and an outlet for excess labour, respectively. This situation is also historical in that the early settlers in Kiambu found Nairobi a convenient and reliable transit point not only for exports such as coffee, wattle and sisal, but also as a source of luxury consumer goods. The section following situates the study area into this historical, economic and administrative dynamic. Each neighbourhood has evolved exhibiting a unique and interesting character, albeit, in close proximity to each other.

## **2.7 Case studies on planning at the rural-urban fringes**

The purpose of using the selected case studies is to provide comparative insights into planning for the urban-rural fringes. Examples have been drawn from different parts of the world to reveal that planning works and to point out how these cases should be applied in relation to the Nairobi-Kiambu corridor.

A study carried by Scott *et al* (2013), recognizes the cross-border dynamics that may influence the style and shape of fringe development. The study highlights the case between the Reddish Borough Council and the Bromsgrove District Council; where the former intended to increase the housing while the latter needs to preserve the green belt. This is a case where planning agencies are driven to focus on internal needs, influenced by political outcomes.

In their research on the periphery area of the City of Mexico, Aguilar & Ward (2003) discuss two forms of peri-urban development; firstly, urban corridors which are lineal developments that may concentrate a predominance of different activities along the way and; secondly, urban sub-centres in the periphery which are traditional towns once dominated by agricultural activities, or the result of new (low-income) residential developments. According to Aguilar, the sub-centres play the role of small cities; providing cheap labour, concentrating a wide range of services, and serving as satellites or dormitory towns to the large city. The research established both lineal/corridors development and sub-centres within the study area; the former along main transport routes and the latter within the core of the settlements.

Other studies from the USA indicate the relationship between the impacts of the urban sprawl and an increased tax burden. These studies indicate that the costs of providing community services increase as homes and businesses spread farther and farther apart, and local governments are thus forced to provide for the widely spaced services. The owners of these dispersed developments seldom pay the full government costs for serving them, forcing the other settlements to subsidize them and with higher taxes being levied at the local and national level.

The Green Belt policy of The Greater Manchester region has locally contained urban development but has also led to the shifting of pressure from urban development to historical centres including increasing commuting to areas behind the belt, and to exclusiveness. The containment policy is a negative or defensive function and often conflicts with other possible goals such as productivity and biodiversity (Ravetz, 2008), and is facing growing political pressure.

While the current policy stance of stability of Green Belt areas should be maintained , there is the scope for adjusting the criteria of the Green Belt to allow for the fulfilment of other goals such as productivity, biodiversity and demonstration of ecological lifestyles. (Ravetz, 2008)

In the former East European complex, referring to Leipzig, Koper and Warsaw, land use planning was traditionally centralised and the development pressure on the urban fringe was comparatively low due to low land prices and public control. According to scholars, the spatial planning policy is now under transition to European Union standards, with sustainable development being the guiding principle, although with few statutory coordination and control mechanisms. In parallel, agricultural enterprises are undergoing similar change due to land privatization and more competitive agricultural markets. Some of the conclusions drawn by the scholars are that: i), supported by enhanced financial conditions, the preferences for living in the peri-urban or rural areas have increased the pressure to develop housing with access to the rural landscape., ii) this is a general phenomenon in Europe and if it is not accompanied by adequate transport facilities, it may lead to congested infrastructure; iii) except for Leipzig-Halle ,the case studies point clearly to the issue of steadily rising land prices in the urban fringe, and the accompanying pressure on local politicians and planners to allow for certain economic development and expansion of industry and housing at the expense of open spaces, green belts and nature reserves. The levy of local taxes also contributes to the tendency of peri-urban regional development agencies to prioritize new settlements in order to create a sufficient tax base for the provision of public services.

In reference to, China, and to the Hangzhou, some scholars indicate that the government's payment to those municipal areas likely to lose development opportunity as a result of environmental protection such as preserving water and green areas for the urban dwellers is also a case in point. The Hangzhou municipality is sufficiently large to adopt preferential economic policies for those rural areas that provide important ecosystem services to further provide a standard of living that is

conducive for people to stay and build their future. This, according to the scholars contributes to a degree of flexibility in planning, more state control and a continuous source of income for the municipality.

According to Hilte (2003), there is very little evidence that suburban residents are willing to pay substantially higher taxes just to preserve local agricultural land uses. Studies from Kentucky have revealed that such reluctance to pay taxes extends even to protecting such scenic landscapes as the horse farms of the Bluegrass. Thus, any attempt to strike a deal would perhaps first need to show that it could be financed out of the savings from reductions in the cost of providing local government public services. Further conclusions from the studies suggest that iii) the nature of the peri-urban areas, generally a complex mix of pressures, drivers and processes in many different sectors, at different spatial scales. The implication is that the peri-urban sustainability agenda is complex and inter-connected, with many layers which need careful analysis; iv) there is need to build institutional expertise for promoting sustainable development: Sustainable development demands for balanced decision-making, conflict management capacities and expertise in spatial planning and government. Without these qualities at hand, a region lacks the capacity needed for pursuing the sustainable spread of urban and rural land use within its territory and ; iv) need to co-ordinate public participation and inclusion of other stakeholders to avoid waste of energy and initiatives and to contribute to synergy between actions and innovations that various actors can conceive and develop.

## **2.8 Conceptual Framework: Land use, planning, and sustainability**

Often, the RUF is portrayed in negative terms as the failure to plan, instead of being viewed as a space within which there is positive opportunity for creative and innovative activities to be encouraged. According to Scott *et al*, (2013), this can well be articulated by the RUF residents and their roles. The transitory landscapes characteristic of the rural-urban fringe covers substantial areas on the outskirts of

large cities all around the world. Even though these areas are regarded as representative landscapes of contemporary society, they are often overlooked. Their character is often perceived as provisional and ambiguous, as they do not fit into established categories such as urban and rural, nature and culture (Qviström & Saltzman, 2006). Indeed, this contention agrees with Swensen, (quoting from Olshammar, 2002), who looked at rural-urban fringes in rather stable terms and studied them as “permanent provisional states” under the research project, “Threatened Landscapes”, on the urban fringes of Stavanger and Oslo, focusing on spatial planning at the edge of the city (Swensen, 2002).

In previous sections of this study, theories of modernity (urban) and utopian planning were used to analyse the ways in which the urban fringe is treated and understood within spatial planning. Subsequent sections based on situated knowledge, brings to the fore the concepts and categories suitable for characterizing these rural-urban landscapes. The utopian (i.e. place-based) approach is part of a long tradition in research that questions modern dichotomies and insist in pursuing new thinking. On the other hand, modernity is based on clear dividing lines between, for instance, nature–culture, and city–country. The urban fringe is viewed as something in between, and it is therefore treated as wasteland simply because its character and qualities are very difficult to grasp and analyse using modern dichotomies such as urban–rural (Qviström, 2005b, 2005c). The deficiencies of spatial planning based on modern thinking are often highlighted when one focuses on landscapes that are no longer rural but rather, are in the process of being urban. The key focus for land use planning is people, their needs, aspirations and interests, as they exploit available resources. Therefore, planning decisions about the spatial arrangement, intensity and functionality of land uses in any one context are influenced by the way in which people connect with their resources and subsequently to the natural environment.

Research has consistently emphasized the fact that the rural-urban fringe is an area characterized by a mixture of urban and rural features or landscape. As a result of the

influence of the expanding city, the rural character of the fringe is gradually or sometimes very abruptly replaced by a more urban profile in terms of land use, employment, income and culture. During this process of rural-urban transformation, the pressure on land is rising because of migration from the core of the city and the rural areas and also due to natural population growth. The result of increasing pressure on land in the fringes is not only changing the land-use character, but also causing the degradation of natural resources of the rural area. Since the key resource or asset in the rural-urban fringe is land, exploring and understanding the manner in which it is allocated for various uses is pertinent.

Landowners exert significant control over the property they own and interactions between sellers and buyers of land create the market for land. Land bought and sold in the 'marketplace' creates a set of land uses such as housing, agriculture, roads, schools and other services. Supply-and-demand factors such as location, soil types, climate, availability of water, transportation systems in place or potential, and other services, heavily influence the buying, selling, and use of land. These factors relate to both land use and land value. In general, the desire of both the seller and buyer is for land to have the highest valuable use.

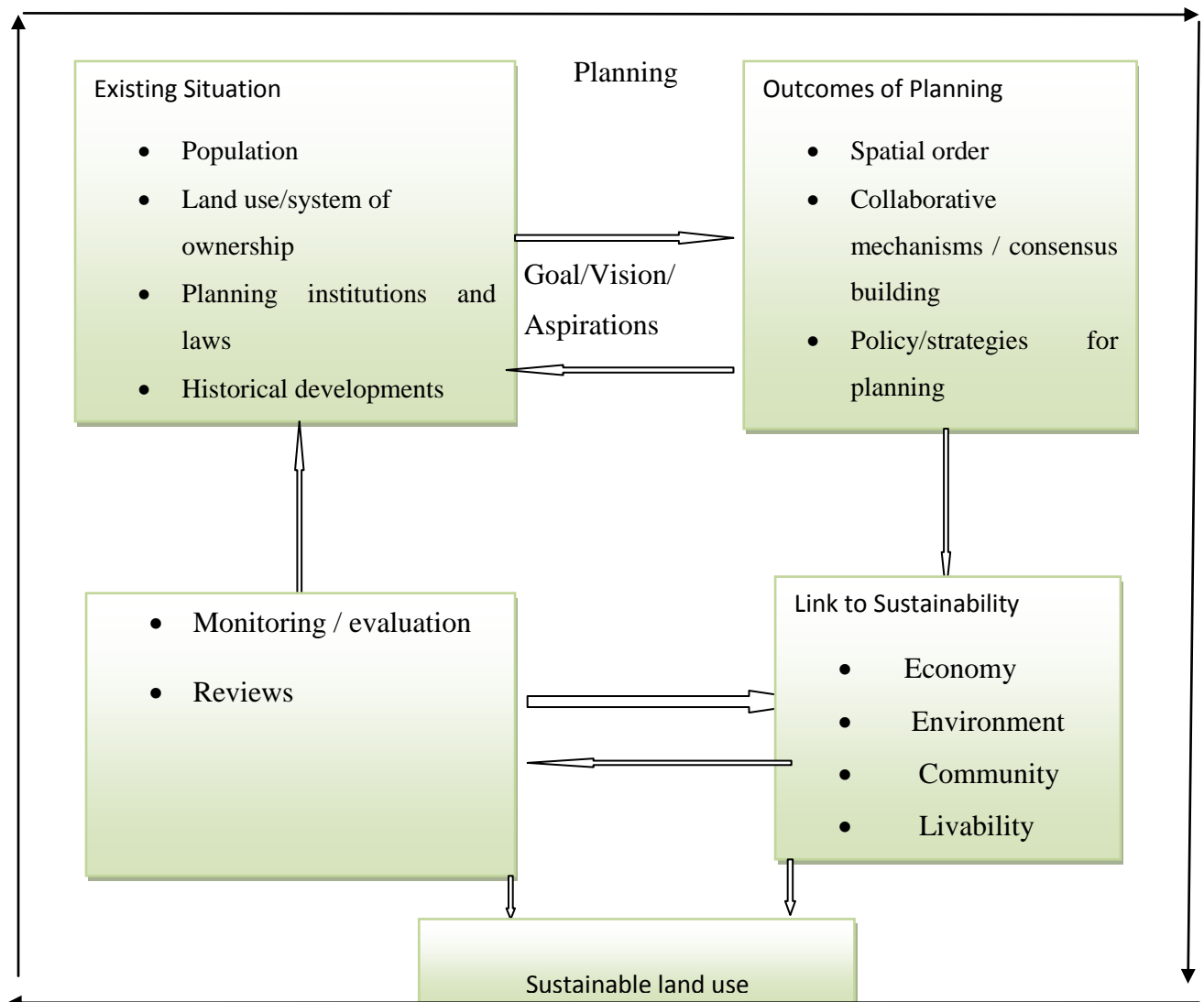
The government however, plays a major role in the control of land use, not only in planning but also in its administration and legislation. Administrative and legislative rules are often put into place to make certain that the land market works in an orderly manner. These rules include laws related to contracts, recording deeds, and land use development regulations that include zoning laws, pollution control, water-use allocation, and land taxes. A rather fragmented legal land framework compounds this situation, for example, land acquisition, land ownership and sanctity of the land title, access and user rights on natural resources such as water and forests. Therefore, what has been described as the land market is actually a system of three distinct decision groups: individual landowners, governmental bodies that control the administrative and legislative laws/rules, and judicial bodies that oversee and interpret constitutional

controls at the state and national level. (Clouser & Mulkey 2009). It is known with a degree of certainty that landowners react to changing rules and regulations, governments react to changing political pressures and societal needs, and constitutional changes result from amendments and judicial interpretations. Change at any of these three levels can influence the actions of any or all three groups. This implies that a framework for planning and development for the fringes must of necessity incorporate the interests and ideals of collaborative planning, strategic planning and sustainable development.

It is essential that all citizens and governments understand clearly the goal of the land use policies. This sounds simple, but it is rather complex because of the “political” interests of the individuals impacted upon by planning decisions as well as their desire to influence policies. Another consideration is the distribution of benefits and costs created by the adopted policies. Who pays for the programs and who benefits from the programs are not always the same. For example, where exclusive agricultural zoning (or any other policy) that does not allow for any type of residential development, the beneficiary of exclusive agricultural zoning is the public-at-large because more production generally translates into stable or lower food prices and / or more spaces that are open. One question that arises is, who pays for the cost of this policy? If the land is not profitably cultivated or disposed off, then the landowner pays the costs for the adopted policies.

The importance of farming at the fringes for social, economic and ecological purposes cannot be overstated. From the economic and social perspective, it is relational to food security. Sinclair (2011), while researching on the food security potential of the Sydney fringes contends that traditionally, food has been grown on the fringe of cities and towns but that planning for food security has not been high on the agenda of planners or governments. Emphasis has been given to water, housing, environmental awareness and social issues but planning for the land that grows the food has been mostly ignored.

From a more conceptual and to an extent practical perspective, land use planning is a decision-making process that facilitates the allocation of land to the uses that provide the highest sustainable benefits. It is based on the socio-economic conditions and expected developments of the population in and around a natural land unit (asset). The result is an indication of a preferred future land use, or combination of uses.



**Figure 2.3: Conceptual framework: planning and sustainable land use**

Source: Author, 2010



Land use planning in the peri-urban areas is crucial as these areas directly impinge on rural areas, through expansion of buildings onto valuable agricultural land and the consequent modification of land uses in the adjoining rural areas. The function of planning therefore requires a redefinition that accommodates the land use dynamics existing in the peri-urban areas of cities.

Fig 2.3 reveals the relationships among the study variables, namely land use as the dependent variable, influenced by how land is utilised (housing, business, institutions and urban agriculture); and how planning as the independent variable could influence it (adherence to planning regulations, implementation of plans and building approvals).

The realisation of these influences, referred to as the outcomes, is the dependent variable influencing sustainable land use, represented by enhanced livelihoods, improved socio-economic standards and spatial order.

Therefore, what is the outcome or value of the above framework? This is described thus:

- i. Values of planning: spatial order and collaborative mechanisms, planning policy and regulatory controls, enhanced production and improved cost efficient mobility.
- ii. Outcomes of planning and sustainable land use: enhanced livelihoods, service delivery, and improved governance, environmental integrity and conservation.
- iii. Intervening variables: goals/visions and desires of stakeholders, and the tool for realizing the outcomes.
- iv. Background and existing support systems: existing land uses, population (community) planning institutions and laws.

## **2.9 Lessons learnt in managing rural-urban fringes and ensuring sustainable land use**

While discussing commercial vegetable production in Lagos, Chukuenzi & Ezedinma (1999), observe that owing to the declining real income for both rural and urban households, urban agriculture has been exploding in several countries including Kenya, Uganda, Togo, Sierra Leone and Nigeria, primarily because it enables the most vulnerable to cope. It is rational therefore that fringe farmers would seek public policies that would allow them to realize some capital gains from the appreciation of land values while continuing to produce agricultural products. This also provides an opportunity for the fringe residents to diversify their livelihoods.

It is clear that in order to ensure an attractive, accessible, diverse and multi-functional rural-urban fringe, the link between sustainability and livelihoods must be understood and established. Griffiths (1994) as quoted by refers to the urban fringe as “planning’s last frontier”, arguing that areas abutting towns and cities have been largely neglected by land use planning and by those public and private agencies with direct and indirect planning responsibilities. In Kenya, for instance, urban and regional planning has more or less treated the urban fringe as a no man’s land. The fringe is not just the place where the town meets country but also a collection of dynamic and productive environments set in inspiring social-cultural landscapes, meeting the needs of both the present and helping to change the way we live in the future.

In studies carried out in Europe (Case studies Section 2.7), there is evidence that when supported by enhanced financial conditions, peoples preferences for living in the peri-urban or rural areas have increased the pressure to develop housing with access to the rural landscape. This is a general phenomenon in Europe and if it is not accompanied by adequate transport facilities, it may lead to congested infrastructure. As rural-urban linkages intensify through improved infrastructure and the movement of people, the importance of commodities, information and money increases. Cheap, efficient transport encourages peri-urban workers to commute to the nearest city. Peri-urban development on the Nairobi-Kiambu corridor for example, can be associated with the

increase in density, changes in the composition of the population and an increase in urban-related economic activities. The change in land use has also resulted in increased land values, particularly along the main transport corridors of Kiambu Road, Kamiti road and the northern by-pass.

In reference to Leipzig, Koper and Warsaw, Aalbers & Eckerberg (2011), indicate that land use planning was traditionally centralised and the pressure for development on the urban fringe was fairly low due to low land prices and public control. According to them, spatial planning policy is now undergoing a transition due to European Union standards for sustainable development as the guiding principle, although with few statutory coordination and control mechanisms. From our study, it is clear that the non-adherence to planning regulations and the resultant spatial disorder is due to the failure of public agencies to develop plans to guide peri-urban development. The solution to ameliorating this situation is to coordinate public participation and the inclusion of other stakeholders and, to contribute to the synergy between actions and innovations that different actors can conceive and develop.

A number of lessons learnt for the development of the Kiambu-Nairobi fringes include the following: Firstly, is drawing from the lesson of the case study from the USA, on the calculation of a cost for service provision in areas at the suburbs, one can draw the conclusion that there is a higher cost incurred from fragmented development as compared to compact development.

This is an important reflection for the Kenyan urban fringes. Inadequate provision of services is evident on the Nairobi-Kiambu development corridor. Further research is therefore necessary to ascertain the real costs, inform policy, and therefore build a case and arguments against uncontrolled development.

Secondly, the lesson learnt drawn from studies carried out in Mexico is important and relevant to the growth of the Nairobi-Kiambu development corridor. What the study refers to as “urban sub-centres” in the periphery are traditional towns once dominated by agricultural activities and can stand in for the pockets of commercial

activities that dot the fringes. As determined in the study, these pockets play different roles in the development of the fringes. These include providing cheap labour, concentrating a wide range of services, and serving as satellites or dormitory towns to the large city.

Thirdly, the rather elusive definitions of the terms: rural, urban, rural-urban and urban-rural, are challenges in the redefinition and therefore translation into familiar concepts. Again, the major concepts of the study, which is, planning, sustainability, sustainable development, also require translation. The challenge in definition and perspective of use has therefore resulted in disintegrated policy and decision making, despite the dynamic identity and character of the fringes. What compounds the state of affairs is problem in planning encountered in cross-boundary cooperation, particularly the competing interests over growth and conservation.

### **2.10 Reflections on the literature review**

Firstly, the functional and morphological dualities that characterise the spatial landscape of the rural-urban fringes not only cause problems but also offer opportunities for future socio-economic and spatial development. Land is the main source of livelihood for the inhabitants of the peri-urban areas. As peri-urban land is lost to residential development, even the potential for peri-urban subsistence farming and the cultivation of high value produce is lost. The peri-urban poor depend to a greater extent on access to natural resources than do the wealthier, urban-based groups. Consequently, the peri-urban poor are adversely affected when these resources are lost or degraded by influxes of people from expanding urban areas. This study sought to explore the possibilities of protecting the most precious asset for residents, namely, land; by generating information necessary to plan and develop policies for sustainable land use.

Secondly, there evidently are positive impacts on the peri-urban land use changes. These include increased opportunities for those who are able to draw simultaneously on the comparative advantages of the rural and urban areas. As rural-urban linkages

intensify through improved infrastructure and the movement of people, the importance of commodities, information and money increases. Cheap, efficient transport encourages peri-urban workers to commute to the nearest city. However, transport is not cheap in Nairobi, and only the urban residents who can afford transport costs reside on the periphery of the city. Again, the increased flows of solid and liquid waste out of cities - despite the risks they may pose to health - can offer alternatives for exploitation and development of commercial fertilizers for the poor peri-urban farmers, as well as being a source of materials for recycling and sale in urban markets.

Thirdly, urban expansion can substantially improve access to basic services such as health and education for peri-urban dwellers. Better transport to the rural and peri-urban areas will increase people's access to information and political decision-making structures, which are often better established in the cities. Increased flows of people and information can also help widen access to important knowledge on issues such as current market prices, allowing peri-rural households to respond more effectively to consumer preferences and urban labor market needs. At the same time, the demand from urban consumers can stimulate agricultural and horticultural production, especially high-value, perishable fresh vegetables and fruits, which can be rapidly transported to urban markets. To be able to respond to urban demands producers will need access to natural resources, especially land and water.

Fourthly, in sub-Saharan Africa, land tenure systems combine both customary and statutory systems; the rural-urban fringes present the best example of how the two systems often overlap. In Kenya, the formal and informal land market transactions tends to exclude low-income groups; this is the case, more so for actors, where the process of titling processes are incomplete. Landowners possess land documents that cannot be used as collateral in banks and other formal institutions to access credit that would enable them to develop their land and tap into the urban markets. According to Tacoli, (2004), in parts of semi-arid South India, only farmers with assets such as

water wells and boreholes have been able to switch from paddy cultivation to the more profitable horticulture. Other assets other than land are therefore important for enhanced livelihoods in the in peri-urban areas.

## CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

### 3.1 Research Design

Burns and Grove (2003) define a research design as “a blueprint for conducting a study with maximum control over factors that may interfere with the validity of the findings”, while Polit *et al* (2001 as quoted by Kaluwich, 2005) define a research design as “the researcher’s overall framework for answering the research question or testing the research hypothesis. This study uses research design as the structure of an enquiry or the logical task undertaken to ensure that the evidence collected enables the researcher answer the research questions. This section stipulates the type of research, components of the methodology and stages and types of data collection.

### 3.2 Type of research

A combination of two forms of research was applied in order to help the researcher collect the desired information.

#### i) Non-experimental

In Non-experimental research there is no manipulation, by the researcher of the independent variable, therefore, the researcher studies what occurs naturally or has already occurred. Indeed, the researcher studies how the various variables used in a study are related. This current study was a non-experimental research as it focused on the following:

- Descriptive- in order to provide a picture of the status or characteristics of the development of the corridor
- Predictive so as predict the future status of land use on the corridor
- Explanatory as it was explained how and why land use as a phenomenon, presents itself. The interest in the study was to establish the cause-and-effect relationship of planning and sustainable development.

## **ii) Qualitative research**

Burns and Grove (2003) describe a qualitative approach as “a systematic subjective approach used to describe life experiences and situations to give them meaning”. This study was an enquiry, and it focused on the manner in which people interpret and make sense of their experiences in terms of land use, land use changes and their expectations on land use and development. The rationale for using a qualitative approach in this study was to explore and describe the opinion of residents and land owners residing on the Kiambu-Nairobi development corridor, the approach thus was deemed appropriate for capturing these opinions.

## **iii) Case study**

A case study based-research is often viewed as a prime example of qualitative research which adopts an interpretive approach to data, or studies ‘things’ within their context and considers the subjective meanings that people bring to their situation. This study was such an example of a case study, the study was based on the Kiambu-Nairobi corridor (context), land use changes and perceptions of the same by residents; and thus the role of planning to enhance sustainable land uses.

## **3.3 Components of the research.**

This included conceptualising the research topic, the problem, research questions and objectives. These aspects are presented in Chapter One of the study report.

## **3.4 Review of Literature**

The aim of the literature review was to obtain background knowledge about the area under study, that is, the historical evolution, trends, reasons and drivers for growth. Thereafter, an extensive literature review was conducted to orientate the researcher on concepts such as land use changes, status of planning and enhancing sustainable land use at the urban –rural fringes and to put the current study into the context of what is known about the topic. After the research findings had been analysed and interpreted,





The criteria for inclusion in this study were: i) land owners and residents in the prescribed corridor, ii) Institutions responsible for land administration, management, and planning and iii) business owners residing in the corridor. Fig 5-3 indicates the enumeration areas for the neighbourhoods, and was used to calculate the population of the household's existing within the settlements.

### Sample

Polit *et al* (2001) as quoted by Kaluwich (2005), define a sample as “a proportion of a population”. In this study, the sample was established at two stages, namely: five neighborhoods were selected, that is, two (2) from Kiambu county and three (3) from Nairobi county. The reason for this was due i, to the limitation of time and finances and ii, the age of the neighborhoods. Therefore Njathaini, Roysambu and Kamuthi neighborhoods in Nairobi county while Kiamumbi and Thindigwa neighborhoods in Kiambu county were selected, to suit the sample. The researcher was convinced that the selected sample of neighborhoods provided data representative of the population from which it is drawn.

**Table 3.1: Neighbourhoods population and study samples**

Rural/Urban fringe	Sub-locations	Total population	H/Hs in the EAs	Sample H/Hs	Actual number of respondents
Nairobi Neighborhoods	Njatha-ini	4,425	1,516	26	25
	Roysambu	10, 579	3,494	58	54
	Kamuthi	2,268	640	11	13
Kiambu Neighborhoods	Thindigwa	7, 075	2,282	38	35
	Kiamumbi	3,593	1,024	17	16
<b>Totals</b>		<b>27,930</b>	<b>8,892</b>	<b>150</b>	<b>134</b>

Source: KNBS,1999

The second stage of sampling was the actual respondents drawn from each neighborhood. The sample was chosen from landowners and residents in the enclave of Kamiti and Kiambu Roads, from the junction with the eastern bypass and business owners.

Notes: A factor of 1.689 to realise the sample size per cluster and a factor of 0.883 for the actual number of respondents per sample

### **Sampling process**

Burns and Grove (2003) refer to sampling as a process of selecting a group of people, events or behaviour with which to conduct a study, a fact confirmed by Polit *et al* (2001) as quoted by Kaluwich, (2005) that in sampling a portion that represents the whole population is selected. Sampling is closely related to the generalibility of the findings. In this study, the sampling was non-probable and purposive. In non-probability sampling, researchers use their judgment to select the subjects to be included in the study, based on their knowledge of the phenomenon.

Secondly, purposive sampling was used in this study. Purposive sampling describes a method of sampling where the researcher deliberately chooses who to include in the study based on their ability to provide necessary data. The rationale for choosing this approach was that the researcher was seeking knowledge about the historical growth of the corridor, the nature and characteristics of land use and the opinion of the residents on how development should take place in a more orderly manner; the respondents provided this information by virtue of their experience. In this study therefore, purposive sampling was applied when selecting respondents for the in-depth interviews and Focus Group Discussions.

Enumeration Areas are determined and used by the Kenya National Bureau of Statistics (KNBS) for census purposes. An EA has a number of households, more often than not a block or blocks of several houses. A sample size of a proportionately calculated number was derived at from each EA, borrowing from Table 1:1 on page 21. The EAs were picked randomly regard of their location within a residential

neighborhood because areas are not defined by names but rather the existing locations/neighborhoods. Thus, the researcher felt that these samples were representative enough of the characteristics and nature of land use to be explored in the study.

Holloway and Wheeler (2002) as quoted by Kaluwich (2005), assert that sample size does not influence the importance or quality of the study and note further that in qualitative research, there are no guidelines in determining sample size. The sample size of 150 households was finally drawn from the selected EAs, again using a proportionate factor as indicated on Table 3.1. This again was determined by the research resources available. In addition, the number of households to be interviewed in each sub-location had already been determined. The pre-determined number of households to be interviewed was selected randomly from the sampling frame provided by plot numbers and subdivisions maps.

At the end of the field survey, 134 households had been interviewed, representing 89.3 per cent of the sample and 1.50 per cent of the total number of all households within the EAs. The 11.7 per cent variance was mainly due to refusal and/ or the non-availability of the household head to answer questions. The researcher is convinced that the responses are adequate and representative for purposes of the study.

### **3.6 Data Collection**

Data for the research was collected using various methods given the characteristics of the respondents and the nature of data required. The following were the data collection methods applied.

#### **3.6.1 Methods of Data Collection**

The data collection for the general survey was carried out between July and December 2009 using a standardized pre-coded questionnaire. The survey was preceded by an

intensive period of familiarization of the Nairobi-Kiambu corridor, developing the sampling design, pre-testing the questionnaire and training the five field assistants.

The researcher had the advantage of having prior knowledge of the area and research experience and was conversant with almost all the neighbourhoods within the study area. The respondent to the questionnaire was either the household head or the spouse, as either or both of them were felt to be best informed about the household's consumption/characteristics, land use and ownership and production patterns. Where the household head or spouse could not be found for the interview, the interviewers were encouraged to make "re-visits" to the household.

The household survey questionnaire was organized in six (6) parts. The first part consisted of questions regarding the household's demographic characteristics such as sex, age, marital status, level of education and occupation, ii) the second part considered the migratory patterns, that is, the origin of respondents and reasons for immigration into the study area, iii) part three covered land use and ownership issues as well as livelihoods on land including farming, iv) part four covered the housing conditions and issue of rentals and other structures including animal sheds, v) part five covered the status of community and basic services and lastly, vi) covered the relationship of the respondents with planning authorities. Another set of questions were designed for the land buying companies that also formed the researchers Focus Groups Discussion, and is labelled Appendix ; a questionnaire was developed for the government institutions and labelled Appendix 3. And other was developed for small business operators and labelled Appendix 4.

At the end of the questionnaire, the interviewer was required to record the duration of the interview, relevant observations made during the interview and the location of the house, according to the researcher's field maps. In addition, the interviewer was expected to record the date of the interview, the name of the EA, and the names of the interviewer, the supervisor and the respondent. This information proved to be useful, not only as the general survey progressed but also during the key informant

interviews. The pre-testing was important in two ways: it exposed a number of ambiguities in the original questionnaire which were edited, and it made it possible to improve the codebook. During the interviews and in walks within the neighbourhoods, observations were made, types of the crops in the fields, the areas under crops, animals kept, the nature and arrangement of the homestead, housing typologies, and other household structures. There was some photographing of some of the observations..

### **Key Informants**

The study collected information from different categories of key informants:

i,) Government officers responsible for planning,. Each of the officers enumerated below (or an agent) was interviewed;

**Clerk to the Council:** The Clerk to the Council was basically the chief executive officer of the county council. County councils had rural-based functions, except for the small market centers and the fringes of the main centers. The running of local councils was governed by the Local Government Act, Cap 265, of the Laws of Kenya ,which empowered councils to grant development permission and to control the use and development of land and buildings within the area of their jurisdiction (under Section 166). This legislation has since been repealed and the functions of counties managed under the County Government Act, 2012. The study area is under the jurisdiction of the then County Council of Kiambu.

**Town Clerk:** A town clerk is the chief executive officer of a City, Municipal or Town Council. The functions of the urban based councils are many and complex, depending on the size. The council for consideration in this study was the City Council of Nairobi. The line of investigation in this regard was the functional linkages between the City and its fringes, in terms of planning, service delivery functional linkages, and the need to harmonize planning and development with the urban area.

**Physical Planning Officer:** The physical planning office is mandated by the Physical Planning Act, Cap 286, of the Laws of Kenya ,to prepare plans in reference to any government land, trust land or private land, within the area of authority of a county council (Section 16(1)).

**Lands Officer:** The lands office represents the interests of the Minister of Lands in respect to government and trust land (now community land), in the districts. This department administers various Acts of Parliament dealing with land administration, registration and controls, namely: Land Consolidation, Act Cap 283, Land Acquisition Act, Cap 295, Registration of Titles Act, Cap 281 , and Registered Land Act ,Cap 300, and many others. The offices and the Acts of Parliament described above, have since been abolished and replaced with new systems with the creation of county governments under the Constitution.

**Officials of land buying companies:** The officials of the land buying companies, (in Kamuthi, Kiamumbi and Thindigwa) were targeted for this category. The chairman of each company was selected to represent the land buying company because it is within their official mandate to give information on behalf of the company.

### **Participant Observation**

Participant observation is the process which enables researchers to learn about the activities of the people under study through observing and participating in their activities. It provides the context for the development of sampling guidelines and interview guides (Dewalt and Dewalt, 2002). Participant observation is also defined as the process of learning through exposure to or involvement in the day-to-day or routine activities of participants in the research setting (Kawulich, 2005). This method is based on extensive observation in the field, a labour-intensive activity that sometimes lasts for years. In this description of the observation process, one is expected to become a part of the group being studied to the extent that the members

themselves include the observer in the activity and turn to the observer for information about how the group is operating.

In this study however, only elements and principles of the method was used; this which included the process of establishing rapport within a community and learning how to blend in with the community for the period of the field data collection. This enabled the research to not only understand what is going on but also to be able to write about it. The actual activity included observation, conversations, checklists, questionnaires, and confirmation of information from secondary sources or other respondents in order to remove distortions or inaccuracies in the description provided by the informants.

In other words, the researcher was able to increase the validity of the study, by being enabled to have a better understanding of the context and phenomenon under study. Sets of information under this category included historical, reasons for settling in the study area and perceptions on the land conversion characteristics.

### **3.6.2 Focus group discussion**

A focus group discussion is an interaction between the researcher and more than one respondent, for the purpose of collecting data. In focus group discussion, researchers engage participants with common characteristics or experience for the purpose of eliciting ideas, thoughts and perceptions about specific topics or certain issues linked to an area of interest. In this study, the researcher held discussion with land owners who reside within the Kiambu-Nairobi development in order to elicit their opinion of growth trends. The respondents were also provided with an opportunity to reflect or react to the opinions and perceptions of others with which they may disagree or of which they are unaware.

The FDGs formed were organized around the five (5) neighbourhoods under study. The research used a question check-list and conducted the discussions as informally as possible. It was important for the researcher to guide the discussions without



intimidating the respondents and at the same getting comprehensive, useful and sometimes sensitive information. As mentioned earlier, the research used the snowballing method in order to select the most useful and well informed respondents for the FGDs. Having been members of land buying companies and living in the area for so long, it was easy for the respondent/participants to connect with one another, to clarify and correct any information given by a member of the group. Generally, the FDG teams were extremely patient, understanding and willing to answer the questions posed. This was attributed to the researcher's familiarity with area and a few of the key respondents.

Specifically, the research design was such that an FGD would be held in every neighbourhood under study. However after consultations with key informants, the researcher realized that the residents of Kiamumbi and Kamuthi had strong historical, familial and socio-economic connections. For example, majority of shareholders in Kiamumbi were also shareholders in Kamuthi and therefore had plots in both neighbourhoods. For this reason four, instead of five FGDs were held to cover the studied neighbourhoods.

Each FGDs had 10-12 key informants comprising of; at least two former officials of the land buying companies (in each neighbourhood), at least two founder/original shareholders who were not necessarily officials, at least two newer immigrants, at least two small business operators, at least two officials of community projects, at least two officials of welfare associations, where these existed. In more formal and modern neighbourhoods, welfare associations have sprung up and are in-charge of the coordination of security, garbage collection and control of building developments. This was evident in Piken Estate, Njathaini and Sportsview Estate, and Roysambu.

### **3.6.3 Data analysis and presentation techniques**

The study utilized a number of approaches in data analysis in order to capture all the information as collected and to enable the study fulfill its goals. The Statistical Package for the Social Sciences (SPSS), a computer aided technique was used to

enhance the researchers ability to distill the massive amounts of data in a much shorter time .The quantitative and qualitative methods of data collection used in this study provided a wealth of information on the challenge of sustainable land use on the Kiambu-Nairobi corridor

### **Qualitative analysis**

The study first used an interpretive approach to continually interpret the information and to understand the meaning and implications. Narrative and performance analysis was used to discover and reveal repeated similarities in people's stories, and particularly in historical reviews of the facts.

Secondly, the research questions were used to guide the design and implementation of the study. Information on the evolution and context of growth of the fringe was an important element in the study, and as applied facilitated the understanding of the past as a tool for understanding the present.

### **Quantitative analysis**

Although numerals are typically associated with quantitative means of data collection and analysis, numbers and figures were used to provide frequency counts to generate meaning, and as a tool for identifying the patterns in the data, and to test the study's interpretations and conclusions. The unit of analysis for the quantitative general survey data was the household.

A chi-square test was used to test whether the observed proportions for a categorical variable, differed from the hypothesized proportions, that is, to test whether there is significant difference. For the study, the proposition tested using this technique sought to explore the significance of adherence to planning laws to and the household incomes derived from the household activities.

The regression analysis was used to establish the strength of the variables in influencing the land use. In this case, the study sought to establish the relationship of the variables as represented by resilient living standards as a factor and function of livelihoods and analyzed as follows: conditions of housing versus diversity/types of the household sources of income.

### **Data Presentation techniques**

Tools applied to present the findings from information generated from the field survey. This was done in form of figures-photographs, plate and graphs and tables. Maps were specifically used to illustrate the locational characteristics and land use patterns of the study area.

## **CHAPTER FOUR: RESULTS AND FINDINGS**

### **4.1 Introduction**

This chapter provides detailed findings on the geographical, historical and social processes of the study area; characteristics of the residents; status of basic urban services; perception of residents on status of planning and their relationship with planning authorities. For ease of presentation, the chapter is divided into two sections, the first section addresses objectives i and ii and the second section addresses objectives iii and iv.

### **4.2 Historical, Geographical and Social evolution and processes**

Specifically, this section addresses objectives i and ii of the study stated as follows:

- i) To investigate the pattern and characteristics of the rural-urban fringe development along Nairobi- Kiambu corridor
- ii) To establish the process of growth and the reasons for settlement in the Nairobi- Kiambu corridor

#### **4.2.1 Land Tenure/ Use Shifts: A Perspective**

A historical perspective of the land tenure and land use changes on the Nairobi-Kiambu development corridor depicts a rather predictable picture. With the onset of colonization, the land changed hands from local African owners to white British settlers, and this reflected the form of livelihoods on the land. The pattern is rather cyclical in that, when ownership reverted to Africans in the 1980's, not only did the calibre of owners change, from elitist- urban, as opposed to communally-inclined owners, but also, the livelihoods on land changed from subsistence farmers to home owners. Every neighbourhood provides similar but unique pattern of evolution in terms of land ownership and use. Figure 4.1 indicates the graphical presentation of these land ownership and land use shifts. Historical records indicate that white settlers first settled in the area around the 1930-50s; majority left in the 1970s and 1980s and therefore there was a dramatic change in the land use and ownership. At present, the

land use exhibits traditional/subsistence livelihoods of farming and residential uses. The 1970s presents the intermediate period when land buying companies took over possession of the land with the beginning of a process of subdivision and allocation to shareholders and limited settlement. According to one respondent, the members desired to have the farm subdivided so that; “each member could have their own parcel of land and also out of fear of land disputes, so reminiscent of the era of land buying companies. At the moment, the company has no assets and members are awaiting dissolution by the Registrar of Companies.” (Response by Mr. E. Kibe, Former Chairman, Kamuthi Farmers’ Company).

Certain zones of the study area such as Roysambu, Kiamumbi and Kamuthi (especially the areas close to Kamiti Road) exhibited high-rise residential developments with no presence of any agricultural or farming characteristic, nor residents of the calibre of the original owners.

←	1950's	1960's	1970's	1980's	1990's	→
<b>African customary system</b>						<b>Land Tenure</b>
	Settler ownership (squatters)		African ownership (land-buying companies)		African ownership (new/ old owners)	
<b>African subsistence farming</b>						<b>Land Use</b>
	Settler commercial farming (coffee)		African subsistence farming/ settlements			
			Peri-urban agriculture and settlements			

**Figure 4-1: Land tenure/ use shifts in the study area**

Source: Author (2011)

This was evident in the changes of land ownership, use and livelihoods. Figure 4.1 indicates the transformations of land ownership and use over time.

#### **4.2.2 Historical, development trends and spatial growth**

This section details the historical, political, social evolution and trends of each of the settlements in the study. Though reasonably homogeneous, each settlement portrays unique characteristics.

##### **Kiamumbi Settlement**

The original name for this settlement was “Kwa Ndereba”, in reference to the white settler owner, Thomas, who owned a Land Rover and used it to ‘drag’ Mau Mau activists along the road, down to the police station. The locals therefore referred to the area as ‘Kwa Ndereba’ the driver’s neighbourhood. In the basic Gikuyu language, the name “Kiamumbi” translates to the place of Mumbi’s descendants, Mumbi being a reference to the matriarch or mother of the Gikuyu people. The original white settler used the land for coffee farming and cattle rearing, up to the 1980s. A land buying company was formed by a group of 666 residents with the intention of buying the land from the white settler.

Land buying by Africans was considered an important achievement, because it was a key issue during the struggles for independence. Partly for this reason, the members of the Kimumbi land buying company received their title deed from the first president of the republic of Kenya, Mzee Jomo Kenyatta, as indicated in the photograph, Fig 4.2. Three (3) categories were evident and included: i) casual labourers in the farm, ii) a group from Ting’ang’a in Kiambu, where majority of the labourers originated from, and iii) a group from other parts of Nairobi. Fig 4.2 indicates the original members of the land buying company, in a 1973 photo shoot in Mombasa, when the group went to receive their title deed. As is expected majority of them have since died and the land inherited by the children or sold to new owners.

The original shareholders paid Kshs 10.00 for registration and Kshs 2,900.00 per share, for a land parcel measuring 100X60 feet.



**Figure 4:2: Original members of the land buying company**

Source: R. Mbugua, whose mother Wa Cege is standing behind the then President Jomo Kenyatta

Later, the members were required to increase the share holding to Kshs 14,000.00 for four (4) parcels of the same size and another land parcel near Kamiti River. This neighbourhood has since experienced minimum subdivision but massive ‘invasion’ by new migrants, who have, according to an original resident, built better and modern housing’ and ‘are not interested in urban farming’.

The original African residents preferred this neighbourhood because the parcels of land were large, they could practice urban agriculture and the restrictions on development were few. However, in the recent past, the County Government of Kiambu requires approvals for all buildings and the payment of plot rates at Kshs 300.00, per plot, per year. The socio-economic setting is presented by a diverse residential landscape, exemplified by single family units, multiple family/apartment units, semi-permanent housing; urban farming, social services such as schools, clinics and shops particularly along Kamiti road.

Figure 4.3 on page indicates the land use characteristics of Kiamumbi. One notes greenery existing within the settlements and the dense development along Kamiti road.

### **Kamuthi**

It is common for the Gikuyu people to name places according to events, people, or the natural features closely associated with those places. This phenomenon is quite prevalent in the areas inhabited by the Gikuyu people, either as original settlers or migrants. According to oral narratives, the name Kamuthi comes from the “muthi” tree. Kamuthi connotes two names “Ka” and “Muthi”. With time, people referred to the neighbourhood as Kamuthi, or the place where not only a “muthi” tree grew, but also under whose shade the members of the land buying company used to hold meetings.

During the 1930s and 1940s, the Kamuthi area was part of a large coffee estate owned by an Italian settler named Jan Brown. In the 1950’s, the farm was bought by Jew, named Mrs. Kiko, whose main livelihood was cattle rearing. The farm formed part of the main collection centre for milk, catering for the whole neighbourhood. The area is sometimes referred to as Maziwa, and is the name for the matatu terminus on Kiambu road. In 1963, the Kahawa Farmers’ Company was formed with the intention to purchase the land formerly owned behind by white settlers at “Kamuthi” and “Kiamumbi” (especially the Kiamumbi land which was the bigger farm). Figure 4.3 on page 84 reveals the characteristics of land use in Kamuthi in 2003, as well as the residential development, where the neighbourhood abuts to Kamiti Road.

Interestingly, increased densities within the neighbourhood are not evident. Although there is an indication of increased settlement along the riverine area, that is, Kamiti River in the north and Riara river in the south, respectively. The resultant situation is possibility of river water contamination ordinarily used downstream for domestic purposes. There is also potential for flooding and therefore danger to life and properties.



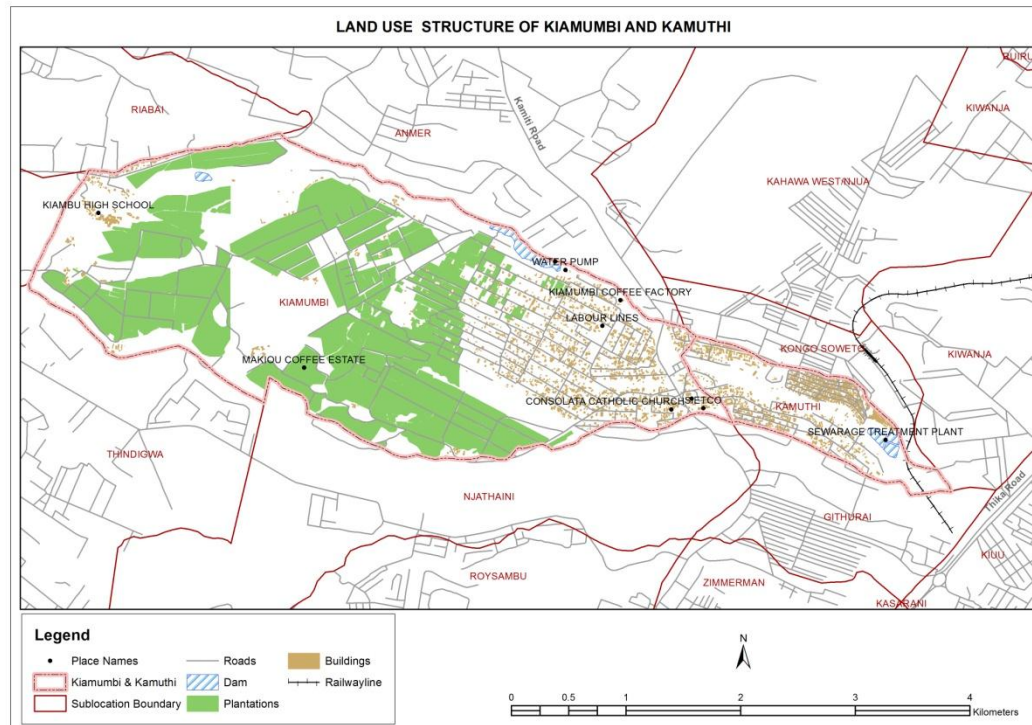
There is need for the generation of information to enable those charged with the preparation of policy, planning and enforcement mechanisms to ensure the sustainable use of the land and water resources.

The original 152 members comprised primarily labourers and squatters in the hitherto settler farms. Surprisingly, majority of residents in Kamuthi own land parcels in Kiamumbi, but few, if any, of the Kiamumbi residents own land in Kamuthi. The company was subsequently split up in 1985, and the members separated into Kamuthi and Kiamumbi “farms”. The farm currently referred to as Kamuthi, covered an area of 415 acres, which included the area now known as Kahawa West. In the early 1970s, the company agreed to sell 154 acres to the then Nairobi City government, for a housing development known as Kahawa West. The original members contributed Kshs 1,700.00 for one share, equivalent to  $\frac{1}{2}$  acre. Further subdivisions have continued unabated up-to very small, uneconomic land sizes. The socio-economic setting of this neighbourhood is exhibited by very dense residential façades of low income, semi permanent housing; middle income single family units; and multi-family apartments (a recent phenomenon); interspersed with urban agriculture in form of animal rearing, crop farming and small scale businesses. During the last ten years, the neighbourhood has become the site of an ultra modern, multi-family residential development, just where the neighbourhood abuts to Kamiti Road.

### **Thindigwa**

Like most neighbourhoods in the study area, Thindigwa, was formerly a coffee estate owned by white settlers and measuring 650 acres (GOK, 2008). The African labourers, formed a company, through contributions of each Kshs 20.00 to enable them buy the farm. In 1972, they bought the farm for Kshs. 2,150,000. The initial subdivision contained  $\frac{3}{4}$  acre parcels and each shareholder was allocated two parcels (of  $\frac{3}{4}$  acre). Over time, further subdivisions and transfers have occurred. Majority of the original members have sold at least one plot, a fact that has drastically transformed the social-economic landscape of the area.

According to the Physical Planning office in Kiambu, a conflict over land use has arisen, where the new landowners prefer to invest in single family controlled residential developments while the older settlers prefer multi-family residential developments (GOK 2008).



**Figure 4.3: The Kiamumbi and Kamuthi neighbourhoods**

Source: Survey of Kenya, 2012

The latter's decision are driven by the need to cash in on the demand for rental housing, expected by the influx of people into the fringes of Nairobi, while the former's interests are influenced by their desire to own homes away, but, in close proximity to the city. Large coffee estates such as Barua, Kugeria, Misiarara Estates also exist while in a few cases, horticulture has been introduced.

The socio-economic setting exhibits a complex mix of land use, namely: high income single family dwellings; low income semi-permanent and poor housing; and dense multi-family dwellings particularly on the the zone, fronting Kiambu Road.

Large scale undeveloped farms are evident along the road that transverses the area and connects it to Kiambu and Kamiti Roads. There is however evidence of subdivisions, and an improved road system which may be the precursor to residential developments. The existing coffee estates and horticultural farms could act as a buffer to further land subdivisions and conversions, although, with prerequisite benefits to the owners.

The landscape however has changed overtime, with intensive subdivision and change of user. The construction of the Northern by-pass, linking the area with Thome estate, Kahawa West and Ruiru has further opened up the area. At the junction of the by-pass and Kigwa Road is the Windsor estate, a high income residential development that is part of Windsor Golf and Country Club (note the green patches on the satellite image). The Four Ways Junction is an upcoming multi-family, middle-income residential development, at the junction of Kiambu Road and the Northern Bypass. Other conspicuous residential/ commercial developments, are located along Kiambu road, and the road stretch up to Kiambu town.

### **Njatha-ini**

There seems to be no consensus on the origin of the name Njathaini. However, the respondents intimate that the area could have been so called in relation to a plant called “muthatha”, which is common in the area. Officially, the name refers to the sub-location, which in the study sample is an enumeration area (EA). Currently this neighbourhood comprise of sections of distinct character and history, detailed in the following sections. In this section, the discussion on the settlement includes smaller neighbourhoods, fronted as pockets within the overall settlement, that is :Ngomongo, Ngumba farm, Gakunju farm and Piken.

### *i) Ngomongo*

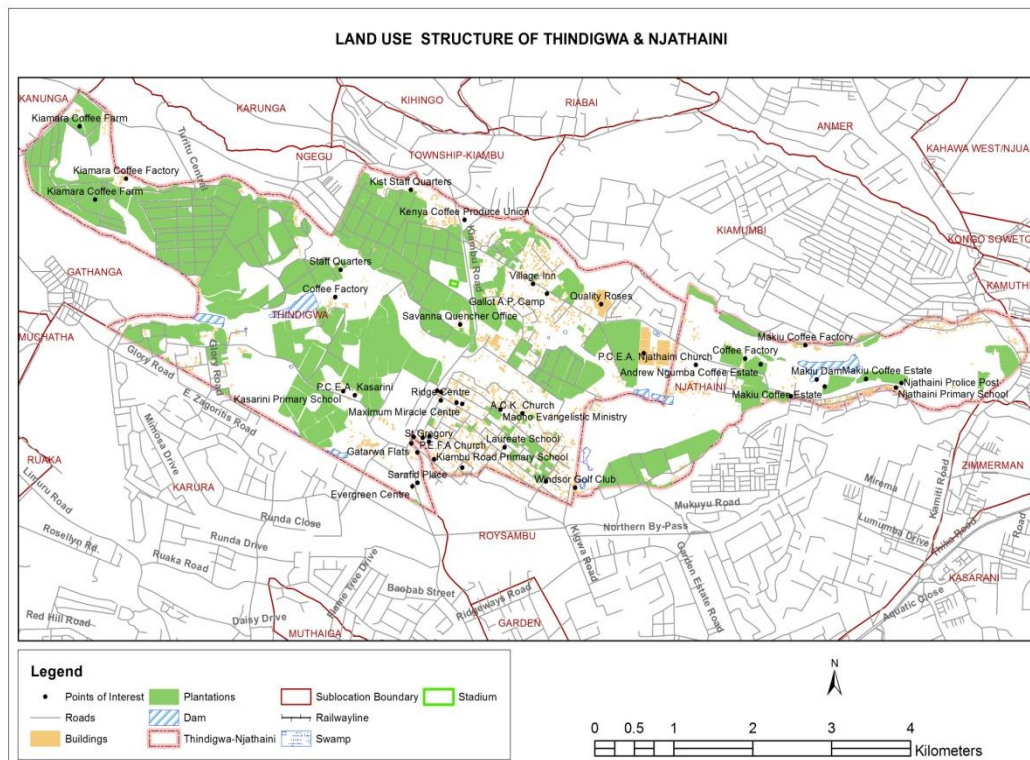
Ngomongo as the area is called, is a reference to the huge and hard stones once mined on the site. The quarries were owned by Indians, in the 1940s and 1950s. “Ngomongo” in the Gikuyu language means a huge, shapeless and hard stone. According to Rachel Mbugua, who was born and bred in the village, the first group of 200 people, settled in the village in 1957 after purchasing the land from the Indian quarry owners. Some of the settlers worked in the quarries but a majority worked in the nearby coffee estates such as Maakiou, Ngombe and Marurui. The original owners contributed Kshs 1,050.00 per share for a plot measuring 100X100 feet. Later, the shareholders were allocated one plot of the same size and another of half the size, for the same amount of contributions.

Over time, the plot sizes have reduced due to land subdivision, with new migrants settling and engaging in a mix of commercial activities and residential use. Ngomongo is the most densely populated section of Njatha-ini. Information from the older residents indicates that the neighbourhood has greatly changed from the housing typologies, level of services and types of livelihoods. For example, the original housing comprised of grass thatched, mud walled huts; residents drew water from the nearby Gathara-ini river; and the people’s livelihoods was employment as casual labourers in the nearby coffee farms.

During the last ten years, Ngomongo takes pride in the fact that it has adequate, portable and reliable water supply from the CCN main lines, there is a police post, public primary school and formal and informal small scale businesses. A section of the northern by-pass, passes less than one kilometre away from the east of the settlement.

*ii) Piken estate*

This is a small upcoming estate comprising of single family units built on land that was formerly part of Marurui farm. Majority of residents in this estate are recent migrants to Njatha-ini. The housing typology is completely different from that of Ngomongo; red-tiled roofs; distinct fencing for every parcel and well-maintained frontages.



**Figure 4.4: Land use in the Thindigwa and Njathaini neighbourhoods**

Source: Survey of Kenya, 2012

*iii) Ngumba Farm*

This area forms the largest section of Njatha-ini, it is owned by one owner, and there is no visible land subdivision or conversion. The farm is owned by the family of former Mayor of Nairobi and former Member of Parliament for Mathare, Mr.

Andrew Kimani Ngumba. The land was originally owned by a white settler and its main use was coffee farming. The African owners continued growing coffee, but in recent years, this has tremendously reduced, and only traces of rather poorly maintained coffee bushes are evident. This farm is poorly maintained, with no clear profitable use. The land presents a potential case for testing planning instruments such as comprehensive development; or maintaining the land as a green buffer zone with coffee or greenery.

#### *iv) Gakunju Farm*

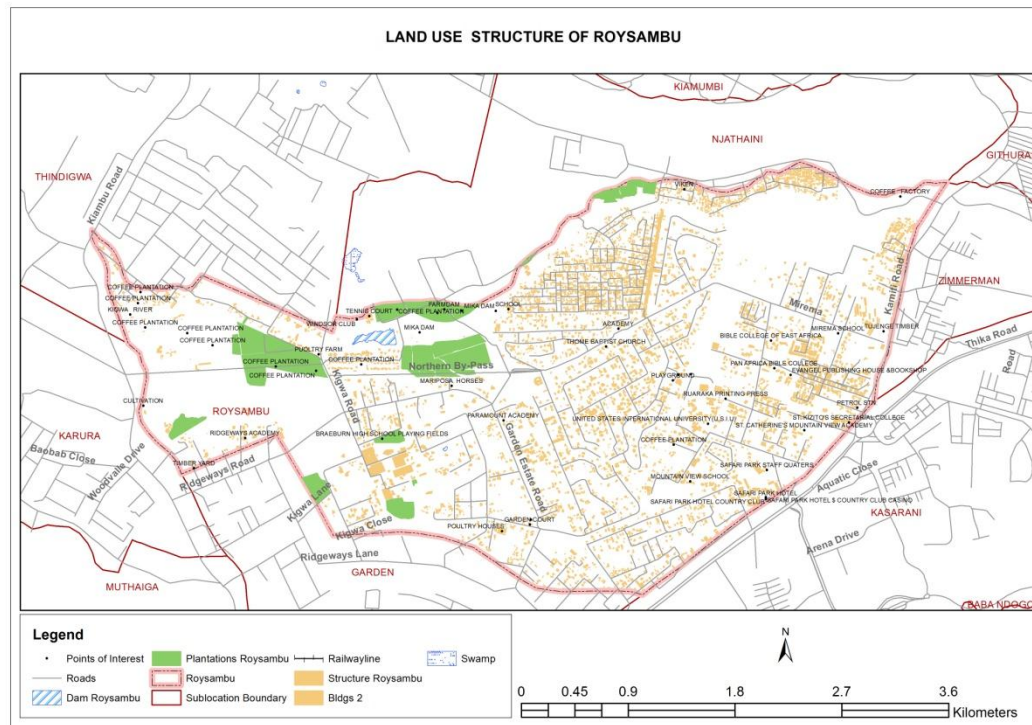
This farm forms the farthest section of Njatha-ini, to the west. The area is primarily single ownership with internal subdivisions, among the family members. Part of the land is undeveloped but is a very attractive site for housing development because the road infrastructure is superior (compared to other sections of Njatha-ini), and adjoins Starehe Girls Centre, a major education facility. Apart from housing, another major form of livelihood is agriculture, comprising crop farming and livestock rearing. The main housing typology is single family, roof-tiled, reflecting a reasonable degree of affluence.

#### **Roysambu**

There is no clear meaning of the origin or meaning of this name. However, according to some respondents, the name could refer to 'Royal Suburbs', in reference to the suburbs occupied by white settlers, during the colonial era; a name since corrupted to Roysambu. During the 1970s, the African elite serving the newly independent government were allocated the land where they practiced cattle farming.

The landscape of this settlement has drastically changed since the 1970s, from one of large tracts of land with cattle rearing as the main livelihood to high residential densities. The settlement is served by a good infrastructure and is located in a busy intersection of major roads to Kiambu, Thome, Kasarani and Nairobi.

Consequently, the area is very attractive for investments in housing and commerce. Its proximity to the dense Zimmerman estate offers further opportunities for small business activities. In the recent past a number of developments have influenced the growth of this settlement. The area accommodates major educational institutions, including the United States International University (USIU), Pan African Christian University, a school of theology and several community facilities such as churches and schools.



**Figure 4.5: Land use in the Roysambu neighbourhood**

Source: Survey of Kenya, 2012

Planned residential neighbourhoods in this zone include Duduville, a middle class residential estate developed by employees of the International Centre for Insect Physiology and Ecology (ICIPE) and Safari Park View, along Mirema drive.

Large farms are evident, these straddle Mirema Drive. However, the internal access roads are in poor condition and in urgent need of upgrading.

The expansion of the Nairobi-Thika Highway and the Northern by-pass (linked to the area through Mirema Drive) is expected to spur even more growth. At the moment, the expansion of the Nairobi-Thika Highway has resulted in a redefinition of the (in) famous Roysambu Roundabout, not only easing the traffic flows but also creating opportunities for residential and commercial development.

### **4.3 Current status and character of land use in the study area**

This section of the study addressed objectives iii and iv namely:

iii, To determine the forces that influence the type of development along this corridor

iv, To determine the appropriate and sustainable land uses in this corridor

To achieve the above, this section presents a detailed analysis of the key variables of the study, mainly information collected from household questionnaires. These included: 1) the household's composition/size; 2) the age of the household head; 3) migratory patterns 4) land use/ownership characteristics 5) housing conditions; 7) status and perception of residents on basic urban services; 8) relationship with planning authorities/perception of residents on planning. These variables and their frequency distributions are summarized in Table 4.1.



**Table 4.1: Key Variables for Analysis, Operational Definitions and Frequency Distributions**

<b>Variable:</b>	<b>Categories:</b>	<b>Operational definition*:</b>	<b>% of Cases</b>
Gender of the household head (as a respondent)	Male Female	Male headed household Female headed household	Male-51.8 Female 48.2
Age of the household head	Less than 30 years 30-49 years 50+ years	Young Middle Old	<30 ---0.8 31-49---34.2 50-59 ---43.8 .>60 ----16.0
Household size	1-2 members 3-5 members 6+ members	Small Medium-sized Large	1-2 members – 36 3-5 members-42 6 members -17 others-4
Household's sources of income	Employment House rent	Very low Low Medium High	Small business-34.0 Employment -34.2 Animal rearing-5.8 House rent 5.0 Crop farming-10.0
How land was acquired	Inherited land Land buying Shares Cooperative company Allocation by LA	Land as a livelihoods//asset Effects of subdivision	40-Inherited land 42 -Land buying Share; 21-Cooperative company 1-Allocation by LA
Reasons for migration into study area	Bought land Inherited land Employed/work Join family/stay with relatives Ethnic violence	Near work and business area Land as an asset	34.6- Inherited land 46.2-Bought land 32.7-Employed/work 25- Join family/stay with relatives 23.1- Business 5.8 Ethnic violence 11.5- Others
Location of respondents occupation	Mostly male household heads	Distance and convenience of the study area	85.5-work in Nairobi 17.9- in Kiamumbi 12.0-in Thindigwa 10.3 in Roysambu 9.4 in Kiambu 12-as others in Thika, Nyeri, Mombasa, Nakuru and Kikuyu
Land acreage	0.25-0.5 0.5-0.75 0.75-1.0 1.0-2.0	As an asset Potential for subdivision Potential for other uses	0.25-0.5----51.7 0.5-0.75----27.1 0.75-1.0----12.7 1.0-2.0-----7.8

Land that has changed use	Housing only Residential and business Residential and agriculture	Need for cheap land for housing Need to maximize land use Need to enhance livelihoods	Residential use- 85.7 Commercial use- 14.3
Current status of land	As allocated Been subdivided	Need to maximize land use Need to enhance livelihoods	Subdivided-19.2 As allocated-80.8
Opinion on service provision	Good Fair Bad	As a factor of spatial order Connection with service providers	Good-46.7 Fair -0.8 Bad 30.9
Awareness of regulations on land use	safeguarding the way leaves/road reserves approval of plans adhere to building lines/beacon/specified land use payment of rates ownership documents	As a possibility to achieving spatial order and sustainable land use As a potential to foster relationships with planning authorities on planning and sustainable development	Approval of plans -38.5 Safeguarding the way leaves/road reserves-18.3 Adhere to building lines/beacon/specified land use-12.6 Payment of rates-1.9 Ownership documents-3.0
Adherence to planning and building regulations	Approval of plans Obtained title deed Have build on own land	As a possibility for fostering partnerships As a factor in sanctioning authorities to fulfil their duties As a factor in residents receiving value for their taxes	Plan approved-64.1 Obtained title deed -12.8 Have build on own land -11.5
Perception on planning instruments and institutions	Do not have information Does exist Does not exist Has not had any need for planning Institutional weaknesses	As an entry point for partnerships between land owners and planning authorities	Not aware of regulations/information-22.2 Delays//too expensive-44.4 Corruption in government offices-7.4 Has not had any need for planning-14.8
Opinion on planning maybe enhanced	Improved road connectivity Creation of community boundaries Partnership between residents and government Reduce grabbing of public land /hasten issuance of title deeds	As a factor of the interest by landowners and residents to improve their neighbourhoods As a factor for enhancing partnerships	Residents should be encouraged to adhere to planning regulations-23.5 Improved road connectivity-11.8 Creation of community boundaries -17.6 Partnership between residents and government- 9.8 Reduce grabbing of public land /hasten issuance of title deeds-2.0

Suggestions on how challenges can be addressed	Implementation of regulations by council Strengthen enforcement Reduction of poverty Decentralize council services/offices Improve social amenities	As a possibility for fostering of partnerships As a factor in sanctioning authorities to fulfil their duties As a factor in residents receiving value for their taxes	Implementation of regulations by council-4.7 Strengthen enforcement-45.3 Reduction of poverty-10.9 Decentralize council services/offices- 3.1 Improve social amenities-1.6
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Source: Author N= 134 the Study Sample

\* Operational Definitions used by Author

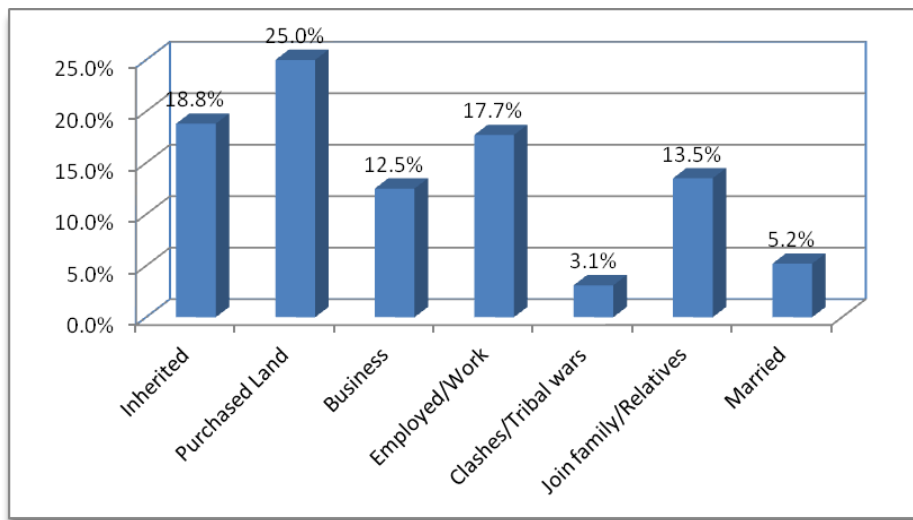
### 4.3.1 Reasons for settlement at the fringes

In reference to research work and data from American cities, Byun & Esparza (2005), present two theories of middle-class migration to the suburbs, namely: the natural-evolution theory and the flight-from-blight theory. According to the former, transportation innovations, the preference for single-family detached housing and rising income has fuelled middle-class suburban migration. Kombe (2003), in his studies of Dar es Salaam, presents a different situation stating that as long as the majority of urban dwellers in cities and towns in Tanzania and other countries in the sub-Saharan region are poor, the cities will continue to expand outwards, thus implying that peri-urban growth is fanned by poor migrants.

Further, Kaiser contends that human ecology theories assume that over time, as the market changes, resulting from the construction of new highways, it produces demographic changes as well as changes in land regulations (Kaiser *et al*, 1995). Rudel (1989) also confirms the argument saying that, ‘as land use changes, repeatedly, on different parcels of land, such change gradually alters the configuration of interest in a community and this change in interest causes a change in policy’

The peri-urban zone can be broadly characterized as a mosaic of different land uses, inhabited by communities of different economic status, in a state of rapid change

without the requisite infrastructure and a deteriorating environment. It is a transition zone that is entirely rural at one end and urban at the other. From the 1950s, land in Kenya became not just a major source of livelihood but also, the basis for individual vertical mobility, an important factor in individual aggrandizement. Land reforms and processes have included land adjudication, consolidation and registration, as the case maybe for many cases, followed, by rapid social differentiation amongst the peasantry, and leading to the emergence of rural capitalists (Kinyanjui, 2007).



**Figure 4.6: How land was acquired**

Source: Field work, March –May 2009

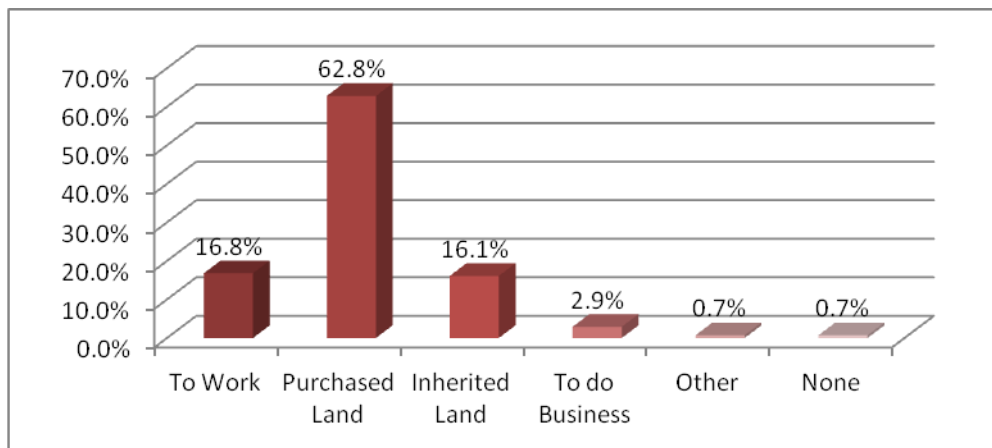
According to the respondents, the original African residents preferred living in the neighbourhoods because the parcels of land were large, they could practice urban agriculture and the restrictions on building development were few. However, in the recent past, the County Government of Kiambu requires building approvals and payment of plot rates at Kshs 300.00 per plot per year. The socio-economic setting is presented in the diverse residential landscape, exemplified by single family dwelling units, multiple family/apartment structures, semi-permanent housing; urban farming, social services such as schools, clinics and shops.

The respondents provide varied reasons ways of how they accessed the land on which they reside. According to Fig 4.6, the majority (25 per cent) bought the land, 18.8 per cent inherited land, while 13.5 per cent indicated that they accessed their land through resources provided by family members. The desire to maintain strong familial and social networks may support the contention that land is a major asset and therefore there is the possibility of greater responsibility to ensure sustainable use. This fact also gives an indication that land ownership in the study area had changed over time. The difference in terms of percentages for those who bought and/or inherited is not higher (11.6 points). This parity is explained by the fact that members of land buying companies were allocated more than one parcel of land, particularly those who could afford to buy more shares. Land in the study area however, has over time been bought by the new migrants who have moved into the area. As indicated in Chapter Four, land ownership and use in the study area transformed from indigenous Africans, practicing subsistence farming, to white settler ownership under coffee and dairy farming, and reverting back to Africans.

The “second stage” under African ownership and use has experienced tremendous subdivisions of land and myriad uses and transfers to new owners. On the question of why respondents settled in the area, 62.8 per cent of the respondents indicated that they bought land in the study area, 16.8 per were in employment, 16.1 per cent had inherited land while 2.9 per cent had settled to do business. This is presented in Figure 4.7.

Varied interests and aspirations on use of the land has resulted in conflicts. This was reported in Thindigwa where conflict over land use has arisen between the new landowners who prefer to invest in single family controlled residential developments, and the older settlers who refer multi-family residential developments (GOK, 2008). The latter’s preferences are driven by the need to cash in on the rents expected from the influx of people into the fringes of Nairobi, while the former’s interests are influenced by a desire to own homes away, but, in close proximity to the city.

Market value sets, according to Kaiser *et al* (1995), has more to do with the commodity values of land, which are responsible for driving the business side of urbanization. In this respect, land is put to its highest and best use as determined by the operations of the market. Market value considerations offer two pertinent views; the market as an effective way for organizing transactions; and, the view that public intervention is necessary for redistributing wealth and opportunities. In a study carried on Nigerian cities, Adesina (2007) contends that as a result of selective real estate development, the urban fringe is often an awkward juxtaposition of flashy commercial or residential high-rise mixes with aging neighbourhoods and dilapidated rural dwellings.



**Figure 4.7: Reasons for settling in the area**

Source: Field work: March-April 2009

Although the Nairobi suburbs do not resemble the affluence found in America or Europe, in the study area, one may not really talk of aging or dilapidated rural dwellings because African settlements are relatively new (since the 1980s). However, there is a clear distinction between original shareholders and the recent migrants.

As indicated in the previous sections of the study, land in the rural–urban fringes is the most important asset for the residents. Land buying companies and cooperative societies took over the management and ownership of the land from the European settlers. This included the processes of land subdivision and allocation. The role of these companies has declined over time, although they are partly responsible for the subsequent transfers, including the sale of spaces reserved for public use and its negative implication on sustainable land use.

As the figure 4.8 indicates, the selling and buying of plots continues through brokers and agents, whose advertisements dot the neighbourhoods.



**Figure 4.8: (a,b,c): Signposts indicate informal adverts (left ) and formal land-buying companies in Kiamumbi and Kamuthi, respectively**

Source: Fieldwork, March-May 2009

#### **4.3.2 Process of growth of on the Kiambu-Nairobi fringes**

As indicated, the two spatial landscapes of Kiambu and Nairobi have always had a symbiotic relationship, due to their proximity to each other; this relationship is even more apparent in recent years.

#### **4.3.3 Types of land uses**

Birley & Lock (1998) define the peri-urban zone broadly as one characterized as a mosaic of different land uses, inhabited by communities of different economic status, in a state of rapid change, with a lack of infrastructure and a deteriorating

environment. In reference to the challenges in the definition and therefore planning, Scott, *et al*, (2013), distinguishes two sets of values, that is, urban-centric values that portrays the fringes as a transition zone; and rural-centric perspective that denotes an area with new opportunities for natural-based assets including food growing and bio-energy. Quoting from Hough (1990), Scott refers to the latter true observation by urban planners that urban development is the highest and best use of non-urban land, (Scott *et al*, 2013).

The challenges in definition and perspectives on land use have therefore resulted in disintegrated policy and decision making, despite the dynamic identity and character of the fringes.

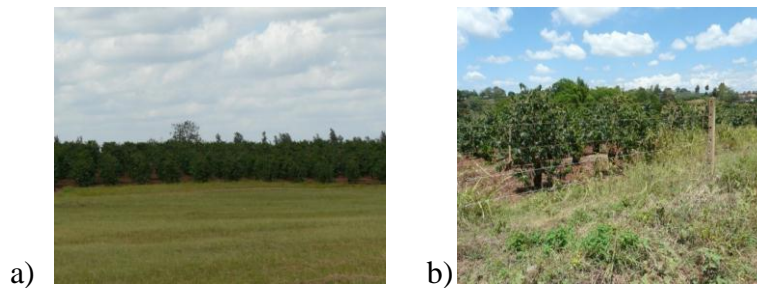
Urban households have had to contend with declining purchasing power prompting the majority to diversify their sources of livelihoods and income (Ellis 2000). Agriculture in the urban and peri-urban areas is an important aspect of this diversification process.

Despite its importance as a livelihood source, farming within the cities' built areas is illegal in many African countries (Foeken, 2005). By-laws, dating from the colonial era ,forbid agricultural activities within the boundaries of urban centres, possibly because it does not fit within the western perception of what constitutes 'urban' (e.g. the city-is-beautiful idea) and apparently it results in all kinds of environmental hazards. (Ibid). As peri-urban land is lost to residential development, the potential for peri-urban subsistence farming and the cultivation of high value produce is also lost. The peri-urban poor depend to a greater extent on access to natural resources than do the wealthier, urban-based groups. Consequently, the peri-urban poor are adversely affected when these resources are lost or degraded by the influxes of people from the expanding urban area.



### **Agricultural activities**

Historically, the study area was a large-scale coffee growing area, owned by white settlers. Agriculture and specifically coffee farming as a land use has reduced since land ownership changed hands in the 1970's and 80's, when African land-buying companies bought the land and sub-divided it. However, large estates still exist along the Kiambu road, Windsor and Kiamumbi areas. The Maakiou estate is one such estate that stretches from Kiamumbi in the north to Ngomongo to the south-west. Figure 4.9 provides a glimpse of this farm with its well-maintained coffee trees, forming the major landmarks in this agricultural estate. Adjacent to the farm, is the Ngumba family farm, also with coffee trees which though not well maintained forms another major landmark in the study area. Crop and dairy farming form a substantial portion of the livelihood portfolio of the residents in the study area. These activities range from highly intensive dairy farming, to sheep, pig and poultry rearing. Some residents engage in these activities in order to supplement incomes from paid or business engagements.



**Figure 4.9: (a and b): a section of the Maakiou Coffee Estate**

Source: Field work, March-May 2009

Other residents solely depend on animal husbandry for their livelihoods. Dairy farming is popular in this peri-urban area due to the ready market for milk in the City of Nairobi and other adjacent urban areas. The residents' ability to supplement their incomes is an important consideration for settling in the peri-urban areas, so much so because, by-laws against agriculture, waste management and pollution are either relaxed or not enforced at all.

Regulations against urban agriculture normally cite the poor management of waste and its potential as a source of unhygienic surroundings and breeding grounds for disease carrying vectors, as a key factor in outlawing the practice. Since parcels of land in the fringes are generally small and also because land on the urban fringes is expected to be used for residential purposes, the waste from domestic animals is often considered a nuisance by both the farmer and the adjacent properties. There is need therefore to develop mechanisms for solid waste management in the planning processes; ensuring the sustainability of land use in the fringes cannot be overstated.

Liquid waste from domestic sewage as a valuable commodity in the peri-urban environment has been reported in a number of Nairobi fringes where it is mainly used for irrigation. Liquid waste is also used to generate biogas and fertilizer for field crops and fishponds. However, the health hazards associated with such waste include many communicable diseases. Composting organic waste for use as manure has the positive health benefit of sanitising the heat destruction of pathogens.



**Figure 4.10 (a, b, c): Dairy farming in Roysambu (Behind Pan Africa Christian University) and animal waste at Kiamumbi (right)**

Source: Fieldwork, March-May 2009

Figure 4.10 reveals discarded waste either ready for use or waste that has reached its final destination. Note how close the door is to the rear , depicted in the plate on the left.

It is evident that urban agriculture is a major source of income to supplement livelihood at the fringes and therefore it becomes a major issue in sustainable land use from the perspective of the natural and built environment. Therefore, there is need to design innovative approaches to enable farmers to reap more benefits from the same. This includes better mechanisms to intensify the agricultural activities and at the same time address waste products deposit and recycling of waste.

#### **Non-farm economic activities**

A dominant feature found on the peri-urban landscape is mixed land use and mixed densities. Whereas some residents move to the urban fringes in order to optimize their land use through home ownership, others move in order to diversify their incomes through the construction of rental houses. Non-farm activities take various forms as indicated by data from the study area. These include residential developments, small service industries, shopping activities and community services (including schools, clinics and pharmacies).



**Figure 4.11: (a,b,c): Residential development in Roysambu (a) and Thindigwa (b) and Kamuthi (c) neighbourhoods**

Source: Field work March- May 2009

Thus, the inhabitants of the fringes derive their living from multiple livelihood strategies and they not therefore a homogeneous group in terms of capital asset ownership (McGregor et al, 2006)

These multiple livelihood strategies are necessary for analysis as they provide a good glimpse of sustainable land use. Multi-family residential/ commercial developments have been a common sight in Roysambu area. This phenomenon is evident in all the other neighbourhoods, except for Njathai-ini. Figure 4:11, illustrates some types of the residential development found in these at Roysambu, Thindigwa and Kamuthi neighbourhoods. At Roysambu, most of such developments are found along Lumumba Drive. Indeed, a major shopping mall, Thika Road Mall, has been constructed near the Thika Highway and Kamiti road intersection; this landmark has drastically transformed the neighbourhood and its environs.

Although not with the same intensity and density, major residential developments are also prevalent along Kiambu and Kamiti roads.

Residential development is the major land use competing for space at the fringes. Due to reduced incomes from agriculture, land owners have converted their land into residential uses. In response to the question why respondents settled in the area, 62.8 per cent of the respondents indicated that they bought land in the study area, 16.8 per cent indicated that they were employed around the area, 16.1 per cent had inherited land , while 2.9 per cent had settled to run business.

### **Small manufacturing activities**

Other non-farm activities are determined by the skills level of the actors as well as the available opportunities. As indicated, Ngomongo is famous for its huge quarries, the mining of which commenced in the 1940s. Initially, quarrying was carried out by large scale mining companies who served the insatiable construction industry in the city with building stone, murrum and hardcore. This has continued to date, with the entry of non-skilled residents, eking out a living by collecting pellets of stone and dust for sale (Figure 4.11a). From an environmental perspective, quarrying is not sustainable. However with the high levels of poverty in the study area, the low skilled residents have few options for earning an income.

Other small scale business activities, which include open air motor vehicle garages, are common at Roysambu , which is located on the major road intersections of Kamiti Road and Thika-Nairobi Highway (Figure 4.11 b). Hawking of all sorts of wares is common in all the neighbourhoods in the study area, indeed small business operators are common along the access roads, especially in Ngomongo area (Figure 4.11c.).

Planning for these activities is needed because they represent important sources of livelihoods for the residents inhabiting the study area.



**Figure 4.12: (a,b,c): quarrying and hawking in Ngomongo neighbourhood.**

Source: Field work March- May 2009

At the moment, the only superficially planned areas in form of zoning plans are the commercial zones of Roysambu, Kiambu Road and Thindigwa area.

#### **4.3.4 Housing typologies and household sources of income**

##### **Housing typologies**

Housing characteristics reflect the household's socio-economic situation. The physical characteristics of the dwelling in which a household lives are important determinants of the health status of household members. They may also influence environmental conditions, for example, in the case of the use of biomass fuels, the exposure to indoor air pollution, can have a direct bearing on the health and welfare of household members. Respondents were asked about their household environment,

including questions on the size of the house, basic services such as source of drinking water; type of sanitation facility used by households; education and health.

Adesina (2007), observes that in many developing cities, including Nigeria, informal settlements have been the principal features of the urban fringes landscape, many of which are never fully integrated and later become a nucleus shanty urban landscape. However, the study findings indicate that there is a combination of both low income and high/middle income social groups. This fact is confirmed by the housing typologies existing in the study area. Figure 4.13a, indicates a high income residential house under construction at Kamuthi neighbourhood; Figure 4.13-b indicates a medium income residential house at Kiamumbi while Figure 3.13c shows a low income residence in Roysambu. Arising from discussions with respondents in Kiamumbi and Kamuthi, there is the perception that the high income housing belongs to new migrants. The contention is that the original owners/shareholders, in the land buying companies, were poor people and apart from the land parcels allocated to them, had no other incomes.



**Figure 4.13: (a, b, c): Housing at Kiamumbi, Kamuthi and in Roysambu**

Source: Field work March- May 2009

This is the reason why they resorted to selling off parts of their land. High income residences are interspersed with medium income and low income residences, within the same neighbourhood.

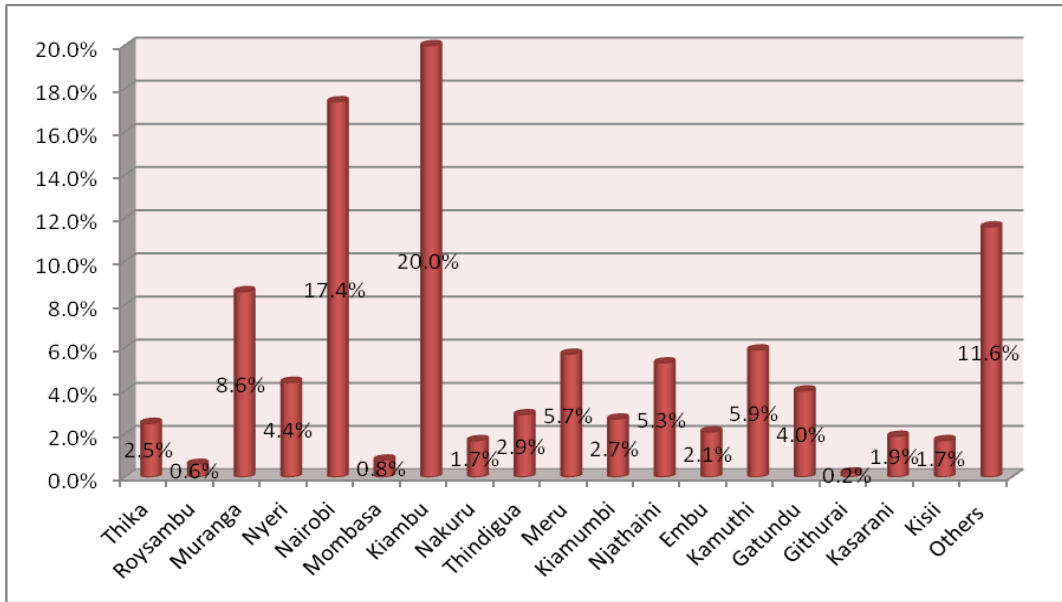
The juxtaposition of the three socio-economic groups at the fringes has resulted in a landscape of mixed situations, ranging from high to poor housing standards. Thus, the

planning challenge is how to meaningfully accommodate the needs of the different groups, as each group struggles to achieve its household and individual social and economic aspirations. This is what the new urbanisation is calling for.

#### **4.3.5 Social-economic characteristics of respondents, location, and migration trends**

As is expected, majority of the residents in the study area were born in districts nearby, primarily Nairobi, Kiambu, Murang'a and a few from other parts of Kenya as indicated in Fig 19-4. Majority of the residents indicated that their birthplace was Kiambu at 20 per cent, closely followed by Nairobi at 17.4 per cent, a fact that may be explained by the desire to build and own accommodation close to the city. The large number of migrants from Kiambu is explained by several factors: i) many people found themselves landless after African lands were taken over by European settlers and they therefore moved to areas nearer Nairobi to seek alternative livelihoods.

Figure 4.14, indicates the home district of the respondents. This interpretation is given credence by Figure 12 -4 which indicates why people settled in the study area. A look at the data collected on categories of housing confirms the varied typologies. Thirty two point one per cent (32.1 per cent) are semi-permanent; that is, constructed of timber, sometimes partly timber and stone; 30.6 per cent are maisonettes; 27.6 per cent bungalows and 3.0 per cent flats/apartments and finally 0.7 per cent of the houses are traditional (mud and wood).



**Figure 4.14: Residents' locations /residences of birth**

Source: Field work, March –May 2009

- iii) Many people also worked as laborers in the coffee and dairy estates in the same farms before and after independence and, iii) Majority of the directors who managed the land buying companies that purchased land from European owners, also were born in the districts neighboring, and they therefore encouraged their kin to register as members.

#### **4.3.6 Other household assets sources of income**

From a study carried out in the peri-urban settlements of Dar es Salaam, Kombe (2003), agrees with other writers on African urbanization that, many households in the peri-urban areas are subsidising their demands for food by engaging in gardening activities (Chukuenzi & Ezedinma, 1999). An assessment of people's levels of incomes and types of occupations are key indicators of the socio-economic state of an area and region. It is such information that helps development practitioners to chart new ways for resource mobilization among communities. In the study area, majority



of the respondents (31.3 per cent) draw their major livelihoods from small businesses which tie together with formal employment also at 31.3 percent; animal rearing at 14.2 per cent and 9.0 per cent from crop farming and finally 4.5 per cent from rental housing.

**Table 4.2: Respondents occupations and income**

Source of income	Frequency	Percentage
Small business	41	31
Formal employment	41	31
Animal rearing	19	14
Crop farming	12	9.0
House rent	6	4.5
Others	13	9
N/A	2	1.5
Total	134	100

Source: Field work, March-May, 2009

This information confirms the contention that rural-urban fringes portray a multiplicity of livelihoods, a situation made possible by the relaxed development control enforcement processes. It is apparent that respondents carry out more than one occupation/livelihood as a way to diversify their incomes.

#### **4.3.7 Reasons for land use change**

The thesis of the systems theory, as applied to the cities is that, the city is a dynamic system that evolves in response to many influences, processes and policies. The theory is applied to analyze the urban areas as systems with persistent human

activities, especially those that occur and recur at specific locations or within particular zones (McLaughlin 1969). The most pertinent argument for the analysis of the systems theory, which is applied throughout the study is that, many activities take place in adapted spaces that were not originally intended and equally activities may take place on the same space, what planning calls mixed use. In the same vein, the study agrees with the contention that the city evolves through time in ways which depend upon the sequences in which changes in land use and movement facilities occur.

According to Kaizer *et al* (2006), planning takes place in a state of turbulence, in a rather complex, dynamic decision-making environment to solve the development and land use problems. These include the increasing fragmentation of land and the inability to enforce controls; diverse populations that create an expanding range of competing pressures and the growing inability by town planners to forecast the future despite the use of elaborate databases and mathematical models.

Adesina (2007), contends that the persistent spate of urbanization in most developing countries over the last two decades has resulted in the fringes asserting their influence on cities as viable zones for regional economy and development. Secondly, their understanding is conceptualised within the context of the interaction of man with the environment, and the ability of individuals and social groups to respond, cope with, recover from and adapt to any external stress placed on their livelihoods and well-being.

Land speculation is viewed as the cause of discontinuous development, at least in the short term (Chin, 2002). The process is one in which land is withdrawn from the land market and its price is placed above its current market value in anticipation of future demand for higher value urban uses. The time at which the particular parcel is released onto the market depends on the rate of development of surrounding tracts, the availability of capital for the speculator and the cost of holding land in taxes.

Broadly speaking, there are three (3) main interests influencing land use changes in the rural-urban fringes that include the developers' responses to the real estate market demands; government policies, strategies and regulations aimed at managing development; and lastly community values and interests driven by the desire for improved quality of life. It is the relation between these three that is the sole determinant of the resultant land uses.

#### **4.3.8 Level /types of service provision at the fringes**

Urban expansion into the fringes can substantially improve access to basic services such as health and education for peri-urban dwellers. Better transport to rural and peri-urban areas will also increase people's access to information and political decision-making structures, as is often the case in the better established cities. Increased flows of people and information can also help widen access to vital knowledge, such as current market prices, allowing peri-rural households to respond more effectively to consumer preferences and urban labour market needs. Kombe (1999), in his studies in Dar es Salaam, states that peri-urban expansion of most cities and towns will continue low levels or absence of basic community infrastructure services notwithstanding.

The findings of the study indicate that the Roysambu neighbourhood is served by good infrastructure and is located in a busy intersection of major roads to Kiambu, Thome, Kasarani and Nairobi; it is therefore very attractive for investments in housing and commerce. Its proximity to the dense Zimmerman (a low income settlement) area offers further opportunities for small business activities. In the recent past, a number of developments have influenced the growth of this settlement. Zimmerman accommodates some major educational institutions that include the United States International University (USIU), Pan African Christian University, a school of theology and several community facilities such as churches and schools. The major types of services available are discussed in the following section:

### **i. Source of water**

Increasing access to improved drinking water is a major goal for the national government and is one of the Millennium Development Goals that Kenya, along with other nations worldwide, has adopted (United Nations, 2001). The source of drinking water is often an indicator of whether it is suitable for consumption. Sources that are likely to provide water suitable for drinking are identified as improved sources and these include protected wells or springs, and rainwater. Lack of ready access to a reliable water source may limit the quantity of suitable drinking water that is available to a household. Secondly, in considering the accessibility of water sources, it is clear that the burden of fetching water often falls disproportionately on the female members of the household. As indicated in Table 4-4, majority of the respondents (65.1 per cent) have piped water on their properties. Although in smaller percentage, the cleanliness of water from rivers/stream, boreholes and wells cannot be ascertained thus, raising health concerns.

Intensive commercial agriculture, mainly horticulture and coffee, could be major sources of ground water contamination. This is prevalent in the Njathaini and Kiamumbi neighbourhoods. Residents who utilise groundwater sources including boreholes and river water are therefore in danger of consuming contaminated water. However, more assessments need to be carried out to further inform policy and planning decisions in regard to the possibility of water contamination.

**Table 4.3: Sources of water used by respondents**

<b>Source</b>	<b>Frequency</b>	<b>Percentage</b>
Piped water	87.3	65.1
Borehole	17.7	13.2
Rain water	15.7	11.7
River/stream	9.6	7.2
Well	2.8	2.1
Natural springs	0.9	0.7
Total	134	100

Source: Field work March-May 2009

**ii. Household sanitation services**

As in the case of water, ensuring adequate sanitation facilities is a Millennium Development Goal that Kenya shares with other countries. A household is classified as having an improved toilet if the toilet is used only by members of one household (i.e. it is no shared), and if the facility used by the household separates the waste from human contact. As indicated in Table 5-4, half of the households use pit latrines. This raises environmental health concerns in regard to the potential contamination of underground water as well as the possibility of spreading diseases, especially to younger children.

**Table 4.4: Types of waste disposal methods**

<b>Type of solid waste disposal</b>	<b>Frequency</b>	<b>Percentages</b>
<b><u>Solid waste</u></b>		
Bury	40	30
Burn	70.5	52.6
Garbage collection	18.8	14.
1,2 and 3	4	3.0
Others	0.5	0.4
Total	0.2	0.01
	134	100
<b><u>Human waste</u></b>		
Water borne toilets	43	32.1
Pit latrines	67	50.0
Both types	3	2.2
Others (septic tank)	21	15.7
Others (septic tank)	--	--
Total	134	100

Source: Field work data March-May 2009

### iii) Source of energy

The type of energy used in a household is a key indicator of the socio-economic stratum of the household. Energy is a key component of the income of poor households. For example, studies done among very low-income communities in Kenya indicate that they spent 30 per cent of their income on food and 10-30 per cent on fuel.

Cooking and heating with solid fuels can lead to high levels of indoor smoke,, a complex mix of health-damaging pollutants that could increase the risks of acute respiratory ailments. Solid fuels are defined as coal, charcoal, wood, straw, shrubs, and agricultural crops.

**Table 4.5: Source and uses of energy**

Type	Use	Frequency	Percentage
Electricity	Lighting	103.8	70.9
	Cooking		6.0
	Both		0.7
Kerosene	Lighting	80.2	20.9
	Cooking		38.3
	Both		0.7
LPG	Lighting	63	2.2
	Cooking		44.8
	Both		.....
Charcoal	Lighting	61.9	45.5
	Cooking		0.7
	Both		.....
Firewood	Lighting	53	1.5
	Cooking		38.1
	Both		

Source: Field work March-May 2009

The study sought to know the sources of energy used in the households as a way of indicating the household's level of income. The most common cooking fuel in Kenya is wood, used by close to two-thirds (63 per cent) of households. Although wood is widely used in rural areas (83 percent of households), urban households rely mainly on charcoal (41 percent), kerosene (27 percent), and liquid petroleum gas or natural gas (22 percent) (GOK, KHBS, 2010).

In the study area, electricity, kerosene, charcoal, Liquefied Petroleum Gas (LPG), and firewood, are the main source of energy used for cooking and lighting. Among the respondents who use electricity, 70.9 per cent use it for lighting, 6.0 per cent for cooking and 0.7 per cent for both cooking and lighting. Of those respondents who use kerosene, 38.3 per cent use it for cooking, 20.9 per cent for lighting and 0.7 per cent for both cooking and lighting. This is indicated in Table 6-4.

The data presented indicated a combination of energy types and therefore the figures do not necessarily add up to the total number of respondents, rarely does one household use only one type of energy. In most instances, households use more than one type of energy. For instance, in order to reduce energy costs, residents use LPG, for indoor cooking, charcoal for outdoor cooking and electricity for lighting.

#### **4.3.9 Community services**

Community facilities refer to the range of services and facilities provided at the neighbourhood and village level. In planning terms, these refer to schools, health centres, shopping areas, recreation areas and churches. For purposes of a more comprehensive outlook, water, sanitation and solid waste issues have been analyzed in section 4.3.8.

The neighbourhoods under investigation present varied categories and levels of services, which targets different sections of the populations. Plates 21-4 indicate some

of the educational facilities available in the study area: a public primary school at Njatha-ini, a semi- permanent school in Thindigwa neighbourhood and a private educational facility in Kiamumbi area, respectively. The types of services depict the diverse clientele and users depending on levels of affordability and needs.

In the planned settlements and those with multifunctional land uses, shopping spaces dot the neighbourhoods and provide the residents with both economic and community needs. In economic terms, they provide low order goods and services, and in community terms they act as places where people meet to share ideas on matters of concern, ranging from politics, to social and developmental issues.

The road network in all the neighbourhoods is poorly developed. Except for the major spine roads such as Kiambu road, Kamiti road, Mirema drive and the newly constructed Northern by-pass, the neighbourhood access roads are earth or at most, upgraded to murrum levels. Figure 4.15 (a and b) indicates the state of roads in Ngomongo (left) and Kamuthi (right).



**Figure 4.15: (a,b,c): Small business premises, open air business and a private school as economic activities in the study area**

Source: Fieldwork, March-May 2009

An improved road connection has direct influence and impact on the land values and enhances other economic benefits. However, road improvements require huge public investments and therefore the involvement of the central government in the planning of these settlements is paramount. Figure 4.15 reveals the state of the main road that transverse Njatha-ini neighbourhood and connects Kamiti and Kiambu roads. Since



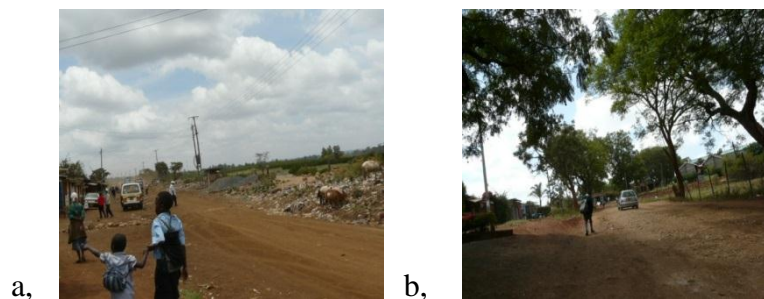
the conclusion of the fieldwork, the northern bypass has been completed and transverses the study area at different points in the neighborhoods of Kamuthi (to the east), a section of Njatha-ini to the west and Thindigwa near the entrance of the Windsor Golf Club.



**Figure 4.16: Different types of schools/facilities in the study area (Njathaini – public, Kamuthi-Parochial and Kiamumbi-private.)**

Source: Fieldwork, March-May 2009

The study findings indicate that only 46.2 per cent of the respondents indicated that the service provision was good, 0.8 percent indicated that the services were fair and the rest, 53.0 per cent, said that the services were in bad condition. As a result of poor service delivery, within Kiamumbi neighbourhood, the land buying company has spent funds to improve the access roads.



**Figure 4.17: (a and b): Sections of the main street in Kiamumbi neighbourhood (right) and Ngomongo (left)**

Source: Fieldwork, March-May 2009

#### **4.3.10 Growth and expansion of infrastructure**

With more and more jobs for suburbanites being located in these areas, rather than in the main city core that the suburbs grew out of, traffic patterns, which for decades centred on people commuting into the centre of the city to work in the morning and then returning home in the evening have become more complex, with the volume of intra-suburban traffic increasing tremendously. As rural-urban linkages intensify through improved infrastructure and the movement of people, the importance of commodities, information and money increases. Cheap, efficient transport encourages peri-urban workers to commute to the nearest city.

The expansion of the Nairobi-Thika Highway and the Northern by-pass (linked to the area through Mirema Drive) is expected to spur even more growth. At the moment, the expansion of Nairobi-Thika Highway has resulted in a redefinition of the (in) famous Roysambu Roundabout not only by easing the traffic flows but also creating opportunities for development.

Major developments in the transport system have taken place in the study area, with a consequent transformation in the residential and commercial landscape of the fringe. The expansion of the Thika-Nairobi Highway, for instance, has stimulated commercial growth at Roysambu, including construction of shopping malls and even spurred the tremendous growth of the informal sector. On the other hand, the completion of the Northern Bypass, that dissects the study area, has resulted in the rapid expansion of residential developments in neighbourhoods such as Kamuthi and also on Mirema drive.

The construction of the Northern by-pass, linking the area notably within Thome estate, Kahawa West and further on at Ruiru has further opened up the area. At the junction of the by-pass and Kigwa Road is the Windsor estate, a high income residential development that is part of the Windsor Golf and Country Club (note the green patches on the satellite image). The Four Ways Junction is an upcoming multi-

family middle-income residential development at the junction of Kiambu Road and the Northern Bypass.

#### **4.3.11 Residents' perception on regulations for land use**

##### **Residents' awareness of planning and building regulations**

Plans and policies provide the framework within which the development control process can take place. In the absence of this framework and guidance, certain questions arise such as: i) how can applications for development permission be assessed? ii) What is the criteria used to determine whether a development proposal is compatible with nearby activity/land uses, or is located on an appropriate site or includes the necessary facilities to support the proposed development? In the absence of a policy framework, the development control system is viewed as arbitrary and people can raise questions on whether or not there is any sound basis or foundation for the decisions made. Furthermore, in the absence of a policy framework, decisions are made entirely at the discretion of the officer (s) evaluating a development proposal.

This apparent situation has engendered the haphazard development and unsustainable land uses in the study area, as is evident from the poor livelihoods. Due to the expensive and lengthy processes involved in the approval of development, land owners prefer to locate to the peri-urban areas where the regulations are either not strict or are rarely implemented.

The reverence with which the people of Kenya hold land cannot be over-emphasized; land is the principal source of livelihood and material wealth, and invariably carries cultural significance. Primarily, land is critical to the economic, social and political development of the country. It is therefore not surprising that majority of respondents to the study indicated that they have ownership documents, 79.9 per cent, against 12.7 per cent, without ownership documents. This is given credence by the fact that 46.2 per cent of the respondents bought land against 34.6 per cent who inherited it. Land ownership determines the style and form of land use since any formal recognition

including building approvals, must be accompanied by ownership documents. Further, the ability to access credit or mortgage is pegged on unambiguous and formal ownership of land.

Respondents indicated that the processes of land registration and development approvals are lengthy and expensive. This was cited as the reason why they do not possess ownership documents. However, those who purchase land are more likely to ensure that they carry out proper investigation of ownership in-order to ensure full documentation of the land because land is viewed as an important household asset.

As indicated in Figure 4 Chapter Three, the land tenure system in the study area has undergone tremendous transformations. The African customary system flourished before and immediately after the onset of colonialism. The main feature of this system was the right to use, given according to the size of the clan or family. Land alienation resulted in the exclusion of the management and development of land by Africans and also their claims on it. In the 1970s -80s, another change in land ownership was experienced as the land reverted back to Africans following purchase from the European owners. In the study area, the main actors in this process were land buying companies whose members worked as labourers in the European farms or were outright squatters. Although designed along customary systems of kin and ethnic networks, individual titling forms the basis of the current ownership. This provides the owners with rights to transfer, use and access credit. On the flipside however, the system has resulted in intensive fragmentation, changes in ownership status and unsustainable land use practices, seemingly beyond the control of the land owners.

#### **Adherence to planning and building regulations**

The dark elongated patchwork on the map is Kamiti River, the river divides the neighbourhood and Kahawa West estate. Ordinarily, the water downstream is used for domestic purposes, but there has been some contamination and there is potential for flooding and therefore danger to life and properties. There is need to generate

information that will enable the preparation of policy, planning and enforcement mechanisms to ensure the sustainable use of the land and water resources.

Development control is a function of the county governments, as stipulated in the Physical Planning Act, and the County Government Act. According to majority of the former LAs, facets of development control include approvals of subdivision schemes, extension of user rights and leases, approval of building plans and adherence to non-interference in the road reserves. Along with this, it is the onus of county governments to ensure the preservation of spaces for public use and utilities, and non-encroachment on fragile areas, as provided for by development plans. Where and when development control instruments are not effectively applied, the outcome is land use conflicts.

The study noted different forms of land use conflicts. For example, due to the high demand for land, spaces reserved for public utilities and services have been sold by the Directors of the land buying companies. Secondly, the neighbourhoods suffer from narrow roads, particularly in Ngomongo, a fact overlooked during the preparation of subdivision plans, which did not envisage the city’s urbanization trends and the expected increased population. Except for Thindigwa, there is no evidence of physical plans guiding development. It is therefore a matter of the developer muddling through as they align their developments with the overall development expectations.

**Table 4.6: Respondents perception of development control/planning regulations**

<b>Response</b>	<b>Frequency</b>	<b>Percentage</b>
Seek assistance from planning authorities/ land officers/engineers	28.7	21.4
Commercial use is not allowed/no kiosks	13.4	10
Not to build on the road reserve	5.9	4.4
Not supposed to grab land/observe the beacon	4	3

It is residential area. no shanties, no kiosks, no high rise	4	3
Approval plans/observing roads before construction	39.9	29.8
No blocking storm drains	2.6	1.9
Proof of land ownership/Title Deed/Allotment letter	5.1	3.9
Payment of land taxes	2.6	1.9
No answer	14	10.4
Not applicable	13.8	10.3
<b>Total</b>	<b>134</b>	<b>100</b>

Source: Field work March-May 2009

The peri-urban areas are the most affected by laxity in the application of plans and policy guidelines and ineffective development control mechanisms. The apparent situation is one of haphazard development and unsustainable land uses, evident from the poor spatial order and incompatibility of land uses. The reason for this, as reported was the inadequate number of technical and enforcement officers. Further, due to the expensive and lengthy processes in the approval of development plans, land owners prefer to locate to the peri-urban areas where regulations are not strictly adhered to nor are plans implemented.

As is evident from the field analysis, given in Chapter 3 and 4, the rural–urban fringes have developed in response to people’s urge to settle in more spacious plots that allow them to diversify their income; urban and fringe agriculture thus forms a major part of their livelihoods.

Many households in the peri-urban areas are subsidizing their demands for food by engaging in gardening activities. Many urban researchers have observed that owing to declining real income for both rural and urban households, urban agriculture has been

exploding in several countries including Kenya, Uganda, Togo, Sierra Leone and Nigeria, primarily because it enables the most vulnerable urban residents to cope (Kombe, 2003, Owuor, 2008, Foeken 20050, Chukuenzi & Ezedinma,1999). But it is also true that there have been land use conflicts arising from waste management. Indeed, in the study area it was noted that animal rearing poses a challenge of waste disposal whereby residents dispose of the wastes on the road reserves, due to the small sizes of land parcels; therefore “waste’ begins occupying precious space.

#### **4.3.12 Analyzing the relationships between and among study variables**

Within the confines of this second stage of analysis, the study sought to establish the relationship between and among key variables drawn from the study findings. It is apparent from the study findings that the varied densities of development (even without planning) within the Nairobi-Kiambu corridor could be explained partly by the effects of land speculation, such that over a longer time period an efficient allocation of land uses has been created. Although the initial development was low density, the vacant land was later developed at higher densities as infill development or used for higher value commercial uses. This agrees fully with theories which argue that land use is dependent on the values that land owners allocate, and the high price for land is based on its prospective value in the future. Land is therefore not developed under existing lower value uses, but only when the more productive uses are economically feasible (Chin, 2002). It is well established from the literature that the density of development increases with land value. This case is evident in Roysambu and Kiambu road where land, due to its prime location has been converted from agricultural based activities to multi-family residential developments. Further, the value of land and the density is higher nearer the built areas of the city or the core of major nodes within the peri-urban development itself. Major transport routes offer better opportunities for commercial/ residential developments; these are also areas of high densities.

The study sought to establish how far or in what way, if any, those respondents who have utilized their land in a planned manner realized higher and better incomes, or

have high standards of living. In an area, such as in the peri-urban zones, it can be rather problematic to define the term planned. For purposes of this section, the term “planned” was applied eclectically, to refer to any or all of the following: Land ownership documents, Approved building plans, Awareness of planning regulations, and, Adherence to planning/zoning requirements. These factors were considered important therefore for sustainable land use.

On the other hand, resilient living standards are portrayed as a factor and function of livelihoods and analyzed as follows: Conditions of housing, Diversity of the household sources of income, Land ownership documents which imply a land owner may access credit or mortgage.

**Table 4.7: Layout for Regression/Correlation analysis for source of income and income earned**

Type of livelihood	Source of Income	X (income earned)	Y (frequency)	X <sup>2</sup>	Y <sup>2</sup>	XY
1	Formal employment	60,000.00	41	3,600,000,000.00	1,681.00	2,460,000.00
2	Animal rearing	31,000.00	19	961,000,000.00	361.00	589,000.00
3	Crop farming	6,500.00	12	42,250,000.00	144.00	78,000.00
4	Small business	10,000.00	41	100,000,000.00	1,681.00	410,000.00
5	Rental income	7,250.00	6	52,562,500.00	36.00	43,500.00
6	Others	12,000.00	13	144,000,000.00	169.00	156,000.00
7	N/A	-	2	-	4.00	-
		126,750.00	134	4,899,812,500.00	4,076.00	3,736,500.00
		18,107.14	19.14285714			



$$\Sigma X^2 = \Sigma XY^2 - [(\Sigma X)^2/n]$$

$$2,604,732,142.86$$

$$\Sigma Y^2 = \Sigma Y^2 - [(\Sigma Y)^2/n]$$

$$1510.857143$$

$$\Sigma XY = XY - [(\Sigma X)(\Sigma Y)]/n$$

$$1,310,142.86$$

$$0.66$$

$r = 0.66$  indicates that there is a positive relationship between the sources of income and the income earned.

Therefore, the study contends that resilient livelihoods are a function of sustainable land use. Secondly that people inhabit the peri-urban fringes to take advantage of the flexibility available, in order to engage in diverse economic activities. Thirdly, that despite the poor services and community facilities evident at the fringes, residents seem to weigh the gains evident, from the level of incomes earned.

**Table 5.8: A contingency table to compare two variables using Chi-square**

	Njatha-ini	Roysambu	Kamiti	Thindigwa	Kiamumbi	Totals
Followed planning regulations	24	21	20	22	20	107
Did not follow planning regulations	6	5	5	6	5	27
Totals	30	26	25	28	25	134

**Table 5.9: A table showing the observed and expected values for calculation of Chi-Square**

	Njatha-ini	Roysambu	Kamuti	Thindigwa	Kiamumbi	Totals
Followed planning regulations	[1,1] 24 (24)	[1,2] 21 (20.8)	[1,3] 20 (20)	[1,4] 22 (22.4)	[1,5] 20 (20)	107
Did not follow planning regulations	[2,1] 6 (6)	[2,2] 5 (5.2)	[2,3] 5 (5)	[2,4] 6 (5.6)	[2,5] 6 (5)	27
Totals	30	26	25	28	25	134

Degrees of freedom

Rows df = r-1 and (r=rows less 1)

Columns df = c-1 (c=columns less 1)

$X^2$  df = [r-1][c-1]

df = (r-1)(c-1)=(2-1)(5-1)

=1\*4

4df

**Table 5.10: The expected Chi-square value sought from the tables, assuming a 0.05 significance level will be:**

Cell Number	$Q_i$	$E_i$	$Q_i - E_i$	$[Q_i - E_i]^2$	$[(Q_i - E_i)^2] / E_i$
1,1	24	24	0	0	0
1,2	21	20.8	0.2	0.04	0.0019
1,3	20	20	0	0	0
1,4	22	22.4	-0.4	0.16	0.0071
1,5	20	20	0	0	0
2,1	6	6	0	0	0
2,2	5	5.2	-0.2	0.04	0.0077
2,3	5	5	0	0	0
2,4	6	5.6	0.4	0.16	0.0286
2,5	5	5	0	0	0
	134	134	0.00		0.0453

$Q_i$  Observed values

$E_i$  Expected values

$Q_i - E_i$  Difference between observed and expected values

The actual, calculated Chi-Square is 0.0453; which is compared to Chi-square expected (obtained from the tables.  $X^2_{[0.05,4]}=9.488$

One of the study propositions is that there is a relationship between adherence to planning regulations and high property values (taking land as the major form of livelihood). The calculated Chi-square is 0.0453 which is less than the expected Chi-square of 9.488. Therefore, we accept the proposition that there is a relationship between adherence to planning regulations and enhanced livelihoods.

A number of interpretations are forthcoming from the ongoing;

i), There is a clear and strong relationship between the use of land, standards of living and perceptions of development control, i.e., residents who have title deeds and have building plans and have adhered to planning regulations have enhanced livelihoods

ii,) Rural-urban populations have created new developments at the fringes of Nairobi and other cities comprising of new affordable homes and new communities. As normally referenced, these are not merely dormitory towns but rather, are genuinely balanced communities combining homes, employment, community and commercial services as required.

#### **4.4 Reflections on the study findings**

Several issues are clear from the above analysis and they have been delineated in the section following: Developments take place within the guidelines of subdivision and survey plans. However, the study notes that except for the Thindigwa neighbourhood, the other settlements had no plan for guiding physical developments. The relationship

between the residents and the respective county governments has moved beyond that of payment of land rates and basic improvement of access roads. Indeed, residents expect some form of development control that moves beyond the requirement of approvals of building plans and processing of land transfers.

The existing large tracts of land present are a potential case for testing of the planning instruments including comprehensive development; maintaining the land as a green zone with coffee or greenery. Alternatively, the area could act as a buffer zone for further “urban development”. The mix of livelihoods existing in the settlements represents the different forms of land uses. These include: large scale and subsistence farming, small-scale business activities, institutional and residential land uses. Residential related livelihoods form the major proportion of all these activities. On the other hand, the mixed land uses gives an indication of the socio-economic characteristics of the residents and landowners. This is also depicted by the housing typologies, the land sizes and the businesses existing in the study area.

As rural-urban linkages intensify through improved infrastructure and the movement of people, the importance of commodities, information and money increases. It is expected that the improved transport systems in the study area will increase people's access to information and political decision-making structures, often better established in cities; thus helping widen people's access to vital knowledge and allowing peri-rural households to respond more effectively to consumer preferences and urban labour market needs. The impacts of the expansion of the Thika-Nairobi Highway and the completion of the Northern bypass attest to this fact, with massive residential and commercial developments being constructed along the two transport spines

The findings sought to relate the usefulness of land use planning as a tool for sustainable land use. A number of issues were raised as indicated following:

In regard to land use planning processes and land tenure, the study explored the extent to which residents and landowners adhere to planning regulations given the rather

complex administrative system, tenure, historical, diverse social-economic and physical uniqueness of the area. As stated in several instances in the study, the area of interest straddles the county governments of Nairobi and Kiambu, with development influences on the key commercial and residential node of Ruiru and the rural landscapes southern Kiambu. The area benefits from good, high quality infrastructure due to its proximity to Nairobi and the richer and well developed regions of Thika and Kiambu. This situation poses several planning and development challenges which impact on sustainable land use.

In regard to land use planning as a factor for land use changes, there exist potential conflicts over natural resource use that further serve to erode the notion of sustainable livelihoods. As indicated elsewhere, peri-urban development on the Nairobi-Kiambu corridor is associated with increases in density, changes in the composition of populations and increase in urban-related economic activities. The change in land use has resulted in increased land values, particularly along the main transport corridors of Kiambu Road, Kamiti road and the northern by-pass. Real estate has become a lucrative business and many investors have entered the land market. However, all these developments are taking place against a backdrop of poor planning, evident in the lack of local plans, poor road conditions, inadequate community facilities and threats to the fragile riverine areas. Secondly, the study found that the reason for the intensive land use change, was due to the fact that property development has been regarded a safe way of investing and gaining financial security against inflation. Private developers start by purchasing the land for speculative purposes, which they later release for development. It was noted that active urban development was ongoing; developed properties are of high quality and to an extent a good urban environment is being created, albeit, with inadequate urban services and utilities.

In Chapter 2, the study explored the relevant theories on the subject of rural-urban fringes. One of the theories referred to is the systems theory. The theory as applied, analyses the urban areas as systems with persistent human activities especially those that occur and recur at specific locations or within particular zones (McLaughlin

1969). The tremendous land use changes at the fringes supports the theory that a system may refer to adapted spaces described by the conscious and regular use and also the physical construction and development. In order to understand the relationship between the different components of the system, the study sought to apply planning principles, in an attempt to balance the need to sustainably exploit natural resources, as reflected in the livelihoods at the fringes and therefore maintain the integrity of the system at the interface.

The planning tool, as a mechanism to accommodate the land use changes experienced in the RUFs is viewed from the interaction of supply and demand. The interplay of actions among individuals, private and public sector pose major challenges in planning. That is, the private sector demands land for investment purposes, the individuals demand land to develop residential houses for personal use while the public sector demands land for the provision of urban infrastructure and utilities ,albeit, only in the later development stages. It is in the balancing of these varied interests that planners failed to ensure sustainable development, which is the ultimate goal for planning. The reason for this failure could be due to: , lack of information on what is expected from investors and landowners, lack of coordination among the actors and the public sector, and lack of resources.

Non-adherence to planning regulations and the resultant spatial disorder is due to the failure of the public agencies to make plans to develop plans to guide peri-urban development. Except for Thindigwa, the rest of the neighbourhood's development is guided by the outdated subdivisions schemes prepared for land allocation purposes. A comprehensive planning framework is important to enable the coordination of public and private activities on the peri-urban landscape. The study has revealed that there is a clear relationship between inadequate and lack of planning, and reduced and depressed livelihoods. This study has therefore provided information pertinent to the development of a planning framework to guide peri-urban development in the Nairobi-Kiambu corridor and in Kenyan urban-rural fringes, in general.

In regard, to development control as a tool for land use planning, the study contends that it is important that plans take into account the preservation of fragile riparian reserves and green spaces from further degradation, a situation that may lower the values of land and properties. The study proposes areas of further research as careful monitoring of the impacts of urbanizing, degrading and polluting on water and ecological/biophysical resources on the rural-urban fringes.

In terms of on whether land is sustainably utilized, the study was guided by a review of information on existing structures and resource use as influenced by access and cost of land, information on planning and land issues such as subdivisions, change of user, development approvals, and institutional linkages. Structures refers to the processes in which various actors are involved in decision-making processes in regard to land management, planning and access to services on one hand; and how these processes are guided by the existing policies, legal and institutional frameworks on the other. To achieve the above, the study utilized descriptions and analysis, using the peri-urban typology and location theories in planning. The study used different timelines in order to provide a more elaborate assessment of the growth and development of the study area; in terms of demographic changes, socio-economic characteristics, pattern of land use changes, distribution of basic services and decision-making practices.

The peri-urban areas are most affected by the laxity in the application of plans and policy frameworks and ineffective development control mechanisms. Expensive and lengthy processes in the approval of development proposals deter landowners from adhering to the stipulated regulations on development. A number of respondents noted that they had opted to locate to the peri-urban areas because planning regulations are not strict and neither are plans adhered to. The resulting state of affairs is haphazard development with unsustainable land uses, as is evident from the depressed livelihoods. From the field work analysis, it is clear that rural–urban fringes have developed in response to people’s urge to settle in more spacious plots that allow

them to diversify their incomes; urban and fringe agriculture therefore forms a major part of their livelihoods.

What emerges from the five neighbourhoods studied is the urgent need for planning, partly ignored out of lack of appreciation of the dynamism of the fringes, and urban development policy to address the emerging land development patterns and guard against the current land development process that neither complies with the conventional city form and spatial orderliness nor reflects planners' visions about our cities of tomorrow. This urban growth process and its outcomes can be read as reality in a Kenyan or sub-Saharan city, which depicts urbanisation with neither a sound economic base nor the institutional capacity to regulate it or to provide basic utilities and services. The study uses the rural-urban fringes of Nairobi and Kiambu as a case in point. Information generated was intended to inform the planning authorities and practitioners about how to address and manage peri-urban growth.



## **CHAPTER FIVE: STUDY SYNTHESIS AND INTERPRETATION**

This chapter synthesises the study findings for interpretation. The chapter draws from the ideas and thinking presented in Chapters 2 and 3. However, much of the study interpretation is based on the findings summarised in Chapter 4.

### **5.1 Kiambu-Nairobi relationship-spatial, economic and social aspects**

Firstly, the study attempts to understand and put into perspective the geo-historical relationship between Nairobi and Kiambu. The two spatial landscapes have always had a rather symbiotic relationship due to their proximity to each other, the former's reliance on the latter for food, fuel, water and labour and the latter as a market for high value agricultural produce and also an outlet for excess labour, respectively. The early settlers in Kiambu found Nairobi a convenient and reliable transit point for exports such as coffee, wattle and sisal, and also a source of luxury consumer goods.

Secondly, an important aspect in land use changes is the shift in land ownership which depicts a cyclical pattern. Historical records indicate that it is the white settlers who first settled in the area around the 1930-50s; majority left in the 1970s and 1980s and therefore there was a dramatic change in the land use. Not only did the calibre of owners change, (elitist- urban, as opposed to communally-inclined owners) but also livelihoods changed from dependence on land, (subsistence farmers), to home owners engaged in labour- intensive peri-urban agriculture.

### **5.2 Characteristics of neighbourhoods**

Developments take place within the guidelines of subdivision and survey plans. Except for the Thindigwa neighbourhood, the other settlements had no plans for guiding physical developments. The relationship between the residents and the respective county governments does not go beyond the payment of land rates and basic improvement of access roads. However, development control is limited to requirements for the approvals of building plans and processing of land transfers.

From the literature review on land use planning, it is clear that plans and policies provide the framework within which development control processes take place. In the absence of this framework, certain questions arise such as; i) How can applications for development permission be assessed? ii) What criteria is used to determine whether a development proposal is compatible with adjoining land uses, or is located on an appropriate site or includes the necessary facilities to support the proposed development? Without convincing answers to these questions, the development control system can be viewed as arbitrary with questions being raised about the basis or foundation on which the decisions are made. Therefore, the laxity in the application of plans and policy frameworks and the ineffective development control mechanisms have resulted in haphazard development and unsustainable land uses.

The existing large underutilised parcels of land present potential cases for testing of the planning instruments such as comprehensive development and/or maintaining of the land as a green zone with coffee or greenery. Alternatively, the area could act as a buffer zone for further “urban development”. As rural-urban linkages intensify through improved infrastructure and the movement of people, the importance of commodities, information and money increases. It is expected that the improved transport systems in the study area will increase people's access to information and political decision-making structures, as is often the case in better established cities; thus helping to widen people’s access to vital knowledge and allowing peri-rural households to respond more effectively to consumer preferences and urban labour market needs. The impacts of the expansion of the Thika-Nairobi Highway and the completion of the Northern bypass attest to this fact as evidenced by the tremendous residential and commercial developments along the two transport spines.

### **5.3 Land use as a function of livelihoods**

The study has established that residents engage in multiple livelihood strategies which in turn provide an opportunity to assess how and if land is being used sustainably. For several years now, multi-family residential/commercial developments have been a common sight in the Roysambu area, particularly along Lumumba Drive. A major

shopping mall, has been constructed near the Thika Highway and Kamiti road intersection; a landmark which has drastically transformed the neighbourhood and its environs. However, this phenomenon of multi-family developments is evident in all other neighbourhoods, except for Njathai-ini. Although not with the same intensity and density, major residential developments are also prevalent along Kiambu and Kamiti roads. Residential development is the major land use competing for space at the fringes. Due to reduced incomes from agriculture, land owners have converted their land into residential use.

#### **5.4 Social-economic profiles of residents**

The following perspectives have been established by the study:

- (i) The study findings indicate that there is a combination of both low income and high/middle income social groups residing in the study area. This fact is confirmed by the housing typologies that are apparent in the study area. Arising from discussions with respondents in Kiamumbi and Kamuthi, there is a perception that the high income housing belongs to new migrants in the study area. The contention is that the original owners/shareholders of the land buying companies were poor people, who apart from the land parcels allocated to them had no other incomes, and hence why they sold off part of their land parcels.
  
- (ii) The juxtaposition of the two socio-economic groups at the fringes has resulted in a landscape of mixed situations, ranging from high to poor standard housing. Thus, the planning challenge is how to meaningfully accommodate the needs of the different social groups, as each group struggles to achieve its household and individual social and economic aspirations. This is an interesting conclusion for the study because it agrees with what new urbanization is calling for. It is apparent though, that the original land owners tend to be satisfied with temporary and semi-permanent housing, and even

those renting tend to occupy rental units that are constructed from temporary building materials.

- (iii) The study agrees with other writers on African urbanization that many households living in peri-urban areas are diversifying their income in order to satisfy their demands for food. An assessment of people's levels of incomes and types of occupations are key indicators of the socio-economic state of an area and region. It is such information that helps development practitioners to chart new ways for resource mobilization among communities. The study findings confirm the contention that rural-urban fringes portray a multiplicity of livelihoods, a situation made possible by the relaxed development control enforcement processes. It is apparent that the respondents carry out more than one occupation/livelihood as a way to diversify their incomes.

## **5.5 Level/types of basic services**

In regard to the provision of basic services, the following aspects are noted:

- (i) The study agrees with other studies which argue that the peri-urban expansion of most cities and towns will continue, low levels or absence of basic community infrastructure services notwithstanding. However, although this situation is evident in the neighborhoods studied, there is a slight deviation from this conclusion in reference to the Roysambu neighborhood. The settlement is served by good infrastructure and is located on the busy intersection of the major roads to Kiambu, Thome, Kasarani and Nairobi, it is very attractive for investments in housing and commerce. Its proximity to the dense Zimmerman (a low income settlement) estate, offers further opportunities for small business activities. In the recent past, a number of developments have influenced the growth and vibrancy of this settlement namely: the United States International University (USIU), Pan African Christian University, a school of theology and several community facilities such as churches and schools.

(ii) Areas distant from the main transport routes indicated dissatisfaction with the level of services. In many urban settings, the private sector and individuals pool their resources through “residents associations”, to provide the basic urban infrastructure. This was evident within the Kiamumbi neighborhood where the land buying company has spent funds for the improvement of the access roads. Although this is a reaction to poor service delivery from the public authorities, it can be turned to an advantage. Communities could pool their material and social capital in order to strengthen the social fabric, while the authorities could utilize these associations as entry points for improving governance at the fringes. By doing this, communities at the fringes will realize the goals of sustainable land use. Improved services will spur more development and ensure that the residents’ livelihoods are resilient to the shocks and stresses often experienced in the rural-urban fringes.

## CHAPTER SIX: CONCLUSIONS RECOMMENDATIONS

### 6.1 Introduction

This is the final chapter of the study and therefore forms the conclusion. It contains the key highlights on information generated to the enable development of a policy framework for urban and regional planning; conclusions and recommendations of the study.

### 6.2 Study Conclusions

- (i) In order to meet the housing needs of the urban population in cities, populations have created new developments at the periphery of cities comprising of new affordable homes and new communities. These are not merely dormitory towns. As this study has established, these are genuinely balanced communities combining homes, employment and most of the community and commercial services needed by the residents. The developments are designed to enhance the livelihoods, utilize the available resources and provide the residents with a well-planned environmental infrastructure, green spaces and links to their surrounding countryside and at the same time draw the benefits accruing from the city.
  
- (ii) Researchers have reached the consensus that development takes place on the urban fringe where land is inexpensive and development controls less rigorous (Kaizer *et al* 2006: 202). In planning practice, the concept of development and infill are more commensurate with built-up areas, rather, than the rural-urban fringes. This is because of the assumption that at the fringes there is an infinite supply of land. However, the application of the two concepts, in the fringes, may provide antidotes to the development of urban sprawl. That is, the intensity of development should be encouraged in the already built-up area, with limits to fragmented developments into the outlying agricultural lands and sensitive environments. In the study area , there is the argument that infill

densification should be encouraged in the existing built up areas of Kiambu Road, Roysambu, along the Northern by-pass ,while preserving the large tracts of land at Ngomongo, Njatha-ini and sections of Kiamumbi. which are currently underutilized with poorly managed coffee plantations.

- (iii) The varied densities of development (even without planning), within the Nairobi-Kiambu development corridor, could be explained partly by the effects of land speculation, such that, over a longer time period an efficient allocation of land uses has been created. Although initial development was low density, the vacant land was later developed at higher densities as infill development or used for higher value commercial uses. This agreed fully with theories which argue that land use is dependent on the values that land owners allocate with a high price for land based on its prospective value in the future. Land is therefore not developed under existing lower value uses, but only when the more productive uses are economically feasible (Chin 2002). It is well established in the literature that, the density of development increases with land value. This situation is evident in Roysambu and Kiambu road where land, due to its prime location has been converted from agricultural based activities to multi-family residential developments. Thus, the major transport routes in existence offer prime areas for commercial/residential developments; these are also areas of high densities.
  
- (iv) Migrants have followed opportunities and made choices which reflect their socio-economic status and affordability. Most newcomers from within and outside the area, chose to settle in the five peri-urban areas because either land or rental accommodation was relatively affordable and easily accessible. In all of them, strong ethnic social ties and affiliations provided conduits for integration into the new living and working environment. The familial and ethnic networks functioned as economic and social nets, providing immigrants

with a new orientation to their environment and to explore the opportunities unfolding.

- (v) Plans and policies provide the framework within which the development control process can take place. For these plans and policies to be effective, they need be negotiated by all actors. In the absence of this framework and guidance, certain questions arise such as: how can applications for development permission be assessed? and, what criteria is used to determine whether a development proposal is compatible with nearby activity/land uses, or is located on an appropriate site or includes the necessary facilities to support the proposed development.? In the absence of a policy framework, the development control system is viewed as arbitrary and people question whether or not there is any sound basis or foundation for the decisions made by the authorities. Furthermore, in the absence of a policy framework, decisions are made entirely at the discretion of the officer (s) evaluating a development proposal.
  
- (vi) Land is the main source of livelihood for majority of the people living in the rural-urban fringes. Yet, as land prices rise, poor people are forced out of their land to look for work in the rban residential development. Potential for subsistence peri-urban farming has been unexploited and the cultivation of high value produce needs to be promoted. In Thindigwa, for instance, there was a dispute simmering between the new and older migrants over the plot sizes and housing typologies that should be allowed. There is no gainsaying that the rural-urban fringe is highly vulnerable to the structural and systematic risks prevalent in urban development processes, and which can be prevented through adequate planning.



- (vii) Agricultural producers can legitimately marsh all environmental arguments for tax breaks in return for their keeping land for agriculture purposes. Agriculture may not be friendly to all environmental values, but it does serve to protect open spaces and provides other amenity values of importance to the community. Agricultural land use also makes little demand on local public services. While a scatter-gun pattern of urban development tends to raise the cost of providing local public services, the cost of providing local government services is minimized if land-use conversion occurs in a systematic and orderly way.
- (viii) An important question is whether land speculation is part of an efficient land market. Traditional theories on the land markets explain the pattern of development as continuous, from the urban centre where efficient development would first make use of the land closest to the centre, as this land has the highest value, is the most accessible and utilizes existing public services. Therefore, discontinuous, scattered development is a result of market failure. On the flipside, scattered development is viewed as part of an efficient land market that provides the highest price for landowners, and allows for the appropriate provision of infrastructure and services. According to urban researchers, land speculation is the cause of discontinuous development, at least in the short term (Chin 2002). The process is one in which land is withdrawn from the land market and its price is placed above its current market value in anticipation of future demand for higher value urban uses. Due to individual differences in parcel characteristics and land owners individual preferences, land development is haphazard, leading to fragmented and uncontrolled development. This is the situation evident in all the five study neighbourhoods, particularly along the main spines (Kiambu and Kamiti roads and the Northern by-pass). Lack of planning guidelines further compounds the problem of uncontrolled development.

- (ix) It is important to underline the fact that even though land use patterns at the rural-urban fringes have emerged sporadically and the form is organic, these patterns are not even or uniform in content or structure. The implication is that the peri-urban sustainability agenda is complex and inter-connected, with many layers which need careful analysis. For instance, from the study findings it is evident that exclusive residential land uses exist without the requisite supporting facilities such as a market, shopping and community facilities. The emergence of mini-shopping / community centers, which are gradually consolidating and servicing the outlying residential areas, can be observed in some situations. This is more apparent along the main roads at Kiamumbi (Kamiti roads), Kamuthi (on Kamuthi road) and Thindigwa (Kiambu road). Often, these community/shopping centers are neither spatially organised nor do they stand out distinctively, i.e. they do not manifest themselves in height variations (vertical development), as in planned community service centers. Rather, they are sporadic given the economic level of the owner and form extensions to the existing residential use. Nonetheless, these presumably “informal shopping centers” add value to the fringes in terms of increased land values and consolidation of the urban character depicted by higher housing densities. It is therefore recommended that deliberate guidelines are established to guide and manage their growth and development. This will ensure sustained livelihoods for both the peri-urban residents and for investors.
- (x) Urban growth has been initiated and sustained in the five neighborhoods , albeit , without basic community infrastructure services. This raises questions on the common generalization among planners and urban managers that infrastructure services bring about urban growth and therefore the belief that their absence can restrain growth. The point here is not to generalize that infrastructure services are not critical for urban growth, nor to belittle the role that infrastructure services play in urban development. Indeed, more easily

accessible, high value land along the major trunk service lines such as transport routes and water mains has and will no doubt remain preferential development areas or development 'hot spots'.

- (xi) Respondents indicated that they are aware and adhere to set planning and building standards and regulations. Thirty eight per cent of those interviewed said that their building plans are approved by the regulatory authorities, 18.3 said they had safeguarded the way leaves/road reserves adjacent to their properties, 12.6 per cent have developed their land according to stipulated use, 1.9 per cent pay the land rates and 3.0 per cent have land ownership documents. This information is crucial as an indication that there is potential for fostering partnerships with statutory authorities in order to achieve the ideals of spatial order and sustainable development. According to the study, a high number of respondents, i.e., 44.4 per cent said that the planning and statutory development requirements were expensive and lengthy, and 7.4 per cent cited corruption in government offices. A surprisingly, 22.2 per cent were unaware of any planning regulations and have had not *raison d'être* to seek such information.

This thesis explores the patterns and processes of utilization of peri-urban land and suggests ways in which the zone can be integrated in spatial land use planning, and more specifically, how peri-urban land can be utilized sustainably. The study explored new and innovative thinking towards sustainable land use, urban growth, urbanization, and land use planning and governance approaches in Kenya. The gap that the study filled was to suggest that there is need for a more comprehensive understanding of land use planning and management policies, legal and institutional gaps for improvement in city growth and peri-urban development processes.

### 6.3 Recommendations

- (i) From the discussion on the legal framework, it is clear that the laws formulated for purposes of land use and management are comprehensive and cover all aspects of development and resources use. However, the implementing authorities often encounter numerous problems in the process of implementing and enforcing the same. The new political and governance dispensation, with its enhanced financial and technical resources, offers opportunities for improved planning, as stipulated by the County Government Act, 2012, the Constitution, the National Land Commission Act and the Cities and Urban areas Act etc, the legislation that provides for checks and balances on hitherto instances of political interference and skewed implementation of planning rules. It is recommended that planning authorities enhance their capacity to implement and enforce the existing regulations on land use and including inclusiveness in the planning process.
  
- (ii) Although preferential tax treatment seldom is sufficient to stop farm land from being ‘swallowed up’ for urban uses, property tax breaks may help buffer urban development from open spaces existent in the fringes; and make land use more manageable. In Njatha-ini and Ngomongo areas for instance, the landowners still possess huge tracts of land. Planning policy could create mechanisms to protect this land from further subdivision and conversion in such a way that their conversion could be systematic and orderly. Ideally, these landowners would be encouraged to lease development rights for some set time period since that gives them access to ready cash while at the same time preserving long-term options to develop the land. Such a goal, however, is vastly costly to the public, and is only achievable if it becomes part of the broad community interaction with other actors at the rural-urban fringe.

- (iii) For poor households or migrants who are desperate or aspire to acquire land in order to explore livelihood opportunities, the decisions to settle or move into an area are largely driven by the anticipatable income generation opportunities and the ability to pay for the land or for room rent. Inclusive planning and development and adoption of new urbanization and growth planning paradigms should help address the needs of the different social-economic groups residing on the rural-urban fringes. The study therefore recommends the building of institutional expertise for promoting sustainable development; a process that demands balanced decision-making, conflict management capacities and expertise in spatial planning and governance. Without these qualities at hand, a region may miss out on the capacity needed for pursuing the sustainable spread of urban and rural land use within its territory.
  
- (iv) Develop a framework evolving from and based on the principles of partnership, dialogue and collaboration with the key actors as well as build upon good practices unfolding in the settlements, for example resident associations. Engendering a partnership between the public and the grass root actors is important, in order to bring about good governance in land development. One activity for this is the preparation of land use plans as regulatory guides, taking into account future public requirements such as the introduction of structural guidelines and standards, for example, green belts and or buffer zones to slow down the urban sprawl.

#### **6.4 Areas for further study**

- (i) The study has not exhaustively researched on the distinctive characteristics if any, of the original landowners and the newer migrants and specifically their perception towards land use. This could be an area of further research.

- (ii) The study has not adequately covered the environmental perspectives of urban sprawl and the consequences of unplanned peri-urban neighborhoods on natural resources such as water bodies, effects of farm chemicals and wastes on the natural systems. This is an area that is ripe for research on the Kiambu-Nairobi corridor and other peri-urban fringes in Kenya.
  
- (iii) There is need for further research on the social, cultural and economic identity of the per-urban fringes compared to the urban core. For example one could ask questions such as; whether this the identity of the African city?

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**APPENDICES**

**APPENDIX I**

**UNIVERSITY OF NAIROBI  
DEPARTMENT OF URBAN AND REGIONAL PLANNING**

**QUESTIONNAIRE FOR HOUSEHOLD**

**Declaration:** This information is confidential and it will be used purely for academic purposes only.

Constituency: Kiambaa/Kasarani

Date of interview..... Questionnaire Number.....  
 Name of interviewer..... Division.....  
 Location..... Sub-location.....  
 L.R. No. ....

**Respondent's information**

- (i) Name of Respondent (Optional) .....
- (ii) Age .....
- (iii) Sex (1) Male (2) Female
- (iv) Marital Status
  - a) Married (b) Single (c) Divorced/ Separated (d) Widowed/ Widower (e) other

**Social characteristics of the members of the household**

Sex	Age	At School	Highest Level of education	Place of birth	Year settled in this place.	Previous place of residence	Main occupation	Location of occupation	Other occupation	Location of other occupation

- v) Reasons for settling in this area (Tick where necessary)
  - a) To work
  - b) Purchased land
  - c) Inherited land
  - d) To do business
  - e) Other (specify)

vi) Are there members of the household who live in this neighbourhood

a) Yes

b) No

If yes, fill in the table below.

Area migrated from	Reason	Relation to the respondent
a)		
b)		
c)		
d)		

### Livelihoods

#### Land:

(i) Do you own land on which the household resides?.....

a) Yes

b) No

ii) If yes, how did you acquire the land? .....

a) Inheritance

b) Allocation by local authority

c) Cooperative shares

d) Land Buying Company

e) Others (Specify)

(iii) Do you have a document of ownership?

a) Yes

b) No

(iv) If no, how much does it cost to rent the piece of land you reside in?  
Kshs.....

(v) What is the size of the land (in Acres)

a) 0.25-0.5

b) 0.5-0.75

c) 0.75-1.0

d) 1.0-2.0

e) others specify

(vi) Has your land been subdivided?

a) Yes

b) No

(vii) If yes, for what reasons fill in the table below

(a) family inheritance

(b) sale

(c) Other (specify)

(viii) Have you changed the use of the land?

a) Yes

b) No

(xi) If yes, for what use has the land changed?

- (a) residential
- (b) commercial
- (c) institutional
- (d) industrial
- (e) other (specify)

Housing:

(i) Do you own the house you live in?

a) Yes

b) No

(ii) If yes, does your household occupy the whole structure?

(iii) If no, how much rent do you pay? Kshs.....

(iv) Type of house(s) on the land (tick as appropriate)

Masionettes	
Bungalow	
Semi permanent	
Flats	
Others (specify)	

(v) Housing conditions.

	Number of rooms	Walls	Floor	Roof	Conditions
Main house					
Other houses on the land					
Other structures					

**Condition Code:** 1\_ Excellent

2\_ Good

3\_ Fair

4\_ Poor

Other income activities:

i) What is your main source of income?

- a) Employment
- b) House rent
- c) Animal rearing
- d) Crop farming
- d) Small business
- e) Other specify

**Infrastructure services and facilities**

Health:

(i) Where do you seek medical treatment?

- a) Within the neighbourhood
- b) Kiambu
- c) Nairobi

ii) Who are the provider of the health facility that you frequent

- a) Public
- b) Private

(iii) In your opinion, are the health services and facilities adequate?

- a) Adequate
- b) Inadequate

iii) What challenges do you face in accessing and using health facilities in this area?

Challenge	Suggested solution
a)	
b)	
c)	
d)	

Education:

(i) Are your children in private or public institutions?

- a) Public
- b) Private

(ii) Where is the location of the education facility that you child(ren) attend

- a) Within the neighbourhood
- b) Kiambu
- c) Nairobi

(iii) In your opinion, are the education services adequate?

- a) Adequate
- b) Inadequate

(iv) What challenges do you face in accessing and using education facilities and services in the area?

Challenges	Suggested solution
a)	
b)	
c)	
d)	

Water:

(i) Where do you get water for domestic use?

Source	Tick where appropriate	Provider
Rain		
Piped water		
River/stream		



Well		
Borehole		
Natural springs		
Other (specify)		

(iii) In your opinion, is the water supply adequate for your uses?

- a) Adequate
- b) Inadequate

(ii) What challenges do you encounter in accessing water supplies in this area?

Challenges	Suggested solution
a)	
b)	

Transport:

(i) What mode for transport does the household use to access services?

- (a) Road
- (b) Rail
- (c) Non-motorized
- (d) Other (specify)
- (ii) Give reasons for your answer in (i) above
- a) Cheap
- b) Safer
- c) Available
- d) Others (specify)

(ii) Do you use public or private transport?

- a) Public
- b) Private

(iii) What is the condition of the roads in the neighbourhood

Type of road	Poor	Bad	Fair	Good
All weather roads				
Gravel road				
Earth road				

Sanitation:

i) How do you dispose solid waste in your household?

Method	Tick where appropriate
Bury	
Burn	
Garbage collection	
Other (specify)	

(ii) How do you dispose human waste in your household?

- a) Water borne Toilets  c) Other (specify)   
 b) Pit latrines

Energy:

What type for energy do you use for domestic purposes?

Type of energy	Source	For cooking	For lighting
Electricity			
Kerosene			
Charcoal			
Gas			
Firewood			
Other (specify)			

Communication:

(i) Which of the following means do you use for communication?

- (a) Land line (b) Cell phones (c) Telephone booth (d) Postal services (e) Barazas (f) Internet

(ii) How do you obtain information/ news?

- (a) Television (b) Newspaper (c) Radio (d) Internet (e) Other (specify)

Planning:

(i) Are you aware of any regulations that govern the use of land in this neighbourhood?

- a) Yes b) No

ii) If yes which ones .....

(iii) Have you followed any of the regulations in the development of this land?

a) If yes how .....

b) If no, why

iv) Are there any challenges that you face in trying to adhere to these regulations

a) If yes, which ones .....

b) How do you think these challenges can be addressed?

iv) In your opinion do you think the planning authorities have played the role of planning effectively?

a) If yes, how .....

b) If no, how do you think residents may assist in proper planning of the neighbourhood

**Thank You for your Time  
APPENDIX II**

**UNIVERSITY OF NAIROBI**

**DEPARTMENT OF URBAN AND REGIONAL PLANNING**

**Declaration: The information collected through the administration of this questionnaire is confidential and will be used for academic purposes ONLY**

**QUESTIONNAIRE FOR GOVERNMENT DEPARTMENTS AND COUNTY GOVERNMENTS**

Date of interview

.....

Name of Respondent

.....

Institution .....

1. In your opinion what are some of the reasons for growth of the Nairobi-Kiambu interface/or council outwards into the hitherto rural areas?

.....  
.....

2. Given this growth (above) what is the vision/policy of the government in terms of incorporation into the city physical fabric?

.....  
.....

3. What are the city regulations and practices on land use/housing development/ planning for the rural –urban fringe?

.....  
.....

4. Is there any conflicts between the city government and national government policies and regulations on planning for the rural-urban fringes?

.....  
.....

5. a) Does the council have a current city development /master plan that covers the Kiambu-Nairobi corridor? If yes, when was it prepared?

.....  
.....

b) If no, what instrument (s) is guiding development in these areas?

.....  
.....

6. What have been the main challenges in the implementation of the rural-urban fringes?

.....  
.....

7 In your opinion, what should be done to ensure sustainable land uses in the rural-urban fringe?

.....  
.....

8. Except for planning what other mandate/responsibilities does the council have in the management of these areas?

.....  
.....

9. Finally, how do you envisage the future planning for the Nairobi-Kiambu corridor within the provisions of the Nairobi Metropolitan Bill?

.....  
.....

**Thank You Very Much for your time.**

**APPENDIX III**

**UNIVERSITY OF NAIROBI**

**DEPARTMENT OF URBAN AND REGIONAL PLANNING**

**Declaration: The information collected through the administration of this questionnaire is confidential and will be used for academic purposes ONLY**

**QUESTIONNAIRE FOR LAND BUYING COMPANIES**

Date of interview

.....

Name of Respondent

.....

Institution

.....

1. In your opinion what are the reasons for the growth of the Nairobi\_Kiambu fringes into the hitherto rural areas?

.....  
.....

2. What was the vision/policy of the company during the time of purchase and subdivision and conversion of land and allocation to members?

.....  
.....

3. When was the land purchased, planned allocated to members and by whom?

.....  
.....

4. What was the previous user of the land and how much of this land is remaining?

.....  
.....

5. Is there any conflict between the current land uses and the city/council regulations on planning for this area?

.....  
.....

6. Did or does the company have regulations/conditions for allocation and development of land uses?

Yes..... No.....

a) If yes, when were they prepared?

.....  
.....

b) b) If No, what instrument (s) is guiding development in this area?

.....  
.....

7. What have been the main challenges in the following the guidelines or conditions for development?

.....  
.....

8. In your opinion, what should be done to ensure sustainable land uses in the rural-urban fringe?

.....  
.....

9. Except for planning what other mandate/responsibilities does the council have in the management of these areas?

.....  
.....

10 Do you have any relationship with the council or government planning institutions? If yes, in what ways?

.....  
.....

If no, why?

.....  
.....

11. Finally, how do you envisage the future planning for the Nairob-Kiambu fringe within the provisions of the Nairobi Metropolitan Bill?

.....  
.....

**Thank You Very Much For your Time**

**APPENDIX IV**

**UNIVERSITY OF NAIROBI**

**DEPARTMENT OF URBAN AND REGIONAL PLANNING**

**Declaration: The information collected through the administration of this questionnaire is confidential and will be used for academic purposes ONLY**

**QUESTIONNAIRE FOR ENTERPRISES**

Name of interviewer.....

Date of interview..... Questionnaire Number.....

Division..... Location.....

Sub-location.....

L.R. No. ....

Declaration: This information is confidential and it will be used purely for academic purposes only.

Respondent's information

1. Name of Respondent (Optional) .....
2. Sex (1) Male (2) Female
3. Marital Status a) Married (b) Single (c) Divorced/ Separated (d) Widowed/ Widower (e) other
4. Type of enterprise
  - i) Manufacturing
  - ii) Service
5. For how long have you operated your business
  - i) 0-1 year
  - ii) 2-5years
  - iii) 5-10 years
  - iv) 10-15 years

v) Over 15 years

6. Do you have any other source of income apart from this business?

Yes \_\_\_\_\_

No \_\_\_\_\_

If yes what is your source of income?

.....  
.....

7. Premises ownership

i) fully owned by proprietor

ii) Rented

iii) Government /council land

iv) Others (specify)

8. Why did you locate your business in this area?

.....  
.....

9. When did you settle in this area.?

10. Is the land on which your business is located planned for this type of business?

Yes .....

No .....

11. If no what was the land planned for?

.....  
.....

12. Are you aware of any development regulations that you need to adhere to?

Yes.....

No.....

13. If yes, which ones?

14. Among these regulations which ones have you adhered to in setting up your business?



15. DO you think these regulations have any impacts on the performance of your business?

Yes.....

No.....

16. If yes, how?

17. If no, why not?

18. What challenges do you face in your business? (in order of importance)

.....  
.....

19. What roles do think the following should play to address the above challenges?

i) Government

.....  
.....

iii) Local authority

.....  
.....

iv) Land owners

.....  
.....

v) Business people

.....  
.....

20. Any other comments ?

.....  
.....

**Thank You for Your Time**