

Exploring Land Development Dynamics in Rural-Urban Fringes: A Reflection on Why Agriculture is Being Squeezed Out by Urban Land Uses in the Nairobi Rural-Urban Fringe?

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Abstract

Rapid urban growth has led to an increasing demand for urban land. This land is not readily available within city, but in the rural–urban fringe, due to variety of factors. The conversion of land in rural–urban fringe is leading to the rapid transformations.

This article, based on qualitative research approach, explores urbanization in Nairobi rural–urban fringe as a case study, while comparing the situation with literature from other situations in developing countries. This article appreciates that urbanization in an urbanizing context such as in rural–urban fringes need be understood at different scales, that's site or situational. Separating urbanization pressures is not easy and any attempt to classify them in this article does not in any way show that they are independent of each other. The article concludes that urbanization of rural–urban fringes is contingent upon many factors, primary of which is population increase through natural growth and immigration. Population growth is thus a necessary condition for the urbanization in rural–urban fringe. The process that produces population growth is however a subset of the processes that produces urbanization of rural–urban fringe.

Keywords

Drivers, urbanisation, rural–urban fringe, land development, land

I. Introduction

Urban growth process is one of the most important dimensions of economic, social and physical change. Therefore in face of rapid changes, it is a truism to say that the planet's future is an urban one (Pieterse 2008; Rakodi 1997: 1; Simon 2007: 301). Rapid urban population growth has led not only to an increasing demand for urban land, particularly for housing, but also for other various urban uses (Aguilar and Ward 2003). In many countries, the increasing demand for land is affecting rural–urban fringes, where urban expansion is already encroaching into the agricultural lands and small villages (Thuo 2010a).

Maconachie (2007), Masuda and Gavin (2008), Mbiba and Huchzermeyer (2002), Briggs and Yeboah (2001), Tacoli (1999, 1998a, 1998b) and Browder et al. (1995) indicate that the conversion of agricultural land to urban uses is leading to rapid transformations in agricultural production, spatial structure, social structure, land ownership and land markets in the rural–urban fringe. This article argues that the dynamics at work in the rural–urban fringe have not been fully captured, as they are often not visible until physical land conversion actually begins or takes place. It is at the rural–urban fringe however that we can best understand the process of today's urbanization (especially in developing countries), land conversions and development, as well as the evolving conflicts over land uses. It is also in the fringe where there is an opportunity to manage urban growth patterns before they get imprinted on the landscape.

Despite the importance of the rural–urban fringe, Maconachie (2007), Simon et al. (2006: 7), Mbiba and Huchzermeyer (2002) and Audirac (1999) indicated that the area is still less understood especially in the context of developing countries. Among the reasons given for the relatively low number of studies of the rural–urban fringe is the divisions of academic disciplines that focus centrally on areas that have either rural or urban issues at their heart. This rural/urban dichotomy does not promote a comprehensive discourse about the development occurring in the area where urban and rural areas meet. Also contributing to the lower number of studies is the conceptual and operational separation of urban and rural areas in planning theory and practice (Evans and Mabbit 1997). Additionally, the concept of urban sprawl, which seeks to explain the rural–urban fringe areas, has also been cited as obscuring the complexity of cultural, environmental, economic and social forces at work in this space (Audirac 1999: 7).

According to Maconachie (2007) and McGregor et al. (2006: 317), managing urban growth is complex and conflict ridden. It is particularly so in developing nations such as Kenya, where the legal and policy frameworks of land use and ownership are weak. As a result land development has occurred in a haphazard manner resulting in urban sprawl. The consequence is non-optimal use of land within the planned/controlled areas (Mundia and Aniya 2006: 106).

Mundia and Aniya (2006: 97; 2005: 2832) indicated that there is widespread land development sprawl within Nairobi city. The sprawling of residential developments is illustrated by land use images (see Figures 1, 2 and 3), that show land

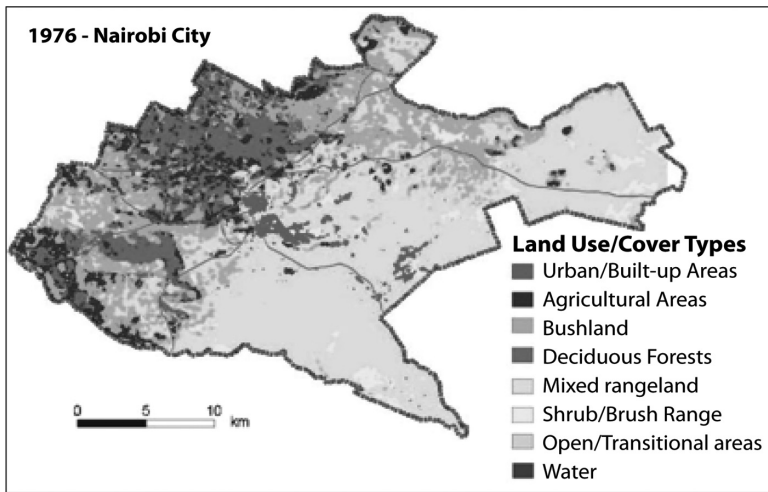


Figure 1. Classified Land Use/Cover Map of Nairobi City in 1976

Source: Mundia and Aniya (2006: 104).

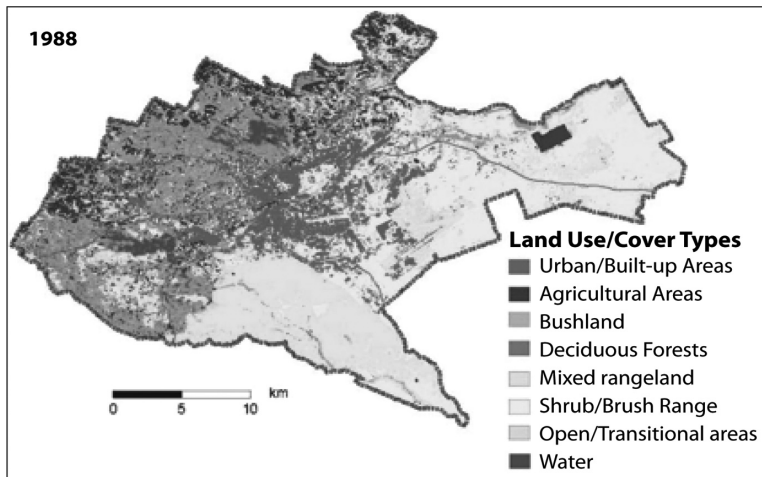


Figure 2. Classified Land use/cover map of Nairobi City in 1988

Source: Mundia and Aniya (2006, 104).

use changes in the period between 1976 and 2000. These images indicate sprawling of the built up area, with most of the land being open or under squatter farming, which is common within Nairobi (see Memon and Lee-Smith (1993).

Mundia and Aniya (2005, 2006) further indicated that there are residential land developments taking place beyond the 1964 city boundaries into the previously agricultural areas (rural–urban fringe areas), though their study never delved into

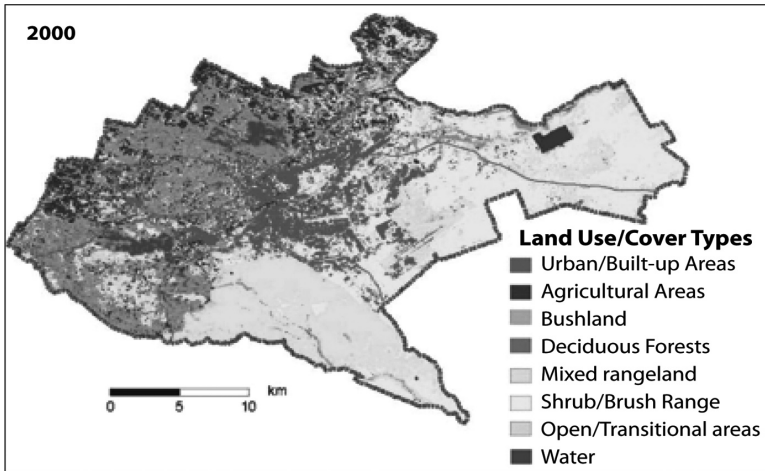


Figure 3. Classified Land use/cover map of Nairobi City in 2000

Source: Mundia and Aniya (2006: 104).

the study of land use in those areas, apart from mentioning that they are taking place. The dynamics of land use developments in rural–urban fringe is the key interest of this article.

The article was based on a research carried out at Town Council of Karuri (hereafter referred as TCK) (see Figure 4), located in Kiambu County, as representing Nairobi rural–urban fringe (henceforth to be referred as Nairobi fringe).

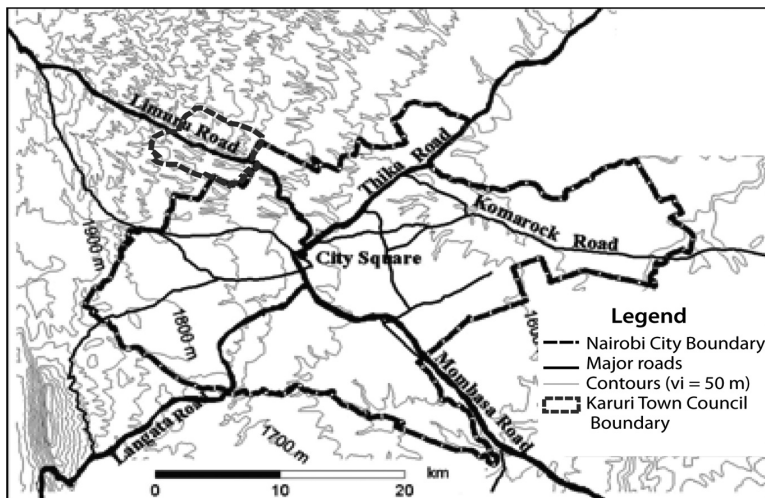


Figure 4. Showing the Study Area in the Context of Nairobi City

Source: Modified from Mundia and Aniya (2006: 98).

2. An Overview of Case Study Area

The Kiambu County lies between latitudes $0^{\circ}52'$ and $1^{\circ} 20'$ South of Equator and longitudes $36^{\circ} 54'$ and $36^{\circ} 85'$ East. It is split into seven divisions namely Kiambaa, Limuru, Ndeiya, Githunguri, Kikuyu, Lari and Kiambu Municipality. TCK is located within Kiambaa Division, with an area of 91.1km^2 and 1,375 persons¹ per km^2 (Government of Kenya 2005a, 2005b).

Kiambu County is divided into four broad topographical regions (see Table 1). TCK falls between the lower highland and upper midland regions. Altitudes range from 1,400 m in the southeast to 2,400 m in the North. Rainfall in this area is bimodal with the two peaks in April/May and October/November (Makokha et al. 2001: 4). Average rainfall is 1,100 mm per year.

TCK usually experiences moderate temperatures: maximum mean annual temperatures range between 22°C and 26°C in the months of January and February, with minimum mean annual temperatures ranging from 10°C to 14°C in the months of June and July. Wide variations in altitude, rainfall and temperature between the highland and lowland areas combined with differences in the underlying geology give rise to a variety of soil types. In general, soils are highly fertile and well drained ranging from deep grey/red to dark brown friable clay. In addition, about 75 per cent of the soils are red soils, which is ideal for farming. The remaining 25 per cent is clay which is not suitable for farming. Ridge tops are covered with red friable clays while the lower, flatter and poorly drained areas have yellow to brown or yellow to red friable clays of acidic humic top soils (Government of Kenya 1989: 5).

TCK is within natural water catchment areas of the Aberdare ranges and the Kikuyu escarpment. There are both surface and sub-surface water sources in the form of numerous streams and ground water. Although the area has a number of permanent streams, 55 per cent of the local population do not have access to clean water. This population depends on raw water from rivers and shallow wells, most of which are polluted due to agricultural activities (use of fertilizers, pesticides and acaricides) and from residential solid wastes and waste water (Gitau et al. 2009; Government of Kenya 2005a).

It is estimated that 25.08 per cent of the population is poor (Government of Kenya 2005a). Various factors indicate incidences of poverty. One of the indicators

Table 1. Showing Topographical Zones

Zone	Physical characteristics	Area covered
Upper Highland	Highly dissected ranges	Parts of Githunguri, Lari and Kikuyu
Lower Highland	Medium spaced parallel ridges	Part of Kiambaa
Upper Midland	Wide spaced parallel ridges	Kiambaa, Githunguri, Kikuyu and Limuru
Lower Midland	Generally level with fewer ranges	Eastern part of Githunguri, and southern part of Kikuyu

Source: Government of Kenya (2005a, 1997).

is access to education and adequacy of educational facilities. Poverty is attributed to the school dropout rate of which is averaged at 30 per cent (Government of Kenya 2005a, 2005b). However, high dropout rates are also attributed to the child labour in the tea and coffee farms. Agriculture is the main source of employment and income. The combination of good soils, suitable climate, well-developed infrastructure and the proximity to the country's main market, Nairobi City, makes the TCK one of intensely farmed region in the country. Vegetable cultivation and dairy production (through zero-grazing) are the most widely practiced farming activities because of the small farm sizes and the high demand for the produce in the City. The major cash crops are coffee, tea, pyrethrum, horticulture and floriculture. These are grown on small and large scale. Landholdings for small scale farming were identified as early as 1984 as being too small to be economically viable for farming as a sole source of income for many households. The size of the plots ranged from one sixteenth to one eighth of a hectare, the consequence of which is a 'quasi-urban' settlement with no economic base (Gitau et al. 2009; Government of Kenya 2005b, 2002).

In terms of governance, local authorities in Kenya are corporate bodies established by the Act of Parliament (Local Government Act Cap 265). The Act mandates them to plan and control development activities and enforces planning regulations, by-laws and building codes. They are also supposed to provide services to various land uses and collect levies from various land use activities (as in the case of TCK).

The organizational structure of TCK consists of two arms, the political and the executive or technical arm. The political arm is headed by the chairperson who is an elected or a nominated councillor. Under the chairperson there is the vice-chairperson also a councillor. The chairperson is the head of the full council which is the final policy making committee of the council. The Town Clerk (who is deputized by the Deputy Town Clerk) is appointed by the Public Service Commission heads the executive or technical arm on a full time basis. The TCK also has various departments. There is no professional Physical planner² employed by TCK and they rely on the District Physical Planner who also covers other rural and urban local authorities within the Kiambu County.

3. Conceptual Foundation

Conceptually, this article is premised on an understanding that, no single theory can provide a full explanation on how different influences, factors and linkages of rural–urban fringe urbanization can be established or understood. Therefore, an approach which stretches across the twin poles of structure and agency is needed. It thus follows that to understand various dimensions of this urbanization and the links among them, a conceptual framework that focuses on neo-classical, political economy and structure and agency theoretical perspectives is adopted. Neo-classical and political economy theoretical perspectives could not provide insights

into localized/individualized aspects of urbanization such as the agency of the landholders, therefore in developing my argument, I further drew insights from Giddens' theory of structuration (Giddens 1984) to conceptualize how an actors' agency interacts with structural determinants of change to shape the conditions for urbanization at the local level.

Insights from an actor-oriented approach (Long and Long 1992) were also borrowed to augment the idea of how people make choices and how those choices lead to the shift of the structures and activities of various institutions over time. It is the actions of the actors that illustrate how they exercise their agency within existing structures to address the circumstances that local and extra-local conditions are creating in their areas.

This article examines various conditions and drivers that influence urbanization of the Nairobi fringe. It is based on the assertion that, to understand why urbanization is taking place in the Nairobi fringe, it is necessary to focus not just on economic pressures on the land market, but also on the social, cultural, political and environmental changes that the proximity to the City and 'new' land uses are bringing to an area like Nairobi fringe (which is 'supposedly' agricultural). This article also recognizes that land use change in an urbanizing context such as in the Nairobi fringe can be understood at different scales. The scales are related to site or situational aspects. According to Bentinck (2000: 96), 'site refers to the physical and cultural characteristics, and attributes of a place...' while situation refers to '...the external relations of a locale.'

This article combines both attributes of land use conversion that are as a result of site and situational changes, while appreciating that it is hard to draw a line between what comes first or what leads to what (see Figure 5). Furthermore, it is not easy to separate these forces and any attempt here to classify them into various groups (sub-sections) is inherently problematic. In structuring the discussion in the sub-sections below, the article attempts to answer the following question 'Why is agriculture being squeezed out by non-agricultural land uses in the Nairobi fringe?'

4. Methodology for Obtaining Information

The sub-location is the lowest, formal administrative unit in Kenya. Each sub-location may consist of one to four villages with informal boundaries, all villages working together as a community. Village boundaries are defined using a variety of criteria, including topographical features. It is possible for village boundaries to cross administrative boundaries (Makokha et al. 2001: 4). Secondary data, listing villages or describing their boundaries is not generally available in Kenya. Social-cultural factors were found to be more important in defining the boundaries of the villages in my study (see Figure 6). Communities regarded themselves as belonging to one of these villages (areas), with various community activities being organized and functioning at this level. It is within these villages (areas) where research was conducted.

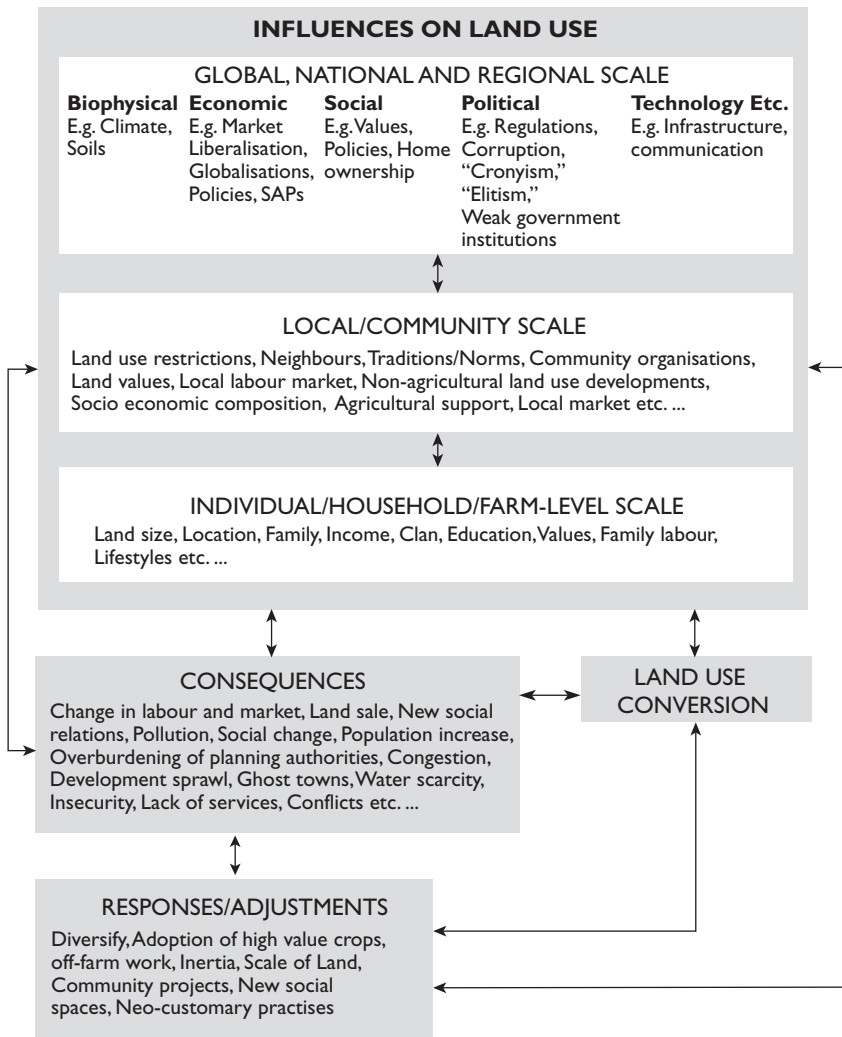


Figure 5. Schematic Diagram of the Complex Links in Land Conversion in the Nairobi Fringe

Source: Adapted from Smithers and Johnson (2004).

The research adopted a qualitative approach (Thuo 2013) that focused on TCK as a case study. The fieldwork commenced in March 2008, however the contact with my research informant continued up to March 2010. A mixed methodology was used in data collection. This allowed me to use different methods to gather data so as to look at research issues from different angles.

During the early stages of my research process, I concentrated on reviewing the literature on urbanization in general and specifically on rural–urban fringes.

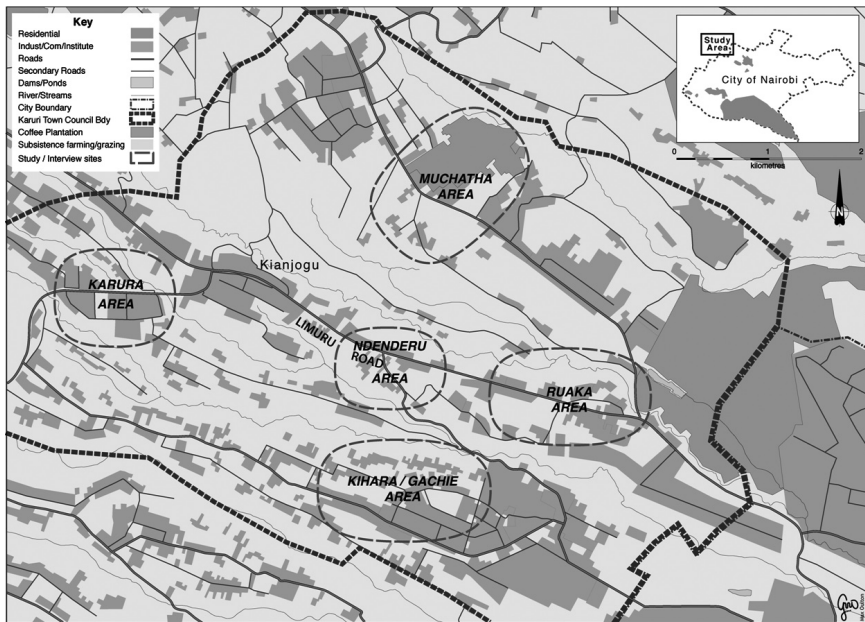


Figure 6. Villages/Areas where Interviews and Observations were made

Source: Thuo 2010b.

Review of secondary data in the form of policy documents, plans, grey literature, newspapers³ and blogs was also done. Theoretical reviews were also done to assist in the development of a conceptual framework and to situate the specific empirical findings/data (field work data) within a broader scholarly and historical framework. An ethnographic approach and other primary data collection methods provided narratives which enlightened me on day-to-day aspects of my informants in relation to land use in the Nairobi fringe. Multiple field visits and interviews provided me with a feedback mechanism to test and link themes, ideas and issues as they emerged from field encounters. I also incorporated focus groups' discussions, personal narratives, in-depth interviews (with key informant), participants'/communicative observations, photographs, autobiography and document analyses for the purpose of addressing my research aims.

5. Locating Drivers and Conditions Influencing Land Use in the Nairobi Fringe

On the surface of the above question it may seem obvious and straightforward that this article sets to identify various factors leading to land use changes in the Nairobi fringe. However, as this article notes, different aspects of land use interact in a contingent and recursive manner in the conversion of agricultural

land to non-agricultural uses. It thus follows that, although this article focuses on a seemingly parochial case study based on a micro-scale, it shows that there are factors at macro scale that influence land use activities in the Nairobi fringe.

5.1 Governance, Planning and Land Use

Lack of affordable housing due to high costs of land and non-provision of public housing in Nairobi City is making people search for housing in the rural-urban fringe. This can partly be attributed to a colonial land ownership legacy that has not changed much since independence. Also, the City inherited colonial building codes, standards and regulations which were constraining and meant to restrict native Africans from permanently staying there. These factors created additional bureaucratic obstacles for those wishing to build formal houses particularly in incremental ways and using non-prescribed building materials within the City. In regard to land in the City, there are also problems in ascertaining ownership, particularly where land lease titles have elapsed and the political elite have taken advantage of the situation to illegally allocate themselves and/or their cronies land which they have later sold to people using unofficial channels. The outcomes of these activities have resulted in a lack of transparency in land transactions within the City, further scaring potential homeowners away.

The colonial land ownership within the City contributed to this scenario [land scarcity for housing] as few individuals and institutions owned huge tracts of land within the City. After independence these tracts were bought by a few elites, mostly for speculation purposes [and] this locked development land from the majority of native Kenyans who had to squat on flood plains or deferred land within City boundaries [and] those who wanted decent homes had to move out of the city boundaries or buy houses within the City through mortgages [an option only available to a few people]. (From an interview with District Physical Planning Officer working for the Kenya Government in Kiambu County).

Besides land transactions being under the control of a restricted set of actors, there is also little or no control by local authorities when it comes to complying with urban planning requirements. This observation concurs with Pacione's (2009: 120) comments on African urbanization that 'more of the population have moved to the urban peripheries where ...official planning regulations are rarely enforced.' The majority of the land in the Nairobi fringe is classified as agricultural and thus covered under sub-division schemes programme where the role of the planning authority is just advisory. This is in contrast to land use planning compliance requirements in the City, where (in absence of explicit urbanization and housing policy and the vagueness of the land market) corruption and other non-civil

behaviours (among the council officials and land dealers) take place (see Figure 5). Such situations of policy, institutional and market failures align with Potts' (2004: 349) observations that '...social and political relations (whom you 'knew') could often affect access to urban (and rural) goods and services'.

SATURDAY NATION

Saturday August 16, 2008

High cost of land worries Raila

The high cost of land is inhibitive for investors in the country, Prime Minister Raila Odinga has said.

The PM, who on Tuesday led a round-table discussion between the private sector and the Government, said this could jeopardise Kenya's plans.

"Can we succeed if an investor has to contend with an acre of land costing a quarter billion shillings? The investor, who could very well be a Kenyan, might decide to venture into one of our neighbouring countries," said Mr Odinga.

.. On the issue of land, Mr Odinga, said that, for instance, the piece of land between the Grand Regency Hotel and the General Post Office in Nairobi, had been sold for Sh1.4 billion.

He wondered what investment could give a rate of return high enough to recover the cost of the land.

The PM attributed the high costs to speculators who hold onto their plots, anticipating making a kill.

Newspaper excerpt 1: A section of the local newspaper expressing Prime Minister's opinion on the cost of land

Source: Saturday Nation, 16 August 2008.

In the City, you need to know 'mwenyeji' (this is someone who has been living there for a long time) who can tell you where to get the real owner of the plot on sale... Even these 'wenyenji' [plural of mwenyeji] need to be trustworthy and not 'brokers' (intermediaries)... These days even your own friend can get you into problems. [And] even when you do the search⁴ at the Ministry of Lands Office, the officers there work together with criminals and you will end up losing your money. (From an interview with a resident who has bought a plot and constructed a house in TCK).

Satterthwaite (2006: 669) argued that '[i]t is not rapid urbanisation but the lack of attention to developing urban governance structures and economic stagnation that underpins most urban problems.' Looking at his argument with reference to the Nairobi fringe, urbanization is taking place in a situation of legal and policy ambiguity because of lack of explicit land and urbanization policies for the whole of Kenya. This has led to legal and jurisdictional overlaps among institutions/departments involved in land use development control. This is also made worse by weak local authorities in the Nairobi fringe (which in most cases were initially designed to cater for rural and agricultural interests). These local authorities lack capacity and capabilities for managing rapid land developments taking place in the fringe

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which has resulted in delays in granting approvals to developers. Other than lack of capacity to enforce development control, there is also lack of information on which land use planning and control can be based. In this case, there is no planning framework to which decisions on plan approvals can be referenced. This has created apathy among Planning Officers who have to rely on the goodwill of the developers to 'do good' in the implementation of their proposed land development activities.

Multiple government institutions/departments (with separate goals and mandates on land) coupled with a lack of planning guidelines (such as Local Physical Development Plans) have created a jurisdictional vacuum (UN-Habitat 2009: 7). This vacuum is being misused, especially by Land Board members, to grant approvals for the subdivision of agricultural land (though knowing it is meant for residential purposes) without seeking the advice from the Physical Planning Office. The ambiguities in responsibilities and jurisdiction are also promoting corruption among officers involved in land development approvals (see also similar observations by Simon (2008: 11). Even where attempts have been made to provide planning guidelines, there has been poor involvement of appropriate agencies and stakeholders thus denying such guidelines the legitimacy and widespread acceptance by the majority of the actors taking part in land use conversions. There is also political interference in land use planning and control which reduces effectiveness and operations of the Physical Planning Office in enforcing land use development control within the Nairobi.

The Kenyan government does not have a comprehensive policy on urbanization [and this] has made urban development occur in uncoordinated way leading to uncontrolled urban growth...Also lacking is a policy on housing; the state has done little towards guiding the way its planning is achieved... This has led to serious shortages of decent and affordable houses within the City. (From an interview with a private practising Physical Planner).

For instance, Town Council of Karuri with a population of more than 100,000 people has less than 10 workers with only two enforcement officers, no (physical) planner or civil engineer...Due to these limitations policing, enforcement and monitoring of land use development activities is limited or non-existing and mostly it is relaxed to allow 'harmonious working relations' with the developers. (From an interview with the Town Clerk, Town Council of Karuri).

Commenting on land issues in the peri-urban fringe, Simon (2008: 11) noted that:

... as is common in Africa and South and Southeast Asia, peri-urban land is held under some form of communal tenure or state ownership, the chief, elders, village council, or local officials will usually preside over approaches by outsiders to acquire land.

In the Nairobi fringe, the control of land use is constrained by the existence of dual legal systems; customary and formal land ownership systems co-exist. Customary land use practices, such as sub-division of land for inheritance among family members, are predominant (see Figure 5). With time this has led to fragmentation of landholdings into uneconomic parcels for agricultural purpose. When subdivision of land is done for residential family use, this leads to in situ urbanization, where some areas of the Nairobi fringe have become densely settled without significant in-migration. Commenting on in situ growth, Pacione (2009: 466) noted that ‘...*in situ* population growth is producing densities that equal or surpass the widely accepted urban threshold of 400 persons per square kilometre.’ The average population density in the Nairobi fringe is 1,275 persons per square kilometre which is more than three times Pacione’s noted threshold. The in situ (quasi) urban settlements in the Nairobi fringe are, however, without an economic base and facilities for a self-supporting urban community.

Land is progressively subdivided among sons and daughters by their parents over generations...These subdivisions are either done informally by clan elders or formally through the Ministry of Land...Since the primary purpose of these areas is agriculture, it is outside the jurisdiction domain of urban planning regulations...Most of subdivided land is usually used for construction of rental residential units especially on land along the major roads.
(From an interview with a Lecturer in urban planning at the University of Nairobi).

In some areas where family members have been subdividing their ancestral land, struggling coffee growing companies have also been subdividing their estate among the members who then sell their plots or build rental housing blocks. There are also land owners who have subdivided their land parcels to cash-in or to avoid restrictive zoning regulations that are likely to be put in place as a result of the prospective boundary extension of Nairobi City. Landholders’ awareness of the likelihood of implementation of zoning regulations once the Nairobi Metropolitan Development Authority (NMDA) comes into force was creating a condition of ‘impermanence’ for those still practicing large-scale farming in the Nairobi fringe. These observations align with Simon’s (2008: 11) argument that ‘...peri-urban cultivation becomes more difficult and precarious when likelihood of land sale and urban development increase.’ Hence, when thinking of issues at rural–urban fringes, one should be aware of the complex situations that interplay and influence the land use and planning activities of local actors.

5.2 Income, Investment, House Prices and Land Use

Commenting on urbanization in cities of the developing countries, Satterthwaite (2006: 668) argued that:

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One of the reasons why urbanisation has been so rapid in many nations (in Africa and Asia) is because it began from such a small base, as the colonial powers kept down urban population by imposing restrictions on the rights of their national populations to live and work in urban centres.

Further, according to Pacione (2009: 6) '[d]emographic changes are among the most direct influences on urbanisation and urban change... [for example] in Third World countries expectations of improved living standards draw millions of migrants into cities.' At independence, Kenya too saw an upsurge of urban population due to relaxed rural–urban migration policies. In regard to Nairobi City, in-migrants came to look for a better life and formal employment. Due to unavailability of formal jobs to employ the growing numbers of job seekers, a good number of people joined the informal employment sector. The number of those working in this sector has surpassed those in formal employment: an observation that echoes UN-Habitat (1996: 90) comment that '...the urban informal sector has become a powerful force for employment in virtually all African cities.' The informal sector has become 'a permanent part of urban economies...' (Rakodi 2006: 659) in cities such as Nairobi.

Potts (2004: 348) argued that '[i]n absence of a welfare sector, urban dwellers had to find some ways of getting by...' In the case of Nairobi City, for informal sector workers to safeguard their stay there, owning a house becomes a necessity. As Pacione (2009: 530) argued, the '...majority of low-income households in the Third World do not satisfy conventional criteria for mortgage finance... [because they are] unable to service the debt in terms of the amount and requirement for regular repayments...' Informal sector workers are also rarely eligible for mortgages because of their non-regular income and also their fear of erratic banks interest rates. Furthermore, although the option of owning a house within the City exists, it is fraught with constraints and thus makes these people fear the 'formal' strategies of owning a house. As a consequence, they find the Nairobi fringe a preferable site to build their houses. This aspect of migration from 'urban' to 'rural' in search for accommodation by City residents differs from 'return migration' (Foeken and Owuor 2008: 1979; Oucho 1996: 91, 100) where people return to their home in rural areas because of retirement, retrenchment or through governments' efforts to reduce rural–urban imbalances.

People fear losing their job thus losing their capability to house themselves... Therefore, ownership of a residential dwelling through incremental construction is a way of shielding themselves from this unforeseen insecurity for those in both informal and formal employment. (From an interview with a Works/Enforcement Officer (then acting as a planner), Town Council of Karuri).

Commenting on urbanization in Eastern and Southern Africa, Potts (2004: 329) noted that:

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...structural adjustment programmes (SAPs) and trade liberalisation have each in turn profoundly influenced urban growth patterns, urban service provision and the sectoral composition of urban economies with its vital corollaries: urban employment and income patterns.

Looking at the Kenya's situation in light of Potts' comments, Nairobi fringe study indicated that the era of SAPs and subsequent adoption of various neoliberal policies saw the liberalization of export and import markets in Kenya. These created an emergent class of business people within a short span of time. However, due to reduced donor support for the national budgetary deficit, there was reduced investment in physical, social and technical infrastructure, necessary for the stimulation and growth of industrial and manufacturing sectors. Investment in security, roads, water and electricity generation also became inadequate even more so in those areas experiencing fastest growth such as the rural–urban fringes. This meant that 'new' businesswomen and men did not have many options on which to re-invest their business proceeds. Land and urban housing became the easy (if not the only) option for them to invest their resources. The absence of public housing provision encouraged private sector investment. Nairobi fringe showed that, given the constraints that pertain to the land market and also bureaucratic systems operating within the City, the Nairobi fringe became a preferred site for these actor-investors, who bought plots of land for construction of self-built houses, rental apartments or just buying parcels of land for speculation purposes.

Here, land is not as expensive as in the city. In the City before you even dig a foundation, the council [NCC] will have already eaten almost all your money. ...Even if you have money, you don't know who the real owner of the plot is. ...Here, I paid slowly while I was constructing my house. (From an interview with a resident who has bought a plot and constructed a house in TCK).

Maconachie (2007: 12) noted that in Kano, Nigeria, livelihoods have '...become increasingly challenged by declining commodity prices, the burden of taxation and the erosion of communal labour structures, which had forced a "peasant reproduction squeeze"...' In the Nairobi fringe, there has been reduced income from agriculture which has also been occasioned by the implementation of SAPs that saw costs of inputs increasing against reduced earnings from farm products. Reduced earnings together with rising cost of labour have seriously affected the continuation of farming as an enterprise especially when faced with competition for land for residential purposes. Furthermore, reduced earnings from farming and the emergence of other land uses willing to pay high prices for the same land leads to the cost of land rising beyond the exchange price between farmer to farmer. Existing farmers are thus denied an opportunity to expand their parcels of land by buying of additional land from neighbours.

Simon (2008: 11) argued that ‘...greater proximity and accessibility to enlarged urban market can create—at least for a time until the arrival of a concrete carpet—new opportunities to intensify peri-urban agriculture and to specialise in higher value horticultural crops...’ In the Nairobi fringe, the decline in coffee farming as a result of global prices and reduced farm sizes made many farmers abandon coffee cultivation in favour of fast growing and high value crops such as fruits and vegetables and zero grazing of dairy cows to take advantage of their proximity to the City and also the ready market in their midst (see Figure 5). Compared to coffee, zero grazing and horticultural farming do not require huge parcels of land and thus can be supported on a small piece of land. This reduces the need for big parcels of land and thereby releases excess land for conversion into rental housing units or for sale for urban purposes. This is a case of a City benefitting from ‘world agrarian crisis’ (Davis 2006: 16). This observation points to the fact that the value of agriculture per se has not declined in absolute terms but landholders have taken advantage of the prevailing situation to re-orient their land production system.

We are growing spinach and kale for the local market and for Nairobi City.... No one will be foolish enough to continue growing coffee which you have to wait for so long to be paid...Even if it is promptly paid, where is the land to grow coffee? You see, we cannot continue to grow coffee here. (From an interview with a resident born in TCK).

Responses from indigenous landholding and non-landholding groups to opportunities created by in-migration (such as operating food kiosks and provision of other services along the major roads within the Nairobi fringe) have made the area attractive to City residents. These services were initially restricted to designated market centres but are currently spreading in different parts of the area, especially along major roads. Decentralized shopping and services coupled with availability of rental houses have increased the demand for land for residential housing particularly to urban workers.

High demand for land for construction of residential housing, given that land in the Nairobi fringe is more expensive than in most rural areas in the country, has encouraged ingenuity among landholders who convert portions of their land to residential housing purposes or sell whole or parts of their land in order to buy bigger but cheap parcels of land elsewhere in rural settings. Similar observations were made by Binns and Maconachie (2006: 217) in Kano where ‘... high peri-urban real estate prices have enticed farmers to liquidate their assets and purchase farmland in less expensive, more peripheral, areas.’ This tendency has further jeopardized sustainable farming in the Nairobi fringe especially having in mind that even those who chose to continue farming are negatively affected by the consequences of residential land use densification (see Figure 5). The cost of living, in terms of services and commodities, has also become relatively high for

those who still farm in the Nairobi fringe. The same cost of living impacts are also experienced by non-landholding groups such as farm labourers. These costs are attributed to the emergence of newcomers with greater purchasing power than indigenous group.

[m]ost people were uncomfortable selling pieces of their ancestral land... They believed that selling it will bring a curse unto them...Others are now 'cheating' ancestors by buying other parcels of land in other areas where land is relatively cheap. (From an interview with a resident born in TCK).

Simon (2008: 15) argued that '[a]lthough historically, PUI [peri-urban interface] residents have been relatively and/or absolutely poor, outmigration of wealthier people to construct large houses on cheaper land in the PUI often changes the socioeconomic profile of residents....' Increased population through natural growth and immigration into the Nairobi fringe is creating new income opportunities. This is more so given that newcomers are better off economically than the indigenous population and thus they have high purchasing power for services and goods. Simon et al. (2004: 243) in their study in Kumasi, Ghana observed that 'average condition of *zongo* [newcomers]...is better than [that] of the indigenes.' The new income opportunities in the Nairobi fringe are in service sectors such as repairs, the construction sector and the local market for farm produce. Newcomers are also more exposed to the 'outside world' than locals and thus contact with them is bringing in new awareness of income opportunities outside the Nairobi fringe. When these factors affect traditional farming landholders (whose earning has been on the decline), the result has been the abandonment of farming as a major source of income, thus land is likely to be sold or converted to non-farm uses (see Figure 5). Similar phenomena were cited by Binns and Maconachie in Kano, Nigeria. They reported that '[a]s a growing percentage of peri-urban land has come under the control of [urban] developers; farming has become increasingly difficult for those who continue cultivation' (2006: 217).

You cannot point at any one person who is purely in agriculture....People are either working in Nairobi City or doing casual work such as house construction in their villages or operating kiosks....The point I am making here is that people are doing many things to survive. Even those who claim to be farmers are just lying. Most of their income is coming from some rental houses in their land....They just do farming to keep themselves busy. (Comments by an agriculture officer, during a focus group discussion session in TCK).

Simon (2008: 14) further noted that '[a] common feature of peri-urban interfaces in poor countries is the diversity of livelihood activities required by individuals

and households in order to spread risk and gain adequate incomes.’ In the Nairobi fringe, there are notable transitions from traditional farming by landholders to other modes of farming or multiple livelihood activities jobs (as a result of conditions/factors making agriculture not economically viable), although not without hardships. Hardships notwithstanding, there are landholders who are able to diversify to other sources of income such as taking on a non-farm job locally or in the City to complement the dwindling earning from the traditional farming (see Figure 5). Those who quit/convert from traditional farming and/or are not able to get a foothold in non-farm jobs often experience hardships. This is because of lack of skills and capital for the adoption of new agricultural production modes and a lack of money to cater for immediate and urgent needs for food, school fees and medications, among others. This observation compares with Cambodia where 60 per cent of peasants ‘who sell their land... are forced to do so by medical debts’ (Davis 2006: 15).

(t)he coffee industry has, however, been faced with serious problems of low payments in the world market. As a result, farmers are beginning to neglect the crop so as to invest in other paying enterprises like dairy farming and horticulture. (Government of Kenya 2002: 38).

There are also farmers with loans acquired for coffee production but who have to nevertheless repay the loan even after ceasing coffee farming. During this transition period, landholders are likely to sell portions of their land to meet their immediate needs. These immediacy problems are encountered by a number of landholders in the transition period and those with loans are often the first group to sell portions of their land. Some landholders, due to their unpreparedness for this transition, have progressively cut portions of their land for sale until at the end they are left with no land at all and they become landless and/or destitute (see Figure 5; also similar observations by Simon 2008: 11).

The inability of some landholders to adapt to the changes in their surroundings by finding innovative ways of farming against dwindling land size in a semi-rural fringe calls one to question observations by Boserup (1965) and Mortimore (1993, 1975) that smallholder farmers are able to respond to pressures by use of various forms of innovation.

5.3 Labour Transformations and Land Use

Arterial roads from Nairobi City to other parts of the country pass through the Nairobi fringe. This has made many areas of the Nairobi fringe easy to access by use of public transport. This was particularly enhanced by the liberalization of the public transport sector within Nairobi and the surrounding areas, which reduced costs and time of travel for those seeking to stay outside the City. A sizeable

number of new migrants also own private cars hence finding it easy to buy land on areas away from major roads and thus leading to further land conversions.

The City has also affected labour within the Nairobi fringe in that there exists steady jobs against that of the agricultural sector which are mostly seasonal (traditionally dependent on coffee farming). In addition, the wages from non-farm employment in Nairobi City is higher compared to that from farm labour. There is also a negative attitude towards farm labour as a source of employment and livelihood. The attitude is reproduced through an education system that devalues farm jobs in favour of 'white collar' jobs, thus shunning farming jobs in favour of urban-based employment. The shunning of farm jobs has led to lack of adequate labour which consequently has raised the level of farm work wages especially during the peak seasons, such as harvesting (see Figure 5). This has further jeopardized the position of agriculture especially when faced by other land uses competing for the same land in the Nairobi fringe. The shortage of labour is also an outcome of high incidences of HIV/AIDS, which according to Pacione (2009: 564) has contributed 'to the Sub-Saharan "urban penalty"'. Due to illness, a good number of men and women who are affected and infected are not able to optimally contribute their labour in the agricultural sector (which in most cases, is labour intensive).

The research conducted by the National Aids Control Council (NACC), indicates that the most affected age group in Karuri is between 15 and 45. This is the most active age group and it provides the required labour force. (Town Council of Karuri 2007: 3).

Nairobi City is doing agriculture a lot of disservice in this area...People no longer want to work anymore...You tend your coffee, but wait for the picking time. You have to go far to get people to come and pick....The cost of picking increases and the pay for the produce is so bad...I think next year I will uproot all the trees...I will feel bad doing it but do I have an alternative? ...It [continuing in coffee farming] is like 'kuhura mai na ndiri'⁵ (grinding water using mortar and pestle). (From an interview with a resident born in TCK).

5.4 Changing Social Organisation and the Community

Social and cultural influences from the City and also from the migrants have affected smallholders' farming system in the Nairobi fringe (see Figure 5). These influences are creating intergenerational conflicts, where cooperation among household members, which is vital for the supply of non-paid family farm labour, is breaking down. Lack of non-paid family labour is making the smallholding farming system (which thrives on such input) to be economically unsustainable

for many farming households. This is due to the increased farm operation costs against dwindling income from agriculture and thus, most of such farmers prefer to subdivide sections of their land for sale or they themselves construct rental houses. There are however those who have stuck with their parcels of land due to cultural attachments and this explains why there is patchy residential development in the Nairobi fringe. The cultural attachment to family land compares with an observation in Accra, Ghana that 'land belongs to a vast family of which many are dead, few are living and countless numbers are still unborn' (Ollenu 1962 in Gough and Yankson 2006: 199) and therefore cannot be sold outright.

Because of inadequate housing in the City and an unstable urban land market, the Nairobi fringe has become an attractive site for those in need of land for housing. Here the land (which is mostly owned through the *Mbari* [clan] system) has been targeted due to its proximity to the City and the flexibility that is afforded by actors' personalized relations around land transactions (see Figure 5). Under the *Mbari* system, locally specific social norms and systems of trust operate in effecting land sales and transfers. These local practices are based on locally embedded systems and are widely regarded and accepted by community members and even by non-community members.

As a result of widespread acceptance of local land transaction practices and their personalized nature, land buyers are able to acquire land through instalments and the incremental building of the houses is undertaken as new land buyers pay the remaining instalments. Imperfect land markets within the City have thus become a driving force in shaping land use in the Nairobi fringe as it compels actors to adopt strategies that are outside formal mechanisms to obtain land for housing. Informal mechanisms are thus more trusted and reliable than formal regulatory and planning systems that are operating in a situation of market uncertainties and, policy and legal ambiguities. While commenting on urban land issues on Anglophone Sub-Saharan Africa, Rakodi (2005: 5) noted that such trust exists because land transactions are '...witnessed (by local leaders, neighbours, etc) and the validity of [such transactions] is generally respected by other actors in land delivery process...'

Further, commenting on the impact of urbanization on kinship networks and other traditional forms of social support in Africa, Rakodi (2005: 50) noted that:

Urbanisation has commonly alarmed social commentators, because of its perceived effects...It is often asserted that social organisations such as kinship networks are breaking down, harming the socialisation of children into prevailing social norms and family support networks.

Entry of newcomers who are individual-oriented rather than communal-oriented has complicated local settings in the Nairobi fringe. They are bringing new challenges to existing social and institutional structures: typically crime and prostitution (see Figure 5). Newcomers also have little attachment to customary values which discourage individual goal seeking in favour of communal pursuits.

Non-alignment to customary norms allows newcomers to treat land (which is cultural and symbolic good to the indigenous group) like any other commodity that can be traded in the market. The newcomers' values are slowly being transmitted to the indigenous group (especially the youths) who see them as representing a more progressive system than their own. This is leading to breakdown in social relations and cooperation in a hitherto closely-knit semi-rural society. Once this happens young people lose foothold in their families which makes them vulnerable to vices such as crime and prostitution, which lead to early deaths and high incidences of HIV/AIDS.

More and more people are coming to stay in this area, either as home owners or tenants....These people owe no allegiance to existing communal or social norms as practiced by our people [the indigenous residents]....For instance, they do not participate in communal activities such as burials, clan gatherings or social investment activities. (From an interview with a Community Leader in TCK).

Furthermore, other than losing family connections, young people have no attachment to ancestral land as a source of employment through agriculture and thus increased incidences of heirs (though many are not adequately prepared to fully participate in urban economy) selling their inherited parcels of land once parents die. In this way, agricultural land is replaced through subdivision for residential land purposes.

The presence of non-indigenous groups and also the need to accommodate changes in the Nairobi fringe has led to emergence of 'new' spaces of interaction and groups which are not tied to customary norms of the people, such as faith- and other interest-based groups (see Figure 5). Although this is a positive move especially in mobilization of local resources for community good, it is leading to a breakdown of social ties, customary institutions and norms. These institutions, ties and norms are necessary in safeguarding family and communal land and resources in it. Their breakage is thus leading to rapidly increasing land conversions in the area. Besides the 'new' initiatives (which are meant to accommodate changes and the entrance of new group of residents) are serving as awareness forums for the young people of circumstances that are unfolding in their surroundings. This awareness to a large extent serves to prepare their participation in a changing environment and hence further undermining their attachment to land for farming.

...also allowed some to build new and extended social, economic, political and cultural networks with groups of people who in most cases are better educated, economically secure and better exposed to the 'outside' world. (From an interview with a practising private Physical Planner in TCK).

Pacione (2009: 118) argued that '[a]s the national and urban economies stagnate in absolute terms and urban population continues to grow...the resources needed for roads, sewers, water systems, schools, housing and hospitals cannot keep up with demand.' In the Nairobi fringe, the lack of involvement of planning authorities in the fringe land development and their poor revenue bases has led to underinvestment in physical, social and technical infrastructure. Among the missing social infrastructure is provision of security by the Police Department. This, together with other problems, has led to increased crime. Increase in crime without an assurance of police protection has contributed to community-led initiatives in provision of security (see Figure 5). This is done either through vigilante groups or engagement of formal and informal security guards. These individual and communal efforts to enhance security in the Nairobi fringe have to some extent led to the removal of the 'insecurity' tag which has long been synonymous with the Nairobi fringe. This can partly explain the upsurge in demand for residential housing in the fringe and thus potentially further jeopardizing the position of agriculture in relation to land. This aligns with what Giddens (1984: 14) referred to 'consequences...unintended by those who engage in those activities.'

These areas have not benefited with improved service and infrastructure.... No new police stations. No new government officers....In such a situation we have elders whom we work with in various villages....In cases of petty issues we encourage them (residents) to resolve them....Some of these cases involve domestic quarrels, issues to do with land boundaries and waste disposal....If one doesn't agree with the decision of the elders then the cases are forwarded to the Chief. In most cases people go with the decision of the elders. (From an interview with a Community Leader in TCK).

Commenting on the level of service provision in Sub-Saharan African cities Rakodi (2005: 62) argued that:

There is nothing unusual in deficiencies of urban water supply...However, even in cities where the main piped supply has broken down or failed to expand to serve new areas... alternative arrangements have evolved, enabling cities to survive despite the breakdown of large scale reticulated supply systems.

In the Nairobi fringe, community based initiatives and other private sector service providers have taken over provision of other services such as water, waste disposal, dispute resolution and arbitration to residents. Although their level of service may not be excellent, these community-led services provision (with some reinforcement from NGOs and local authorities) is making the Nairobi fringe more 'habitable' inevitably leading to more people moving in to look for residential housing. However, Neuwirth (2005: 97), commenting on community-led initiatives, observed that '[d]espite the great love residents have for their community...things do not

look promising...” This is because of mixed signals they receive from the government pertaining to the legal status of their settlements.

Mortgage schemes cover only a small segment of those in formal employment...Formal housing provided for by mortgage schemes within the City is out of reach for most of the City residents...Peri-urban residential housing thus becomes a preferred location for such people with no regular income... [where] they self-build their houses incrementally. (From an interview with a Lecturer in urban planning at the University of Nairobi).

5.5 Consequences of Land Conversions and Local Environment

While land in the Nairobi fringe continues to be converted from agriculture to residential uses, this process is affecting on-going farming for remaining farmers. During the rainy seasons soil from building sites is washed into water bodies where it causes siltation of dams and river channels. Siltation is causing flooding on river valleys and thus affects those still practising small-scale horticultural farming. Flooding is also caused by the reduced storm water ground infiltration due to the increased paved surface area. This, together with excess pressure on land (as result of intensive farming due to land shortage) is affecting farming in the area by causing soil erosion which is washing away top soils that are suitable for crops cultivation. Mining of top-soil for sale to those growing flowers and building stone quarries are also reducing the amount of land available for farming (see Figure 5).

...urban related land uses are impacting negatively on agriculture...For example, flooding due to run-off from paved/built-up areas has a great impact on agriculture along the river valley...Contractors are also discarding building wastes after construction which leads to drying up of dams due to siltation. (From an interview with a District Physical Planners working for the Kenya Government in Kiambu County).

Increased population density with little investment in services and infrastructure has led to problems related to poor waste disposal. Waste disposal problems are reducing the viability of agricultural enterprise in the affected areas, with similar observations are reported in Jakarta by Pacione (2009: 552). Management of liquid waste is posing a great threat to continued farming. This is because the waste is dumped into open ground especially in isolated farming areas or into river channels. This observation underscores Pacione’s (2009: 550) statement that ‘[m]any cities in Asia and Africa have no sewers, and most human excrement and waste-water ends up untreated in watercourses, gullies and ditches.’

This is jeopardizing the use of shallow wells and rivers—which Pacione (2009: 548) referred to as ‘little more than open sewers...’—as source of portable water. Irrigation of horticultural crops, such as vegetables on the river valleys, using surface water is also threatened due to faecal contamination from dumped human wastes. Binns and Maconachie (2006: 224) also made similar observation in Kano that ‘[i]ncreasing water pollution is...a key problem in peri-urban Kano. Of particular threat to lowland irrigation crops...’

...pests such as rats and mice...due to increased population densities are destroying crops and other stored grains...Solid wastes and household wastes such as polythene bags affect our livestock once they eat them and are also breeding grounds for pests (**From an interview with a resident born in TCK**).



Photograph 1. Solid waste disposal on the roadsides along Gachie–Ndenderu road in TCK

Source: Thuo 2010b.

Commenting on land issues in the rural–urban fringe of Colombo, Dayaratne and Samarawickrama (2003: 102) noted that ‘[c]ommunities are divided, with outsiders and insiders unable to build relationships and coherent communities.’ In the Nairobi fringe, especially in areas where farming and residential land uses co-exist, conflicts are now manifest (see Figure 5). These and other factors are seriously affecting continued farming as a viable enterprise in the fringe.

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There is also conflict among those still practicing agriculture especially keeping livestock, due to foul smell and flies from the stables and also smell from spraying of crops with pesticides and other chemicals... **(From an interview with an Agriculture Officer in TCK).**

5.6 Local Changes and Landholders' Responses

Land conversions are producing intended and unintended consequences in the Nairobi fringe. These consequences are leading to change in social, cultural, environmental and economic aspects of the fringe. Actors in land use are however not passively accepting their fate as victims of land conversions but instead they have been routinely monitoring local and extra-local circumstances affecting their surroundings. They have evolved varieties of local/human-level responses that enable them live in this rapidly changing environment (see Figures 5). Their responses have created acknowledged and unacknowledged conditions that affect local land uses. Actions resulting from their responses are unintentionally creating enabling conditions for further land conversions either through making hitherto unfavourable areas for settlement favourable or creating more obstacles for continuation of viable agricultural activities. It then follows that land use conversions in the Nairobi fringe are a result of both the actions of landholders and outcomes of such actions. This observation accords with Pacione's (2009: 11) argument that '[I]ocal contexts...exert a powerful influence on (rural–urban fringe) urban change.' Simon (2008: 13), however, argued that '...the poorest households and members of the community, who are least able to resist the changes or to access alternative resources or livelihood activities, are most vulnerable.'

*Population is increasing, government has not built any new hospital, no new structures in the existing health centres....People either go to towns (market centres) or seek medical services from private clinics. It is a terrible situation....Even if you go to government health centres, there are no medicines, queues are long and you waste a lot of time. **(From an interview with a Community Leader in TCK).***

*When it comes to construction of access roads, the Council will do its best. However, due to our budgetary constraints, we are unable to meet all expectations of the people. In this regard through self initiative, people have come together to construct road and bridges within their areas...They are also doing other things like laying water pipes from points where boreholes are drilled to their houses on a communal basis...This way people have complemented our activities without which I don't know how it would have been. **(From an interview with the Town Clerk, Town Council of Karuri).***

6. Conclusion

This article has indicated that different aspects of urbanization in rural–urban fringe interact in a contingent and recursive manner in the conversion of agricultural land to urban land uses (see Figure 5). The figure further indicates that many of the influences on urbanization at the micro-level are not necessarily local but are a product of wider social, cultural, political and economic conditions that challenge the economic viability of agricultural enterprises.

This article has pointed to a number of powerful conditions/factors operating on broader scales in determining what it is possible to do at the level for the individual landholder in respect to land use (see Figures 5). Individual and social responses to land use conversions follow from changing economic, social, cultural and environmental conditions mediated through institutional factors. This does not deny that landholders have agency, but it is important to note that their agency is limited or strongly constrained by structural factors/conditions that are beyond their knowledge repertoire or control. Such conditions include land and housing market failure, lack of urbanization and land policies, weak societal and governmental institutions, SAPs, new economic opportunities linked to the cities, social and personal characteristics and environmental changes, among others. Collective and individual responses to such structural conditions reshape effects of drivers of land conversions differently thus leading to variations in land use decisions within different areas of rural–urban fringes. These variations are however affecting agricultural activities in the area especially if a substantial number of landholders chose to convert/sell their land for residential purposes.

Following from the above discussions, it is therefore reasonable to conclude that the reason why agricultural land use is being edged out by non-agricultural uses in the rural–urban fringes is contingent on many factors/conditions, primary of which is population increase through natural growth and in-migration. Population growth thus is a necessary condition⁶ for land conversions from agricultural to residential use rural–urban fringes. The process that produces population growth is, however, a part of the processes that produces land conversions.

It is worthwhile, however, to point out that population growth by itself does not cause land conversion in rural–urban fringes. This argument is informed by an understanding that urban areas can have (or have had) population growth within controlled and designated zones. However, population growth comes with an increase in number and diversity of activities/actors and extensive linkages. Increased number of actors/activities and linkages are, on the other hand, necessary in increasing the need for land for various purposes/uses.

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Notes

1. This population is not evenly distributed; there are pockets with huge densities while others are still under plantation farming (see Figure 6).
2. Urban local authorities employ Physical Planner to manage their planning departments but those without relies on the services of the District Physical Planners.
3. Newspapers provided me with an opportunity to understand the current national discourses on issues that directly or indirectly related to my study area and topic. I took daily news and blogs as reflecting the relevance of different aspects and issues within the public domain. Such issues and aspects are included in this article in the form of excerpts which support discussions and comments from the informants.
4. This is usually done to get certification of the ownership of the land/plot, either from the local council or from Ministry of Lands, before buying the land.
5. This is a Kikuyu (*predominant ethnic group in TCK*) proverb implying engaging yourself in an unproductive activity or an activity whose returns are uncertain or nil.
6. According to Sayer (2000: 94), necessary conditions are ‘properties that enable an object to produce or undergo distinctive kind of changes.’

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