

African emerging small towns: Assessing the changing environment due to urban growth

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This paper has been through a process of double-blind peer review

Abstract

Urban growth can have positive effects if well managed or negative impacts in instances of uncontrolled urban expansion. Often, land management regulations are employed in urban areas to ensure that land is efficiently planned and managed to achieve sustainable land management. This study examines the changing landscape of Kabuga town, Rwanda due to land use conversion. Data was obtained from 107 respondents and interviews with the local authorities in charge of urban planning. Variables examined include migration, the means of acquiring land, land use (initial use of land and current use of land) while driving factors of land use conversion were also identified. The challenges of urban growth in Kabuga and the implications for proper land management are examined. Results reveal that 6% of the population lived in Kabuga before 1994 and the remaining 94% are migrants; 55% came within the period 1994-2005, 29% came during 2006-2012 and 10% came after 2012 implying that residents are predominantly migrants. The analysis finds evidence of diminishing agricultural and forested land and vacant lands in favour of residential area and commercial activities due to influx of people. Major impacts of this changing environment in Kabuga town are overcrowding, pollution and loss of green spaces.

1. Introduction

Urban growth as a result of rapid urbanisation is one of the realities of our times. The world's population is getting more urbanized as people migrate from the rural areas to the urban centre. Towns are perceived to offer improved living conditions, job opportunities and other opportunities including infrastructure such as good roads, schools, hospitals, markets, better communication network and electricity. Urban growth in Africa both in spatial and economic terms is mainly due to natural population increase and migration (Krüger 2004, United Nations-UN 2011). The high rates of population growth that have been experienced in the last three decades are unprecedented in human history (UN 2001). With 53% of the world's population living in urban areas as at 2012 and 2.5 billion people in developing countries lived in urban areas in 2009, studies of urbanization and land change in developing world settings are essential (Thomas 2008, WHO 2013). In developing countries, 90% of population growth are taking place in cities and towns with more than half the African and Asian population projected to live in urban areas by 2020 (International Food Policy Research Institute – IFPRI 2002).

As the world is becoming more urbanized, issues such as urban sprawl, ineffective governance, weak institutions in charge of land use planning and control of housing development ensue in most developing countries (Bhatta 2010, United Nations Human Settlements Programme - UN-Habitat 2012). Thus the call to develop land administration and urban land management systems which will be able to deal with increasing shortages of serviced and well located land; peri-urban sprawl (often on customary land); pervasive land grabbing; widespread informal land delivery; cumbersome and expensive registration procedures which are often relics of the colonial past; incomplete land records; under-resourced, inefficient, highly centralized land agencies; fragmented mandates involving several central and local government entities: inappropriate land allocation monopolies; gender exclusion; poor public land management and corruption (UN-Habitat 2010). Many cities are unable to manage the current scale of expansion and rate of change and are searching for better management solutions (Organisation for Economic Co-operation and Development - OECD 2011).

According to Berke et al. (2006), land use systems are dynamic and there are three main influencing factors from the planner’s perspective: 1) Developer’s responses to real estate market demand, 2) Policy objectives, government plans and decision, capital expenditures and regulations aimed at managing community development, as well as the people’s values and interest directed at maintaining and improving their quality of life, 3) Land use plans and regulations making up a main set of influences on land use. Government policies and master plans for town development influence the local communities on how they can use their lands. Land use is influenced by different institutions depending on the human need for land as illustrated in Figure 1.

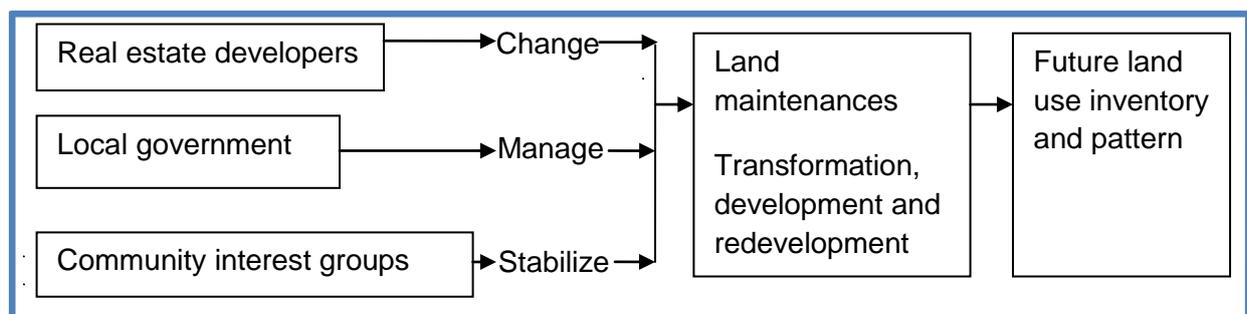


Figure 1: Influences on land use (Source: Berke et al., 2006)

Figure 1 shows how each stakeholder plays a role in land use change. For example, real estate developers’ influence is to change the land use such as actually converting the use of the land from forest to residential built-up. The local government’s influence is to manage the land use by giving permission based on the master plan and zoning regulations. But the influence of the different community interest groups is a stabilizing one, such as advocating for and/or against certain land uses in the community.

Studies have criticised the comprehensive master planning approach as not being adaptable to the emerging needs of cities and towns, especially in the context of rapid urbanisation and change in developing countries (Clarke 1992). In several urban centres and towns in Africa, urban expansion is so rapid and chaotic with master plans becoming quickly out of date. The social, political and economic dynamics shaping the city and driving change were typically neglected, as were the many actors and interests involved, and the probability of conflicting interests which results in compromises and corruption as well as the coordination limitations of a centrally organised system (Galloway and Mahayni 1977, Rode 2006, Todes et al. 2010). Over the years, alternative approaches to planning have emerged which led to paradigm shifts with concepts such as communicative planning, strategic planning among others (Bryson and Einsweiler 1987, Fainstein 2000, Newman 2008, Allmendinger and Haughton 2010, Todes et al. 2010, Innes 2013). However, traditional master planning nevertheless continues in several contexts (UN-Habitat, 2009, Todes et al. 2010). There are still other perspectives of viewing and conceptualising the management of cities.

Looking at city governance and leadership within the context of globalization, there is the concept of ‘managing capitals’ as the basis for developing strategic agendas that will take cities forward. The constituent elements of the city is analysed into a number of different asset groups, or capitals that a city embodies. These capitals are 1) Intellectual and social - covering the people and knowledge, 2) Democratic - participation and consultation, 3) Cultural and leisure - values, behaviours and public expressions, 4) Environmental - natural resources, 5) Technical – man-made capital and infrastructure, 6) Financial - money and assets. With the possibility to harness these capitals fully, new perspectives on cities, their dreams, knowledge, creativity and motivation will emerge to find new ways to develop strategic city management for the future (PricewaterhouseCoopers n.d.).

Land management regulations are employed in urban areas to ensure that land is efficiently planned and managed to achieve sustainable land management (SLM) Focusing on the functions of the environment for the benefit of society, SLM seeks to harmonise the often conflicting objectives of intensified economic and social development, while maintaining and enhancing the ecological and global life support functions of land resources. SLM postulates that both these aims can be achieved simultaneously in a true win-win situation if things are done appropriately (CIESIN n.d.). SLM best practices integrate approaches and focuses on all major land use systems including agriculture, rangeland, and forestry, based on four strategic guiding principles: 1) Mainstreams SLM into the production landscape by addressing environmental and sustainable livelihood issues within a holistic development framework; 2) Creates synergies across focal areas to address sustainable land management in the context of biodiversity conservation, integrated land and water management, watershed management and sustainable forest; 3) Promotes gender mainstreaming in sustainable land management; and 4) Builds institutional capacity in land management (Pender et al. 2006). Going a step further, the sustainability science definition of cities can be adopted whereby

cities are seen as systems that are constantly changing. Thus, the central aim of the city goes beyond achieving some optimal state (such as a condition of sustainability), but to improve their ability to adapt based on scientifically proven best means to deal with identified drivers of change in that context (Du Plessis 2009, Jepson 2012).

This study seeks to contribute to the better understanding of drivers of land conversion and their management in emerging small towns in Africa. Our knowledge of these towns, particularly in the African context is limited (Hanson 2003, Greene and Pick 2006, Akinyemi and Rugege 2012). Globally, small towns are expected to account for about half of urban population growth worldwide between 2005 and 2015. According to UNFPA - United Nations Population Fund (2007, p.3), much of urban growth is taking place in small towns. It states that:

“Although mega-cities have received most of the attention, conditions in smaller urban areas call for even greater consideration. Contrary to general belief, the bulk of urban population growth is likely to be in smaller cities and towns, whose capabilities for planning and implementation can be exceedingly weak. Yet the worldwide process of decentralizing governmental powers is heaping greater responsibility on them. As the population of smaller cities increases, their thin managerial and planning capacities come under mounting stress. New ways will have to be found to equip them to plan ahead for expansion, to use their resources sustainably and to deliver essential services.”

It is important to examine the factors at play and the dynamics of growth in these towns in order to develop suitable strategies for their management in a holistic manner. Based on the foregoing, this study examines the changing landscape of Kabuga town due to land use conversion and it seeks to decipher the drivers of these changes. The paper is structured as follows: first is the introduction, followed by the methodology used in data acquisition, results and discussion section, lastly, recommendation and conclusion.

2. Study Area

This study focuses on Kabuga town, which is one of the emerging Rwandan towns located on the outskirts of Kigali (the capital city). Kabuga town has part of it located in Rusororo sector in Gasabo district and Masaka sector in Kicukiro district. Rusororo and Masaka sectors comprise of 8 and 6 cells respectively (the cell is the fourth administrative level). However, the town is composed of only 4 cells, namely: Kabuga I, Kabuga II and Nyagahinga (Gasabo district) whereas Gako cell is located in Kicukiro district (see Figure 2). According to the Kigali conceptual plan, this area is designated as a high growth area. In its development, Kabuga town will form part of the Masaka development area (MDA) within the Masaka sector plan. The MDA with an area of 2954 hectares will comprise of Masaka town (612 hectares, population: 40,000), Kabuga (228 hectares, population: 20,000), among other new towns to be developed (Kigali City 2010).

Gasabo and Kicukiro are two of the 30 districts in Rwanda and they are among the 3 districts comprising the Kigali city council. With a combined surface area of 595.8529 km² and a total population of 850,568 inhabitants, the average density is 1578 persons per km². At the national level, population density has increased from 321 persons per km² in 2002 to 416 persons per km² in 2012. These districts have the highest number of inhabitants than most districts in Rwanda and have both urban and rural areas. The city phenomenon is very recent in Rwanda with 21% of Rwanda's population being urban. Comparing the total number of 10,537,222 inhabitants in Rwanda as at 2012 with 8,128,553 inhabitants in 2002, the country experienced population increase of about 29.6% and an average annual growth rate of 2.6%.

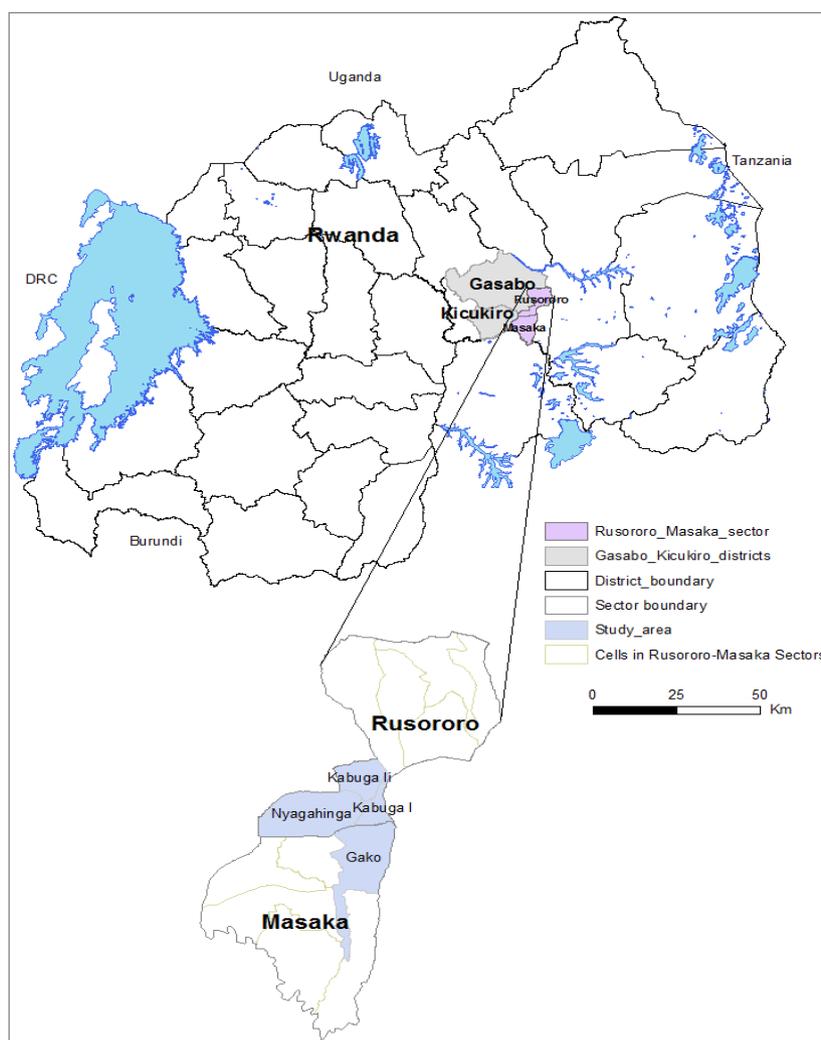


Figure 2: Location of study areas in Kabuga town within the context of Rwanda

The population of Kigali city increased from 236,000 people in 1991 to 800,000 people in 2007 to 1,135,428 people in 2012 at an average annual rate of 9% (see Table 1). Kigali that covered an area of 112km² with 140,000 inhabitants in 1991 now has a population of over 1 million in 2012. Thus in Kigali, the population density is currently 1,556 persons per km² and the average annual growth rate during the period 2002-2012 is 4.0% (National Institute of Statistics Rwanda - NISR 2012). This resulted in a concentration of the urban population in the capital city which is estimated

at 44% of the urban population of Rwanda. Relating the population increase to housing development, there is a major difference in the needs between Kigali and other urban areas such as Kabuga, Musanze and Rwamagana. As of 2008, the housing supply was estimated at 10,000 annually. However in terms of demand, as of 2012, Rwanda needed 25,000 new housing units every year. Kigali city alone requires between 8,500 and 10,000 units, while other urban centres required 15,000 units (New Times 2012).

Table 1: Population growth and area coverage of Kigali city

Year	Area	Number of population
1907	8ha	357
1945	250ha	6,000
1991	112km ²	140,000
1996	112km ²	358,000
2001	314km ²	605,000
2006	730km ²	1,000,000
2012		1,135,428

Source: <http://www.kigalicity.gov.rw>

3. Methodology

The main objectives of this study are as follows:

- examining the socio-economic dimensions of land use conversion in Kabuga town
- assessing the past and present situation of land use and the driving factors of land conversion
- assessing the impact of urban growth

3.1 Data

To capture different aspects of land use conversion, 4 indicators and 7 variables were used (Table 2). Primary data was obtained from the local community (households), government officials and land agents within Kabuga town using a combination of questionnaire surveys, interviews and field observation. Moreover, the authors' familiarity with the town is not in question. A total of 107 respondents were surveyed.

Table 2: Key indicators and corresponding variables

Indicators	Variables
	- migrants' time of arrival
Migration	- pull factors of migration
Land use	- initial use of land, - current use of land, and - drivers of land conversion
Means of land acquisition	- Ways of acquiring land
Consequences of land conversion	- Identify impacts

4. Results and Discussion

Different socio-economic aspects of the changing landscape of Kabuga town were examined.

4.1 Means of land acquisition

In Kabuga town, it was found that people acquired land in different ways. These are through inheritance, squatting, purchase and rent (see Figure 3).

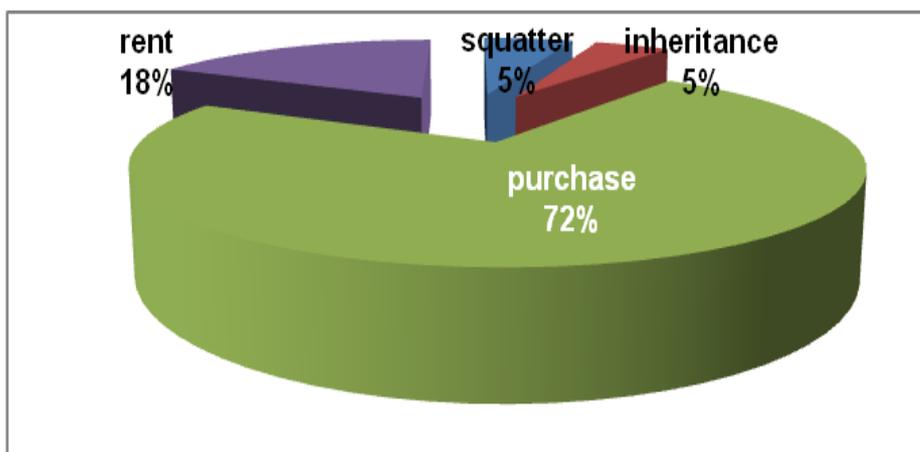


Figure 3: Means of acquiring land

Majority of the respondents (72%) acquired their land through purchase. Others have rented land from landowners (18%), 5% of the respondents received their land through inheritance, others (5%) are squatters on vacant lands by the government over the period 1994-2005, especially people from outside the country such as from Uganda and Burundi. The major reason for purchasing land in this area is the fact that the price of land is low, that is, not expensive when compared with Kigali and other towns in Rwanda.

4.2 Migration

The time of people's arrival in Kabuga town was sought as the town is new developed (see Figure 4). Most people migrated to Kabuga town between 1994 – 2005. The Figure shows that 94% of respondents settled in this town after 1994, 55% settled between 1994-2005, 29% have been settled there between 2005-2012 and 10% after 2012, the inhabitants before 1994 were few (6%). This means that Kabuga town has been receiving many people from different areas within and outside Rwanda such as Changugu, Rwamagana and Gitarama after 1994.

This goes to explain why majority of respondents acquired their land by rent or by purchase as most are migrants. Whereas, the majority of the people that settled before 1994 have acquired their lands by inheritance. Others were squatters that returned earlier. The different reasons given for migrating to the town are shown in Table 3.

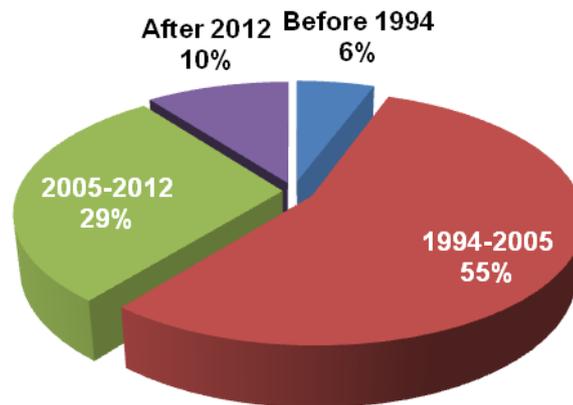


Figure 4: Time of migrants' arrival

Table 3: The pull factors attracting migrants to Kabuga town

Reason	Surveyed household	Percentage (%)
Residential area	30	28
Job opportunity	38	36
Nearness to work place	26	26
Affordable cost of land	11	10
Total	107	100

Results reveal majority of the respondents (36%) were attracted to Kabuga town because of the existence of job opportunities. Other factors were residential (28%), nearness to work place (26%) and affordable cost of land (10%).

4.3 Initial and current use of land

The major uses of land in most parts of Kabuga town are residential and agriculture. Our results reveal that conversion of forest and agricultural land to either residential or commercial built-up is the major trend in the study area. We further sought to understand this observed trend in land use conversion by asking respondents the land use type before they settled in the area and the current use of land (Table 4).

Table 4: Initial land uses before conversion

Land use	Number of respondents	Percentage (%)
Agriculture	56	52
Residential	30	28
Forest	13	12
Vacant	8	8
Total	107	100

This reveals that the major land use before people settled in this area is agricultural with 52%. Residential built-up accounted for 28%, forest was 12% and vacant land was 8%. This finding

confirms the rural nature of Kabuga town at its inception. Compared to what exist today, the town is estimated to have around 10,000 inhabitants living in that area. Further asking the sampled households the uses of their land before and after 1994, results reveal that the farmlands have decreased at the highest rate and residential land use increased (see Figure 5). The implication is that a large number of people now live on a residential plot without much space for example, for agriculture and other related uses. Vacant and forested areas are decreasing considerably in favour of residential and commercial built-up uses.

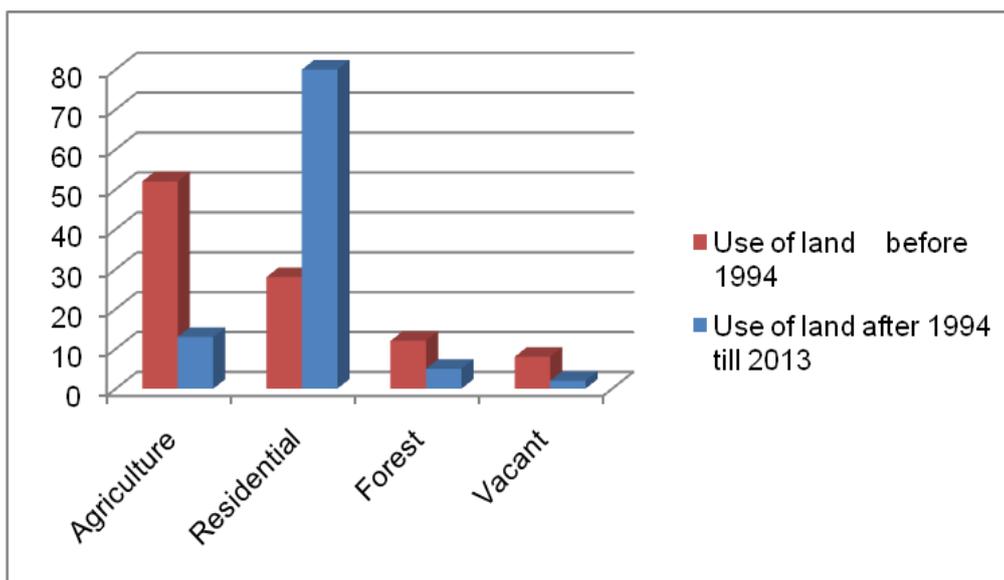


Figure 5: Use of land plot before 1994 and after 1994

4.4 Drivers of land use change

In the 1980s-1990s, Kabuga town was largely agricultural lands and forested areas. Currently agricultural land and forested areas are mostly prone to being converted into residential, commercial and infrastructure such as road, school, hospital and markets (see Figure 6). This is in line with other research findings that show that in the tropical areas of the world, forests are the primary sources of new agricultural lands in the 1980s-1990s (Gibbs et al. 2010). Also, that agricultural land is lost to urbanisation in the tropics (Akinyemi 2013).

Underpinning these observed changes are several other factors such as job opportunities and affordable cost of land. Consequently, human population is increasing in the town through natural growth and through migration as more people are attracted into town. It had a population of about 10,000 as at 2012. Within the context of the MDA, Kabuga is projected to grow to approximately 20,000 inhabitants (Kigali city 2010). All these factors acting together are driving land use conversion in the town (see Table 5). The low price of land in Kabuga town is a major pull factor attracting developers and people who now live in Kabuga but work in Kigali or the nearby towns.

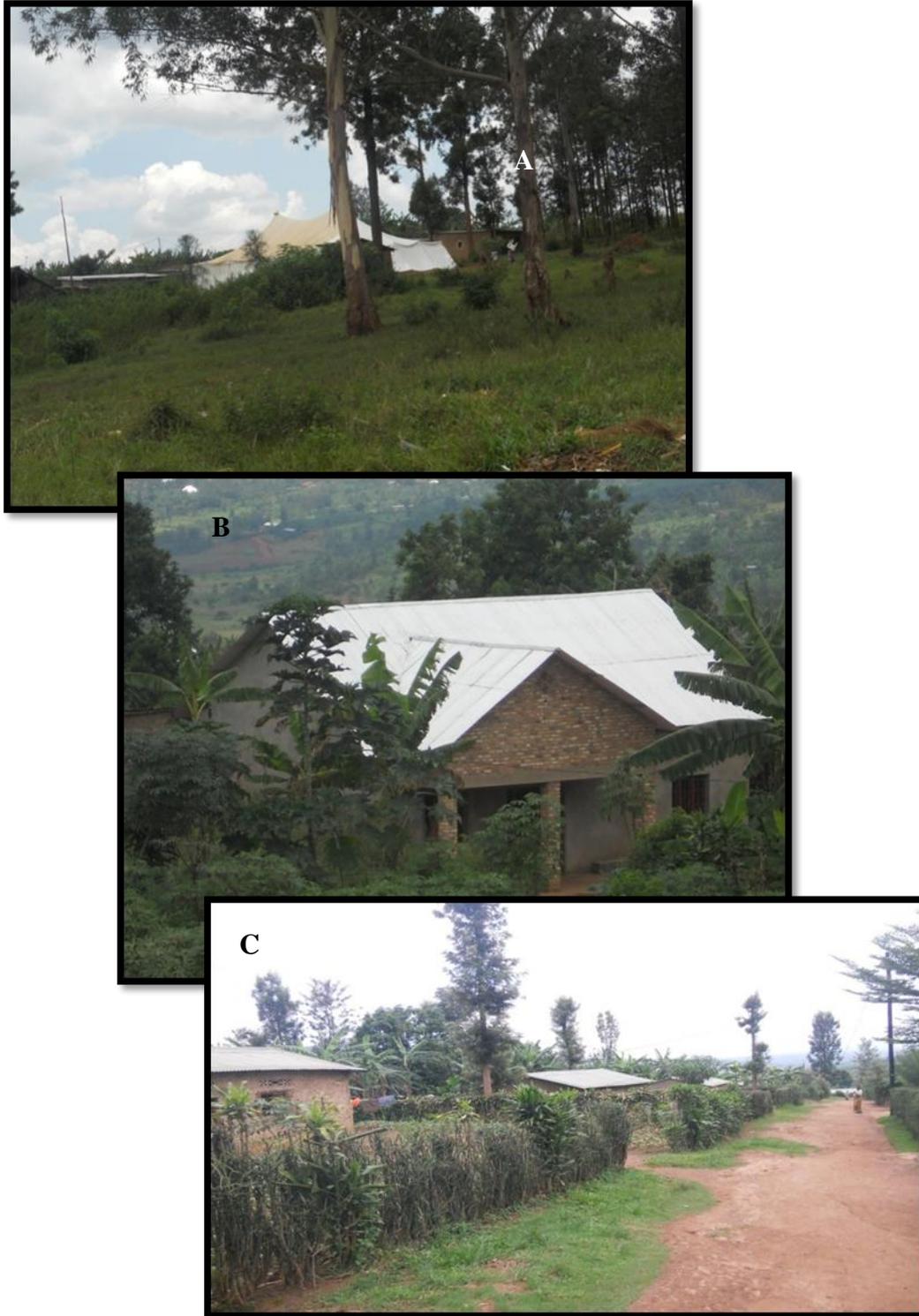


Figure 6: Land use conversion a) Some left over forest trees as land use is converted from forest to residential, b) and c) Agricultural land converted to residential

4.5 Consequences of land use conversion

Land use conversion has negative impacts on the people and the environment (see Figure 7). According to the perspective of the respondents, 63% see the greatest challenge of growth in this

town as overcrowding. Other challenges are the loss of green and open spaces (23%), as well as pollution related problems (14%).

Table 5: The price of land

Location	year	Price Rwf/sq.m
Muhima	2013	80,000
Kabuga town	2011	2000
Kacyiru	2011	45,000
Kinyinya	2011	30,000
Kagugu	2011	30,000
Masaka	2011	3,000

Source: fieldwork

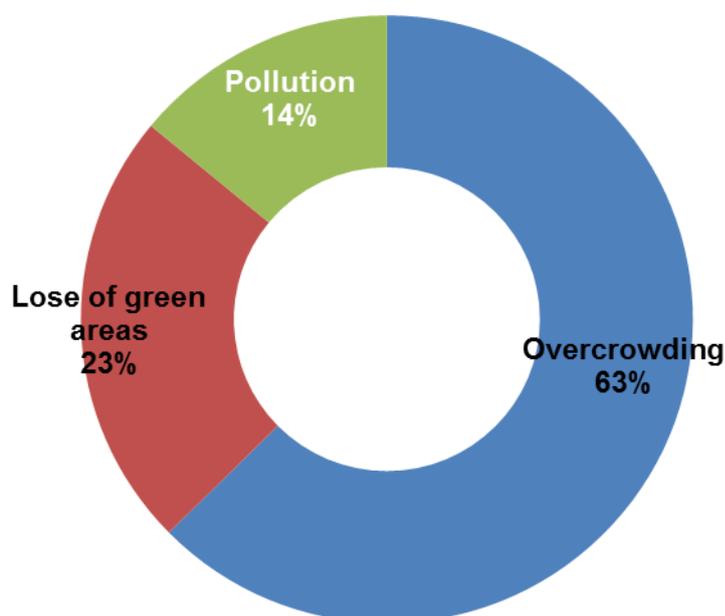


Figure 7: Challenge of growth in Kabuga town

5. Recommendations and Conclusion

This study focused on the growth of Kabuga as an emerging urban centre. In addition, it sought to identify the impacts of urban growth. The impacts of its rapid growth on the environment can be deciphered from land use changes. Most of the changes to the landscape of Kabuga town are due to land use conversion and the major trends are from agriculture, vacant and forest to residential and/or commercial purposes. Major drivers of these land use changes are the increase in the number of people migrating into the town and the low price of land in Kabuga in comparison to other nearby towns and cities. Thus, Kabuga as a peri-urban area is attractive to people moving out of Kigali to the peripheries. Thus it is fast becoming a commercial centre with vast areas of residential properties.

Urban systems worldwide are facing an increasing number of challenges, particularly the impact of urban systems on the local environment which constitutes a major policy issue (OECD 2011). Examples of such challenges that were identified in Kabuga are the loss of agricultural land, loss of green and open spaces, overcrowding and problems of pollution. The following are some suggested strategies to manage the growth of Kabuga town in order to overcome the identified challenges related to land uses.

- a) As Kabuga is in a predominantly rural context, the majority of the people still live in sub-standard houses and depend on agriculture for a living. They are now faced with problems as agricultural lands are converted into residential and commercial areas. The needs of existing residents should be taken into consideration as development occurs in the MDA.
- b) Restriction of housing development to certain land areas to protect prime arable land for urban agriculture. Peri-urban green zones ought to be created, so that the income of the rural populace engaged in agriculture will be guaranteed and fresh food supply for the town and nearby city like Kigali. According to Baudoin (2009), the status of such areas must be moved from a “squatting” status to acknowledged, reserved areas with a “*nonedificandi*” status and duly registered in the cadastre with a title deed and also included in the urban development plan of Kigali and its environs.
- c) Infrastructure needs to be improved upon as existing ones cannot suffice with the increasing population. This is important to ensure that properties have good access to the road, water, sewage and drainage systems should be in place. This will make the place attractive to investors in order to promote nonfarm activities.
- d) Policies for building design and construction have to be flexible enough to ensure some variations in order to be friendly to all income groups, including affordable housing provision to cater for low income earners and the rural populace for example.
- e) Participation of all stakeholders is needed in finding solutions to these numerous issues such as the proposed promotion of vertical development which will necessitate mixed and multi-intensive land uses.

Already, Kabuga is a fairly well established town due to its proximity to the Kigali-Rwamagana highway. Its potentials are enormous as another growth node which could offer a better quality of life for the people if its growth is well conceived and managed.

The development of sustainable urban systems involves complex and interdependent social and biophysical factors, which need to be understood (OECD 2011). With ever-increasing population and objectives of intensifying socio-economic development, the use of SLM as a tool to address the challenges of Kabuga town is suggested. This study provides some baseline figures of the situation of different variables which the authorities will find useful as currently, there is a dearth of records. Further research is required to build on this preliminary study.

Acknowledgements

The useful comments of the two anonymous reviewers are highly appreciated.

Note

¹ Felicia Akinyemi is currently based at the Botswana International University of Science and Technology, College of Science, Earth and Environmental Science Department.

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