

National University of Rwanda, Rwanda

Department of Geography

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1. Background

Rwanda is a small landlocked country located in the centre of Africa, surrounded by the Democratic Republic of the Congo in the west, Burundi in the south, Tanzania in the east and Uganda in the north (Figure 1). Its surface area is only 26 336 km², but its population numbered around 9 309 614 by 2007, with a density of 368 inhabitants per km². Eighty-three per cent of the population is still rural. The national economy is based on agriculture.

Figure 1: Rwanda in Central Africa



Source: RR MINECOFIN 2005c: 7

Since November 2005 Rwanda has embraced a policy of decentralisation, giving more responsibility and authority to local governments and to the population. Thus, the government has reorganised the administrative structure and given autonomy to Kigali City, the capital, and to districts which have a legal identity, and therefore they are responsible for designing and implementing their urban and regional plans.

In contrast to the development policy prevailing until 2005 which privileged agriculture-based rural development, since 2006 the central government has opted for rural development, development of services and urban development in accordance with the Millennium Development Goals. To achieve those objectives, Kigali City and districts have a great need for skilled people in various fields, among

them urban and regional planning and environmental management. As no institution was providing training in these areas, the Department of Geography at the National University of Rwanda started a new programme aiming to fill that gap.

This paper will focus on urbanisation in Rwanda in general, and specifically on Kigali City which accommodates 45% of the total urban population. The paper also presents the new urban planning and environmental management curriculum initiated by the Department of Geography from 2006.

2. The urban and regional context

2.1 Level of urbanisation

Rwanda had 12 towns in 1991 (Table 1). By 2005 that number had risen to 15 because Nyagatare, Ruhango and Kabuga were recognised as urban centres in 1996 and 2002 respectively. Table 1 shows that the urban population increased six-fold from 222 727 people in 1978 to 1 372 604 in 2002. The level of urbanisation rose from 3% to 16.9% in the same period. In terms of population, all Rwandan towns except Kigali are small towns (Figure 2).

Table 1: Evolution of urban population, by town and Kigali City, 1970–2002

City/Town	Population			
	1970	1978	1991	2002
Kigali City	57 400	111 990	235 664	603 049
Butare	8 400	22 189	29 255	77 217
Ruhengeri	12 500	18 942	29 286	71 511
Gisenyi	6 250	12 655	22 156	67 766
Gitarama	9 359	8 531	17 490	137 995
Byumba	5 980	7 702	11 947	66 268
Gikongoro	7 020	5 637	8 506	32 427
Kibuye	1 670	3 045	4 393	46 640
Rwamagana	4 850	5 930	6 535	46 198
Nyanza	4 640	11 563	9 187	60 117
Ruhango	–	–	–	50 930
Kabuga	–	–	–	51 693
Nyagatare	–	–	–	8 437
Cyangugu	3 540	7 201	9 693	59 070
Kibungo	3 860	9 272	13 617	44 216
Total urban population	125 460	222 727	391 194	1 372 604
Total population	3 680 574	4 831 527	7 157 551	8 128 553
Urbanisation rate (%)	3.0	4.5	5.6	16.9

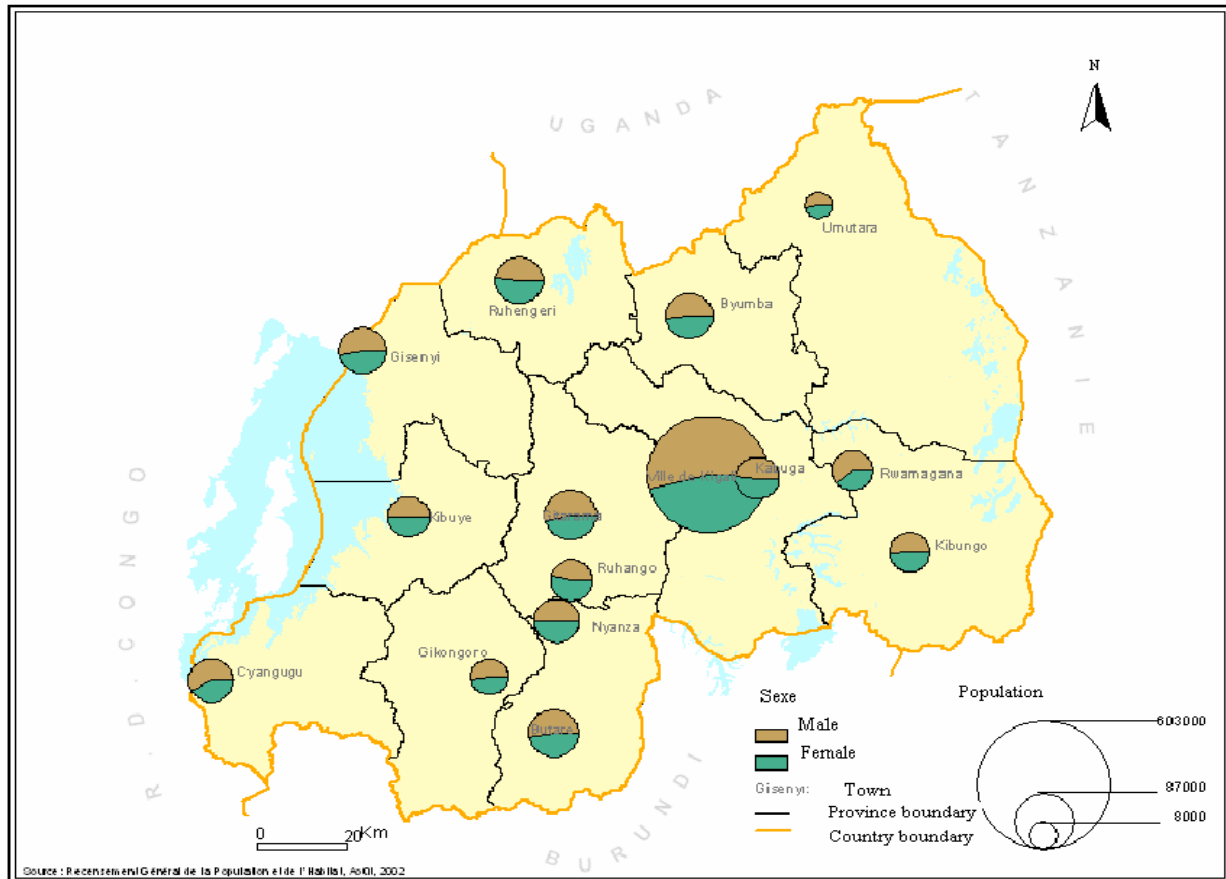
Source: RR MININFRA 2007: 13

The extent of the increase in urbanisation is a little confusing to identify, because the delineation of urban areas has changed several times since 1962, when Rwanda achieved its independence. Usually the central government establishes a list of towns and delineates them. In general, huge rural areas with scattered settlements are included within town boundaries. That list is updated from time to time. For instance, in 2002 the central government published a list of 14 municipalities which included 12 towns that had been recognised as urban by the Central Government from 1907 to the end of 2002, and 2 new towns: Ruhango and Kabuga. Since 2005, Kabuga town has been integrated into Kigali City, which has been greatly extended over a huge rural area following the 2005

Administrative Reform. Kigali City now covers 370 km² (Ville de Kigali 2008: 19).

Referring to present and past situations, 'urban area' can be defined as centres that are former provincial headquarters, and Kigali City and other centres that are recognised as urban by the central government, and which accommodate administrative functions and socio-economic activities though they can also include vast rural areas.

Figure 2: Population of towns and Kigali City, 2002



Source: RR MINECOFIN 2005c: 36

2.2 Evolution of urbanisation

Until the beginning of the 20th century, Rwanda was a totally rural country characterised by scattered habitat. The first grouped settlements, which later became towns, were founded in the early 1900s by the German governors who then ruled the country. The first towns to be created were former German military outposts. These are Ruhengeri, created in 1903, Kisenyi (1907), Kigali (1908), Cyangugu (1914) and Butare (then Astrida), created in 1927. Kigali was recognised as the capital by Dr Richard Kandt, the then German Governor of Rwanda. As Rwandans were not authorised to settle in the burgeoning centres unless they had urban employment accepted by the colonialists, urbanisation remained very weak during the colonial era, so that the level of urbanisation was less than 1% at the time of independence in 1962. At that point Kibuye, Byumba, Kibungo, Gikongoro and Gitarama, as headquarters of respective prefectures, were also recognised as towns, as was Nyanza (Nyabisindu).

After independence successive governments privileged rural development areas by disseminating markets, health care centres, primary and secondary schools, Christian parishes etc. in the

countryside on the one hand, and colonising the under-populated eastern part of the country, on the other hand, while little attention was paid to urbanisation. Successive governments restricted rural-urban migration by setting up a pass system for all rural-urban migrants. They also introduced a residence permit which was issued only to people who could prove that they had an accepted activity in towns. All those factors contributed to keeping the population in the countryside, so that the total urban population was 125 460 inhabitants, and the urbanisation level was still 3.0% in 1970 (RR MININFRA 2007: 13). Kigali then accommodated 45% of the total population.

Since the mid-1970s, following the total colonisation of the eastern part and generalised high-density population throughout the country, small industrial activities began to be initiated in towns, mainly Kigali City, accompanied by the development of urban commerce and improvement in transport infrastructure, with the result that rural-urban migration was boosted, oriented mainly to Kigali and Butare towns which were the most economically dynamic. The government then created the urban *communes* of Ngoma (Butare) and Nyarugenge (Kigali) in 1975, and delineated ten other urban areas which were recognised as towns that included headquarters of prefecture, and Rwamagana and Nyabisindu centres. The level of urbanisation reached 4.5% in 1978.

In the early 1980s and after, the government was so worried about urban growth, especially in Kigali (around 10% per year), that the police used to arrest 'irregular dwellers' in all towns and to redirect them to their respective native areas. This slowed the urbanisation rhythm but did not stop it: by 1991 the total urban population had increased from 222 727 to 391 194 people; that is, an increase of 65% between 1978 and 1991 (with an annual growth of 4.4%) and the level of urbanisation had reached 5.6%. Kigali's population growth was the highest; its population increased to 235 664 people, representing 62.25% of the total urban population. In 1994 the urban population dropped due to the genocide of the Tutsi; the flight abroad of a large proportion of the population and the war's aftermath led to a further decrease of the urban population. After 1996 the total urban population gradually increased again and reached 1 372 604 people in 2002; among them 603 049 inhabitants of Kigali City, 44% of the total urban population. By 2007 the population of Kigali City was approximately 900 000 people, living in an area of 370 km² (Ville de Kigali 2008: 19). The relative decrease in size of Kigali City compared to 1991 can be explained by the administrative enlargement of towns in 2002 over huge rural areas surrounding the existing urbanised core. Despite this, the level of urbanisation of Rwanda (16.9%) still remains the lowest in Africa.

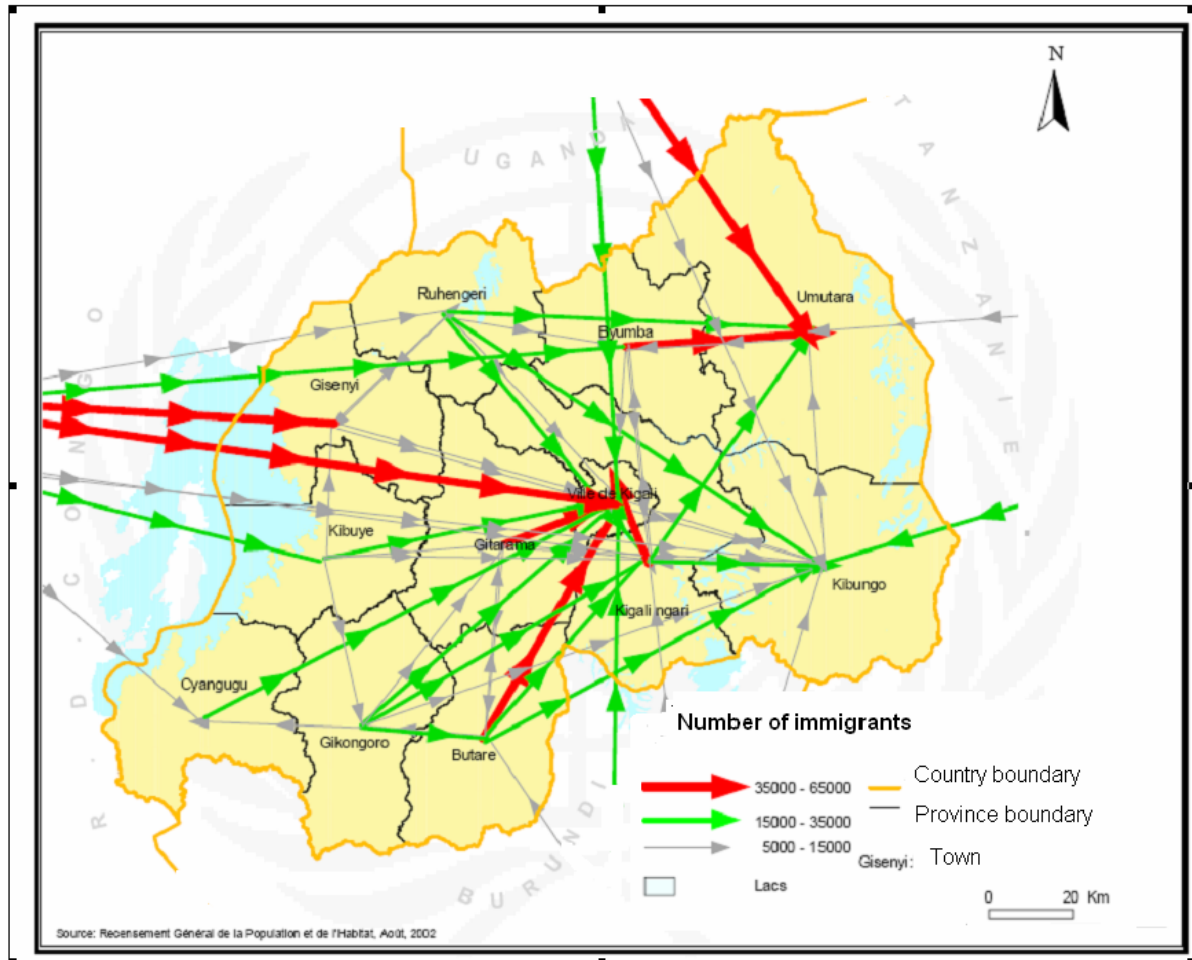
The increase of the urban population from 1978 to 2002 was not due only to internal urban growth; a high proportion of it was a result of rural-urban migration as Rwanda is still in the first stage of urbanisation. However, it is not easy to identify exactly the proportion due to in-migration and that due to natural growth because of successive administrative reforms since 1990 which greatly extended the urban area. As Figure 3 shows, a high proportion of rural-urban migrants were oriented towards Kigali City.

With regard to Kigali City, the 2002 Census revealed that 342 931 of the 603 049 inhabitants were in-migrants. This indicates that rural-urban migration has contributed to the population growth of Kigali City more than natural growth. However, this percentage is to be considered cautiously because it includes a large number of people who settled in rural areas that have been included in Kigali City since the 2002 Administrative Reform. Rural-urban migrants are mainly returnees (20%); others come from Gitarama and Kigali Provinces (18%) and Butare Province (10%) (RR MINECOFIN 2005a: 49–50); the share of other provinces is less significant. Because of the low levels of development of other towns, in-migration to Kigali City will remain important for several years to come.

According to the most recent administrative reform and the national urbanisation policy, as the headquarters of all the 17 rural districts will become towns, urbanisation will go on growing (Figure 4); it is predicted that the number of towns will amount to 30 by 2020 and the level of urbanisation is

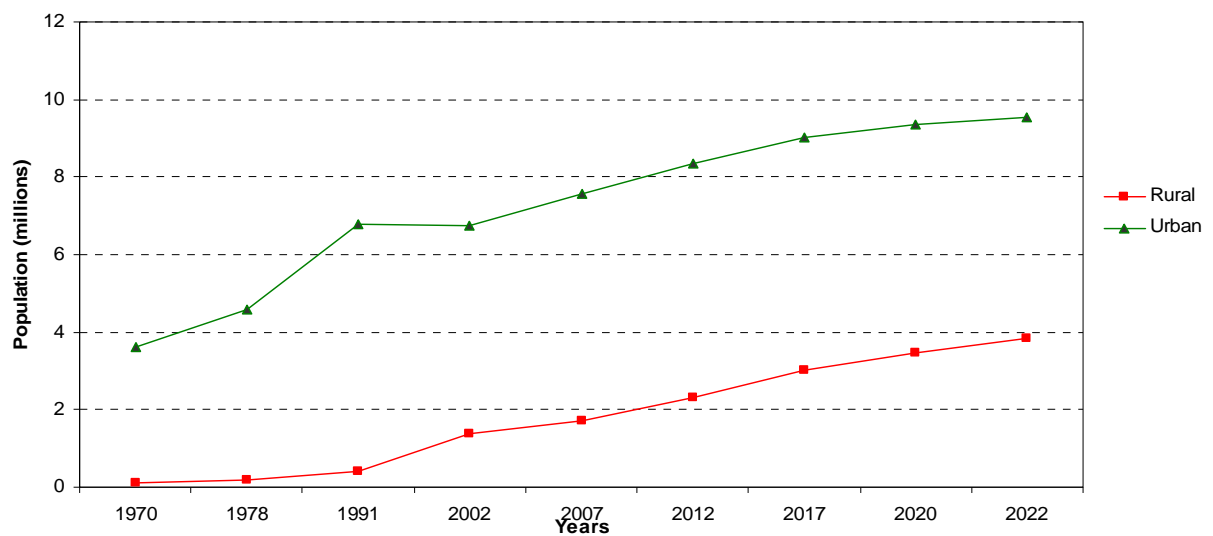
expected to reach 30%. Kigali City is expected to accommodate more than 3 000 000 people by that time.

Figure 3: Migrations in Rwanda



Source: RR MINECOFIN 2005c: 68

Figure 4: Predicted evolution of rural and urban population, 1970–2022



Source: RR MINECOFIN 2005c: 50

2.3 Employment, poverty and income considerations

Levels of employment and economic sectors

According to the 2002 National Census findings (RR MINECOFIN 2005a: 94–95), the economically active Rwandan population is higher than the inactive population (56.4% and 43.6% respectively). The proportion of the active population in employment is 77.8% in rural areas as against 63.1% in urban areas. Eighty-seven per cent of the total active population is employed in the primary sector, 10% in the secondary sector and only 3% in the tertiary sector; this reveals that Rwanda still has an agriculture-based economy.

In Kigali City, 68.7% of the economically active population is employed in the primary sector, 15.8 % in industry and 15.5% in the services sector. The high rate of economically active population employed in the primary sector prevails in rural areas which have been included in Kigali City since 2002. In the urbanised core of Kigali City with various factories, commerce and other services and cottage industries, between 13% and 23% of the economically active population is employed in industry, and more than 70% in the tertiary sector. In 2005, a survey of household living conditions revealed that 23% of the economically active population was employed in commercial and 7.5% in housing activities.

Poverty and income

According to Rwandans, a poor person is one who is incapable of meeting the basic needs of well-being such as access to food, health care and decent housing, payment of children's school fees, etc. (RR MININFRA 2007: 42). The *Enquête Intégrale des Conditions de Vie des Ménages*, updated in 2005, categorised Rwandan households in three groups according to poverty levels:

- poor: household relying on less than 250 Rwandan francs (RwF) per day;
- very poor: household relying on between 150 and 250 RwF per day; and
- extremely poor: household relying on less than 150 RwF per day.

Referring to that definition, the survey revealed that 56.9% of Rwandan households were poor. The proportion of households living below the poverty line was lowest in Kigali City, compared to other towns and rural areas (RR MINECOFIN 2007: 42). The same survey also revealed that the average monthly expenditure per household in urban areas was 35 000 RwF, equivalent to approximately US\$70, which is really very low (RR MINECOFIN 2007: 43). According to the Ministry of Finance and Economic Planning (Table 2), the proportion of households living below the poverty line increased between 2005 and 2007 at national level and in rural areas, whereas it decreased slightly in Kigali City.

Table 2: Proportion of households living below the poverty threshold, 2005 and 2007

Region	Percentage of households living below the poverty threshold	
	2005	2007
Kigali City	13.0	10.4
Other towns	41.5	–
Urban areas	–	17.8
Rural areas	62.5	65.0
Rwanda	56.9	60.0

Source: RR MINECOFIN 2007: 43–45

Urban poverty is linked to:

- a great dependency on the informal and monetary economy;
- a high level of professional inactivity: the unemployment rate is higher among the urban population than the rural population (23% in Kigali City and 10% in other towns, versus 5% in rural areas);
- unhealthy living conditions for the population living in informal settlements, with low access to socio-economic services, mainly in Kigali City, such as poor housing, poor water supply, exposure to environmental hazards, poor waste management and poor access to health care.

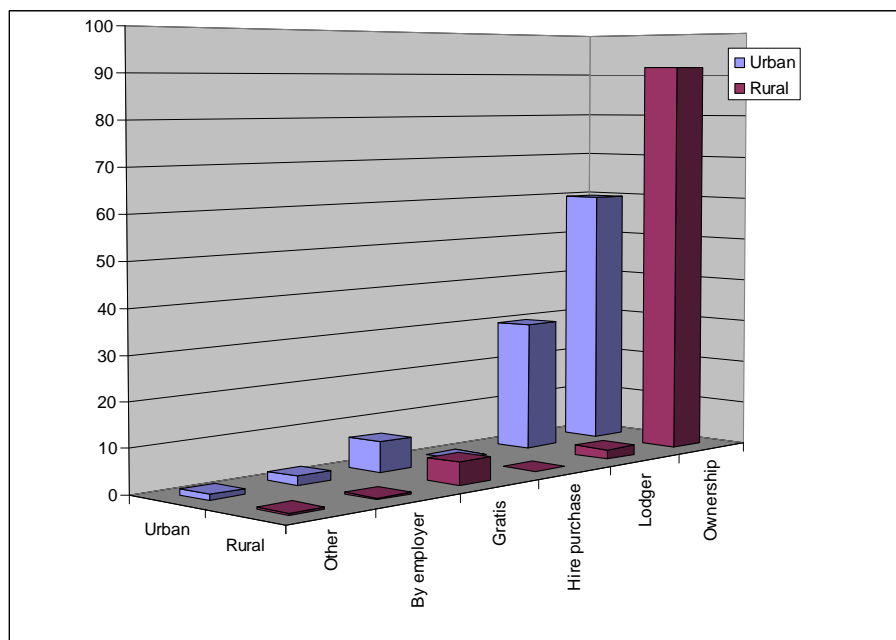
With regard to income levels, no accurate study has been conducted, but to our knowledge there is a very big gap between the income levels of senior management and employees in general. For people working in informal sectors such agriculture, construction, vehicle repair, handicrafts, etc., salaries are low and irregular in rural areas as well as in urban areas.

2.4 Access to adequate housing and services

In Rwanda, the first priority of each adult living in a rural area as well in the urban areas is to have his own house, however small it may be. People manage to reach that goal. This is why 86.9% of Rwandan households were living in their own houses in 2002. Figure 5 shows that the proportion of households living in owned houses is higher in rural area (91.8%) than in urban area (59.7%). The table also shows that in urban area, 29.8% were lodgers, 6.9 % had free houses and 2.1% were given accommodation by their employers (government, public and private companies, etc.).

Within Kigali City, the proportion of households living in their own houses at the time of the Census was only 43.0%, lodger households comprised 47.5%, households living in free housing comprised 6.3%, and households accommodated by their employers were 2.7% of the population (RR MINECOFIN 2005a: 31–33). By 2007, informal settlements extended over 80–90% of Kigali City (RR MININFRA 2007: 58) accommodating around 60% of the population; 40% remained settled in planned areas and in dispersed habitats as Kigali City includes extensive rural areas. In other towns, the situation is similar.

Figure 5: Urban and rural distribution of households, by ownership status



Source: RR MINECOFIN 2005a: 31–33

Within Kigali City, informal settlement has developed either on steep slopes or on flood terrain, and rarely on terrain suitable for construction. These informal settlement zones are densely constructed and populated, and have poor access to piped water, lower accessibility, poor sanitation and poor waste management. Houses are small, though there are some nice buildings constructed with long-lasting materials.

Figure 6: A partial view of Kigali City



Source: Photograph by Gilles Trodjman, May 2003

Figure 6 shows one example of an informal settlement built on Kacyiru Hill, an example of the steep terrain found within Kigali City. The hill slope is covered by informal structures (foreground); in the background a regular settlement known as Estate 2020 is visible at the top of a hill, built by Caisse Sociale du Rwanda and surrounded by rural terrain. The buildings in the centre are ministries; on their left is the National Policy Headquarters. Another example of an informal settlement, at Mont Jali in Kigali City, is shown in Figure 7.

Nowadays, the tendency is to demolish informal settlements and relocate the poorest population, after paying them compensation, as well as other house owners. Despite the sensitisation work done by the authorities in Kigali City, the evicted population contests the amounts paid as compensation. In their view their houses are undervalued. This was the case in Kiyovu neighbourhood, an informal settlement close to Kigali City's downtown area built in the 1970s and 1980s, whose residents resisted moving to Batsinda Site located 10 km away from the city centre, already serviced and where small, decent houses were given to the poorest of the evicted people. But finally the people did move to this new area.

In other towns, in order to further the decentralisation of urban management and planning services, local governments and local authorities at cell level ban new unauthorised constructions within the

urban area. In Kigali City many new unauthorised constructions have been demolished since 2005. Therefore, medium- and lower-income earners who wish to build new houses manage to obtain plots in nearby rural areas where one can easily build. This trend may lead to the development of informal settlements in rural areas close to the existing towns and Kigali City, namely along main commuting roads. This may be amplified when the 2008 Kigali Conceptual Master Plan is fully implemented.

Figure 7: Informal settlement at Mont Jali, Kigali City

Source: Photograph by Emmanuel Twarabamenye

2.5 Urban land prices

The rapid growth of the urban population and the high density of population lead to high prices in both urban and rural areas, with land prices being much higher in urban areas than in rural areas. So far urban land prices have not been well studied, but in Kigali City, where land prices are the highest, a building plot of 0.6 hectares on a serviced site located in a suburb costs around 2 500 000 RwF (approximately US\$4 500). Thus urban land is not accessible to the low- and medium-income earners. In addition, Kigali City and other town administrations have failed to meet the demand for building plots. People have to wait for several years before getting a plot from the urban services in a regular way. This explains why informal settlement has expanded rapidly since the 1980s, land seekers preferring the informal land market and building immediately after acquisition of land. Some people also acquire land and sell it after some years, with substantial gain. Therefore land appears to be a worthy investment, especially in urban areas.

In non-serviced urban areas the land price varies according to its location: land located on steep slopes, on terrain liable to flooding, or far from infrastructure such as roads, water pipes, the electricity grid etc. is cheaper than land located on flat terrain and land close to an area with existing basic infrastructure.

In urban areas, until 2005 no compensation was paid for bare land, because according to Rwandan law such land belonged to the government. Therefore urban landowners used to sell small portions of

their land to land seekers to avoid having municipalities allocate their land at no cost to real developers or individuals. This is also one key factor which contributed to the extension of informal settlement, mainly in Kigali City, because compensation was only paid for deeds on the land (mainly constructions, crops and forest). From early 2005, the new land law recognises land as private property, though degraded or unexploited land may be confiscated by districts, municipalities or towns (Organic Land Law n° 08/2005, articles 73, 74, 75, 76 and 77).

2.6 Main health issues

Leading causes of morbidity in Rwanda are malaria, upper respiratory infectious diseases, diarrhoea, worms, cutaneous diseases, HIV/AIDS, tuberculosis, typhoid fever, cholera and meningitis (RR MINECOFIN 2002: 286). Medical staff and medical equipment are insufficient: in 2002 there was only one medical doctor for every 50 000 people, one nurse for 5 000 people and one hospital bed for 1 000 people. The private medical system is not developed; the existing private clinics are located in Kigali City and these are not affordable to lower-income earners (RR MINECOFIN 2002: 9).

Great efforts are being made by the government to alleviate health concerns by engaging medical doctors in rural hospitals, sensitising the population to the issue of HIV and decentralising HIV treatment to rural health care centres and hospitals, involving the population in malaria prevention and distributing nets to pregnant women, generalising the Health Insurance Scheme throughout the country, equipping public hospitals and rural health care centres, campaigning for family planning and supplying contraceptive products in all health care centres and hospitals, etc.

2.7 Main environmental issues

Rwanda's natural resources are mainly land, forests, wildlife and water that are the basis of farming, tourism, fishing and energy production. The high demographic pressure exerts strong pressure on these resources, leading to their degradation. Nowadays, the central government and local governments, planners and the population are facing problems of land scarcity and land impoverishment, deforestation, encroachment and poaching in protected areas, loss of natural habitat due to land reclamation, human settlement and overgrazing, loss of biodiversity, lake water levels falling and drying up in some cases, and marshlands drying up. Other environmental problems are the spread of invasive species like *Lantana camara* and *Strychnos scandens* in Nyungwe National Park as well as *Eichornia crassipes*, stream water pollution arising from mining activities, and industrial activities, especially in Kigali City.

To mitigate the impact of these environmental problems, the central government has initiated several policies and actions such as terracing steep terrain in several parts of the country, reforestation of deforested areas, lake catchments protection, and so forth (RR MINECOFIN 2005d).

3. The Rwandan planning system

3.1 Main legislation governing planning in Rwanda

Many pieces of legislation governing planning in Rwanda have been enacted since independence in 1962. Some date back several years, others are more recent and have not been revised thus far. Table 3 lists some of the laws and presidential decrees which govern planning in Rwanda.

Table 3: Some items of legislation governing planning in Rwanda

Legislation	Year of publication	Year of revision
Croquis d'aménagement de la Ville de Kigali	1965	Never revised
Croquis d'aménagement de la Ville de Kigali, Gisenyi, Gitarama, Ruhengeri et Butare	1984	Not revised
Décret-loi n° 11/79 du 20 avril 1979 relatif à la délimitation des circonscriptions urbaines du Rwanda	1979	Revised in 1995, 2001, 2005
Décret-loi n° 4/81 du 3 janvier 1981 relatif à la délimitation des circonscriptions urbaines du Rwanda	1981	Revised in 2002
Arrêté Présidentiel du 26 mars 1991 prescrivant l'établissement des plans locaux d'aménagement de Byumba, Gitarama, Rwamagana	1991	Not revised
Loi n° 05/2001 du 18/01/2001 portant organisation et fonctionnement des villes	2001	Not revised
Loi n° 05/2001 portant organisation et fonctionnement de la ville de Kigali	2001	Revision in process
Arrêté Présidentiel n° 18/01 du 30/09/2001 complétant l'arrêté présidentiel n° 23/12/1998 portant organisation et fonctionnement des cellules et des secteurs	2001	Not revised
Organic Law determining the modalities of protection, conservation and promotion of environment in Rwanda	2005	Not revised
Organic Law n° 08/2005 determining the use and management of land in Rwanda	2005	Not revised
<i>Journal officiel</i> 45ème Année n° spécial, Loi organique portant administration territoriale du Rwanda 2006	2006	Not revised

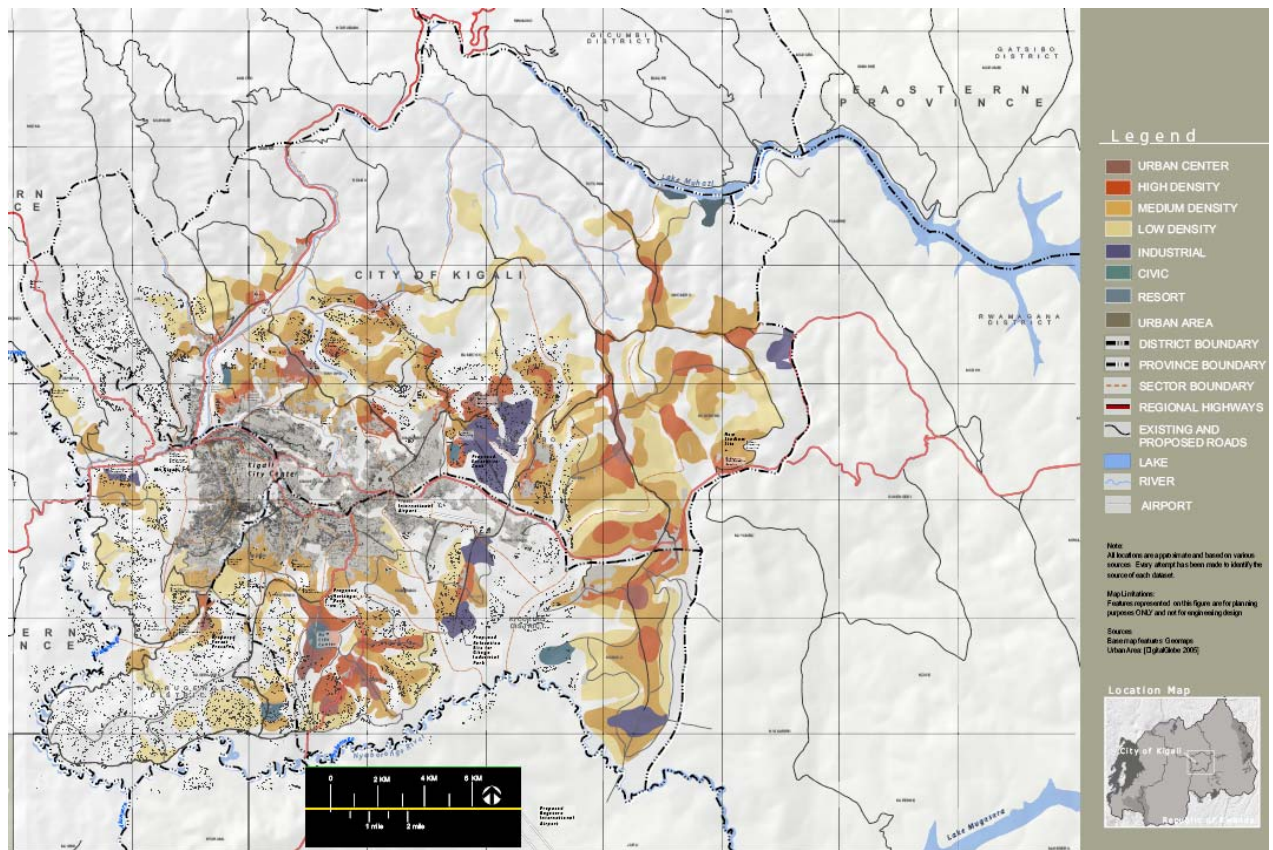
3.2 Kinds of urban plans produced

From the mid-1960s to the 1980s, successive governments privileged the production of conceptual master plans. But because of financial constraints, conceptual master plans were produced only for Kigali City, Cyangugu, Kibuye and Rwamagana.

The 2007 Kigali Conceptual Master Plan was adopted by the City Council in January 2008 and by the Cabinet in May 2008, and has to be approved by Parliament before its implementation. The plan has a 50-year duration (Ville de Kigali 2008: 19). It privileges zoning, but compared to the 1980s plan, it gives more attention to multi-storey buildings in the downtown area that will serve as multipurpose offices (public administration, commercial enterprises, etc.) and apartments to be located on the hilltops. The main land use allocation is clearly shown in Figure 8. In terms of zoning, as shown in Figure 9, each hilltop is assigned a specific function (Government Centre, Medical Research Centre, Technological Centre, University Centre, Commercial Centre, etc.) surrounded by residential

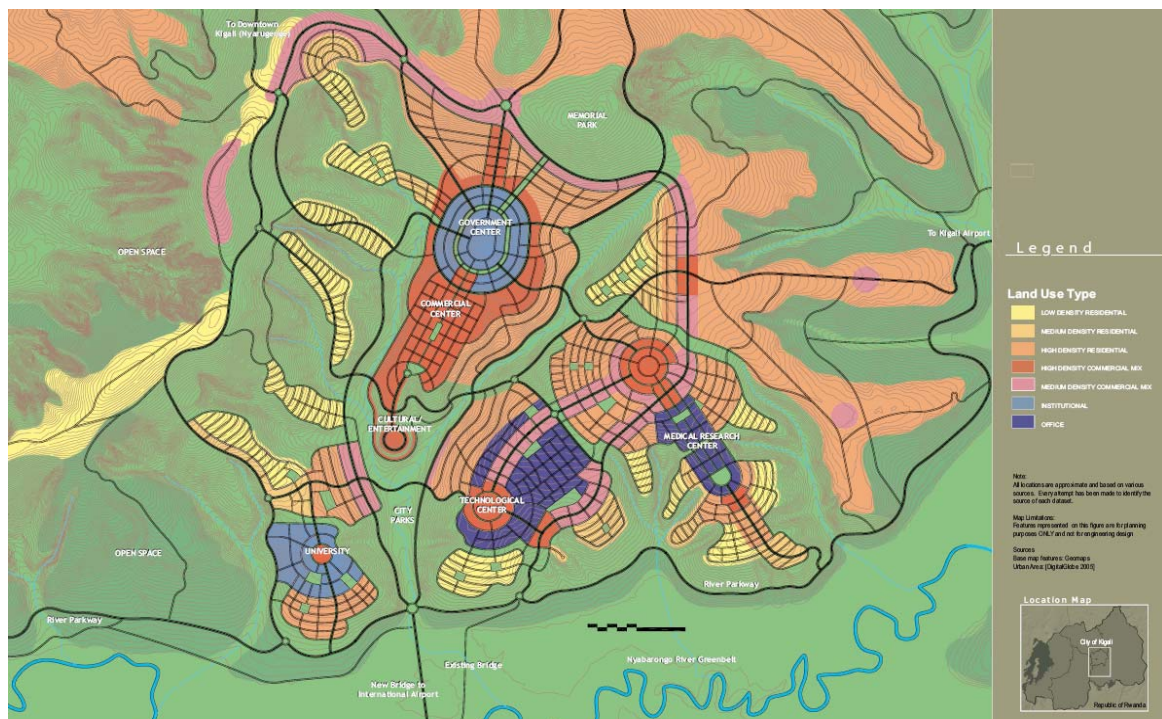
buildings with basic services.

Figure 8: Kigali Land Use Plan



Source: OZ Architecture et al. 2007: 59

Figure 9: New City Centre Vision Land Use Plan



Source: OZ Architecture et al. 2007: 8

For residential purposes, the 2007 Kigali Master Plan shows zones for each category of population and activities, but still privileges private housing estates with huge residential suburbs. This is linked to the great proportion of medium- and low-income earners in the city on the one hand, and the mentality of Rwandans who believe in having their own houses on the other. Therefore Kigali City is expected to spread greatly, and this is why it was enlarged to cover an area of 370 km² in 2005, though some zones will not be constructed. These are marshlands, valleys and slope terrains which will be reserved for agriculture, and steep terrain reserved for forestation.

3.3 Planning's effectiveness in guiding and controlling private sector development

Kigali City is the first town in Rwanda to have had a conceptual master plan elaborated and voted in 1965 (Prioul & Sirven 1981: 30) but this plan was not implemented for unclear reasons. In the 1980s, conceptual master plans for Kigali, Gitarama, Butare and Gisenyi were approved, but they have never been implemented. This was probably a consequence of excessive power held by the Ministry of Public Works and Equipment with regard to urban development. The ministry, based in Kigali, had to produce all conceptual master plans and local development plans, to mark building plots and allocate them to beneficiaries, to approve building blueprints and issue building permits and to follow up urban development all over the country. Until 2002, the ministry was represented at prefecture level by the Head of Urbanism and a few staff who were not very conscientious, poorly motivated, without relevant training, inadequately equipped and very accommodating towards people who built illegally within urban areas. As a consequence, from 1970 to 2005 in-migrants and other people started to build illegally around the existing planned core in Kigali, while other towns were stagnant or grew at a very slow pace.

To stop the extension of informal settlement in urban areas, the government has adopted the National Urbanisation and Urban Development Policy (RR MININFRA 2006) which provides guidelines to all actors who deal with urban development matters. In addition, all urban planning and management activities are now totally within the remit of districts and Kigali City. Kigali City, district and sector authorities are now responsible for urban development. They have to ban all new unauthorised construction in urban areas. Even in rural areas, all new constructions have to be authorised by the administration's representative, taking into account the land development plan agreed to by the habilitated organs, if not those constructions which will be demolished (the law is under study).

As there is no state or district housing company in the country, all construction activity for residential developments as well as for businesses is undertaken by individuals and private housing companies (RR MININFRA 2007: 27). Currently, specifically in the capital, the 2007 Conceptual Master Plan will guide private sector development because Kigali City district and sector officials are committed to a better urban planning and management system. Therefore informal settlements will be banned. But there is a risk that poor people could be forced to settle outside the urban areas, as they will be unable to meet urban construction standards or to rent apartments in residential multi-storey buildings.

3.4 The roles of ministries, Kigali City, provinces, districts and the population in planning

Since 2002 Kigali City and other districts have had their own legal identity and financial autonomy; therefore they are totally responsible for conceiving, designing, developing and implementing their urban, rural and sector development plans once these are approved by the appropriate organs. The conceptual master plans of towns and Kigali City have to be approved by the Cabinet and by Parliament. To prevent negative environmental impacts, all plans have to be checked and approved by the Rwanda Environmental Management Authority before their approval by various ministries, the Cabinet, and eventually by Parliament. Since 2002, the role of ministries has been to elaborate

national policies, and in collaboration with provincial officials to supervise the implementation of districts' and Kigali City's development plans, once approved.

In regard to conceptual master plans for towns in Rwanda, these are produced by foreign private companies renowned for their expertise. For instance, the 2007 Kigali Conceptual Master Plan was produced by a consortium of private US companies: OZ Architecture, EDAW, Tetra Tech, ERA and Engineers without Borders-USA. During the plan development process, the staff of the above-mentioned companies worked closely with Kigali City district and sector officials at all stages from spring 2006, and the population was also consulted on a sector basis throughout Kigali City from July to September 2006 through public meetings and survey questionnaires. Local staff were involved in collecting socio-economic data at sector level. They also led consultative meetings with the population in designing the plan. After its approval by the government, mayors and sector officials, the executive secretaries of cells presented the plan to the population and advised them to stop constructing new buildings without building permits.

The involvement of Kigali City staff and Kigali City Council and local officials in the process of developing the Kigali City Conceptual Master Plan helped the OZ staff and their associates to better understand the local situation. Thus the OZ staff could align the Kigali Conceptual Master Plan with regional planning, taking into account national planning policy (including the national villagisation policy, the Districts Development Plan, and infrastructure development plans including the planned new Bugesera International Airport) as there is strong linkage between Kigali City and the rural areas.

So far, the central government, via Kigali City and districts, finances all activities related to the production of town conceptual master plans. But a World Bank Project-funded 'Projet d'Infrastructures et de Gestion Urbaines' has been servicing urban low-standard neighbourhoods in Kigali City, Butare and Ruhengeri towns since 1994. This project has the mandate to:

- mark out a road network and finance its construction;
- install water pipelines;
- contribute to the town's capacity-building in the area of urban planning and management;
- upgrade informal settlements;
- support specialised private companies dealing with urban planning and management.

The rapid urban growth rate leading to the large extent of informal settlements in urban areas, the shift from scattered to grouped habitat, the present environmental degradation and the government's willingness to protect the environment, the lack of rural and urban planners in Rwanda, and the commitment of the central government to base the development of the country on a planning system, led the Geography Department at the National University of Rwanda to abandon its former programme oriented to training undergraduates in Human and Physical Geography and Environment and Planning, and to start a new curriculum focusing on Urban and Regional Planning and Environmental Management in 2006.

4. The status of the planning education system in the Department of Geography, National University of Rwanda

The Department of Geography currently offers two degrees: a Bachelor of Science with Honours (BSc Hons) in Urban and Regional Planning (URP), and a BSc Hons in Environmental Management (EM). Both degrees are structured as four-year programmes, organised in two stages:

- The first two years are common for both options; here students acquire general knowledge in the fields of geography, environment, geo-information sciences, sciences and research methodology.
- In the third and fourth years, students specialise in either URP or EM with many modules that are practice-oriented.

4.1 Objectives of the curriculum

The programmes aim to train undergraduate students in the fields of URP and EM to be capable of using modern geo-information technology to address current environmental and land development and planning challenges in Rwanda, especially in the context of infrastructure development, growing urbanisation, land reform implementation, poverty alleviation, population growth and sustainable development.

The specific objectives of the curriculum are to:

- provide practice-oriented knowledge in urban and regional planning and environmental management;
- prepare students for graduate-level research;
- develop student capacity for critical thinking, analytical and research design skills;
- develop an awareness of the importance of interdisciplinary collaboration and training in order to solve complex environmental and urban problems.

4.2 Entry requirements and exit profile

Admission requirements

To be recruited into the Department of Geography, the candidate must have:

- completed secondary school training in Mathematics-Physics, Biology-Chemistry, Mathematics-Geography-Economics, Human Sciences or equivalent subject groupings.
- a good working knowledge of both English and French.

Exit profile

Upon completion of the BSc (Hons) URP programme, graduates will be able to:

- prepare urban plans and district spatial development plans;
- coordinate urban development in terms of stakeholder analysis, preparation and implementation of urban development plans, and operation of a geographical information system;
- administer and manage transfers of ownership and use of land, buildings and real estate;
- advise and support public and private land developers;
- advise local governments on planning, city growth, infrastructure, public facilities, village

planning and implementation, land dispute resolutions and urban property building;

- coordinate action plans related to project planning and management in terms of conflict resolution and problem-solving within the context of strategic development planning;
- monitor development of cities and towns.

Graduates will work as researchers, consultants, urban and regional planners in governmental institutions, teachers at private and public educational institutions, agents in private companies or independent entrepreneurs.

Upon completion of the BSc (Hons) EM programme, graduates will be able to:

- develop, operate and apply environmental management tools and information systems for planning of natural resources (urban and rural) by adoption of information and communication technology tools;
- coordinate action plans related to environment-oriented project planning and management, conflict resolution and problem-solving;
- develop and execute an environmental management-related research proposal, derive and disseminate research findings, and write a research report.

Graduates of this programme will be marketable as associate researchers, consultants, trainers or managers in environment-related governmental and non-governmental institutions, as well as teachers at private and public educational institutions.

4.3 Teaching and learning methods and student assessment

Teaching methods used include – among others – lectures, self-study, group discussion, problem-solving, group research projects, practicals, guided exercises, seminars, field trips and so forth. Students are expected to participate actively in all learning activities and students' attendance is compulsory.

Forms of assessment include – among others – formal tests and exams, laboratory exercises, literature reviews (essay), oral presentations (including follow-up discussions), field trips and project reports, internship work and report and a Final Research Project in Year IV.

4.4 Programme modules

Table 4 sets out all modules taught from Year I to Year IV and the amount of student working hours and credits allocated to each module. A credit equals 10 student working hours. The annual student working time amounts to 1 200 hours.

Table 4: Programme modules, Years I–IV

	Credits	Self-study	Lecture hours	Practical seminars	Total
Year I Modules					
Science for Geography	20	50	120	30	200
Introduction to Physical Geography	20	60	80	60	200
Introduction to Human Geography	20	80	60	60	200
Ecology and Biogeography	10	40	30	30	100
Introduction to Statistics and Research Methodology	15	50	70	30	150
Introduction to Cartography and GI Science	15	60	50	40	150

Introduction to Planning	10	30	30	40	100
Research Project 1	10	15	10	75	100
Total	120	385	450	365	1 200
Year II Modules					
Advanced Research Methods and Statistics	15	40	50	60	150
Rural Spaces	15	70	30	50	150
Urban Spaces	15	70	30	50	150
Regional Geography	15	60	40	50	150
Geographical Thought and Approaches to Science	10	30	30	40	100
Introduction to Remote Sensing	15	50	30	70	150
Introduction to Land Administration	10	40	30	30	100
Introduction to Environmental Management	10	40	30	30	100
Research Project 2	15	30	10	110	150
Total	120	430	280	490	1 200
Year III Urban and Regional Planning Modules					
Urban and Regional Planning Theory	15	60	40	50	150
Land and Housing	15	60	30	60	150
Services and Infrastructure Planning and Management	15	60	40	50	150
Local Economic Development	15	60	30	60	150
Methods and Techniques in Urban and Regional Planning	20	40	50	110	200
GIS for Urban and Regional Planning	20	50	50	100	200
Research Project 3 for Urban & Regional Planners	20	40	20	140	200
Total	120	370	260	570	1 200
Year IV Urban and Regional Planning Modules					
Project Planning and Management for Urban and Regional Planning	20	80	50	70	200
Entrepreneurship	10	30	30	40	100
Communication Skills	10	20	20	60	100
Professional Practice and Internship in Urban and Regional Planning	20	40	10	150	200
Research Project Preparation	20	80	20	100	200
Final Research Project	40	50	0	350	400
Total	120	300	130	770	1 200
Year III Environmental Management Modules					
Watershed Management	10	30	20	50	100
Local Economic Development	15	50	30	70	150
Resource Assessment and Land Use Planning	10	30	20	50	100
Regional Ecology, Land Degradation	15	50	30	70	150
Environmental Risk Analysis and Management	10	30	20	50	100
GIS for Environmental Management	20	50	30	120	200
Environmental Analysis and Planning	20	60	40	100	200
Research Project 3 for Environmental Management	20	50	10	140	200

Total	120	350	200	60	1 200
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Year IV Environmental Management Modules					
Project Planning and Management for Environmental Management	20	80	50	70	200
Entrepreneurship	10	30	30	40	100
Communication Skills	10	20	20	60	100
Professional Practice and Internship in Environmental Management	20	40	10	150	200
Research Project Preparation	20	80	20	100	200
Final Research Project	40	50	0	350	400
Total	120	300	140	760	1 200

The first three years each include a research project module reflecting real-life situations in which students have the opportunity to develop their capacity to assess various issues, find appropriate solutions and consequently grow accustomed to research. In the final year, students have a five-week internship in a public or private company that deals with urban and rural development or environmental management. This is an opportunity for students to be involved in solving real-life problems under close supervision of practitioners.

The revision of this programme is planned for 2011, when the first graduates will be in employment.

4.5 Class numbers and staff/student ratio

In 2008 the total number of students amounted to 92, distributed as follow: 53 student in Year I, 27 in Year II and 12 in Year III. The department has 11 permanent staff members, but 5 of them pursue PhD studies abroad. Therefore the staff/student ratio is 15 : 3. As the permanent staff complement is low, the department hires staff services from other university departments, especially from the Departments of Soil Sciences, Physics, Mathematics, Chemistry and Civil Engineering and from the Centre for Geo-Information Systems and Remote Sensing of the National University of Rwanda (CGIS-NUR).

4.6 Library and ITC resources available

A good training in the fields of URP and EM must be supported by appropriate and up-to-date reading materials for both students and lecturers and by Information & Communications Technology (ICT) equipment.

For published materials, the department relies on the CGIS-NUR Documentation Unit funded by the initiative known locally as NPT/RWA/071 Project (financed by NUFFIC/The Netherlands) and other partners, and on the National University of Rwanda Main Library. Both are insufficiently furnished with appropriate literature for the programme. Therefore there is a big need to acquire more and recently published materials in the fields of URP and EM.

For ICT equipment, the department relies exclusively on the two CGIS-NUR laboratories. Unfortunately, these facilities are small (with 20 computers each) and the connectivity is still low. Thus, students and CGIS-NUR staff face problems in using GIS and remote sensing software and in accessing free online journals. The connectivity needs to be improved, and a third laboratory equipped with more computers is also needed.

5. Conclusion

The central government has embarked on both rural and urban development initiatives in order to transform Rwandan society. To achieve this objective, the country needs people highly skilled in planning cities in a sustainable manner. In this regard the Department of Geography has initiated a new programme centred on urban and regional planning and environmental management with the aim of providing graduates who are able to deal with the challenges and constraints facing the country in regard to urban and environmental matters, and equipped to contribute to implementing new policies such as villagisation, land administration, etc. As the present curriculum dates back only three years, it is too early to realistically assess its impacts. The programme will be updated from time to time and the department will have to work in close collaboration with more experienced African planning schools in order to improve the curriculum and to address national and regional issues relating to urban and regional planning and management.

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