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List of abbreviations/Acronyms

CBOs: Community Based Organizations
CBD: Central Business District
CDM: Clean Development Mechanisms
DC: District Council
EDPRS: Economic Development for Poverty Reduction Strategy
EIA: Environmental Impact Assessment
EMP: Environmental Management Plan
GDP: Gross Domestic Product
GIS: Geographic Information System
GTZ: German Technical Cooperation
Hu/ha: Housing Unit per Hectare
ICT: Information and Communication Technology
KCC: Kigali City Council
LUP: Land Use Plan
LPG: Low Petroleum Gas
MINAGRI: Ministry of Agriculture
MINIRENA: Ministry of Natural Resources
MW: Mega Watt
MLR: Ministry of Lands and Resettlement
NLUDMP: National Land Use and Development Master Plan
NLUPG: National Land Use Planning Guidelines
NGOs: Non-Governmental Organizations
OSC: Once Stop Centre
RAB: Rwanda Agriculture Board
RNRA: Rwanda Natural Resources Authority
RLMUA: Rwanda Land Management and Use Authority
RCAA: Rwanda Civil Aviation Authority
SEA: Strategic Environmental Assessment
ToR: Terms of Reference
Ta2O5: Colombo-tantalite
WSSD: World Summit for Sustainable Development
7YGP: 7 Year Government Program
WO3: Wolframite
SnO2: Cassiterite
UDP: Urban Development Plan
UN: United Nations
PREFACE

The Government approved the Rwanda National Land Use Development Master Plan in 2010 and other urban and human settlement planning tools. Since then these tools have been the sources of guidance for land use and spatial planning, land use zoning and efficient use of land in Rwanda. These standards and guidelines have not covered all types of land uses, but they are very important tools in the land use management, spatial planning and permitting systems.

The Ministry of Natural Resources (MINIRENA), based on the government policies, found it necessary to consolidate existing land use guidelines and standards relating to social, economic and physical infrastructure provision from various sectors into one document for ease of implementation and enforcement and developed the Land Use Planning Guidelines for efficient and optimal use of our scarce land resource. These guidelines will serve as planning tool for land use plan preparation processes and major land uses development controls.

The objective of this document is to guide efficient land use and management and to standardise land use plans preparation and development in Rwanda.

This document is divided into five chapters that can be grouped into three main parts. Part I contains the Densification Guidelines, part II highlights clear steps and consultations in the land use plan planning process and stakeholder and community involvement guidelines with the Environmental and socio-economic Guidelines and Planning Standards theme by theme come under part III.

The Guidelines provide clear definitions for land use activities within each land use zone. They also spell out the considerations that must be taken into account if the land use zone is to be changed, either for an individual plot or parcel of land within a local plan or a broad land use zoning classification in the Master Plan.

The second part of the document contains spatial planning standards. These standards are based on a number of sources; comprising guidelines, provided by the National Land use Development Master Plan (2010), adapted standards provided under the Rwanda Urban and Building Code (2015), other standards developed by Ministries of Lands and Housing in EAC as well as other internationally accepted standards provided in different projects/documents.

In addition, the Standards have taken into account the use of buffers areas especially in a rapidly urbanizing society employing new technologies. Specific guidelines have also been developed on the process of preparing the three levels of land use plan that will control the management of development throughout the country: the NLUDMP; the District Land Use Plan, and the Local Plan and DPP.

The National Land Use Planning Guidelines and Standards are intended to help Local Planning Authorities in approving any land use plan and development within their area of jurisdiction. It is also expected to assist individual developers, Consultants, Estate managers, the Academia and Planning Authority in their efforts to promote harmonious spatial, land use and human settlement planning and management. They outline the planning steps, criteria relating to acceptable site location, conflicting land uses, and are not intended to prescribe specific design solutions. Rather they are basically a checklist of the principles which should be followed in preparing and assessing land use plans and development proposals, and a yard stick for appraising the quality of development, from the point of view of the users or occupiers of buildings, and in terms of its impact on the surrounding areas. Local and/or
other Planning Authorities as well as all developers are entreated to consult these guidelines and standards carefully. If further clarification is required they should contact Rwanda Land Management and Use Authority and Rwanda Housing Authority as the two government agencies covering land use planning at national level and Kigali City and District One Stop Centres, at local level.

The National Land Use Planning Guidelines were developed through the former Rwanda Natural Resources Authority (RNRA), the Department of Lands and Mapping (DLM), respectively a team of professionals from this department, supported by an international consultant outsourced from DFID LTRSS Project. The team also worked closely with the other departments of the RNRA and MINIRENA who provided valuable guidance during the preparation of the document.

The long process of developing the National Land Use Planning Guidelines involved comparative studies of other countries with conditions similar to Rwanda, including East African countries as well as emerging economies of Asia and South Africa. In the process, technical validation workshops with/and by local, central institutions and professional organizations have been held (Appendix). In concluding the process and for effective completion and adoption of the Guidelines, the Ministry of Natural Resources requested concerned institutions, i.e., MININFRA, MINAGRI, MINICOM, MIDIMAR, MYICT, MINALOC, MINEDUC, MINISANTE, MINADEF, RDB, RHA, REG, WASAC, RTDA, RAB, NAEB, REMA, the City of Kigali and all Districts to provide formally comments regarding the compliance of the Guidelines to respective sector policies.
EXE
C U T IV E  S U MMARY

Land in Rwanda is a key factor of production, making its proper management a requirement for sustainable development. Due to increasing demand of land for settlement both urban and rural residential settlements as the result of high increase in population growth in Rwanda, given the actual development and mismanagement of lands it has affected and will continue to affect agricultural, grazing, forestry, wildlife, tourism and land resources available if no appropriate measures taken. To address the identified key issues in land use management within a development oriented approach poses challenges to all stakeholders and requires integrative solutions across the policy, socio-economic, and environment sectors.

The UN Millennium Declaration, the UN Millennium Development Goals and the World Summit for Sustainable Development (WSSD) Implementation Plan recognized the maintained integrity and restoration of land resources as a critical factor in achieving economic and ecological sustainability. To meet these challenges, new and innovative approaches are required. The National Land Use Planning Guidelines (NLUPG) takes into account the provisions of the Rwanda National Land Policy 2004 specifically the Chapters which deal with Land and Environment etc. as well as in land laws and the various other laws, regulations, policies and guidelines in the different land sectors. It also embeds vision 2020, EDPRS 2, Rwanda Green Growth and Climate Resilience Strategy, 7YRS Government, as well as the Urban Planning and Building Code.

The NLUPG was subjected to stakeholders validation through the National Validation Workshop organized at Lemigo Hotel and gave the stakeholders an opportunity to re-examine the proposed land use guidelines, refine the document further and make final inputs.

The development of the NLUPG is aimed at guiding efficient use of land by addressing land use conflicts and managing both natural and anthropogenic disasters through the promotion of sustainable land management. The NLUPG have been grouped into four chapters and covered the following 18 major thematic areas and:

1. Guidelines on the Land Use Planning Process and Environmental Considerations
2. Densification and Mixed Use Guidelines
3. Land Subdivision, reploting Consolidation Guidelines
4. Guidelines for zoning, rezoning and land use change
5. Guidelines for urban renewal and Informal settlements upgrading
6. Guidelines for industrial location
7. Guidelines for establishing petrol and gas stations
8. Land Use Planning Guidelines for airports and airstrips
9. Guidelines on the Preservation of Agricultural and Pastoral Lands
10. Guidelines on Mining and Quarrying
11. Guidelines on Hazards and Disaster Management

Land Use Planning Guidelines 10
17. Guidelines on conversion of land and on land recovery by the Government
18. Socio economic facilities (Establishment of Schools, Hospitals, Places of Worship, Prison and Cemeteries)

The main aim of the NLUPG is to ensure that National Land Use Planning processes and procedures are harmonized at National and Local Government levels. The guidelines support a coordinated planning process which facilitate decision making, harmonizes interests and offers economically, socially and environmentally sustainable solutions. This will provide guidance for land use planning and management in Rwanda.

The legal implication of the NLUPG is to provide viable bottom up harmonization strategy, which will inform the enactment, review and/or amendment or repeal of Regulations, Standards and Laws.

The implementation of the National Land Use Planning Guidelines NLUPG will be promoted by means of land use planning and the means available to government authorities. In planning at the regional and municipal level, the guidelines will be made concrete while taking into consideration the specific features of different areas and while coordinating the national guidelines with the regional and local goals.

Activities regarding implementation of NLUPG will be jointly conducted between MINIRENA/ Rwanda Land Management and Use Authority other government authorities and Local Governments. MINIRENA/ Rwanda Land Management and Use Authority shall ensure continual discussions with relevant government authorities/agencies and local governments on the implementation of the NLUPG.
CHAPTER ONE: GENERAL CONTEXT

1.0 Introduction

Land is a prime requisite. Rwanda is one of the most populated countries in Africa and land is scarce. The Nation is experiencing a steady period of growth, in terms of both population and economic development.

The country's natural resources and in particular arable land are not increasing. The result is an increase in competition and conflict of land, exacerbated by possible effects of climate change that can only be resolved through planning based on principles of sustainability. Consequently, there are greater expectations for natural resource management and improved living environments; increasing demands for greater public participation in the planning process, and rapidly changing technologies in infrastructure development. It is critically important that we develop an effective planning system to manage, protect and use our land (and water) efficiently. This will lay the foundation for improving the lives of Rwandans today and giving our children the same opportunities for health and prosperity, and an environment as beautiful and safe as the one we share.

As a consequence, the Government has through Rwanda Land Management and Use Authority initiated a planning procedure with the first step resulting in a National Land Use and Development Master Plan. This is the first of its kind for Rwanda. At the same time a new legislative framework for alignment and harmonization of the new Plan, the provision of updated and accurate mapping material for the country and a nationwide land registration project were put in order, which together will make our nation well equipped to meet future challenges to use and protect our vulnerable environment in a sustainable way.

However, after the NLUDMP had been adopted, the most challenging task awaits – its implementation: to have its context to inspire and direct cross sector and local planning and to have the Plan touch ground in actual land use changes and building activities at local level. For that purpose, actions were taken to facilitate this assimilation resulting in 30 District Land Use Plans were prepared by the land professionals at local governments using Geographic Information System (GIS) as a tool.

Rwanda Land Management and Use Authority has the overall responsibility to guard the Nation’s land is used sound and efficient. Among other important subjects the NLUDMP highlighted (five years ago) the need for a de-concentration Urban Policy (now found in the Secondary Cities Program), mixed use development, mixed housing and densification. Unfortunately, rural and urban planning have not comprehended with the guidelines. Furthermore, actual development tends to deviate from sound planning principles.

Continuous and rapid low-density development is and will threatening the long-term sustainability of land use development, and is creating the following challenges:

- Good agricultural land on the urban edges and elsewhere is rapidly being consumed by urban development, and valuable biodiversity resources and areas of scenic and amenity value are being threatened.
- The unit cost of providing the necessary infrastructure required to service low-density forms of urban development is far greater than the unit and operating cost of servicing medium to higher-density forms of urban development.
- Urban sprawl has created long travel distances with fragmented and dispersed urban activity patterns, which make it difficult to develop a viable public transport system. This has a negative impact on the mobility of poorer people, who are dependent on public transport (travel and fuel costs), and is unsustainable in an oil-constrained world.
Road-based transport (including private transport) with increased traffic congestion and carbon dioxide (CO) emissions has significant environmental pollution consequences.

Lastly, the inefficiency caused by this fragmented and low density form of development has serious economic implications, limiting access to opportunities and causing operational inefficiencies and a wastage of supporting economic resources (both natural and built).

Densification efforts together with mixed land use and green housing approaches are viewed as necessary steps to promote the long term sustainability of the Nation’s valuable natural, urban and rural environments and Rwanda Land Management and Use Authority has taken the initiative to elaborate in a more detailed way on these issues and present National Land Use Guidelines as a high priority to:

- Guide decision making with respect to mixed (urban) land use, mixed housing and density-related applications;
- Guide the detailed urban planning and design of action area plans;
- Align density patterns, trends and proposals with the land use management regulations and infrastructural capacity; and
- Identify and put in place feasible mechanisms and processes to support the appropriate implementation and management of higher densities.

The instrument presents the land use and Land Use Planning Guidelines for all land use planners and developers in Rwanda which is one of the key tools and the first of its kind developed at national level to facilitate the enforcement and implementation of the NLUDMP. It is intended as a clear mechanism for directing the land use planning and development in the public and private sectors to follow a clear set of planning and development objectives, definitions, regulations and standards that reflect the planning concepts proposed in the Plan. This Guidelines document comes to address issues that were experienced during the implementation of the NLUDMP and improves the planning process. The regulations and guidelines presented in this instrument shall complement the national directives, guidelines and planning standards for the Areas and Hubs of National Interest stated in the Plan.

This document is drawn from relevant Rwanda government and legislation and guidelines, regional (EAC) as well as international standards and relevant research and the sources cited.

1.1 Key Land Use Challenges and Threats

The main land use challenges and threats in Rwanda include:

- Population pressure in Rwanda has pushed farmers into increasingly fragile lands.
- The increase in degradation processes acting on hill slopes eventually leads to excessive deposition in the valley bottoms conditions which over time precipitate flood damages and destruction of low land crops in different areas of the country.
Decreasing soil fertility which reduces vegetation cover hence increased potential for soil loss and even lower fertility.

Urbanization increase: Rwanda is highly urbanizing compared to the rest of regional countries which has great has greatly affected land use in terms of increased residential, infrastructures and industrial uses. The country has currently reached 19% of urbanization rate with the target to reach 35% by 2020.

Soil erosion has worsened due to continuous cultivation of land, settlement on marginal land that is unsuitable for agriculture, and lack of reliable soil conservation methods.

Climatic changes: The rainfall in Rwanda is unpredictable. Annual rainfall increases from East (900mm) to West (1,600). The eastern lowlands receive less rain, with an annual rainfall that is less than 1,000 mm per year, while the higher altitudes of northwest receive more, with an average of 1,800 mm per year, and a maximum of 2,500 mm.

Abandonment of agricultural activities due to inadequate infrastructure.

Uncontrolled subdivision of land is still increasing and being practiced, though there are strict laws against it especially in rural areas.

Wetland reclamation: Despite their impotence for environmental protection, most of the wetlands have been cultivated by local communities for subsistence farming which has diverse effects.

Encroachment, Deforestation, Loss of biodiversity: Rwandan forests are subjected to strong human pressure. Due to forest clearing, between 1958 and 1978 Nyungwe mountain forests surface area was reduced from 19114,125 ha to 97,138 ha, i.e. a loss of approximately 17,000 ha in a space of 22 years. This is, in other words, a reduction of 15% of the forests surface area. This huge forest was already being destroyed due to a steady stripping off of fuel substances for commercial purposes, as well as the poaching of big mammals such as the buffaloes and the elephants.

Lack of respect to master plans: Though the government of Rwanda put more efforts in establishing urban master plans in all District towns and other different land use plans. It has been noticed that, implementation and practices sometimes violates such initiated master plans hence negative effects on land use.

Inadequate planning for the informal sector activities.

Inadequate human capacity for planning and management of natural and financial resources: Poor management and use of land resources are also a result of inadequate human, material land financial resources. The cadastral system, which is at the core of land administration, requires trained and motivated staff as well as an enormous amount of material and financial resources, which the country still lacking. Continued country’s land reform requires the collaboration of several stakeholders from various sectors in order to be effective.

The return of refugees as the result of disastrous effects of war and genocide, the death and displacement of thousands of Rwandans resulted in the abandoning and destruction of anti-erosion structures. The massive return of refugees led to the systematic destruction of existing wooded areas, and a quasi-anarchical takeover of protected zones, namely the Akagera National Park and the Gishwati natural reserve.
1.2 Principles of National Land Use Planning Guidelines (NLUPG)

The NLUPG are based under the following principles:

- Land use planning is orientated to local conditions in terms of both method and content. Planning approaches often fail because global models and implementation strategies are applied and taken over automatically and uncritically. But LUP is not a standardized procedure which is uniform in its application world-wide. Its content is based on an initial regional or local situation analysis.

- Equity and acceptability and public participation (Land use must also be socially acceptable. Goals such as food security, employment and re-distribution of land may be undertaken to reduce inequality or alternatively to attack absolute poverty.

- Land use planning considers cultural viewpoints and builds up on local environmental knowledge. Rural societies or groups can often provide complex indigenous knowledge of the environment. If this is the case, such local knowledge should be part of the basis for planning and implementing a sustainable land use.

- Land use planning takes into account traditional strategies for solving problems and conflicts. Traditional rural societies have their own way of approaching problems and settling conflicts concerning land use. In the process of land use planning, such mechanisms have to be recognized, understood and taken into account.

- Land use planning assumes a concept which understands rural development to be a "bottom-up" process based on self-help and self-responsibility. The population should actively participate in the process of LUP. The results of planning and the implementation of measures can only be sustainable if plans are made with and by the people, not behind them or even against them. To ensure a feeling of ownership concerning self-help activities, people who are affected have to be involved in the planning process from the early beginning. Sustainability (Sustainable land use is that which meets the needs of the present generation while at the same time conserving resources for future generations).

- Land use planning is based on interdisciplinary co-operation. The ecological, economic, technical, financial, social and cultural dimensions of land use make it necessary to work with an interdisciplinary approach. Land use planning provides many interfaces with other technical disciplines and planning fields. Therefore, one goal of development planning is to make efficient and productive use of land.

- Land use planning requires transparency and be easy to the public. Therefore, free access to information for all participants is a prerequisite. It increases the motivation of the people for creating sustainable results.

- Conflict Resolution (harmonization of Resource use-conservation and utilization and promotion of compatibility).

- Planning for the unexpected events (Disasters and influx of displaced persons).
1.3 Objectives of the National Land Use Planning Guidelines

The objectives of the NLUPG are:

- To standardise land use planning processes and procedures of the land development operations, regarding efficient and optimal use of land.
- To guide land managers, land use planners and practitioners at all levels in the process of land use planning.
- To resolve land-use conflicts that may happen among the users.
- To enable land users particularly investors have the same understanding in implementing Rwandan Government Land Policy and development strategies.
- To promote sustainable land management.
- To provide a number of tools and resources that could be of practical use by land use planners.
- To prevent and mitigate land degradation.
- To manage natural and anthropogenic disasters.

1.4 Aim of the Guidelines

The aim of the NLUPG is to ensure that land use planning processes and procedures are harmonized at national and local government levels. The guidelines support a coordinated planning process which facilitate decision making, harmonizes interests and offers economically, socially and environmentally sustainable solutions. This will provide guidance for land use planning and management in Rwanda.

1.5 Purpose of the Guidelines

- The purpose of the Land Use Planning Guidelines is to explain the principles and procedures of land use planning in general, and how it can be applied at various levels in particular.
- These Guidelines shall direct all target users in the management of private as well as public land, in the planning and processing of land development and development applications.
- Land use planning guidelines presents a development approach that contributes to the prevention of land use conflicts, the adaptation of land uses to physical and ecological conditions, the lasting protection of land as a natural re-source, the lasting productive use of land and a balanced use that fulfils all social, ecological and economic requirements.
- Land use planning guidelines leads to achieving of food security, mitigating and adapting to climate change, protecting biodiversity while at the same time initiating economic growth, protecting people from natural disasters, preventing and settling land conflicts..
1.6 Target users of the Guidelines

These Guidelines are targeting the followings:

- Administrators and Technicians involved in land use planning and natural resources management at district and national level.
- The civil servants from various line ministries, or project staff of national and international NGO’s and consultants.
- The relevant departments of colleges and universities.
- Ministries and national agencies as stakeholders in land use planning.
- Local Governments: City of Kigali One Stop Centre (OSC) and District OSCs.
- Land managers, land use planners, surveyors, land administrators and other professional practitioners in land.
- Developers and investors.
- Local communities in general.
CHAPTER TWO: LEGISLATION AND POLICY INFORMANTS

2.1. Land use planning guidelines in relation to legislation and policy informants

A number of laws, strategy and policy documents, prepared by Government, regulate land use development in Rwanda. For an outsider it seems to be an overwhelming number of such documents and in fact they are not conflicting in many cases. Due to the complexity it is not easy for the planner to know what (s) he should pay most attention to. Thus, this document is aiming at simplifying and disseminating land use planning guidelines for better observance by the specialists and the general public.

2.2. Legal framework

Several land laws and orders have provisions on land use as follows:

- Law No. 24/2012 of 15/06/2012 relating to the planning of land use and development in Rwanda;
- Law N°43/2013 of 16/06/2013 governing land in Rwanda;
- Law N°10/2012 of 02/05/2012 governing urban planning and building in Rwanda;
- Law N°20/2011 of 21/06/2011 governing human habitation;
- Law N°32/2015 of 11/04/2015 relating to expropriation in the public interest;
- Law N°87/2013 of 11/09/2013 determining the organization and functioning of decentralized administrative entities;
- Ministerial Order N°14/11.30 of 21/12/2010 determining the models of land consolidation;
- Ministerial Order N° 04/Cab.M/015 of 18/05/2015 determining urban planning and building regulations;
- Ministerial Instructions relating to the implementation of the National Grouped Settlement Program in Rural Areas (27 May 2009);

2.3. The Relationship between Guidelines and Vision 2020 Pillars

Pillars of the VISION 2020 in relation to guidelines are as follows and some crosscutting issues:

Infrastructure Development: The rehabilitation and development of infrastructure is a crucial aspect in lowering the costs of doing business in Rwanda, which will attract domestic and foreign investment.

Land use management: Land use management is a fundamental tool in development. As Rwanda is characterized by acute land shortage, a land use plan is needed to ensure its optimal utilization in urban and rural development.

Urban development: Rwanda is characterized by low but accelerating urbanization. This has happened in a rapid and uncoordinated manner, meaning that social services and employment opportunities are lagging behind.
Natural Resources and the environment: The major problem in the field of environmental protection in Rwanda is the imbalance between the population and the natural resources (land, water, flora and fauna and non-renewable resources, which have been degrading for decades). This degradation is observed through massive deforestation, the depletion of bio-diversity, erosion and landslides, pollution of waterways and the degradation of fragile ecosystems, such as swamps and wetlands.

2.4. The National Land Use Planning Guidelines in relation with EDPRS

In its Priority Areas for Rural Development, EDPRS 2 suggests “Integrated Approach to Land Use and Human Settlements” given land scarcity, land allocation for agriculture, industry and settlements will be a key factor in determining growth in rural areas in EDPRS 2. The challenge is how to manage and administer a range of land use issues, from dealing with land allocation to dealing with land disputes amongst small holders. The more efficient the system the more investment and income generation that is likely to occur, therefore there is a need to strengthen two functions: firstly, overall land use allocation for development, and secondly the decentralized process of land allocation and management. Growth in quality human settlements will depend on effective land management and the pull framework of infrastructure and services in rural areas. Almost all other priority areas in EDPRS 2 are in compatible with the National Land Use Planning Guidelines.

2.5. The 7 Year Government Program 2010-2017

Program 6: Land, Forestry, Environment and Natural Resources

Government is aware that land is a natural resource for the current generation and that it must be adequately utilized for the future generations to inherit and that is the reason why land and other resources on in it need permanent preservation by each and everybody in Rwanda for sustainable development.

The Following actions to be carried out:

- **Soil Management**
  - To implement the National land use master plan and districts’ land use master plans so as to rationally manage and use urban and rural land for its increased productivity.
  - To keep fighting erosion on steep slopes to the rate of 100%.
  - To complete by June 2012 the land registration and issuance of land title deeds to help land owners to avail their title deeds as collateral security in banks.

- **Forestry**
  - To re-afforest all suitable areas to the extent that within three years, at least 30% of the national land will be covered with trees.
  - To plant trees on road sides and lakeshores, wherever possible.
- To maintain all natural and planted forests owned by Government as well as those owned by individuals.
- To develop technology and investment in industries processing forestry products.

- **Environmental Protection**
  - Capacities in coping up with climate change will increase Rwandans will be sensitized on the origin and impact of climate change. Mechanisms to implement the national strategy on climate change and low carbon development projects will be made.
  - To put in place an environment protection fund.
  - To work out a strategic plan for the rehabilitation of critically degraded ecosystems and watersheds
  - To include environment protection programs in all institutions.

- **Natural Resources**
  - To build capacities of the National Mining and Geological Authority to ensure value addition of mine and quarry products.
  - To continue research aimed at mapping out the country’s natural resources with regard to gold, nickel, copper, platinum, tin, wolfram, Colombo-tantalite, etc. for the mining products to increase, at least threefold and be exported with added value.
  - To complete the initiated study on oil.

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2.6. **National Land Use Planning Guidelines and the National Land Policy**

The National land policy of 2004 gives clear policy direction on land use management in Rwanda. These include policy responses related to the problems of rapid urbanization, inadequate land use planning, unsustainable production and poor environmental management. The key principles that guided the development of the national land policy included: Land Use Planning and Environmental Management Principles. The National Land Use Planning Guidelines development was informed by these principles.

2.7. **National Land Use Planning Guidelines and the Urban Planning and Building Code**

Within the framework of ensuring more safety in urban planning and construction industry, the Government of Rwanda put in place the Ministerial Order N°04/Cab.M/015 of 18/05/2015 determining urban planning and building regulations as per the Official Gazette n°20 bis of 18/05/2015. The innovation intends to increase safety in the urban planning and construction industry and it has systemically rolled out across the country to benefit all the people living in Rwanda. This crucial activity will help to bring about augmented accessibility to more inhabitable and safer human settlements and thus better livelihoods.
The Urban Planning Code provides urban planning principles that include criteria of defining urban centers, basic public infrastructures, objectives and requirements of site development and land subdivision, plot restructuring and re-plotting, plot development parameters based on zoning principles, categorization of urban land use, neighborhood design principles, traffic circulation principles, etc.

Rwanda Building Code provides minimum requirements for a building to ensure protection and safety, reduce potential hazards, lower construction costs by promoting the use of local materials, provide standards in construction, contribute to community well-being, provide uniformity in building practice, ensure accessibility of public buildings to the disabled regardless of their incapacities, etc. It is expected that professionals in the building construction and urban planning industries, housing inspectors, regulatory agencies, trainers and others, shall ensure the enforcement, compliance and effective implementation of the codes.

Before the establishment of Urban Planning and Building Codes, both industries in Rwanda were regulated by urban planning and building control guidelines but limited in scope. Therefore, these Codes are the first of their nature in the history of Rwanda’s urban planning and construction industries to guide the sector's performance. Therefore, the National Land Use Planning Guidelines development was guided by these principles.


Green Growth and Climate Resilience Strategy

Green growth is an emerging concept that recognises that environmental protection is a driver of global and national economic development. It refocuses society on achieving qualitative growth rather than simply increasing GDP. The Rwanda national strategy is one of the initial steps on a pathway which leads to a sustainable, secure future where Rwanda is prepared for the risks associated with climate change, population growth and rising oil prices.

One of the Strategic Objectives is to achieve Sustainable Land Use and Water Resource Management that results in Food Security, appropriate Urban Development and preservation of Biodiversity and Ecosystem Services. Mounting pressures on natural resources – land, water and ecosystem services – requires Rwanda to employ sustainable land use planning and integrated water resource management to ensure human wellbeing. This will involve a new approach to urban planning, rural resettlement and agriculture to ensure food security and to protect ecosystem services vital for sustainable development.

In land use planning "smart green growth" is a collection of land use and development principles that aim to enhance the quality of life, preserve the natural environment, and save money over time. Smart growth principles ensure that growth is fiscally, environmentally and socially responsible and recognizes the connections between development and quality of life. Smart growth enhances and completes communities by placing priority on infill, redevelopment, and densification strategies.
Green growth is economic growth, that is compatible with protecting the environment by reducing carbon and other unwanted emissions, improving the rational use of natural resources, (e.g. land) mitigating the effects of climate change, securing access to clean energy and water, and simultaneously targeting poverty reduction, job creation and social inclusion.

Examples on smart green growth principles are as follows:

- **Mix land uses.** Each neighbourhood has a mixture of homes, retail, business, and recreational opportunities.
- **Built well-designed compact neighbourhoods.** Residents can choose to live, work, shop and play in close proximity. People can easily access daily activities, transit is viable, and local businesses are supported.
- **Provide a variety of transportation choices.** Neighbourhoods are attractive and have safe infrastructure for walking, cycling and transit, in addition to driving.
- **Create diverse housing opportunities.** People in different family types, life stages and income levels can afford a home in the neighbourhood of their choice.
- **Encourage growth in existing communities.** Investments in infrastructure (such as roads and schools) are used efficiently, and developments do not take up new land.
- **Preserve open spaces, natural beauty, and environmentally sensitive areas.** Development respects natural landscape features and has higher aesthetic, environmental, and financial value.
- **Protect and enhance agricultural lands.** A secure and productive land base, such as BC’s Agricultural Land Reserve, provides food security, employment, and habitat, and is maintained as an urban containment boundary.
- **Utilize smarter and cheaper infrastructure and green buildings.** Green buildings and other systems can save both money and the environment in the long run.
- **Foster a unique neighbourhood identity.** Each community is unique, vibrant, diverse, and inclusive.
- **Nurture engaged citizens.** Places belong to those who live, work, and play there. Engaged citizens participate in community life and decision making.

This report highlights some of the principles that need to steer land use planning in Rwanda. They are Densification, Mixed Land Use, Mixed Housing and Green Design.

### 2.9. Guiding Principles for Sustainable Land Use Planning

#### 2.9.1. Household size

The household is a decisive unit in planning and in economics. It is also the base unit in many theories. It is of great importance to know the number of households in the population when estimating the future demand for housing.
In order to estimate the formation of households, the NLUDMP of 2010 has used household sizes of 4.3 persons to calculate number of households for 2010-2020. In land use planning, since 2015, population projections should base on the current figures from the NISR which states household size of 4.6 persons based on 2013/14 Integrated Household Living Conditions Survey (EICV4) focusing on poverty (NISR, 2016)

2.9.2. Managing Population Density

The following are the guidelines for managing population density:

- Project and routinely monitor infrastructural development vis-à-vis the urban population growth for proper planning purposes.
- The regional land use plan and the local master plan should be justified by means of a prognosis of the future population development.
- Provide alternatives for long-term population development in regional planning, both in urban centres and in rural areas.

2.9.3. Urban Area Definition and Guidelines for District Urban Centres

Definition

According to the NLUDMP: An Urban Area in Rwanda is defined as a built-up agglomeration which exceeds 20 SqKm and has a population of more than 10,000 permanent living resulting in a population density of more than 500 persons/SqKm. It can be compared with the definition found in the National Housing Policy: Urban Areas are built-up areas with a considerable amount of man-made infrastructure and a population that is mainly dependent on service based income rather than in agricultural based occupations. The population density of urban areas is generally higher than 400 persons per square kilometre.

Guidelines:

Considering provided definitions above, an urban area should be defined based on the following elements: number and density of population, surface area, amount of man-made infrastructures, and functions other than agricultural activities.

1 The NLUDMP, 2010
The following features are proposed by the NLUDMP for a modern District Centre by year 2020:

An Urban Development Plan (UDP) shall be prepared for the layout of the District Centre, consulted and approved following the guidelines in the Plan:

**Location:** The Centre shall be located on non-fertile soil and no permanent buildings will be allowed on slopes more than 20 degrees or where flooding occurs.

**Population:** The Centre should accommodate more than 10,000 inhabitants and correspond to about 30% of the respective District total population by 2020.

**Housing:** Areas of low, medium and (moderate) high residential density should be zoned for in a mixed context.

**Education:** (At least) One tertiary education facility: University branch, technical college, etc. should be located in the Centre.

**Health:** A district hospital shall provide secondary health services to the Centre and the District population.

**Administration:** District office with an inviting and ‘transparent’ architectural design and a multi-purpose community hall should be found in the District Centre.

**Commercial:** A pedestrian friendly shopping area with a market place should be centrally located in the Centre.

**Culture, sport and recreation:** A sport and recreation area shall be zoned, accommodating an arena for sports and culture, swimming pool and creative playground. A multi-purposed hall shall be constructed for major cultural and official events.

**Protection:** A District court, a District police station and a fire station would be the basis for a secure and safe living environment for the Centre and the District as a whole.

**Industrial:** Areas with non-polluting small-scale industries should be included to have self-sufficient production of basic goods and exploiting local human and natural resources found specifically in the District.

**Transportation:** Regular public transport with gas powered vehicles shall be provided for the inhabitants. A bus terminal for regional public transportation should be zoned for at a conflict free location.

**ICT:** The Centre shall be provided with a fiber optic network.

**Energy:** The Centre shall be connected with the national electrical grid. Local energy production: Biogas, hydro, solar panels, etc. corresponding to about ??% of total shall be generated.

**Water:** Potable water will be distributed to all due via pipes or water posts. Rain water harvesting shall be a mandatory requirement for construction of new housing.

**Sewerage:** A functional system built-up offers good hygienic standard shall be provided.

**Solid waste:** A landfill area with a biogas digester and a recycle centre shall be located in an environmentally safe place.

### Environment

- The Directives for Areas and Hubs of National Interest shall be respected. For further information see, the NLUDMP and the DLUPs;
The hilly conditions of Rwanda shall be observed. The orientation of houses and service access roads shall follow topography and contour lines. Maximum slope for residential land use should range between 20 and 30 degrees according to the availability of land and topography of the area. Areas prone to flooding shall not be utilized for urban land use.

Provided buffers in the Rwandan context for swamplands, rivers and lakes are areas not suitable for settlements, urban and industrial developments. An EIA should be done before an establishment of other proposed land use projects.

2.9.5. Densification

According to the NLUDMP of 2010 for residential areas, the proposed minimum gross density is 108 Hu/Ha which corresponds to a population density of 46,440 persons /SqKm whereas the new Urban and Building Code of 2015 allows the zoning provides for land use sub-categories ranging from 15 to 70Hu/Ha, which corresponds to a population density of between 6,450 to 30,100 persons /SqKm (by using 4.3 household size standard found in the NLUDMP).

The NLUDMP Assessment Report (2016) findings allow making new proposals for densities with the NLUDMP revision.

Guideline:
- Minimum gross density for new urban development shall be of 33 and 70 Hu/Ha in single family and multifamily residential areas respectively, which correspond to population densities of 15,200 and 32,200 persons /SqKm (by using updated household size of 4.6 by EICV4).

2.9.5. Mixed Land Use

- Provide for commercial land use in ground floor of residential buildings;
- Allow for office use in multi-storey buildings on individual plots in the block;
- Allow for non-polluting small-scale industrial land use on individual plots in the block;

2.9.6 Mixed Housing

- Use a standard plot size to form blocks adjusted to natural sloping conditions (figure below, p.29);
- Size of blocks is approximately 1 Ha (10,000 SqM);
- The standard plot size can accommodate housing for low, medium and high income groups in the same block;
- The housing unit floor area sets the standard for the respective income group: Approximatively 30 SqM for low income; 60 SqM for medium and 120 SqM for high income families;
- Flexibility regarding type of housing shall be recognized: single unit, semi-detached, row houses, apartment blocks shall be found in each block;

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2 NLUDMP
- Allow flexibility regarding number of floors shall be recognized: Each block shall have minimum 50% with two stories;
- ‘Green’ Construction and green infrastructure: Each block should reserve the land area for urban agriculture;
- Parking area should encompass 0.2 places at 25 SqM per housing unit;
- Domestic/locally produced building materials should constitute 50% of the total. For the structure, 25%, 55% and 20% for roof, walls, and floor is counted for respectively;
- Solar and/or wind energy should provide minimum 50% of the electrical requirement of the block;
- Houses should be constructed with roofing suitable to allow rain water harvesting.

Figure 1: Example of a Green Construction for a Medium density building
Moving from lower to higher density is not enough, the sloping factor must be observed.

Figure 2: Examples of good spatial integration and increasing densities

To exemplify the result of applying the guiding principles in a typical Rwandan natural environment the following can be presented:

Urban High Density adapted to the needs and financial resources assigned to the Low and Medium income group.

The example shows a residential block of 6 to 8 floors where the ground floor is used for shops, office and micro-light industrial activities. The big inner yard with its natural slope can be terraced and used for urban agriculture. The unit is supplied with carbon zero equipment such as solar panels and wind generators. For small sized housing units one shared bathroom compartment can be accommodated per floorplan served by a staircase. The housing unit size is standardized to 50 and 100 SqM which gives the residential compound a net density between 108 and 287 Hu/Ha.
Urban Medium Density adapted to the needs and financial resources assigned to Low, Medium and High income groups respectively.

The example shows a block divided into about 43 plots, which buildings in 2 or 3 floors flexibly can be adjusted to low, medium and high income groups depending on actual demand and political will. The ground floor can be used for shops, office and micro-light industrial activities. The big inner yard with its natural slope can be terraced and used for urban agriculture. The unit is supplied with carbon zero equipment such as solar panels and rain-harvesting roofs.

The housing unit size is standardized to 50, 100 and 200 SqM, which gives the residential compound a minimum net density between 43 Hu/ha and 260 Hu/ha. The example on Medium Density is based on a housing design from the NLUHMP. Although it was prepared in 2011 it is still relevant for the Rwandan environment and presents a comprehensive picture of sustainable land use.
**Urban Low Density** adapted to the needs and financial resources assigned the High income groups respectively. The positioning of dwelling can reduce of plot area.

The studies for the two first examples (high and medium densities) are laid out on a **0.5 Hectare (5,000 SqM)** site, including access roads (complete streets) but not feeder roads and public spaces so that a net density indicator can be assessed for comparison. **Complete Streets** is a transportation policy and design approach that requires streets to be planned, designed, operated, and maintained to enable safe, convenient and comfortable travel and access for users of all ages and abilities regardless of their mode of transportation. Complete Streets allow for safe travel by those walking, bicycling, driving automobiles, public transportation, or delivering goods.

One important difference in construction between high and medium is that high requires elevators to support the floors.

In Rwanda vertical densification should not regarded as a housing opportunity for ‘poor’ people (social housing) and that other income groups will should also be attracted to ‘live on top of each other’. Lack of land makes it time to change the mind-set in this respect. Nothing excludes Rwandan origins from people in other parts of the world that has arrived to a higher degree of urbanization and sees the advantages of vertical living as regard to housing costs, accessibility and comfort.

**Figure 5: mansard roof type**

It is also interesting to compare simple roofing with the complicated designs which is quite common in Rwanda by some reason. A mansard roof, shown to the right in the graph, consumes at least **20 %** roofing materials than a simple pitched roof, to the left, not included all the waste and offcuts that are generated from the complicated cutting of angled sheets. And even if labour fees are not so costly in Rwanda, the complicated roof will need more than **50 %** more time to mount. Leakage is another problem that might occur more often with a roof with more intersections.
CHAPTER THREE: LAND USE PLANNING PROCESSES GUIDELINES

3.1. Land use planning definition

Land use planning is a procedure for planning the sustainable use of the land considering its potentialities, limitations and the user needs. Land use planning is a procedure which leads to an optimal and sustainable use of the land and all its attributes.

3.3. Guidelines on the Land Use Planning Process and Steps

Steps proposed to be adopted into the prescribed phases/tasks of the LUP Planning Process. When developing and preparing a LUP at national or local level, the NLUDMP provides 10 steps that should be adhered to as follows:

STEP 1: Getting organized to work with the LUP and identifying stakeholders
STEP 2: Setting the vision for the LUP
STEP 3: Analysing the situation
STEP 4: Setting the goals and objectives for the LUP
STEP 5: Establishing the development thrust and spatial strategies
STEP 6: Public consultations on LUP
STEP 7: Preparation the detail draft LUP
STEP 8: Reviewing, adopting and approving the LUP
STEP 9: Implementing the LUP
STEP 10: Monitoring, Reviewing & Evaluating the LUP.

STEP 1 - Getting organized to work with the LUP and identifying stakeholders
Anticipating and preparing for the resources that will be needed for the surveying and planning activities lead to the smooth implementation and accomplishment of the planning outputs on time. As regards data capture it is important to ensure that a ‘GIS Start Package’ - the resources needed for GIS activities - are readily available. It will mean that all the five components of GIS will be secured: hardware, software, human resource development, data and methodology.

STEP 2 – Setting the vision for the LUP
This avoids duplication of efforts and the risk of confusion among stakeholders and the general public. The LUP vision must reflect the NICI Plan - 2010 Plan in which the Rwandan Government is pursuing the creation of a knowledge-based economy, and in which Information and Communication Technology (ICT) plays a central role. The objective is to use ICT for poverty reduction through its catalytic and leveraging effect on improving access to basic services such as education and health.
STEP 3 – Analysing the situation
Step 3 of the planning process - Situation Analysis - basically answers the question: Where are we now? It is both analytical and diagnostic, geared towards identifying issues, potentials and future development needs and spatial requirements of the city/nation. Assessment involves technical and participatory methods.

In this step the first thing is to take necessary actions to gather the required data and to prepare a digital LUP Base Map. It might be a lengthy process and it is, therefore, important to ensure that a base map is readily available as soon as possible so gathering of data for sector and cross sector analysis is not delayed. National Base Map data layers in combination with the Orthophoto portfolio will become useful sources of data for the preparation of the LUP Basemap.

It is, likewise, recommended to prepare the demography data upon the base line studies and sector analyses that education; health, transport, agriculture, etc. will be based on. As there is only one vision set for the nation one population projection should be agreed on.

Technical assessment is based on factual data derived from surveys, official publications and records of the national agencies concerned and other entities. Assessment involves the use of indicators such as proportions, rates, frequency, quality/condition (e.g. severity, critical, etc.), standards and other parameters that are vital in characterizing the situations.

The result of the consultation will hopefully bring out a tailored specification of data that answers to the special requirement for sustainable development. The consultation will also trigger the “search for data’ activity and the secondary source data custodians should then be approached as early as possible in order to get all necessary information required for this step as the search and acquisition for the data is usually a lengthy process.

In this Step, thematic spatial layers -Baseline Studies- need to be prepared for all sectors and sub sectors included in the LUP. The locations of service facilities, infrastructure utilities, environmental prospects and constraints and land management regulatory options and limitations as specified in the ToR need to be defined with an accuracy that is acceptable for LUP planning and analysis activities.
It is also recommended that a proper File and Folder system should be introduced for the accumulated Project attribute and spatial data. The Needs Assessment Information Products will be a comprehensive combination of maps which will not only reveal weaknesses or gaps in the distribution of goods and services of the urban area but also the District needs based on population projections. GIS is a useful tool for this as it makes the plan more transparent to the general public. The Risk & Suitability Analysis Information Products will focus on the limitations and potentials originating from nature and manmade/enforced restrictions/ rules and regulations. These will provide the bases for some examples for the formulation of a sustainable development plan for the urban area.

**STEP 4 – Setting the goals and objectives for the LUP**

The next step after the data gathering and analysis is the formulation of goals and objectives that will help the nation to achieve its vision. It is important that the goals and objectives reflect the “common good” or consensus of the broader community so that implementation of the plan effectively engages all sectors, and ownership is shared community-wide. A good way to achieve this is to conduct participatory goal-setting processes in public settings where the Situation and Risk & Suitability Analysis Information Products can be presented.

**STEP 5 – Establishing the development thrust and spatial strategies**

This step is critical in determining the future spatial development of the nation and involves the understanding of what is appropriate, feasible and possible through an exploration of different land use alternatives or scenarios. A draft plan will be prepared based on a preferred way forward. Only the planner’s imagination can define the limits of the use GIS in this step. Most probably the use of GIS will be limited to actual presentation and display work in the beginning. When the planner acquires advanced skills in the use of the GIS, more sophisticated spatial analysis is possible.

**STEP 6 – Public consultations on LUP**

This involves a 3-stage process namely: public display and information dissemination; conduct of hearings and consultations. The process aims to inform the general public and ensure an objective and participatory review of the draft LUP and to encourage ownership of the plan and gain support for its implementation. GIS will be a useful
instrument to translate the plan into a format that will be understood by the stakeholders. The information products in the above step can be printed out and displayed and/or be included in a PowerPoint presentation.

Public participation during the preparation and adoption of DLUPs and LUDPs

To ensure a certain level of transparency in the development of a land use plan at all level of planning, the following should be adhered to:

- Conducting consultative meetings with community, local authorities, the private sector and other local organizations.

- Public display and circulation of the draft plan

STEP 7 - Preparation the detail draft LUP

It is at this stage where the location and details of the plan components are put into final draft form. It also provides for more detailed information on land use regulations/controls, among other things. The GIS will be useful in furnishing templates which are based on map standards.

STEP 8 - Reviewing, adopting and approving the LUP

The mandatory and comprehensive review of the LUP will take place in this step, after which adoption, enactment and approval of LUP by the Client will take place.

- When considering the development of a land use plan, it is recommended that all stakeholders are included in consultations during the early stages of the planning proposal to ensure all relevant aspects are considered before submissions are made.
➢ Local authorities should have accurate details of the extent of the land use plan within their governing area and display the land use plan within regional town planning schemes and structure plans.

➢ All proposals for the development of land must be submitted to the relevant authorities.

➢ GIS benefits from the excellence of the digital mode compared to the tedious process of reviewing analogue maps which might be useful in this step.

STEP 9 – Implementing the LUP
Implementing the LUP requires resources, institutional structures and procedures. For example a comprehensive land use plan has to be included in the District Development Plans in order to provide a closer touch base interpretation of the national and local strategies. It is recommended that the proposed planning legislation should allow great flexibility for the implementers to design and implement their own organizational structure and staffing pattern taking into consideration its vision, mission, goals and objectives as contained in the LUP and accountability to the country.

STEP 10 – Monitoring, Reviewing & Evaluating the LUP
The GIS enables the planner to readily extract data from the database and LUP project profile, thus, it will be easier for ministries and agencies concerned to manage/ implement projects as well as share project information with stakeholders/contractors. With the LUP and its implementation program established, assessment procedures for its effectiveness must be instituted. Monitoring review and evaluation are performed to assess how fully and how effectively a plan is being carried out. The combination of attribute and spatial data, which is a unique advantage of GIS, greatly facilitates the measurement of development outcome and trends. As the GIS software is developing strongly into more user-friendly interface it will also be easier to meet a growing demand for ‘political transparency’ and participatory planning.

3.4. Guidelines on Community and Stakeholder Collaboration in the Land use planning process

3.4.1 Community and Stakeholder Participation
Conventional (top-down) planning approaches have had very little success due to a lack of dialogue and coordination. Hence, participation has been identified as key factor for a successful land use planning. It covers communication and cooperation of all actors involved. Participation is an interactive and cooperative process of analysing, planning and decision-making in which all relevant stakeholders including disadvantaged groups take part. The old expert driven (top-down) approach resulting in one-way communication which characterized land use planning process should be avoided.

Involving the community early and often in the planning process vastly improves public support for smart growth and often leads to innovative strategies that fit the unique needs of a particular community. The needs of every community and the programs to address them are best defined by the people who live and work inside or next to a planning area.
3.4.2. Encourage Community and Stakeholder Collaboration in Development Decisions

For all types of land use changes the community must be informed and have a say. This is particularly important if there is an urge for changes in a built up environment. However, also new development on ‘virgin’ land will have the neighbour’s attention and consulting them is as important. No land is actually ‘virgin’ it is always ‘used’ in some way or another by somebody, humans or animals. The common thread, however, is that the needs of every community and the programs to address them are best defined by the people who live and work inside or next to the planning area.

Public participation can be time-consuming, frustrating and expensive. On the other hand, encouraging community and stakeholder collaboration can lead to creative, speedy resolution of development issues and greater community understanding of the importance of good planning and investment. Smart growth plans and policies developed without strong citizen involvement will lack staying in power. Involving the community early and often in the planning process vastly improves public support for smart growth and often leads to innovative strategies that fit the unique needs of a particular community. Key actions in encouraging collaboration include developing an inclusionary process and a common understanding among diverse stakeholders, using effective and appropriate communication techniques, and working with local authorities.

3.4.3. Key strategies in this guide to achieving strong public support

- Base the proposal on an existing, approved plan, such as a District Land Use Plan, Urban Development Plan or a similar study developed with substantial public participation.
- Involve the public and stakeholders early in the process and seek their input in developing the ideas about densification and mixed land use. Stakeholders include local officials, developers, the business community, environmental and other advocacy groups, property owners, and citizens at large.
- Address public concerns. Fears about density, property values, and changes in community character are common, especially if you are introducing smart growth in a high income area. Proponents of mixed use can address these issues by presenting documentation to dispel myths and/or by including protections within the guideline itself.
- Ask interest groups, especially those with competing interests, to speak out publicly and to take an active role in outreach.
- Allow enough of time to build understanding and support.
- Engage the local media. Mixed use examples with graphics lend themselves to feature articles and cable presentations.
- Use visuals of existing “success stories” and of opportunity areas in your community. PowerPoint presentations are an excellent way to tell the story. They can be shown in District and Sector Council meetings.
3.4.5. Public Sector Management/Initiatives

To build capacity in land use planning for local authorities and professionals of, it is important that partnerships be developed between the public and a private sector to ensure that densification throughout the residential areas is managed efficiently. The high density developments/schemes should be managed by the developer/owner/accredited management agent. The role of the District should be to ensure that the public areas and infrastructure are maintained on a continuous basis.

3.5. Guidelines on Environmental Assessment (EA) Integration in Land Use Planning

3.5.1. General Environmental Considerations in Land Use Planning

It is of paramount importance to address environmental problems and incorporate environmental factors and criteria throughout the land use planning process. In applying the guidelines for the preparation of land use plans, it will be necessary to take account of resultant implications of alternative measures and trade-offs between associated costs and benefits to the community in general.

Proper land use planning, along with appropriate controls at sources through licensing and enforcement of environmental protection ordinances, plays an important role in protecting the environment. Applying these planning steps will help achieve the following:

- Proposed land uses in particular development areas are environmentally suitable;
- Proposed land uses in the same development area are compatible with each other; and
- Adequate and suitably sited environmental facilities are provided to ensure proper handling and disposal of all wastes and waste water arising from proposed developments.

To promote the suitability of land uses in a particular development area, an analysis of the environmental implications of the development should be carried out by proponents or development agents in consultation with REMA. The environmental suitability of a site for a certain land use is governed by such factors as:

- natural environmental characteristics including topography, climate, hydrological and hydrographical characteristics, vegetation, wildlife and habitat, and soil conditions;
- the nature, distribution and consequences of the residuals including aerial emissions, wastes, sewage or noise generated by land uses in the development area;
- the capacity of the environment to receive additional developments, for example, the capacity of an airshed or water basin to receive and assimilate residuals or the capacity of the environment infrastructure such as sewerage and waste reception facilities to accommodate further residuals; and
- existing land uses

The following general environmental considerations should be considered at the earliest possible stage in preparing land use plans and/or planning briefs.

Air Quality Considerations
Air quality is affected by such factors as the emission rate of air pollutants, the separation distance between emission sources and receptors, topography, height and width of buildings as well as meteorology. Every planning effort should be made to ensure that:

- large air pollution emitters are not located in areas where the dispersion of air pollutants is inhibited or where the present air pollution is already serious;
- wherever practicable, major air pollution emitters are sited in direction of urban areas and new towns to take advantage of the prevailing north-easterly winds;
- high-rise buildings and low-rise air pollution emitters are not located close to each other;
- new traffic generators, especially those of goods vehicles, are not located in areas which currently have severe air pollution;
- adequate buffer distance or screening is provided between sensitive receptors and potential air pollution emitters; and
- the land use pattern will minimise the demand for road traffic so that the vehicle emissions can be kept to the minimum.

**Noise considerations**

The basic role of planning against noise is to provide an environment whereby noise impacts on sensitive uses are maintained at acceptable levels. The principle is to ensure that:

- new noise sensitive uses are located where they will not be exposed to excessive noise levels;
- new noise emitters are located as far as possible so as not to introduce excessive levels of noise to existing, committed or planned sensitive uses; and
- where other constraints do not permit either of the above, noise reduction designs should be incorporated into the noise emitters at the earliest stage of planning. Where a completely acceptable noise exposure cannot be obtained at the noise sensitive uses, acoustic insulation should be provided;

**Water Quantity and Quality Considerations**

- Any major developments which are likely to cause significant disruption to water circulation should be either avoided as far as possible or subjected to water quality modelling tests prior to the finalisation of site selection.
- Any development which causes either conflict with the constraints or damage of the resources and amenity areas should be avoided, unless the conflict can be resolved or the imposition of appropriate development controls is practicable.

**Waste Management Considerations**

In the preparation of land use plans, effort should be made to reserve sufficient sites in suitable locations for municipal waste reception and transfer facilities. Consideration should also be given to the special requirements for waste disposal of some community facilities and industries. As some uses have potential to cause nuisances and to give rise to special requirements for waste disposal and effluent discharge, due consideration should be given to their location and design to minimise the potential impacts.

3.5.2. **Strategic Environmental Assessment (SEA) in Land Use Planning**

In Rwanda, the experience has been to apply an Environmental Impact Assessment (EIA) to projects and even to land use development plans (master plan, local development plans, and detailed physical plan / Action Area Plans).
As during the land use planning process, various land uses and/or projects are planned to be developed within the delineated area, Strategic Environmental Assessment (SEA) should be introduced in Rwanda land use planning system and applied to key development zones, such as industrial parks, agricultural zones, tourism zones, national parks, and major projects. Strategic Environment Assessments (SEAs) for key Development Zones and ecologically sensitive areas need to be standard practice.

The main tasks of SEA in land-use planning being the following:

- To promote inter-ministerial and multi-stakeholder coordination.
- The analysis of ecological, social and economic impacts, i.e. identification, description and evaluation of effects of land-use planning measures the output of which should be the creation of information database for the process of land-use plan elaboration and for the decision-making process in land-use planning;
- To assess and address cumulative, spatial impacts of proposed land uses;
- To address alternatives or possible solutions resulting in optimal carrying capacity of land;
- To mitigate negative consequences on the environment.

Guidelines:

- Conduct an environmental assessment;
- Consider socio-economic implications/limitations of the proposed land uses;

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3 Dr Mathew WARNEST, Eng. Didier G. SAGASHYA, and Dr Emmanuel NKURUNZIZA. 2012. Emerging in a Changing Climate – Sustainable Land Use Management in Rwanda

4 Green Growth and Climate Resilience National Strategy for Climate Change and Low Carbon Development, Kigali October 2011
Mixed-use development is - in a broad sense - any urban, village development, or even a single building, that blends a combination of residential, commercial, cultural, institutional, or industrial uses, where those functions are physically and functionally integrated, and that provides pedestrian connections.

4.1.2. **Aims and Objectives**

The design of mixed land use developments should aim at providing a safe, healthy, useable, serviceable, pleasant and easily maintained environment for all users. In order to achieve this, sometimes conflicting requirements of different land uses involved need to be reconciled. While the nature of each venture will differ, design of buildings and open space should consider the following objectives:

- **Safety** - protection from the spread of fire, dangerous operations, insanitary and dangerous waste and refuse, and vehicles.
- **Amenity** - control of heat, cold, noise, smells, vibration and other nuisances.
- **Accessibility** - access for all users including the elderly and the disabled, for fire-fighting and rescue, collection of waste or refuse, and for servicing and maintenance of equipment, processing, sanitary, or other installations.
- Energy conservation and environmental protection - reduction in dependence on non-renewable, scarce and polluting resources in construction, processing, production, maintenance and climate control, and prevention of pollutive airborne emissions or airborne discharges; apart from orientating and designing buildings in such a manner that undue solar heat gain is avoided, this will include that operations are designed to conserve energy and resources, and that pollution is controlled at source.

4.1.3. **Motivation for Mixed Use Development**

Traditionally, human settlements have developed in mixed-use patterns. However, with industrialisation as well as the invention of governmental zoning regulations, which were introduced to separate different functions, such as manufacturing, from residential areas. Traditional zoning was developed during a time when factories and many commercial uses were noisy, smelly, and/or hazardous to the public. To protect public health and residential property values, early zoning focused on separating different uses and buffering them from each other to minimize nuisances.

Today, much commercial development is environmentally nonthreatening, and there are often advantages to locating different uses in close proximity to where people resides. Mixed use concentrated development, preferably near transit, is seen as a key “smart growth” tool to reduce auto dependence and preserve green space and natural resources. Thus many communities are turning to “mixed use,” which generally refers to a deliberate mix of housing, civic uses, and commercial uses, including retail, restaurants, offices and even non-polluting and non-disturbing manufacturing industry.

4.1.4. **Different Combinations of Mixed Land Uses**

There are different combinations of mixed land uses. These include:

- Commercial and residential land use. Examples are small general dealers shop on the ground floor of a residential development, flats above shops in a business centre, etc.
R W A N D A  N A T I O N A L  L A N D  U S E  P L A N N I N G  G U I D E L I N E S

☑ Residential, commercial and civic/community land use. An example is introducing residential land use in a business centre by vertical densification.

☑ Residential and industrial land use. In exceptional cases where security or other staff need to be on site on a 24 hour basis. An example is staff quarters in a fire station.

☑ Residential, industrial and commercial land use. Examples are a permanent janitor housing, security staff quarters, etc

☑ Commercial and community land use. An example is office accommodation in a warehouse.

☑ Commercial and industrial land use. An example is an industrial plant or a place where products are manufactured and also are sold to the general public.

4.1.5. Need to Consider Requirements of Each Land Use
The particular requirements of each involved land use shall be complied with. In mixed land use development, each involved land use shall be considered on the basis on how it is normally regulated.

In cases of mixed land use development where the requirements of the land use components involved demand different standards, or are in conflict with each other, the requirements of the predominant and most vulnerable land use shall take precedence.

If in mixed land use development, the predominant land use is in conflict with most vulnerable, each case shall be considered on its own conditions in determining which land use shall take precedence.

4.1.6. “Overlay” Zoning – a Short Cut to Smart Green Growth Development
To achieve well-planned mixed use development, most of the guidelines described in this guide are “overlay” zoning. This means that if it is an existing plan with zoning regulations for private land, the underlying zoning remains in place. If the community wants to encourage mixed use, the overlay should be structured to be attractive to developers and the requirements should not be burdensome. Developers may choose to try to develop according to the underlying zoning or, alternatively, according to the mixed use provisions. The overlay encourages coordinated, cohesive development among lots or through lot consolidation. The overlay approach is especially useful when the community wants to promote a unified approach in an area where there are two or more underlying districts. The district retains control through the permit process and can turn down any development not to its liking or which does not conform to green planning principles. If developers persist to make use of the underlying zoning, the government will initiate a revision of the existing land use plan that will be a very time consuming process not favoured by developers in general.

4.1.6.1. Mixed (Income) Housing
Definition: The definition of mixed (income) housing is broad and encompasses many types of dwellings. A new, constructed mixed income housing development includes diverse types of housing units, such as apartments, raw or semi-detached and single-family homes. It also has a deliberate effort to construct a multifamily development that has the mixing of income groups
as a fundamental part of its financial and operating plans. Three aspects of development are looked into, separate but in most cases combined: the type of physical structure, what income groups can afford to live in the area and what type of tenure status that will avail.

4.1.6.2. **Motivation for Mixed Housing**

Create a range of housing opportunities and choices

Providing quality housing for people of all income levels is an integral component in any green growth strategy. Housing is a critical part of the way communities grow, because it constitutes a significant share of new construction and development. More importantly, however, housing availability is also a key factor in determining households' access to transportation, commuting patterns, access to services and education, and consumption of energy and other natural resources. By using green growth approaches to create a wider range of housing choices, communities can mitigate the environmental costs of auto-dependent development, use their infrastructure resources more efficiently, ensure a better jobs-housing balance, and generate a strong foundation of support for neighbourhood transit stops, commercial centres, and other services;

No single type of housing can serve the varied needs of today's diverse households. Mixed housing represents an opportunity for local communities to increase housing choice not only by modifying land-use patterns on newly developed land, but also by increasing housing supply in existing neighbourhoods and on land served by existing infrastructure. Integrating single- and multi-family structures in new housing developments can support a more diverse population and allow more equitable distribution of households of all income levels. The addition of units – through attached housing, accessory units, or conversion to multi-family dwellings – to existing neighbourhoods creates opportunities for communities to slowly increase density without radically changing the landscape;

Adding housing can be an economic stimulus for commercial centres that are vibrant during the work day, but suffer from a lack of foot traffic and consumers during evenings or weekends. Most importantly, providing a range of housing choices allows all households to find their niche in a smart growth community – whether it is a garden apartment, a row house or a traditional single-family home.

Urban design generates the size and shape of blocks, the configuration of streets and spaces and principles for the subdivision of blocks into plots that are to accommodate the density envisaged for an area.

The subdivision of properties in well-established residential areas should be limited to minimum parcel sizes where densification is concerned.

4.2. **Densification Guidelines**

4.2.1. **Definition**

Densification is defined as follows:
The increased use of space, both horizontally and vertically, within existing areas/properties and new developments, accompanied by an increased number of units and/or population threshold. Density varies greatly depending on the base land area used in the density calculation. The parcel or site density is almost always higher than the neighbourhood density, because at a neighbourhood scale much land is included in the base land area calculation that does not have houses. Population density depends on both dwelling unit density and household size. Given a certain dwelling unit density, the population density will be lower with small households such as empty nesters than with large families with several children.

Incremental densification, in turn, denotes the following: Small-scale densification that has a relatively low impact on the character of an area, e.g. the subdivision of a residential property or construction of a second dwelling.

4.2.2. Goal

The Densification Guidelines seeks to improve the land use sustainability of the country and to enhance the quality of the built environment.

4.2.3. Objectives

The Densification Guidelines more specific objectives are to:

- Ensure optimal and efficient use of infrastructure, services, facilities and land;
- Provide a framework and guidelines for the assessment of development proposals;
- Support the development of a viable public transport system and to improve levels of access to the urban area’s resources and services;
- Protect, manage and enhance the natural and built environment and significant cultural landscape;
- Provide homeowners and property investors with a level of certainty regarding areas that will be targeted for various types of densification;
- Ensure that the scale and character (in terms of size, height and architectural styling) of higher-density areas are appropriate to the immediate context;
- Support the development of mixed land uses, providing for vitality, opportunities and integrated living environments.
### 4.2.4. Densification Policy Statements

Contribute to place-making and the development of attractive and safe urban environments.

The following policy statements should guide all density-related land use decisions:

#### In general

The Government will promote densification in all urban areas that is both existing and planned. However, importantly, a ‘one size fits all’ approach will not guide density decisions.

Rwanda aims to achieve a minimum average net density of (Table of Densification Indicators below):

- **70 Hu/ha** for Kigali City
- **40 Hu/ha** for Secondary Cities and District Centres (meaning for other district centres that have been appointed as secondary cities
- **30 Hu/ha** for rural settlements - between 25 and 30 Hu/ha as net density for single family residential- in the next version of NLUDMP, (and will aim for a higher gross density thereafter).

The intensification of all types of land uses, not just residential land uses, should be encouraged, and a better mix of land uses should be supported.

Generic considerations for densification related to the suitability of the area for land use intensification, such as surrounding land use character; access to public transport; proximity to places of employment, services and social facilities; proximity to public open space, and infrastructure availability (existing and planned).

The Government will investigate, promote and support urban design as well as financial and institutional mechanisms that support multi-storey/more suitable forms and locations of subsidised housing, in order to achieve better urban form and higher-quality, sustainable living environments.

When Action Area Plans are prepared, minimum height and/or maximum height and density parameters/guidelines must be set.

<table>
<thead>
<tr>
<th>For existing areas</th>
<th>For planning of new areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Government will proactively encourage densification in built-up areas. Different packages of incentives may be applied in different locations. The packages could include land use measures (e.g. overlay zones, class rezoning and the relaxation of building lines, authorising enhanced bulk, reduced parking and public open space provisions), financial mechanisms (e.g. adjustments to developer contributions, property rates and/or planning application fees), and procedural improvements (e.g. streamlining application procedures)</td>
<td>A variety of parcel and dwelling sizes (Mixed Housing) are to be promoted within any one area. An Action Area Plan must be required to guide the densification of properties larger than one hectare.</td>
</tr>
<tr>
<td>Higher levels of densification will be encouraged at specific spatial locations, particularly in areas with: Good public transport accessibility; at concentrations of employment, commercial development and/or social amenities.</td>
<td>The determination of the appropriate location, height, scale, form and orientation of a higher-density development in a particular location should be guided by the density decision-making framework.</td>
</tr>
<tr>
<td>Small-scale incremental densification should be permitted in urban areas, where appropriate and feasible in terms of infrastructure availability.</td>
<td></td>
</tr>
</tbody>
</table>

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Contextual informants related to the development application and its immediate surroundings, such as the natural environment, land use, built and heritage character, infrastructure availability and capacity, and socio-economic considerations, should determine the densities appropriate in a specific location.

Challenges in some of these areas include the monotonous mono-functional form of the subsidised housing developments, their spatial location, and the number of informal backyard dwellings.

### Table: Densification Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Definition</th>
<th>Planning Hierarchy Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hu/Ha</td>
<td>Housing ( Dwelling) units per hectare.</td>
<td>All. Can for example be calculated by multiplying the number of units by an appropriate average household size.</td>
</tr>
<tr>
<td>Population Density (P/Ha)</td>
<td>Number of people per hectare.</td>
<td>All. Can for example be calculated by multiplying the number of units by an appropriate average household size.</td>
</tr>
<tr>
<td>Gross Density (Hu/Ha)</td>
<td>The number of housing units per hectare of land calculated in a designated area on the basis of land used for residential purposes and other land uses, such as industry, commerce, education, transport and parks.</td>
<td>The designated area can be the city/town boundary. To be used for comparative analysis in national and district land use planning. (Excluded are land-extensive and non-urban land uses, such as agricultural land and natural areas/nature reserves/parks). In Rwanda, the relation between Gross and Net is proposed to be that Gross is about half or less the density of Net.</td>
</tr>
<tr>
<td>Net Density (Hu/Ha)</td>
<td>The number of housing units per hectare of land calculated on the basis of land used for residential purposes.</td>
<td>To be used for comparative analysis in urban planning, such as Urban Development/Action Area/Subdivision Plans</td>
</tr>
<tr>
<td>Building Density (%)</td>
<td>Ratio of total building floor area to the corresponding site/parcel area.</td>
<td>To be used in the building permit approval process based on zoning.</td>
</tr>
</tbody>
</table>

#### 4.2.5. Measures of densification

A range of measures are used to calculate and compare built form and population densities. Some of the commonly used measures are dwelling unit density (gross/net), population density, and gross base density. The table below describes these measures in more detail. This policy makes use of a gross base density at the urban area level, and net du/ha figures when setting density guidelines in specific locations in an action area plan context. When planning the provision of social facilities and public open space, or undertaking market analyses, population density is the most appropriate measure of densification.
Densification is not an end in itself, but a means of improving the sustainability of the urban area as well as for the whole country as such. It is a relative indicator of the intensity of development and the population thresholds that could support economic activity, public transport services and the like.

4.2.6. **Forms of densification**

Density is a much used term at its simplest, density is a number of units in a given area. A key area of difference and confusion is in the base land area calculation — what is included and what is excluded to make density figures truly comparable. Is it only the site or the entire neighbourhood? This is the key dimension of variation in the range of the working density definitions of these Guidelines.

Broadly speaking, there are three generic building forms that support higher densities. These building forms can be applied in many different ways.

4.2.7. **Forms of densification in urban areas**

- A traditional street layout with attached row/terrace housing; and
- A perimeter-block enclosing an open space or courtyard.

**Figure 9: Forms of Densification**

4.2.8. **Forms of densification in rural areas**
Single family (on a parcel): the traditional and detached house types shall develop and change according to the topography and needs of households but within a reduced open space;

A perimeter block enclosing a reduced open space or courtyard: Multifamily house residential (2 or 4 in one);

Figure 10: Examples of increasing density in Kigali City
Source: Google Earth 2015

4.2.9. **Motivation for densification**

Densification can contribute to the creation of good-quality, efficient and sustainable urban and rural environments in a number of ways, including the following:

- **Densification reduces the consumption of valuable/non-renewable resources**
  
  By encouraging development upwards rather than outwards, densification helps reduce the consumption of valuable resources such as agricultural land, areas of mineral potential, aquifer recharge areas and valuable biodiversity areas. In urban area, densification can also reduce the consumption of non-renewable fuels by reducing transport needs and lessening private transport (car) dependence in general.

- **Densification supports the development of a viable public transport system**
  
  Higher densities, accompanied by increased population thresholds and mixed-use development, support the efficient functioning and viable provision of public transport services, especially on major line-haul routes for mass and rapid transit.

- **Densification makes the city and rural settlement site more equitable**
  
  Higher densities in appropriate locations, especially those close to services, facilities, jobs and public transport, help rationalize the housing pattern in the urban as well as rural areas, and improve access to the amenities and facilities. They help reduce travel distances and times, as well as the associated costs.

- **Densification facilitates economic opportunities and supports service provision**
  
  Higher densities, accompanied by increased population thresholds, create sufficient consumers to generate the development of economic opportunities, social facilities and services, and enable the cost-effective provision and optimal use of
infrastructure especially where there is excess service capacity or where increased thresholds are required to provide services and infrastructure.

- **Densification improves housing patterns and choice of house type**
  
  A mix of residential densities ensures diversification and choice of housing types and tenure options (mixed housing).

- **Densification contributes to built-up place-making and improves safety**

  Appropriately designed and located higher densities (in terms of form, scale, height, orientation) can provide an opportunity for place-making and the creation of attractive and safe built-up environments, particularly those in proximity to public spaces (both natural and built-up areas).

  However, higher densities are not a guarantee of quality urban environments, appropriate built form or good urban design. The extremes of either very high or low densities often result in negative urban environments. Appropriate regulations, local development policies and urban design policies can be used to help prevent negative built environments.

### 4.2.10. Generic considerations for urban densification

Densification decisions should be guided by the density decision-making framework and be balanced by resource limitations and infrastructure availability. The table below outlines the components of the framework that should guide decisions regarding the location, form, extent, scale, height and orientation of densification.

Particular issues require consideration when identifying and evaluating areas or locations for higher-density forms of development, especially where densities are in excess of 50 Hu/ha (net) or where parcels are smaller than 200 m².

**Table: Generic Considerations for Densifications**

<table>
<thead>
<tr>
<th>LEVEL OF DENSIFICATION</th>
<th>CONSIDERATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium to high levels of densification</td>
<td><strong>Access to public transport system (existing or planned)</strong>&lt;br&gt;Medium to high levels of densification should be aligned with existing/proposed public transport routes. This is essential for housing development targeted at lower-income earners, who are unable to afford the costs of private transport. It should not be an overriding consideration for middle and high-income earners, as the residents are likely to make greater use of private transport.</td>
</tr>
<tr>
<td></td>
<td><strong>Access and proximity to public open spaces</strong>&lt;br&gt;Medium to high-density development should have access to urban open spaces (such as squares and promenades), recreational green spaces (parks and sports fields) and/or natural open space (nature reserves) to provide physical and psychological relief from high-density living environments.</td>
</tr>
<tr>
<td>All forms of densification</td>
<td><strong>Infrastructural capacity</strong>&lt;br&gt;Densification should not be supported where water, wastewater and storm water capacity are reaching points of absolute constraint, and the cost implications of rectifying the situation are too high for the private sector, or are not provided for in the local government's capital budget.</td>
</tr>
</tbody>
</table>
4.2.11. Means of achieving densification

Densification can take place in the developed areas of the urban area, on vacant infill sites within the developed areas, and on Greenfield sites that coincide with the local government’s planned growth direction. The general process of densification takes place in a number of ways, by subdivision, consolidation or amalgamation and re-plotting (see figure on p. 56), and is facilitated and managed by a range of zoning and land use regulations.

4.3. Zoning Guidelines

4.3.1. Definition

Zoning is a tool used by planners and planning authorities to prescribe the acceptable use and form of development of and on an area of land. Zoning defines the use category of the land, prescribing allowable and non-allowable activities and developments on a parcel of land within a zone. The zones are defined in the Master Plan and determine the types of development that will be detailed at plot level in a Local Plan.

It is a form of land use regulation relied upon to control development according to the present and potential uses of the land. Zoning specification should be developed, taking into consideration the different user types e.g. residential zones and densities, commercial zones and industrial zones. Zoning should also take into consideration the need for social amenities, conservation zones and environmentally significant areas.

When applying zoning regulations to a development application, the following factors will be considered:

- Population Density
- Site and physical attributes of the land involved.
- Existing uses and zoning of neighbouring property.
- Traffic and transportation.
- Risk and suitability analysis on the land for the permitted use.
- Character of the neighbourhood of the community.
- Effect of the permitted use on the land in the surrounding area.
- Any potential decrease in property values.
- Any economic and cost benefit analysis.
- Existing sectoral guidelines on the current land use

The plans for an area are subject to approval by the Kigali City Council or District Council. Once the Plan has been approved by the Council, it becomes a legally binding document.

4.3.2. Colour Coding in Zoning Land Uses

A standardized system of colour coding is used for all the legally binding types of plan. The Land Use Master Plan uses a simplified range of colour codes as the zoning relates to areas of land that contain multiple parcels of land, while the Local Plan specifies the intended use of all parcels within the plan area.
4.3.3. **Guidelines for Zoning Rural and Urban Development**

**Background**

Contemporary communities oriented toward meeting the needs of their residents often offer a network of amenities to facilitate and enhance individual, family, and community life. At their best, they may offer parks and landscaped public open spaces, churches, community centres, and other places for social and civic functions, residences or other facilities for persons with special needs, and safe, pleasant bicycle and pedestrian connections that link homes and important destinations.

These guidelines take this opportunity to cite the need in each community for appropriate elements, which aid and enhance the overall quality of life of the Community.

The long-term cumulative impact of incremental intensification in existing built-up neighborhoods through infill and home expansion could adversely affect the character of existing neighborhoods, in the absence of effective residential lot and subdivision design and development standards that distinguish rural from urban development.

4.3.4. **Guidelines for rural zoning areas**

The following are the guidelines for zoning of rural / regional areas in Rwanda:

- In the settlement schemes, land demarcation for productive and conservation use (agriculture, factories, forestry, conservation area, and livestock) shall be of a great share of total land size and provide at least 80% of the agriculture land for agroforestry and woodlots.
- Promote compact development i.e. consolidating settlements into designated grouped areas (Imidugudu) then provide the population with social amenities (like health facilities, schools, markets, playgrounds, roads, churches, water and electricity etc.) to enable them getting such facilities conveniently.
- Zone out conservations areas, set aside land for cemeteries, protect environmentally significant areas and provide for social amenities and recreational areas.
- Promote decentralization of development (e.g. of industries, social amenities and infrastructure) to upcoming urban centres to manage the rural-urban migration, decongest the cities and consequently control the urban sprawl.
- The residential area should not conflict with agricultural zone.
- Provide buffer zones (maintained as greenways/spaces) between different zones e.g. game parks and residential or other settlement zones; roads and settlement; water catchment areas and settlement; water catchment areas and agriculture.
- Provide signage and other forms of orientation to help direct the public through the area’s major facilities such as administrative units, hospitals, schools, churches, hospitality facilities.
- Provide maps showing social services and attractions in the locality.
4.3.5. **Guidelines for Zoning of Urban Areas**

Zoning specification should be developed in urban areas while considering all forms of densification to ensure efficient use of land, taking into consideration the different use types e.g. residential zones and densities, commercial zones and industrial zones. Zoning should also take into consideration the need for social amenities, conservation zones and environmentally significant areas.

The following are the guidelines for zoning of urban areas in Rwanda:

- Population density
- Economic activities and functions
- Zoning should take note of the prevailing meteorological conditions for example wind direction.
- Provide designated locations for establishment of public utilities, social amenities such as kiosks, carwash (using appropriate water saving technologies), garages, public toilets and smoking areas taking into considerations the inter-relationships between various land use types.
- In land use planning, buffer zone of sufficient distances should be left between functions that cause undesirable health effects or accident risk on the one hand and impact-sensible activities on the other. Industries that cause a risk for major catastrophes and the transport routes for dangerous substances, as well chemicals rail-yards should be placed sufficiently far away from residential areas, areas for communal functions and sensitive natural areas.
- Provide buffer zones between different zones e.g. industrial, game parks and residential or other settlement zones.
- Restrict development of new residential areas in noise-sensitive zones.
- Take proper abatement measures to mitigate noise in established residential areas.
- Restrict settlements and development in protected areas reserves and way leaves.
- Provide for the classification of urban areas, e.g. cities, municipalities, townships as guided by comprehensive regional plans, zoning specifications and land-use codes.
- Promote measures to prevent proliferation of slums through adherence to housing standard, the provision of low cost quality houses (affordable housing) and slum upgrading projects.
- Provide access to fire-fighting equipment and services.
- Drills and exits in both commercial and residential buildings, and provision of sub-fire stations.
- Review of local urban development plans should be undertaken after a provided period by laws.
- Enhance inspection and monitoring to ensure compliance with the zoning specifications.
4.4. Guidelines for Land Sub-division, Consolidation and Replotting

4.4.1. Definition

Land subdivision is the process of dividing land into two or more parcels in order to obtain a higher density of use.

4.4.2. Guidelines

The following are the guidelines for land sub-division in Rwanda:

- Land subdivision and consolidation should follow the implementation of a proposed land use in a particular area by the master plan.

- Land subdivision shall respect the allowed plot size according to the land use zoning guidelines, standards for land use categories and/or specific local zoning regulations. In residential zones, the plot size should be subjected to the acceptable area for obtaining a building permit.

- For each land use type, minimum and maximum land/plot sizes should be prescribed.

- Responsible institutions, at national and local government levels, should introduce economic incentives to promote land consolidation and disincentives to deter land fragmentation and land speculation.

- Create awareness within the communities on the importance of land consolidation. For example, providing awareness on the need to ownership of land in the form of shares instead of sub-dividing the parcel into unproductive/uneconomic sizes.

The form and structure of a subdivision scheme may be as illustrated in the figures below:

![Diagram of Land Subdivision and Consolidation]

Figure 11: Structure of Land subdivision and Consolidation according to UN HABITAT (2013)
4.5. Guidelines for Land Use Change and Rezoning

4.5.1. Introduction

The following guidelines are intended to help clarify where a developer of land needs to seek approval for a change in the Approved Zoning for a particular parcel of land and where the developer needs only to seek a ‘Change of Use’. If the developer wishes to develop a plot of land for a use which is not in compliance with the existing approved land use as given in the Master Plan, the developer will need to provide special justification and seek permission to have the area rezoned.

4.5.2. What is Rezoning?

Rezoning in land use planning is the process of the changing the approved use of land or the development requirements on land, as set out in the Master Plan and the Detailed Physical Plans, i.e. Zoning Regulations.

For example: from residential use to commercial use and vice versa; from single storey residential area to apartment blocks or the construction of a modern piece of architecture in an area of historic significance, and others.

4.5.3. What is Change of Use?

In terms of land use planning, land use change is the conversion of the type of development that has been approved, zoned or designated for the area.

Change of Use differs from rezoning in that it is applied at the Detailed Physical Plan level and is concerned only with changes of use for an individual plot or plots but which remains within the list of permissible uses for the land within a zoning
4.5.4. **The Need to Rezone**

Land use plans are prepared to guide physical development over a period of time. During implementation of the plan a variety of circumstances can lead to a need to revise the plan to reflect changing function or activity on the land, the forces of the market or improving standards for a variety of land users. The changes required may cover a substantial part of the planned area or just a single plot. When a large area is affected or when the changes proposed are not in conformity with the use of the land as approved in the Master Plan or DPP/Zoning Regulations, the zoning for that piece of land will need to be changed, thereby being a variation to the approved Master Plan. Rezoning may also be referred to change of building heights, the external appearance of buildings, the densities of development among others, if these have been specified in the zoning guidelines regulations.

Examples of the need to rezone areas include:
- When the market trends make some activities obsolete, for example, the use of land for industrial uses;
- Where the main centre for the activity relocates to areas with greater competitive advantage;
- Mining areas where the seams of the minerals mined have been exhausted, or where the demand for office space leads to an area fundamentally changing from a residential to a mixed or even commercial area;
- Likewise population growth may lead to the need for ancillary development in adjacent areas, which may previously have been designated as agricultural;
- Etc.

4.5.5. **Who Initiates Rezoning?**

Any individual, organization or institution proposing development of land in a way that is not in conformity with the approved zoning ordinance for the area. However, only the Kigali City Council and District Council can approve the changes proposed.

4.5.6. **Period for Rezoning**

A request to rezone an area may take place at any time. However, Master Plans shall be subject of continuous monitoring and the suitability of the land distribution evaluated.

Statutorily, the Master Plan should be reviewed after 5 years. The review may lead to the need to revise the zoning of parts of the planned area and even to extend the planned area into areas previously zoned for agriculture or without specified function (white land).

4.5.7. **Persons Authorized to Prepare Rezoning Plans**

Revisions to the Master Plans can be proposed by any interested individual or organization but the proposal will need to be approved by the relevant authority according to the level of the land use plan.

Where developers or land owners propose developments not in conformity with current zoning ordinances, they may undertake or commission qualified firms or individuals to prepare proposals for a revision to the zoning scheme as approved in the Master Plan.
The request for rezoning will be reviewed and approved or rejected by the Kigali City Council or District Council.

Revision to the Land Use Plan, the preparation of the revised plan and any revisions to the zoning ordinances affecting the land will be supervised by the Kigali City and District One Stop Centres, in consultation with national agencies in charge of land use planning at national level, local community and other government institutions having the stake in or that will be affected by the proposed revisions.

4.5.8. Conditions for Change of Use

An application for a ‘Change of Use’ will need to satisfy the following criteria:

a) The type of development is within the permissible uses as given in the Zoning Guidelines
b) The type of development does not significantly alter the original intention of the plan or zone.
c) The type of development does not cause disruption to the surrounding land uses by way of:
   • Significantly increasing traffic generation
   • Significantly increasing noise and or odour
   • Increasing the risk of fire or explosion
   • Undermining the image of the area
   • Being a risk to public health
   • Intrusion of privacy
d) Be of net benefit to the community in which the use is located.
e) Has minimal impact on existing services and infrastructure.

While some request for a change of use may not comply with all the above criteria, the net benefit of the change for the society may outweigh the negative aspects. (An example is a request for a most needed nursery school development in a residential area on a residential user plot, but with a potential effect of increasing traffic, noise and burden on services in the residential area). In such a case decision on the request should be made by the Kigali City Council or District Council upon the advice of the Kigali City or District OSC after consultation with residents and other affected stakeholders.

4.5.9. Procedure for Processing Rezoning Applications

The procedure for processing rezoning and land use change applications made by individuals or organizations is laid out according to approval process for Land Use Master Plans and Development and Building Permits' as follows:

i. Applicant submits proposed request to the Mayor a comprehensive rezoning report justifying the need for such rezoning.

ii. The report is studied, summarized and recommendations for action prepared by the OSC are presented before the KCC or DC.

iii. KCC or DC then considers the application for (a) Approval; (b) Refusal/Rejection or (c) Deferred with reasons

4.5.10. Procedure for Processing Change of Use

The procedure for processing land use change applications made by individuals or organizations follows the approval process for ‘Development and Building Permits’.
4.6. **Guidelines for Utility Corridors and Greenways**

Utility corridors and greenways are required so as to provide for a distribution system throughout the country. Where located in settlement areas, these corridors may provide for greenways that can serve as pedestrian or bicycle routes, if issues of safety, liability, and maintenance can be adequately addressed.

The following are the guidelines for the utility corridors and greenways in Rwanda:

- Provide sufficient easement width for the major trunk lines and transmission lines for utility systems, when their alignment is not within a road right-of-way, to permit the growth of trees within the easement.
- When overhead transmission lines are located within or adjacent to a road right-of-way, there should be sufficient width to permit the growth of trees adjacent to the transmission line, consistent with the applicable operations, maintenance, and safety requirements.
- Permit the use of utility easements for pedestrian and bicycle routes.
- Encourage coordination between utility companies, landowners, local authorities and the local community to ensure that safety, liability and maintenance issues are adequately addressed.
- Encourage the use of appropriate vegetation and/or ornamental trees to minimize the frequent need for vegetation control.
- Power lines are important to the national energy supply and should be indicated in district land use plans.
- Restrict human activity within power line corridors.

4.7. **Guidelines for Parks and Recreation Areas**

4.7.1. **Background and Definitions**

The measure of any great civilisation is in its cities, and a measure of a city’s greatness is to be found in the quality of its public spaces, its parks and its squares.’ (John Ruskin)

Public spaces are all places publicly owned or of public use, accessible and enjoyable by all for free and without profit motive. This includes streets, open spaces and public facilities.

Recreational uses are sports areas and facilities, parks, public squares, boulevards and pedestrian zones. There shall be Urban Centre Parks and neighbourhood parks.

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The 2016-2030 Sustainable Development Goals has proposed an eleventh Goal 11 ‘Build cities and human settlements inclusive, safe, resilient and sustainable.’ One of the proposed targets set out is “by 2030, provide universal access to safe, inclusive and accessible, green and public spaces, particularly for women and children, older persons and persons with disabilities”.

The Rwanda Urban Planning Code (of 2015) provides a distance of 500m from home to open space or park (Neighbourhood Park including picnic area and children’s playground) for a catchment of 5,000 persons. The World Health Organization (WHO) recommends 9 square metres as the minimum amount of accessible green public space per capita and that all residents live within a 15-minute walk to a green space per city.

The following are the guidelines for parks and recreation areas:

- For new residential development, provide land for open space and recreation purposes and/or circulation space by ensuring that land is surrendered during subdivision to provide the open space.
- Provide adequate public parking and related support facilities (such as rest rooms, showers and security arrangements among others)
- Incorporate natural features and use landscape materials that are indigenous to the area, where feasible, into the design of recreation areas.
- Provide pedestrian and bicycle pathways from surrounding streets to parks, to facilitate convenient access into the parks.
- Identify carrying capacity limitations of recreational resources and implement policies to regulate and mitigate impacts to these resources

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Accessible green space is considered to be that which is located close to residents’ homes, easy to walk to, physically accessible, safe to use, and provides well maintained facilities. [Definition by Public Health England]
Land use planning should provide for extensive and attractive recreational areas across the urban areas. The recreational areas should form cohesive entities so that there is a network of green zones combining them.

4.7.2. Guidelines on the public open and green spaces implementation

As per the Rwanda Urban Planning Code (of 2015), small neighbourhood parks shall provide access to basic public space functions, such as play and contact with green in an urban neighborhood. A neighborhood park shall:

- Be accessible to children and elderly in case of the need to cross any primary distributor road;
- Have a children’s playground with play equipment;
- Make small-scale sports possible, e.g. jogging, basketball or football;
- Have places to support passive recreation including seats;
- Be designed to ensure safety and security during day and night hours
- Be capable of being used by all the residents in the development
- Have naturally shaded areas.

Urban centre parks should offer a large spectrum of activities and features including such of a neighborhood park, function as an urban landmark and connect to pedestrianized zones where possible.

Sport fields and sport pitches shall be evenly distributed throughout urban residential areas.

Sports facilities should ideally be distributed near educational and social facilities and should be interlinked with parks and other public spaces.
The distribution of stadiums is a strategic decision for each urban area.

<table>
<thead>
<tr>
<th>Type</th>
<th>size (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Junior football pitch</td>
<td>45 x 90</td>
</tr>
<tr>
<td>Senior football pitch</td>
<td>100-110 x 64-75</td>
</tr>
<tr>
<td>Handball pitch</td>
<td>20 x 10</td>
</tr>
<tr>
<td>Netball pitch</td>
<td>15.25 x 30.5</td>
</tr>
<tr>
<td>Basketball pitch</td>
<td>15 x 28</td>
</tr>
<tr>
<td>Volleyball pitch</td>
<td>9 x 18</td>
</tr>
<tr>
<td>Tennis court</td>
<td>11 x 24</td>
</tr>
<tr>
<td>Children’s playground</td>
<td>Min. 100 m²</td>
</tr>
<tr>
<td>Cycling tracks</td>
<td>Min. 300 m</td>
</tr>
<tr>
<td>Passive Recreation Areas</td>
<td>Min. 100 m²</td>
</tr>
</tbody>
</table>

4.8. Guidelines on sites and services

4.8.1. Site development requirements

When planning for the development of a site, the following requirements shall be fulfilled:

1. Urban infill development and development on dilapidated and inefficiently used urban areas shall be prioritized before extending into new settlement areas consuming agricultural land located within the urban boundaries.
2. Adjacent or neighbouring uses shall be compatible with each other.
3. Planning for urban centres shall take into account the connectivity of uses and modes of transport, including convenience for pedestrians, circulation and parking areas, loading and unloading.
4. Sitting of residential buildings shall be in a way to form valuable and usable exterior space, and footprints of new high rise residential buildings shall not be pointed.
5. At least 30 % of a developed area shall have a permeable ground surface area.
6. The use of vegetation shall be integrated into the design or a neighbourhood and existing mature trees shall be retained wherever possible.
7. Set specific densities to ensure optimum land use and where possible plot subdivisions of land can be done to make densification possible

4.8.2. Land subdivision requirements

When developing Land Subdivision, Plot Restructuring or Re-plotting:

1. Plots shall be created in the most efficient way of using land and infrastructure.
2. The shorter plot width shall face the road.
3. Newly planned plots shall be rectangular, or as close as possible to rectangular in shape, depending on the prevailing geographic conditions.
4. A plot shall be directly accessible.
5. The minimum neighbourhood servicing requirements shall be respected and measures be taken to integrate public open space, facilities, infrastructure and utilities.
6. A new building should be located within a properly sub-divided and adequately serviced area.
4.8.3. Neighbourhood Safety

In support of neighbourhood safety thorough site planning:

1. Dead-end-streets of more than 100 m shall not be permitted.
2. Street lights shall be provided at minimum along primary and secondary distributor roads, from local transport nodes and from bus and minibus stops to a neighbourhood.
3. Invisible corners and spaces shall be avoided in plot boundary design along roads.
4. Plot owners shall be required to install security lighting on their plot boundary.

4.8.4. Fire protection in human settlements

Site planning shall include the following mitigating measures against fire outbreak and transmission:

1. Access to all buildings and public spaces must be possible.
2. Design shall mitigate causes of fire and possibilities of fire transmission between buildings.
3. Every building shall improvise, fix and maintain fire-fighting equipment easily accessible,
4. There shall be water points and fire hydrants well accessible within a radius to be specified by the responsible authority.
5. The water rate at water points and hydrants available for firefighting shall be secured at 25 m3/ hour with minimum availability for 2 hours.
6. If points 3 or 4 above are not fulfilled, the responsible fire brigade shall use firefighting engines which are equipped with a water tank.

4.8.5. Plot development requirements

- One plot may be developed with one or more than one building.
- Plot development parameters shall be specified through zoning regulations for each specific area within an urban planning document:

4.9. Guidelines for urban renewal

Urban renewal, which is generally called urban regeneration ("regeneration" in the United Kingdom), "revitalization" (in the United States), is a program of land redevelopment in areas of moderate to high density urban land use.

Urban renewal is the process where an urban neighbourhood or area is improved and rehabilitated. The renew process can include demolishing old or run-down buildings, constructing new, updated housing, or adding in features like stadium. Urban renewal is usually undergone for the purposes of persuading wealthier individuals to come live in that area.

The following are the guidelines for urban renewal:

- Promote high-rise buildings as opposed to horizontal growth to save on available space.
- Provision of systems i.e. efficient use of water, energy, parking space, security, waste management and lighting among others.
- Preserve buildings of historical/national heritage importance.
- Undertake road widening/redesigning programmes to ease and discourage traffic congestion and encourage pedestrian and non-motorized oriented/friendly towns.
- Decentralize public institutions from Kigali City to Secondary Cities including other towns to reduce congestion, ease infrastructural pressure and encourage growth of other urban centres.

4.10. Informal settlements upgrading

4.10.1. Background and definition

Informal or unplanned settlements are characterized by one or more of the following challenging aspects: overcrowding when located in inner urban locations, inefficient use of land and unauthorized land conversion when located in the outskirts of urban areas or outside of planned urban areas, limited accessibility of individual plots, and limited access to infrastructure services. Informal settlements upgrading, slums upgrading and urban upgrading sometimes are used interchangeably.

Informal settlements upgrading are a typical phenomenon from developing countries where its inhabitants live in precarious conditions, without the basic infrastructure needed to satisfy the basic human needs. Many of these settlements have no water supply or sewerage, throwing the domestic garbage into water, contaminating the rivers, and soil, compromising the drainage as well as generating other environmental impacts.

The term "slum upgrading" is open to broad interpretation. It can be applied to any intervention in an urban settlement that results in the improved quality of life of its inhabitants. Slum upgrading can range from the installation of basic infrastructure and improvements to streets, access-ways and upgrading dwelling units, to providing basic services such as garbage collection, health and education amenities. In recent years new items have been incorporated into the slum upgrading programs such as environmental education, land tenure regularization, income generation and suppressing crime and lawlessness.

Urban upgrading is defined by Cities Alliance (2003) as physical, social, economic, organizational, and environmental improvements undertaken cooperatively among citizens, community groups, businesses, and local authorities to ensure sustained improvements in the quality of live for individuals.

The full extent of informal settlements, including their density characteristics is not equally known for all Provinces. For major urban areas in Districts outside Kigali, the percentage of people living in informal settlements is estimated about one third (e.g. in Musanze). The average percentage of informal population in Districts other than Kigali is between 2% and 5% (District-wide average) according to EICV4. The average for the whole of Rwanda is 12.8%, whereby informal settlements within urban areas comprise about 62.6%, and for rural areas 2.5%. Countrywide analyses may allow a summary of characteristics of informal settlements outside of Kigali as follows:

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7 Concept Construction Consultancy, 2014, Consultancy Services For Profiling And Providing Indication Of The Status Quo And Trends In Informal Settlements And Propose Mechanisms For Their Upgrading-Northern Province, RHA.

8 A series of reports commissioned under RHA from 2013 and 2014 assessing informal settlements in all Provinces.
Urban upgrading comprises measures intending to improve the living conditions of the urban population living in informal settlements by providing basic infrastructure and by supporting measures which The National Housing Policy (2015) stipulates in its Policy Statement #4 that “Existing informal housing units shall be upgraded and integrated into the formal housing stock to the highest degree feasible”.

4.10.2. Physical Guidelines and Standards for Urban Upgrading and Renewal

The National planning framework applies to the implementation of urban upgrading. Reference documents are provided by the Ministerial Order N°04/Cab.M/015 of 18/05/2015 determining urban planning and building regulations, which contains the Urban Planning Code in its annex 1 and the Building Code in its annex 2.

- Urban neighborhoods should be upgraded to ensure an agreed standard of service provision for their residents, provided that the neighbourhood is on suitable land which is non-hazardous land, i.e.: (1) Not prone to flooding; (2) Not on weak soil; (3) Not on sloped terrain steeper than 30°. In case an area must be cleared from existing development for one of the above three reasons, it must not be re-developed.

- Areas should be environmentally protected from polluting industrial operations, and from newly built structures. Trees, green areas, and spaces shall be preserved and restored.

- Urban neighborhoods upgrading requires sufficient primary infrastructure, especially (1) water distribution, (2) ensuring that neighbourhood level infrastructure to be provided or upgraded is able to function. In case an area must be cleared from residential development for one of the above three reasons, it shall not be re-developed.

- Planning shall follow the procedures of a specific Land Development Plan, and urban planning operations as applicable and determined by the respective implementing orders.

- Site improvement shall ensure the protection of human health and or natural resources. When upgrading informal urban settlements, there shall be measures to ensure that:
  - Storm-water is managed in a way that (1) prevents, controls, and cleans storm-water runoff; (2) reduces flooding, erosion and sedimentation; and (3) helps in replenishing groundwater; and (4) no built structures are added in historic flooding areas.
  - Liquid waste is managed in a way that protects the environment from its effects, including the collection, transportation, treatment and disposal of waste water; and it is treated to be free from risks of transmitting disease before entering into the environment;
  - The evacuation of solid waste is organized by every household by requesting the services of a service provider.
  - Every plot is to be accessible by at least a footpath; and there is access for emergency services and public transport within 500 m from every plot.
  - Safety in areas of electricity cable networks is ensured under the responsibility of the electricity provider.
4.10.3. Minimum access to infrastructure and facilities for upgraded neighborhoods

Urban upgrading standards may deviate from standards for new development, while it is apparent to adhere to public health and safety requirements.

The following minimum standards apply to service and infrastructure provision in upgraded neighborhoods:

- Public toilet where not all households have access to appropriate sanitary conditions
- Potable water access point shall be provided at a distance of 250 to 2000 inhabitants
- Every plot shall be accessible by at least a footpath.
- There shall be a Secondary, Local Distributor Road, or an Access Road within 500 m.
- Every road shall be accompanied by properly dimensioned storm water channels.
- Every household shall undertake proper evacuation of solid and liquid waste.
- Every household shall undertake measures for the proper control of erosion from storm water and liquid waste.
- The electricity provider shall be responsible for the safety in areas of electricity cable networks. No open wiring and underground placement of cables shall be allowed.
- Sewers must be protected in a way safe for passers-by and particularly children during storm water flushes. Safe bridging passage ways shall be provided following the course of footpaths.
- Civil engineers and urban planners responsible for the elaboration of the Specific Land Development Plan may propose to the District to waive the standard width recommendations for access roads and accompanying uses following a road where there is insufficient space or the intervention would cause unjustifiable displacement.

4.10.4. Conditions for the Formalization of Existing Buildings

Existing buildings which were developed prior to urban planning documents, or in any way informally may be formalized under the following conditions:

- Provisions from above article are fulfilled;
- The building structure is in safe condition;
- The land use is permissible in the area.

4.10.5. Urban Neighbourhoods and Settlement Upgrading Implementation Options

The National Informal Urban Settlement Upgrading Strategy (2016) states five options of implementing an upgrading project, and recommends where best each of the five options shall be adopted. They are:

1. Initiative of collaborating landowners who may form a cooperative, with intervention predominantly recommended in area where land owners are ready to invest in upgrading / development;

2. Investment, where a Real Estate Investor may either be acting on own proposal, or may have been identified by a group of landowners or government, with intervention recommended in areas under development pressure;
3. Initiative of the Central or Local Government, the intervention of which shall focus on areas requiring basic infrastructure provision following public investment plan, and in underserviced areas where the community alone is not capable to upgrade;

4. A scheme out of a Social Investment Trust, with intervention recommended in areas which are not matching Masterplan requirements;

5. Schemes developed with development partners, NGO/CSO's or lending institutions, whose support will be requested to focus on the most underserviced areas with low / very low income population.
4.11. Guidelines for Industrial Location

4.11.1. Definition

Industry is defined as general manufacturing, processing, assembling, handling, storing of products and materials. Industrial activity can be classified into light, general, heavy and special uses depending on scale, noise, effluents, odors, appearance, nature of materials, etc. Separate areas may be zoned for these different types of industry. Small scale enterprises such as crafts, maize mills, tailoring workshops, carpentry, bicycle and shoe repairs, tinsmiths, etc., are generally regarded as service industries which can be located in commercial areas.

Industrial development will only be permitted in areas zoned for such purposes.

4.11.2. Background

The NLUDMP promotes a mixed use in establishment of light industries in residential areas and other land uses to reduce walking distances and transport.

All Districts need to adopt uniform national standards for the location and operation of polluting activities. Standards should follow set criteria on the location, buffering and types of industries allowed. The following criteria should be adopted. All industrial activities should be restricted to specified ‘light’, ‘commercial’ or ‘heavy’ industry zones. These zones should be defined in the DDP’s and be determined by the following factors:

- Low-risk of pollution runoff to water bodies (dependent on land gradient and distance to water bodies; Low risk of landslides;
- Suitable distance from agriculture, residential and flood prone areas;
- Easy road (and rail) access.

4.11.3. Common Locational Requirements

The environmental threat posed by industry and pollution is fairly limited but will grow rapidly. Main problems are the pollution of wetlands and water bodies from manufacturing and processing facilities. Pollution impacts will rise as population and economic development increase. The designation of industrial areas is a key first step to minimise pollution. In siting industries, care should be taken to minimise the adverse impact of the industries on the immediate neighbourhood as well as distant places.

The locational requirements common to all industrial and business land use types are:

- Flat land or large flat terraces;
- Good access to major traffic routes, preferably direct access to major trunk roads wherever possible to avoid causing nuisance to other noise sensitive uses, but at least 500m from highway and railway.
Convenient access to business centres in existing urban areas;

- Good accessibility to inland container depots or airport;

- Adequate provision of piped water, sewage disposal and waste storage/treatment facilities, electricity supply and telephone services;

- Sited to avoid adverse environmental effects (e.g. noise, odour, dust etc.) on residential and other sensitive land uses, or with design requirements for the provision of appropriate installations to mitigate such effects;

- Consider the hilly character of the country and avoid closely siting polluting industries lower than the surrounding residential areas, as well as avoid siting low-rise industrial developments close to high-rise residential developments;

- Ensure that adequate buffer distance and/or intervening uses are available between residential and industrial uses. Provide adequate buffer areas between Specified Processes, industries giving rise to dusty, odorous and gaseous emissions, and any sensitive land uses

- Sited to avoid despoliation of the rural landscape, country parks, water catchment areas and environmentally sensitive areas, and the site concerned should be properly designed and landscaped so as to minimise adverse impacts.

4.11.4. General Environmental Guidelines for Industry Location

Air Quality Considerations

Air quality is affected by such factors as the emission rate of air pollutants, the separation distance between emission sources and receptors, topography, height and width of buildings as well as meteorology. Every planning effort should be made to ensure that:

- Potentially air-polluting industries are not located in areas where the dispersion of air pollutants is inhibited or where the present air pollution is already serious so as to minimize the health hazard to the surrounding residential areas.

- The location of the industrial zones/plants is influenced by the general wind direction; wherever practicable, industrial zones shall be sited so as urban areas and new towns to take advantage of the prevailing winds;

- High-rise buildings and low-rise air pollution emitters are not located close to each other;

- New traffic generators, especially those of goods vehicles, are not located in areas which currently have severe air pollution;

- Provide adequate buffer distances or screening between specified processes, industries giving rise to dusty, odorous and gaseous emissions, and any sensitive land uses.

Sensitive Land Uses: For the purposes of this guideline, (i.e. where industry is concerned) sensitive land use may include:

- Any building or associated amenity area (i.e. may be indoor or outdoor space) which is not directly associated with the industrial use, where humans or the natural environment may be adversely affected by emissions generated by the operation of a nearby industrial facility. For example, the building or amenity area may be associated with residences, residential areas, day care facilities centres, hospitals and clinics; schools; churches, and other similar institutional uses, or campgrounds and active recreational activities.
The land use pattern will minimise the demand for road traffic and facilitate the development of railway network so that the vehicle emissions can be kept to the minimum.

**Noise**
- Avoid locating noise-emitting industries close to noise sensitive uses in such a way that the maximum allowable noise levels at the nearest sensitive uses are exceeded.
- Position industries such that there is no line-of-sight to major noisy activities from adjacent noise sensitive uses.
- If the required separation and screening between industries and sensitive uses cannot be provided, consider the feasibility of noise mitigation measures such as purpose-built noise barriers and innovative site layouts to minimise noise impacts.

**Water**
- Locate industries in areas adequately served by public foul sewerage.
- In areas where no foul sewerage is available, avoid siting industrial developments that will result in effluent discharging into inland waters.
- For effluent-producing industries, ensure adequate provision of suitable land and access for installation of effluent pre-treatment facilities.
- Wherever possible, centralise industries of the same category to economise the provision of wastewater collection and treatment facilities.

**Waste**
For industries with special requirements for waste disposal,
- Ensure that adequate and suitably located space and access are provided for the collection, storage and transportation of waste.
- Locate offensive trades in purpose-built industrial buildings within designated industrial areas and provide adequate buffer to minimise potential odour nuisance.

### 4.11.5. Buffer areas / Health protection zones standards

The Rwanda Building Code of 2015 provides that there shall be a health protection zone against pollution from industrial uses of between 100 m up to 1,500 m around SEZ’s, to be determined by the responsible government agency and depending on the particular use, applicable to the following sub-categories of an SEZ: (1) Heavy industry and power plants, (2) Agro-industry, and (3) Light industry and technology.

There shall also be health protection zones as determined by the responsible government agency around the following uses, independent of whether they are located inside or outside of an SEZ:
1) Heat and power stations and boiler installations;
2) Sanitary engineering installations and municipal undertakings;
3) Sewage treatment installations;
4) Sewage pumping stations.
Table: Summary of recommended buffer distances for land uses

<table>
<thead>
<tr>
<th>Polluting Uses</th>
<th>Sensitive Uses</th>
<th>Buffer Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-storey industrial buildings</td>
<td>residential areas, schools</td>
<td>100m</td>
</tr>
<tr>
<td>Multi-storey industrial buildings</td>
<td>commercial</td>
<td>30m</td>
</tr>
<tr>
<td>Industrial areas</td>
<td>hospitals</td>
<td>500m</td>
</tr>
<tr>
<td>Industrial chimneys</td>
<td>sensitive uses</td>
<td>within 500m</td>
</tr>
<tr>
<td>Industrial chimneys</td>
<td>high rise buildings</td>
<td>200m</td>
</tr>
<tr>
<td>Industrial chimneys</td>
<td>active open spaces</td>
<td>10–50m</td>
</tr>
<tr>
<td>Slaughterhouses</td>
<td>sensitive uses and commercial areas</td>
<td>200–300m</td>
</tr>
<tr>
<td>Village incinerator</td>
<td>sensitive uses</td>
<td>100m</td>
</tr>
<tr>
<td>Odour sources</td>
<td>sensitive uses</td>
<td>200m</td>
</tr>
<tr>
<td>Offensive trades</td>
<td>sensitive uses</td>
<td>200m</td>
</tr>
<tr>
<td>Dusty uses</td>
<td>sensitive uses</td>
<td>100m</td>
</tr>
<tr>
<td>Trunk roads</td>
<td>active open spaces</td>
<td>20m</td>
</tr>
<tr>
<td>Trunk roads</td>
<td>residential uses</td>
<td>20–30m</td>
</tr>
</tbody>
</table>

Note: To avoid conflicts with adjacent land uses, relevant industry specific standards and guidelines must be determined and developed by the government institution responsible for industries (MINEACOM).

4.12. Guidelines on preservation of agricultural and pastoral lands

4.12.1. Background

Preservation of agricultural areas is essential to maintaining the open space setting and the rural character of the region. To assure the successful development of diversified agriculture in Rwanda, it is essential that agricultural lands be protected, dedicated, and committed primarily to agricultural use. In addition to the rural community and agricultural boundaries as demarcated, guidelines are established to protect agricultural lands from other development. Good and cohesive agricultural fields should be preserved for agricultural production and not be put to any other incompatible land use.

Appropriate incentives for maintaining the long-term availability of important agricultural lands and industry development should be explored, designed and implemented as high priority action items by relevant lead agencies. Agricultural land should be zoned based on land suitability to promote sustainable production systems and to preserve it for food security. It is also envisaged that these guidelines will aid in preservation of land for livestock so as to ensure proper utilization during both wet and dry seasons.

4.12.2. Guidelines on agricultural land

The following are the guidelines on agricultural land in Rwanda:
- Prohibit land use such as commercial/industrial development and residential subdivision on important fertile agricultural lands – any other use must have a direct connection between those activities and the maintenance of agricultural uses on the same or nearby properties.
- Major land use changes, agriculture lands cannot be converted without permission of concerned institutions or ministries.
- Develop and map soil capability profiles for the country in order to carry out different sustainable agricultural activities.

- Prohibit conversion of agricultural lands to large-lot residential subdivisions with no agricultural activities – any conversion can only be permitted if they are accessory to agricultural activities.
- Structures on individual sites should be clustered to maximize agricultural production lands and reduce infrastructure costs.
- Establish a rural settlement boundary to protect agricultural lands. Outside this boundary, land uses will be limited to agricultural pursuits, outdoor recreation and preservation.
- Prohibit developing or subdividing of agriculturally designated and zoned lands for residential or other non-agricultural uses.
- Base any subdivision of productive agricultural lands on viable economic units for agricultural production as per different agro ecological zones/regions.
- Crop production should be done depending on adaptation to designated agro-ecological zones, soil characteristics, recommended agricultural practices and appropriate land husbandry technologies.
- The minimum land subdivision should be based on ability of a given size of land to support a family unit.
- Prohibiting subdivision of agricultural land less than 1 Ha.
- Develop incentives and/or disincentives to discourage subdivision of large scale farms.
- Cultivation on the slopes ranges from 0% - 12% contour farming is recommended and to use soil conservation measures; 12% - 55% one is obliged to apply soil conservation measures; slopes up to 55% with deep soil may be used as a last resort if extensively terraced and above 55% land should be used for perennial/permanent crops/forests (e.g. grass, tea and bananas and trees).
- Discourage cultivation on areas identified and demarcated as riparian – the distance of cultivated land from rivers should be 10m from the highest water-mark during peak of the rainy season. The minimum on both side of the river should be 2m for small rivers and maximum of 10m. Generally the standard should be the same size of the river on both sides of the river, with a minimum of 2m and up to a maximum of 10m.
- Distance of cultivated land from lakes: it should be 50m from highest water mark for all lakes.
- Stony, shallow soils on hilly areas should be used as pasture (controlled) or forest or should have stone terraces.
- Protection of the soil against erosion: plough and plant along the contours, practice crop rotation, apply manure to crops, leave crop residue on the ground, agroforestry and practice terracing.
- Identify map and gazette wildlife corridors.
- Discourage agricultural activities in wildlife dispersal areas.
- Protection of water bodies from contaminants emanating from agriculture.
  i. reduce soil erosion by applying proper agriculture-land husbandry practices
  ii. Integrate Soil Fertility Management (organic and inorganic) to reduce non-point source contaminants
- Prohibit cultivation along highways and railway lines reserves.
- Encourage on farm water harvesting.
4.12.3. **Guidelines on urban agriculture**

The following are the guidelines for urban agriculture in Rwanda:

- In a residential area, a maximum of 5% of the land may be covered by agriculture.
- The use of appropriately treated waste water should be encouraged for agricultural purposes and prohibit use of raw waste water for irrigation.
- No agricultural practices should be undertaken in the road and railway lines reserves within towns.
- Introduce economic disincentives to agricultural practices that should be undertaken (for speculation purpose) in the residential zones provided with infrastructures within cities and towns.

4.12.4. **Guidelines on peri-urban agriculture**

Peri-urban agriculture should adhere to the following guidelines:

- Agriculture may be practiced at the backyard of the plot.
- Peri-urban agriculture should be practiced in single holdings and restricted number and species of animals per land holding.
- Establish an adequate waste management system on the plot.
- Restrict livestock keeping within closed boundaries of the plot.
- Encourage the use of appropriately treated waste water for agricultural purposes and prohibit use of raw waste water for irrigation.
- Ban agricultural practices in the road reserves within peri-urban and highways.
- Encourage harvesting and storage of rain water for agriculture.
- Prohibit agricultural activities in ecologically fragile/socially sensitive areas e.g. riparian reserves, sewerage lines or ponds, cemeteries, dumping sites, settlements etc.
- Any agricultural activity must have the approval of the local authority or District Authority as supervised by MINAGRI through RAB as guided by zoning specifications and by laws.
- Encourage organic farming and integrated pest management practices as opposed to manufactured/chemical fertilizers and chemical pest control.
- Optimum use of agro-chemicals should be encouraged.

4.12.5. **Guidelines on plantation farming/estates**

Plantation farming / estates should adhere to the following guidelines:

- Conduct an EIA before establishment of plantations, annual and perennial crops.
- Plan for residential quarters for workers with adequate amenities such as schools, clinics, water and sanitation facilities.
- Provide machinery parking yards and garages.
- Designate site for the processing plant.
- Conserve water courses and wetlands through provision of buffer zones.
- Preserve and ensure access to cultural and public utility sites.
- Provide for proper occupational health and safety measures to workers.
- Prohibit use of banned chemicals.

4.12.6. Guidelines on livestock rearing

The following are land-use guidelines on protection of livestock lands (areas)

- Delineating livestock lands according to agro-ecological zones.
- Ensure that the siting, distribution and density of water points is done in consultation with relevant stakeholders after doing an EIA.
- Rehabilitate degraded lands with appropriate technology e.g. reseeding, soil conservation among others.
- Set aside blocks for seed bulking and pasture conservation.
- Ensure the farm size is not smaller than the minimum recommended size of a commercially viable farm for a given ecological zone.
- Encourage rotational grazing (wet season and dry season grazing areas) through regulated grazing procedures developed by locals.
- Ensure sitting of livestock handling facilities (markets, holding grounds, dips, routes that animals follow on their way to markets etc.) is done in consultation with the local communities and District authorities.
- Control human settlements near watering points.
- Develop conflict resolution mechanism by forming natural resource committees and ensure adequate facilitation.
- Encourage the location of processing facilities in livestock rearing areas.
- Maintain the most appropriate species and breeds for each ecological zone.
- Ensure that stocking levels are within the carrying capacity set for each ecological zone (Ha/livestock unit).
- Establish inventories, map and register community grazing areas.

4.12.7. Buffer areas in separating agricultural and residential land uses

Buffer areas are legitimate planning tools. They are used to separate land uses to ensure long-term protection of both areas impacted upon and areas used for the conflict generating activity. Examples of such activities include industries, sewage treatment works, abattoirs, tanneries, composting plants and rendering works; and intensive animal and plant production facilities (such as feedlots, piggeries and poultry sheds). The principle of separating conflicting uses is also applied to the protection of natural resource areas (such as nature conservation reserves, streams, water supply storage areas and forest reserves).
Planning Guidelines:

- **Odour:** Information on odours from poultry farms indicate that 500 m would be an acceptable separation distance for odour mitigation should the duration threshold be exceeded.

- **Agricultural chemical spray drift:** To locate new residential areas so that the impacts of agricultural chemical spray drift on amenity and health is avoided, and complaints from residents regarding the use of agricultural chemicals are unlikely. From a planning perspective, it is not considered practical to base buffer area dimensions on individual chemicals or formulations.
  - Based on the available research on chemical spray drift, the planning guidelines have adopted a minimum width of 300 m where open ground conditions apply; and a minimum width of 40 m where a vegetated buffer element can be satisfactorily implemented and maintained. These dimensions may vary according to local topographical or climatic conditions or as further knowledge is obtained.

- **Dust, smoke and ash:** Some agricultural activities including cultivation prior to planting, tractor and transport movements, cane fires and harvesting can generate dust, smoke and ash.
  - The separation distance between the sensitive receptor and agricultural land is a minimum of 150 m; or a minimum width of 40 m where a vegetated buffer element can be satisfactorily implemented and maintained, and located between the sensitive receptor and adjacent agricultural.

- **Noise:** The separation distance between the sensitive receptor and the source of noise is a minimum of 60 m whether or not a vegetated buffer element is located between the sensitive receptor and adjacent land uses.

All District Centres should allocate land to the collection, storage and treatment of waste. This would include land within built up areas specifically for the collection of household waste. The volume of waste generated and access by collection vehicles should determine allocated space. Facilities such as separate bins should also be provided to allow easy separation of organic and recyclable material from the waste stream. Areas for waste collection would be allocated at the edge of dense settlements with limited vehicle access. Districts should be mapped into local waste ‘catchments’ that reflect topography, density and type of waste generated. Specific land requirements for these facilities will depend on the population size and type of waste collected.

The following are the guidelines for agricultural, industrial and domestic waste management:

- Solid waste should be disposed in landfills with a requirement of a minimum area of 5000 sqm and should ideally be positioned further from cultivated and highly populated areas at least 7 km from centre.
- All larger District Centres (>50,000 people) require a landfill. Capacity should be based on population projection of the total waste catchment – including population growth in adjacent Districts that do not have a landfill. Criteria for positioning landfills must include ease of vehicle access; drainage, flooding and land slide risk; proximity to settlements and cultivated land, and the porosity of substrate and depth to groundwater. Landfills require a minimum buffer of 500m and should ideally be positioned further from cultivated and highly populated areas.
- Waste disposal sites should be secured and manned to discourage scavenging and exposure to hazardous chemicals.
- Provide adequate buffer zone between waste disposal sites and the surrounding communities.
- Waste treatment works should be located so that the bulk of all waste generated is well managed and may be utilized or treated in purposeful way.
- Waste collection points, transfer site and disposal site (landfill or incinerator) should be well designated and properly functioning.
- Agricultural, industrial and domestic waste/effluent treatment should be designed to avert pollution of lakes and other water bodies, ensure the enforcement of the same.
- Each waste generator should provide appropriate receptors for waste collection and segregation.
- Promote and enforce the provision for the design and construction of adequate waste water handling facility for a proposed development.
- Plans for the utilization of treated waste water should be kept updated for all waste water treatment plants in all districts. Treated waste water should be regarded as a resource. Networks should be built for the distribution of treated waste waters to agriculture and green areas.


Irrigation farming should adhere to the following guidelines:
- Encourage use of rain water for irrigation.
- An EIA should be done before an establishment of a large scale irrigation and drainage of swamps.
- Undertake a water resources assessment survey and prepare a report.
- Prohibit water abstraction without a valid license.
- Methods of irrigation and technology applied should be compatible with the water source, crop varieties and climatic condition.
- Damming of rivers for irrigation should be encouraged, with respect to some flows downstream for environmental purposes and equitable distribution of the resources.
- Marshland irrigation projects should include a component of erosion control measures at the surrounding hills and supplying catchment.
- Provide sanitary facilities in large irrigation schemes.
- Irrigation farming must be friendly with adjacent land uses.
- Provide a buffer zone of at least 50m from the irrigation schemes and the natural water courses/body into which such irrigation scheme discharges its water.
- New irrigation projects should comply with the binding by the Rwanda irrigation Master plan.

4.15. Guidelines on fish farming

4.15.1. Background

The Pond fish farming culture was introduced into Rwanda during the Belgium colonial period at around 1925 and there been some improvement in fish farming since then. Rwanda currently has 79 ponds from 10 sites and produces over 17,000 metric tons from ponds.

Today aquaculture has been transformed from non-viable subsistence to economically sustainable enterprise as part of food security in the country. The sector which is managed largely through local governments and cooperatives falls under the Ministry of Agriculture and Animal Resources (MINAGRI). On the whole however, fishing in Rwanda has remained artisanal characterized by smallholder fishers and farmers. Therefore is a need to reorganize the fishers and farmers not only into cooperatives but viable fish production units with consideration for attaining economies of scale and accessing regional supply chains.
The country has fairly well distributed ample water resources, good physical and communication infrastructure, and very good national macroeconomic policies which if exploited can provide a very firm basis for rehabilitation and development of the Aquaculture and Fisheries sector for increased fish production.

Fisheries and Aquaculture can be undertaken in nearly all ecological zones of the country but different sites are suitable for different production systems depending on the site specific natural and socioeconomic conditions.

4.15.2. **Location:**
- Fish pond shall be located in wetland or on slopes. Land with a gentle slope shall be selected, taking advantage of existing land contours or topography.
- Fish farms shall not be located within areas which have been designated or proposed as RAMSAR sites
- Removing aquatic weeds growing in the pond

4.15.3. **Size and Shape**
- Square and rectangular shaped ponds are easiest to build, but your pond can have a different shape to fit the size and shape of the land.
- An area of 300 m² is a good size for a family pond, which you can build without the use of machinery. Ponds can be much larger than this, but for family use it is better to have several small ponds rather than one large one. Also, if you have more than one pond you will be able to harvest fish more often.
- Land suitability study should be conducted before developing aquaculture.
- All project development on fish farming must conduct an EIA before implementation.
- Aquaculture shall be developed in good sites with adequate and suitable water resources
- Should be sited so as environmental factors are properly managed and regulated for good survival and optimum growth of fish.

4.15.4. **Depth**

The water depth is usually 30 cm at the shallow end and 1 metre at the deep end. The pond can be deeper than this if the pond is used as a water reservoir in the dry season. It is important that the water can be completely drained for harvesting.

5.6. **Guidelines for mining and quarrying**

5.6.1. **Background**

Rwanda has great potential for mineral resources investment development and exploitation. Currently, the key minerals currently being mined and traded in Rwanda are cassiterite (SnO2), wolframite (WO3), Colombo-tantalite (Ta2O5) and gold. Other key minerals include ambigrinite, beryl and semi-precious stones such as tourmaline, topaz, corundum, chiastorite, amethyst, sapphires, opal, agate and flint. Construction materials which can be used in their primary state or given a higher value are abundant. These include; amphibolites, granites and quartzites, volcanic rocks, clay, sand and gravel. Industrial resources such as dolomite, industrial sand (glass and foundry), kaolin for ceramic and paper, quartz and feldspar exist in substantial amounts. Resources which can be used in soil upgrade for agriculture include; travertine, peat and trachytes. Energy substances that need development in the sector include peat and geothermal potential. In addition, mining operations generally affect the hydrological functions and compete with ecologically protected zones such as national reserves, game parks and protected forests. Quarrying activity is a major industry in Rwanda, which supports the local construction industry.
and revenue generation, creates huge employment opportunities and is a major contributor to the national economy. However, there has been growing public dissatisfaction in the manner in which the activities are being undertaken. The country has witnessed various quarry disasters and complaints associated with quarrying activities which have brought about safety, environmental and socio-economic concerns that need to be addressed.

5.6.2. Guidelines on Quarrying
The guidelines on quarrying could broadly be categorized (i) Occupational, public safety and health Guidelines (ii) Environmental guidelines and (iii) Socio-economic guideline. But for land use planning purpose, the proposed guidelines here are limited to spatial dimension. The following safety distances should be maintained in quarry operations:
- Quarry sites should be designated, mapped.
- Siting of quarries should be in harmony with other land uses and provide for defined buffer zone between quarries and other land uses.
  For quarrying operations without blasting:
  - 500m to any aerodromes/landing ground
  - 200m to any shopping centre, school and hospital
  - 100m to any house irrespective of consent from the owner
  - 50m to any river edge, road reserve or rail
- Undertake an EIA before quarrying starts.
- The areas should also be physically planned and appropriate land use assigned and Environmental Management Plan (EMP) for the whole area prepared.
- Quarrying activities within the forested land should be restricted to forestland devoid of trees with the aim of reclamation for re-vegetation.

5.6.3. Guidelines on Mining
The following are the guidelines for exploration of minerals in Rwanda:
- Maximum area of exploration should not exceed the recommended size by law.
- Maximum duration of exploration should not exceed the period specified by law.
- Undertake an EIA before any mining procedure starts
- In case of trenching and pitting, rehabilitation should be done as recommended in EIA.
- Time must be indicated as to when rehabilitation starts after exploration ends.

5.6.4. Guidelines on mining (exploitation)
The following are the guidelines for exploitation of minerals in Rwanda:
- Undertake an EIA before mining starts with clear SIA and adequate compensation mechanisms for the local communities.
- The mode of mining should be based on type of mineral, safety, existing land uses, ecological sensitivity etc.
- Wastes should be disposed in designated disposal sites.
- Sanitary facilities should be provided in mining sites.
- Appropriate technology must be used to increase efficiency, control dust, noise and vibration to acceptable levels.
- Toxic by-products should be properly managed so as to avoid adverse environmental impacts
- Maximum duration of mining should not exceed the maximum recommended period by law.
- Disused mines should be rehabilitated according to EIA/EA/EMP where applicable.

5.6.5. Guidelines on artisanal (small-scale) mining

The following are the guidelines for artisanal mining in Rwanda:
- Intensive small-scale mining should be done in designated areas.
- The Government should facilitate EIA in the designated areas and provide disaster vulnerability profiles for mining sites.
- Persons engaged in small scale mining should be encouraged to operate as organized groups and vetted to ascertain capacity to mine i.e. skills, equipment and finances among others.
- Disused mines should be rehabilitated according to EIA where applicable.

5.7. Guidelines on Establishment of Military Barracks, Camps, Garrisons, Trainings Institutions and other Installation

In land use planning, the needs of the national defence and the safeguarding of the national integrity should be taken into account for national sovereignty, and sufficient areas should be allocated to military barracks, camps, garrisons, training institutions and other Installations.

The following are the guidelines for the establishment military barracks, camps, garrisons, training institutions and other installations:
- They should be marked and/or demarcated as military land and appropriate signage/warning notices erected.
- Ensure that they are not located in environmentally sensitive areas e.g. wetlands, parks, protected forests, conservation areas and human settlements among others.
- Ensure that in establishing them, the Ministry of Defence should provide appropriate infrastructure services to support and minimize potential negative impacts to the region.
- Ensure that they are isolated from civilians by establishing a safeguarding area as buffer zone between the military camps and civilian settlement.
- Consider relocating permanent military camps and training areas in appropriate areas.
- Environmental Impact Assessment should be conducted before establishment of any military camps and other installations.


Background

Rwanda, like most African countries, hosts refugees fleeing from civil conflicts and prosecution. Rwanda is a signatory to the 1961 convention on diplomatic relations signed at Vienna United Nations Convention relating to the Status of Refugees, Protocol of 1967 relating to the status of refugees and Organization of African Unity's Convention of 1969 governing the
specific aspects of refugee problems in Africa to which Rwanda accessed by the degree-law no 30/79 of 22 October 1979 confirmed Law no 01/82 of 26 January 1982.

Pursuant to organic law no30/2008 of 25/07/2008 relating to Rwandan Nationality, Article 13 of the Rwandan Refugee law no 26 of 30/06/2014 gives powers to the Minister of Refugees in Rwanda to grant status of refugees in mass influx situations. The government and other humanitarian organizations work together to provide food, shelter, medical assistance and other basic needs in these camps and transit centres.

On environmental matters, it is the responsibility of the Commissioner of refugees through the Refugee Camp Manager / Camp Coordination Board to make sure that the camps are managed in a way that protects the environment, the welfare of the refugees, the host communities and promote peaceful co-existence between the refugees and the host communities.

Rwanda like any others countries in the great lakes regions has also been experiencing situation of internally displaced persons as a result of environmental disasters (such as earthquakes, landslides, floods and droughts), fire outbreaks, insecurity and political instability.

The following are the guidelines:
- Undertake EIA for establishment of proposed refugee camps and undertake EAs.
- Ensure the provision of designated areas for refugee settlement. Such areas should not be in ESAs and should be accessible to food supplies, water supplies, shelter, medical assistance and other cost-effective basic needs. Regional camps should be designated.
- Ensure that the refugee’s camps are sited in areas with social infrastructures (schools, hospitals and places of worship) and basic infrastructures (water, shelter, security, and food).
- Determine the camp carrying capacity for each single camp and duration of time for which refugees are accommodated there.
- The sites of refugee camps should be located outside protected zone areas (forests and national parks) about 2 Km from buffer zones and provision of renewable sources of energy in camps should be ensured.
- Ensure the protection of interests of the existing communities, avert conflicts with them, and prove buffer zone of 2 km between the refugee camp and the local settlement.
- Refugee camps should not be located less than 50 km from the nearest international border as per the UN Convention on refugees of 1951 for their safety.
- Ensure that area of the refugee camp is marked by a ring road or a live fence to control unauthorized expansion.
- Set aside public lands at each provincial level to temporarily cater for any unlikely event that might result in displaced persons.

5.9. Guidelines on Hazards and Disaster Management

5.9.1. Background

People and environment face threats to their life and livelihood from natural and human related hazards. Natural hazards in Rwanda comprise drought, floods, earthquakes, volcanic eruptions, landslides, cyclones, and storms among others. Disasters occurs when these natural hazards interact with vulnerable people, property, and livelihoods causing varying damage depending on the level of vulnerability of the individual, group, property or livelihoods. In Rwanda disaster impacts have become an impediment to sustainable development and a number of regions have suffered devastating effects of disasters and calamities. The most common disasters in the country are weather related natural phenomena such as droughts, floods, landslides and lightning which in most cases takes lives of people. In addition anthropogenic factors causing land degradation; deforestation of catchment areas, poor
agricultural practices, inappropriate land use systems, changing living conditions, among others are established to be contributing to increased impacts from the various natural hazards.

In the recent past these hazards have increased in number, frequency and complexity. The level of destruction has also become more severe with more deaths of people and animals, loss of livelihoods, destruction of infrastructure and environmental degradation among other effects resulting in losses of varying magnitudes.

It is therefore important that guidelines are developed to minimize impacts by avoiding construction in disasters prone areas and controlling land use on steep slopes and other risk prone areas.

5.9.2. Guidelines for flood-prone areas

The following are the guidelines for flood-prone areas in Rwanda:

- Identify and map flood prone areas all over the country.
- Discourage human settlement in flood-prone plains.
- Create a buffer zone between the flood plain and human settlement to ensure safety of the local communities.
- Carry out afforestation tree-planting, water and soil conservation in catchment areas and along water courses.
- Develop a flood early warning system.

5.9.3. Guidelines for landslide-prone areas

The following are the guidelines for landslides-prone areas in Rwanda:

- Identify and map landslide prone areas all over the country.
- Discourage human settlement in landslides-prone areas
- Sitting of infrastructure in landslides prone areas should be determined by slope, soil characteristics and vegetation cover.
- Control the flow of water along water courses using appropriate technology through Construction of flood control structures such as dykes and dams.
- Undertake an EIA for proposed construction of dykes and dams
- Engage the local communities in the construction of water-flow control structures.
- Encourage the planting of water-logged tolerant crops (e.g. rice, arrow roots) in flood plains.
- Intensify soil and water conservation measures in already settled landslide prone areas.

5.9.4. Guidelines on fire safety management

The Prime Minister Instructions Nº001/03 OF 11/07/2014 provides safety measures relating to the Fire Prevention in Rwanda The following are the guidelines for fire management in Rwanda:

- Designate and develop fire breaks in fire prone habitats/areas such as forests, ranches, squatter land and slums etc.
- All urban areas should have an adequate number of well-equipped fire stations.
- Build and strengthen the capacity of responders (fire fighters) and conduct regular drills.
- All commercial and institutional buildings must have operational and clearly labelled emergency exit routes and ensure regular inspections of the buildings.
- Provide adequate access roads and hydrants for firefighting in urban settlement.
- Farms and forests shall be surrounded with a buffer distance as safety belt of cleared land designed to stop the spread of wild fire.
- Separation distances shall be set from other buildings and allow evacuation in case of fire;
- Where these separation distances cannot be realised, additional protective measures, typically a fire wall may be used to justify a reduction in the minimum separation distances.

5.9.5. Guidelines for Wind and earthquake prone areas
- Identify and map wind/earthquake prone areas all over the country;
- Tree shall be planted as wind breakers;
- Appropriate designs of houses in earth prone-prone areas

5.10. Guidelines on the Protection of Ground water, Rivers, Lakes and Wetlands

5.10.1. Guidelines for groundwater management
The guidelines for groundwater management in Rwanda are as follows:
- Locate industries and other activities that are likely to cause pollution or changes to groundwater away from ground water areas/sources used for water supply.
- Conduct hydro-geological mapping of ground water characteristics countrywide document and report as national ground water aquifer profiles.
- Control industrial development, settlements and other human activities on known ground water recharge zones in order to control possible ground water pollution and allow recharge.
- Establish mechanisms to allow ground water recharge through damming, artificial ground water recharge and enhancing precipitation infiltration by allowing certain percentage of land free of pavements.
- Provide for a buffer zone between the irrigation schemes and ground water sources and natural water bodies.

5.10.2. Guidelines for rivers and lakes protection
The guidelines for rivers and lakes in Rwanda are intended to:
- Provide buffer zones measured from the highest water mark for rivers/streams depending on the width, water volume, whether permanent or seasonal and the use of that water.
- Provide buffer zone for lakes for purposes of minimizing soil erosion, runoff of pesticides, fertilizers and other non-point sources of contaminants into streams, rivers, lakes, wetlands and marine habitats.
- In addition to stream/river/lake setbacks, utilize erosion control devices, integrated pest management plans, and rehabilitate disturbed areas.
- Incorporate best management practices to prevent pollution of rivers, streams, wetlands and near shore waters.
- The in charge institution to coordinate the development, adapting, and implementation of management plans that shall rationalize the use of resources and mitigate on the negative impacts on rivers and lakes.
- Profile and report human activities around such lakes, rivers and wetlands, clearly indicating the impact of such activities on the system.
- Develop, adapt and implement management plan that shall rationalize the use of resource and mitigate on the negative impacts.
- The concerned institutions/authorities shall issue necessary notices and orders in order to stop degradation of such lakes, rivers, wetlands and other surface water bodies.
- Preserve the aesthetic and biological values of the rivers and streams as part of open space system. Where possible, provide public access to these open spaces and for recreational purposes.
- Preserve and maintain the rivers, natural streams and drainage ways within the developed areas by designating them as part of the open space system.
- If modifications are necessary, mitigate impacts on biological habitats by using stream-side vegetation, rip-rap boulder lining of stream banks, v-shaped bottom channels to maintain a stream flow during low rainfall periods, and other designs to enhance aeration.
- Integrate planned improvements to the drainage system into the open space system by emphasizing the use of retention basins and recreational access in the design approach.
- Develop monitoring plans for discharge of effluents into the aquatic environment to ensure that standards are met.
- Encourage inter-agency coordination and public-private partnership in planning and management efforts of these resources.
- Carry out Environmental Impact Assessment (EIA) for activities likely to have negative impacts on the river/stream, lake, wetland and ground water. Limit uses in these areas to conservation, compatible recreation such as hiking, fishing, religious and cultural practices and controlled diversion for agricultural purposes.

5.10.3. Guidelines for wetlands and wetland resources
- Clearing of wetland vegetation, for purposes other than domestic use should only be done with the approval of the concerned authority.
- The burning practice of wetlands should not be allowed as doing so destroys wetland biodiversity.
- To prevent depletion of fish stocks there should be no fishing in breeding sites.
- Fish ponds constructed within a wetland should be constructed on the sloping sides of the wetland.
- Promote and regulate the development of an aquaculture centre and nature reserves around the wetlands that would serve as an attraction for both visitors and residents.
- Cattle access should be prohibited in the wetland.
- It must be ensured that all areas upstream and around a wetland are properly managed to prevent wetland degradation. Growth of wetland plants should be allowed at the edges of riverbanks.
- Environmentally significant wetlands should be declared protected areas for the purposes of their protection and develop management plans for their sustainable use incorporating zoning (wise use) principles.
- The responsible institutions should control all activities in wetlands (e.g. regulating brick making, sand and clay harvesting) through a licensing in system.
- Sensitize opinion leaders’ especially political leadership on the importance of conserving the wetlands.
- Efforts should be made to rehabilitate degraded wetlands through exclusivity to allow natural regeneration, enrichment planting and controlled use.

5.11. Guidelines on protection of hilltops, hillsides, mountains and forests

Background
Rwanda’s land resources include mountains, hills, and forests, historic and cultural sites. The protection, therefore, centres on hilltops, hillsides, mountains and forests in the various forms of land ownership in Rwanda both in protected and unprotected areas to conserve these resources and biodiversity therein. The integrity of these resources has continually been threatened by intense human activities. These resources have been protected under the various land ownership regimes in Rwanda. The main forest ecosystems include moist highland forest, dry forest, tropical rain forest, savannah forest etc. It is estimated that forests cover is more than 17% of Rwanda’s total land surface (Land Cover mapping, 2015). The local communities, particularly in the rural areas depend on forests for provision of wood, fuel wood and non-wood products for their livelihoods. Forests contribute about 95% of the total rural domestic energy.

On the highland volcanoes forests are found the major national water towers (Virunga Volcanic lakes, Nyungwe forest water and amashyuya hot water spring) which are reservoirs for water supply in the country.

Conservation of hills, mountains, and forests in Rwanda are faced with numerous challenges, which include management capacity, different ownership regimes, inadequate public awareness, lack of prioritization, natural disasters and growing population, there is also increased demand for resource utilization. Inadequate legal and inconsistent policy frameworks pose a challenge in management. Ineffective monitoring and evaluation of these resources have also been a great hindrance to their sustainable management.
The following guidelines will be followed
- Cultivation should be discouraged on slopes beyond 55%, instead there should be afforestation and the protection of existing vegetation.
- Promotion of appropriate species selection for site planting.
- Regulating exploitation of forest products and services e.g. charcoal, logging, and non-wood products.
- Zone and protect water catchments areas in hilltops, hill sides, mountains and forests.
- Embrace integrated ecosystem management planning.
- Protect hills, mountains and forests through identification, mapping, inventory, easement and gazettement.
- Encourage interagency coordination and public-private and community partnerships in planning and management efforts of these resources.
- Prevent the burning of grass and any other vegetation in areas of intensive agriculture or on steep slopes.
- Promote agroforestry and encourage woodlots establishment on farm lands.
- Rehabilitate degraded areas through re-afforestation and enclosure for natural regeneration.
- Undertake an assessment of the carrying capacities of various goods and services before any extraction to ensure sustainable use of hilltops, hillsides, mountain and forests.
- Encourage indigenous forestry on hilltops, hillsides, and mountains.
- Provide buffer zone of 5m between forest plantations and other land uses for purposes of minimizing bad effects
- Encourage ecotourism in hilltops, hillsides, mountain and forests.
- Establish disaster preparedness in forest fires and landslides, mudflows, rock falls, flush floods, volcanic activities, diseases and pests among others.
- Promote participatory forest management.

5.12. Guidelines on conservation of biological diversity

❖ Background
Rwanda is covered by diversified ecosystems: natural ecosystems consisting of mountain rainforests, gallery forests, savannas, wetlands and aquatic lands and ecosystems. These ecosystems accommodate a great diversity of flora and fauna wealth. The flora comprises hundreds of higher and lower plant species. Some of them have been domesticated for years and are today the basis of human diet, commercial and medical uses.
Rwanda’s three national parks, Parc National des Volcans (PNV), Nyungwe and Akagera, covering just over 8% of the national territory, are at the very frontline in protecting this natural wealth, the ecosystems and the goods and ecological services they provide.
A large proportion of Rwanda’s population are directly dependent upon biological resources for subsistence purposes, including the gathering, harvesting or hunting of animals and plants for food, medicine, shelter, fuel, building materials,
and trade. Several industries are also directly dependent upon the use of local species for economic gain. One of most fundamental benefits of conserving biodiversity lies in the ecological services which it provides. These are essential to fulfilling human needs as well as those of all life on Earth. Biodiversity enriches our cultural diversity and spiritual life. Through the use and appreciation of Rwanda’s biological diversity, a rich cultural and traditional knowledge and deep attachment to the country's natural heritage and beauty have developed amongst people. However, Human activity has been changing the natural ecosystems through agricultural and industrial development, and human settlement, over-exploitation of certain species and the introduction of alien invasive species. This has resulted in habitat loss and degradation, and the pollution or toxification of the soil, water and atmosphere. In addition, some species have been lost and ecological processes impaired. Currently, there is no comprehensive strong legislative framework to regulate access and exploitation of genetic resources. While collection of genetic materials for industrial purposes is going on, there is no clear mechanism for monitoring of such activities.

In preservation of biodiversity the following guidelines will be followed:

- Identify, delineate and protect existing key biodiversity areas.
- Encourage conservation and monitoring of endemic, rare and endangered species as appropriate.
- Develop mechanisms on access to genetic resources, benefit sharing; and intellectual property rights (IPR) as it relates to biodiversity including indigenous knowledge; acquisition, development and use of new technologies, such as biotechnology; integration of biodiversity, including agro-biodiversity.
- Undertake periodic national participatory biodiversity assessment and monitoring.
- Undertake natural resource valuation and incorporate it into the natural capital accounting system for the country.
- Identify map and gazette wildlife migratory corridors and dispersal areas.
- Promote policies on community participation in the preservation of bio-diversity.
- Develop and enforce screening systems to manage import and export of biodiversity materials.
- Develop early warning and surveillance systems on diseases invasion on agro-biodiversity.
- Map and inventory biodiversity resources.

5.13. Guidelines on protection of historic and cultural resources

Background

Rwanda has a variety of historic and cultural resources which are main source of government revenue, this also constitute big part tourism basement for the nation. Such historical and cultural resources include; Museums sites in different areas in the country, genocide memorial sites, churches, traditional cultural practices like dances, beaches etc. Therefore, land use should contribute to the preservation of Rwanda’s cultural and built heritage and its diversity.
The guidelines for the protection of historic and cultural resources in Rwanda are as follows:

- Identify and protect existing visual landmarks and support the creation of new culturally appropriate landmarks.
- Retain, whenever possible, significant vistas associated with archaeological features.
- Develop mechanisms to allow access and benefits sharing to the local community.
- Respect significant historic resources by applying appropriate management practices that include strong community participation. Such practices may range from total preservation to integration with contemporary uses.
- Determine appropriate preservation methods.
- Delineate and map site boundaries and setbacks for gazettement.
- Determine appropriate restrictions on uses and development of adjacent lands.
- Undertake inventory and documentation of the cultural and built heritage sites in the country.

5.14. Guidelines on Transport and Information Communication Technology

Background
The national needs for communication networks should be satisfied in a way that promotes both a functional regional structure and our international competitiveness. The guidelines particularly refer to the main road network, the national rail network, and airports of national significance. A main challenge is to develop these as part of an integral traffic system.

At the present moment there is no railway network in Rwanda. The land public transport services are solely oriented in road based public transport services. Although at present there are 41 companies and cooperatives, which operate different types of public transport vehicles, the major market share of vehicles come from individual operators. In terms of total available seat capacity, the individual operators provide 70% of the supply.

Out of 72,292 seat capacity, large buses, medium buses and minibuses cater for 84% of the total supply, whereas taxi cabs and motorcycle taxis provide 3% and 13% of the passenger capacity respectively. Minibuses, having 18 seat capacities are the principle mode of transport, which cater for 54% of the total supply. It is, therefore, evident that public transport services organized by the private operators in Rwanda is dominated by individual or small operators having smaller vehicles, such as minibuses and motorbikes. Therefore, Rwanda National Road Network is operating at undesirable levels with 11.1% and 88.9% of the total length of road network being analysed operating at a LOS E and F respectively. It is therefore clearly evident that the LOS of the road network of Rwanda is not satisfactory. The LOS of the bus route network has significant impact on ensuring quality services for intercity bus travellers.

In response to the foregoing, the following guidelines were prepared to inform the rollout of communication network infrastructure in Rwanda to ensure that commercial, environmental and consumer concerns are addressed in a sustainable way as follows:

The following are the guidelines for the provision of transport systems:
- Ensure the provision of pedestrian paths, bicycle paths, motorbike lanes and public transport lanes in road construction and planning—with consideration for persons with special needs e.g. physically disabled.
- Road construction shall ensure that, the construction of designated bus lanes/ taxi lanes coincide with the sitting of pedestrian drop-off and pick-up points.
- The local authority shall ensure the introduction of multi-storey parking lots and encourage parking lots outside the CBD.
- Ensure traffic separation by minimizing the intersection of road and rail networks in order to reduce accidents and install barriers as necessary.
- Dual carriage ways should be constructed to include barrier walls dividing dual carriage ways to avoid on coming bright light obstruction.
- Provide time-frames during which private vehicles are not allowed within the Central Business District (CBD).
- Provide for the location and enforcement of designated pedestrian drop off and pick-up points for public transport.
- Provide by-passes for all towns to decongest towns.
- Ensure the protection of road and railway reserves.
- Control the encroachment of human activities along the by-passes and major roads.
- Undertake appropriate landscaping and tree planting scheme to enhance greenways and scenic views.
- Ensure the installation and regular maintenance of roadways, street trees, signage, street furniture and street lighting.
- Provide waste baskets within public transport services.
- Marking of the roads should be done concurrently with the road construction to enhance road safety.
- Provide for the designs and carrying capacities of vessels used for public services on land, air and water within the country for both passengers and cargo.
- Ensure the provision and access of maps of the cities and towns of a particular region/rural area showing attractions, location and contacts of emergency services (e.g. fire brigade, ambulance, police stations among others).
- Promote the growth and use of bio-fuels as alternatives to fossil fuels.
- Land use planning should safeguard the continuity of the existing nationally important different types of transport.
- Land use should promote cooperation between different modes of traffic and public transport by reserving sufficient areas for the development and functioning of good traffic terminals and passenger travel centres functioning as crossroads.
5.15. Land Use Planning Guidelines for airports and airstrips

Major airports in Rwanda have become key nodes in regional and global production and playing a big role in terms of connecting the Country which is land locked easily than any other local type of transport. Airports still provide powerful engines for local economic development, attracting aviation-linked businesses of all types to their environs. These include, among others, time-sensitive manufacturing and distribution; hotel, entertainment, retail, convention, trade and exhibition complexes; and office buildings that house air-travel intensive executives and professionals. Planning for land uses around airports has been and continues to be one of the most challenging aspects of airport planning. Therefore, to ensure sustainability, the Rwanda Civil Aviation Authority (RCAA) and the local council must discourage development and/or land uses nearby that are considered incompatible with the environmental consequences of aviation activity and ensure that airports development will be more economically efficient, aesthetically pleasing and socially and environmentally sustainable. The following are the guidelines for airports and airstrips:

- Establish a sufficient buffer zone to control human developments around airports.
- Where an airport is already surrounded by residential or other noise sensitive land-uses, prevent any further increases in incompatible land use while putting measures in place to ensure that previous incompatible land uses are made compatible.
- Where a new airport is planned in a less urbanized environment, establish appropriate measures to preserve the balance between the integrity of the airport and the quality of the life of the surrounding community.
- Establish a cooperative relationship with the nearby communities and airstrip/airport management.
- Cluster development, rather than strip development, should be encouraged along airport transportation corridors with sufficient green space between clusters.

5.16. Land Use Guidelines for Setting up a Prison

- **Location:** The site of a prison should either be located in urban or rural Districts and should accommodate the staff in charge of security. No development in or near wetlands, flood plains, fragile landscapes, or historic/archaeological sites. There shouldn’t be negative social impact on neighbouring land use caused by developing site for a prison. There should be minimum impact on existing land/air/water conditions.
- **Environmental Impact Assessment Study:** Before establishing and building up any prison, there might be an EIA conducted at any site selected.
- **Capability for future expansion and flexible building configurations**: Site establishing a prison must allow for a facility expansion to meet future demand.

- There should be less noise impact on neighbouring land uses and construction process on adjacent land uses as well as minimal impact on existing transportation/traffic infrastructure.

- **Parking**: Include sufficient space for staff and visitor parking. The prison will need enough parking to accommodate two full staff shifts because of overlap during shift changes, as well as enough spaces for overlap during visiting hours.

- **Recreation yards facility**: Any planned prison should have design that places most recreation yards where the prisoners should take an advantage of relaxing.

- **Perimeter and access roads**: The prison should include the area required for the double fence zone and the perimeter patrol road. Also roads providing access to the site from public roads should be added.

- **Service yards**: Include areas for incoming deliveries and for waste disposal and recycling must be considered.

- **Buffer zones**: The amount of “buffer” zone around the prison facility is discretionary. Planners might to provide a visual barrier of trees and greenery or some other buffer between the perimeter fence and the property line.

- **Building footprint and densification**: A low raise building prisons may lead to mismanagement of land, many multi-storey prisons operate quite successfully and recommended like any other forms of well densified settlements.

- **Site ownership**: Land property for setting up a prison should be owned by the government. Or can be acquired through expropriation procedures to gain enough space of land available for development.

### 5.17. Guidelines for Establishment of Schools

#### 5.17.1. Planning Guidelines on Site Location of School Facilities

The guidelines present recommendations for determining the location of a new school with regard to accessibility and proposed distances by the national policies, convenient locations regarding other land uses, standards on the size of land...
for its efficient use and also evaluating the environmental and public health risks and benefits of potential school locations during the school siting planning process.

When selecting a school location, it is important to identify and balance the environmental risks and benefits. It is recommended that the local education planners seek to avoid locations that have onsite contamination or are in very close proximity to pollution sources offsite risks like industrial facilities, especially collections of multiple sources, if acceptable alternatives exist within the neighbourhoods being served by the school. A potential environmental and public health benefit is a location that’s close to where students live so they can walk to school.

5.17.2. Location of Schools and Planning Considerations

Planning authorities will:

- Ensure that school sites are fit for purpose in terms of their location, access to services and the provision of space for recreational and sports activities which can help to support an effective learning and development environment for children, in line with the MINEDUC requirements.
- Seek to situate new schools within the existing/proposed catchment in a manner that aids ease of access from surrounding areas and encourages sustainable mobility by walking, cycling and public transport.
- Insofar as possible, reserve lands for educational purposes in locations close to the areas of greatest residential expansion and adjacent to community developments such as community centres, playing fields, libraries etc. so that the possibility of sharing facilities can be maximized.
- Following the identification/reservation of suitable sites, initiate immediate contact with the national education agencies to clarify the suitability of the site (having regard to that MINEDUC’s site standards).
- Consider the use of multi-campus schooling arrangements in appropriate cases, e.g. 2 or 3 schools side by side; a primary and a secondary school sharing a site; schools anchoring wider social and community facilities required in the same area.

Inventory and distribution of schools (the mapping exercise)

One of the most effective ways of determining the location of a new school is as follows:

- Use a base map of the district and vicinity, on which land use planner enter, translate and compare data, facts and information;
- Locating the positions of existing schools;
- Graphical analysis of data on where population (pupils/students) comes from to determine the areas of influence and service of those facilities.

This kind of analysis shows the overlapping of influence and any voids that need filling and therefore warrant the provision of a new school.

5.17.3. General site location criteria

School site selection is affected by many factors, including health and safety, location, size and cost. In siting a school both the present and the possible feature characteristics of a site and its surrounding land uses and property have to be evaluated.
The evaluation of alternatives and final selection of the site is based on criteria agreed over time with designers. This selection requires enquiries and studies on the following aspects and criteria:

- Education needs of the school catchment area with potential demand for enrolment;
- Availability of suitable land;
- Neighborhood and relationship with residential area;
- Size of school as compared to the authorized occupancy rate;
- Availability of utilities (piped water, electricity, internet, incinerator);
- Topographic characteristics and suitability for a school settlement;
- Local community involvement and its interest
- In places of high earthquake risk, all schools are to be single storeyed for safety reasons.
- In urban areas, locations with severe land limitations schools shall be multi-storeyed and designed to allow additional storey as future extension.
- All Tertiary Institutions - Polytechnics, Universities and others are to be multi-storeyed.

Conventional physical planning requirements for new school sites proposed to be applied by District planners are as follows:

- no frontage on major roads or railways
- site not less than 200m from noisy and toxic industries
- children going to school not to cross dangerous roads
- water and other services readily available
- easy access to a playing field

5.17.4. Guidelines on Zoning for Education Facilities

In land use planning, land in education zone is intended to be used for the training or teaching of persons and research into specialized areas. Education Facilities to be located in the Education Zone range from Basic, 9YBE and Secondary Schools, Technical and Vocational Schools/Colleges to Tertiary Institutions like Polytechnics and Universities.

Education Zone for Basic Schools Nursery and Primary schools

- Land in Education Zone is intended for the establishment of basic schools –nursery, primary and 9YBE schools–, and should be located in close proximity to residential areas and community facilities.
- It is important that nursery and primary schools are located within a neighbourhood centre with easy pedestrian and vehicular access system.
- Catchment population range from 3000 to 5000 people.
- Recommended walking distance ranges from 500m to 2 km maximum from home to school.
- Distance between two schools 1 - 4 km
- Facilities to be provided shall include playgrounds, classroom blocks, hostels (where necessary), offices, canteens, places of convenience, libraries among others.
Prohibited uses include large scale commercial activities, industries, transportation and warehouses, animal rearing, slaughter houses etc.

**Education Zone for Secondary Schools, Vocational/Technical Schools**

- Land in this Zone is intended to be used for the establishment of Upper Secondary Schools and Vocational/Technical Schools and Colleges. These shall be located in neighbourhoods and serving up to 15,000 people.
- They shall be located with easy access to community facilities and transport.
- Recommended walking distance is max 3 km from home to school.
- Distance between two schools shall be 6 km maximum.
- Recommended land sizes range between 2.4 to 2.8 hectares.
- Permitted uses in the zone will include students' hostels, teachers' bungalows, places of worship, laboratories/workshops, playgrounds, offices, shops, canteens, libraries among others.
- Prohibited uses in close proximity will include industries, garages and warehouses, animal husbandry other than for research and teaching.

**Note:** It is the norm for the location of schools in rural areas will state the maximum distance that the student is to travel from home to school.

Once the maximum distance of travel has been decided upon, then it is possible to estimate with some certainty, how many students can be enrolled. This can be done by counting the numbers resident within the prescribed distance from the site or within what is known as the "catchment area".

**Education Zone for Tertiary Institutions- Polytechnics, Universities and others**

- Land in this Education Zone is intended to provide facilities for the establishment of tertiary institutions like Polytechnics, Universities and other Specialized Institutions. These should be located in easily accessible areas near community facilities but serene enough for high academic work, with catchment population of 45000.
- Facilities to be provided in Education Zone here will include students' hostels, residential accommodation for lecturers and other workers of the institutions, lecture halls, laboratories, workshops, playgrounds, places of worship, police stations, clinics/ hospitals, sewage treatment plants, research stations and their facilities, commercial buildings for shops, banks, printing, minor repairs, gas/petrol filling stations, fire stations among others.
- Prohibited uses in close vicinity will include industries, transportation, warehouses, animal husbandry other than for research and teaching, large scale markets.

**Design and Construction of School facilities**

**School size and Class size**

- The area required for a site should be standardised, per student place. This will ensure, first, that more land than is actually needed is not acquired. Secondly, a per place area requirement allows a site of any convenient shape to be selected.
To simplify the planning process and the design of schools, all new classrooms should meet a planning standard for primary and secondary schools capacity of \( \leq 46 \) pupils or students per classroom;

Proposed minimum and maximum size of ordinary classrooms shall range from 1.6 to 2\( \text{m}^2 \) per student place according to the desired density for schools located in low or high density population areas;

Primary and Secondary school planning standards

<table>
<thead>
<tr>
<th>Planning Standard</th>
<th>Primary School</th>
<th>Pupil/ Qualified Teacher</th>
<th>Pupil/Classroom</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>40</td>
<td>( \leq 46 )</td>
</tr>
<tr>
<td>Fair</td>
<td></td>
<td>( \leq 40 )</td>
<td>47-70</td>
</tr>
<tr>
<td>Poor</td>
<td></td>
<td>( &gt;40 &lt; 60 )</td>
<td>71-99</td>
</tr>
<tr>
<td>Critical</td>
<td></td>
<td>( \geq 60 )</td>
<td>( &gt;100 )</td>
</tr>
<tr>
<td></td>
<td>Secondary School</td>
<td>30</td>
<td>( \leq 46 )</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( \leq 30 )</td>
<td>47-70</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( &gt;30 &lt; 40 )</td>
<td>71-99</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( \geq 40 )</td>
<td>( \geq 100 )</td>
</tr>
</tbody>
</table>

The administration and service rooms are determined according to the number of users and their functions. The number of toilets and other sanitary facilities is determined proportionally to the school total capacity (for example, an average 30 students is calculated per toilet cubicle).

The minimum requirement of land area for each type of school is calculated by adding the necessary requested external spaces to the built area of each building. This area depends on the school capacity, the number of floors, and the estimated proportion of land attributed to landscaping and circulations.

The following site areas are shown as a guideline only. The area required will depend on the shape of the site, site access, availability of site utilities, and the capacity of the site to meet the criteria set out in the guidelines that follow:

<table>
<thead>
<tr>
<th>School Size</th>
<th>Area in Hectares</th>
</tr>
</thead>
<tbody>
<tr>
<td>School with 1 - 3 class units</td>
<td>0.5</td>
</tr>
<tr>
<td>School with 4 to 6 class units</td>
<td>0.6 to 1.0</td>
</tr>
<tr>
<td>Schools with 7 to 11 class units</td>
<td>1.1 to 1.4</td>
</tr>
<tr>
<td>School with 12 to 30 class units</td>
<td>1.5 to 2.00</td>
</tr>
</tbody>
</table>
Table: Proposed standards for schools in Rwanda (minimum size)

<table>
<thead>
<tr>
<th>Education and research</th>
<th>Nursery and preschool</th>
<th>Primary school</th>
<th>Secondary school</th>
<th>Primary and Secondary school combined</th>
<th>Higher Education Institutions (Vocational training centers)</th>
<th>Higher Education Institutions (Universities)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Plot area: min. 700 m²</td>
<td>1.5 ha</td>
<td>2.4 ha</td>
<td>2.8 ha</td>
<td>PLC: Max. 0.3 Minimum floor area 0.6 ha Open space: estimated 1 ha</td>
<td>PLC: Max. 0.4</td>
</tr>
<tr>
<td></td>
<td>PLC: Max. 0.3</td>
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</table>

- **Any of the above uses may also require accommodation facilities, which are not included in above area requirements.**


### 5.18. Guidelines for Establishment of Hospitals

Hospitals and other health facilities can be planned and designed to observe appropriate architectural practices, to meet prescribed functional programs, and to conform to applicable codes as part of normal professional practice.

#### 5.18.1. General requirements

The following general requirements are to be obtained:

**Site locational and Environment:** A hospital and other health facilities shall be so located that it is readily accessible to the community and reasonably free from undue noise, smoke, dust, odour, flood, and shall not be located adjacent to railroads, freight yards, children’s playgrounds, airports, industrial plants, disposal plants.

**Occupancy:** A building designed for hospital / healthcare facility shall be used only for this purposes.

**Safety:** A hospital and other health facilities shall provide and maintain a safe environment for patients, personnel and public. The building shall be of such construction so that no hazards to the life and safety of patients, personnel and public exist. It shall be capable of withstanding weight and elements to which they may be subjected. Water Supply: A hospital and other health facilities shall use an approved public water supply system whenever available. The water supply shall be potable, safe for drinking and adequate, and shall be brought into the building free of cross connections.
Waste Disposal: Liquid waste shall be discharged into an approved public sewerage system whenever available, radioactive waste and other hazards liquid waste to be collected and treated in accordance to international rules and solid waste shall be collected, treated and disposed of in accordance with applicable codes, laws or ordinances. Sanitation: Utilities for the maintenance of sanitary system, including approved water supply and sewerage system, shall be provided through the buildings and premises to ensure a clean and healthy environment.

5.18.2. Site Location of Hospitals and Health Centres

Site Locational Guidelines

Inventory and distribution of health facilities (the mapping exercise)

One of the most effective ways of determining the location of a new facility is as follows:
- Use a base map of the district and vicinity, on which land use planner enter, translate and compare data, facts and information;
- Locating the positions of existing facilities;
- Graphical analysis of data on where patients come from to determine the areas of influence and service of those facilities.

This kind of analysis shows the overlapping of influence and any voids that need filling and therefore warrant the provision of a new facility.

Service catchment area

The catchment area for a health care facility is determined by several factors:
(1) Politico-administrative boundaries are usually the strongest determinant, as they set a defined area and imply an established organization which directs, manages and operates the affairs of the population within its jurisdiction. The hierarchy of physical facilities parallels that of the politico-administrative organization, so that a particular level of facility is under the jurisdiction of an equivalent level of the politico-administrative unit throughout the country.
(2) Geographical boundaries are natural physical barriers to population movement and can therefore also be strong determinants of catchment areas;
(3) Time boundaries, although invisible, determine catchment areas in regions without roads and easy means of transport. Populations gravitate towards the facilities that are most easily accessible, that is, the facility they can get to in the shortest time.

Factors to be considered in locating a hospital
- It should be within each District, within 20-30 minutes travelling time. This would mean a service zone with a radius of about 10-25 km
- Accessibility to good road network: In a district with good roads and adequate means of transport, Health care facilities are quite ineffective if all-weather roads, water supplies and a reliable electrical supply are not available at the site
- It should be grouped with other institutional facilities, such as religious (church), educational (school), tribal (cultural) and commercial (market) centres.
It should be free from dangers of flooding; it must not, therefore, be sited at the lowest point of the district. Waterlogged areas, wetlands should be avoided.

It should be in an area free of pollution of any kind, including air, noise, water and land pollution.

**Availability of infrastructures:** It must be serviced by public utilities: water, sewage and storm-water disposal, electricity, gas and telephone.

**Site selection criteria:** The availability of a site outweighs rational reasons for its selection. In the case of assessing whether a piece of land is suitable for siting a hospital; either site selection or evaluation of adaptability, the following items must be considered: size, topography, drainage, soil conditions, utilities available, natural features and limitations

**Size of the site:** The site must be large enough for all the planned functional requirements to be met and for any expansion envisioned within the coming ten years (Fig. 5). Recommended standards vary from 1.5 to 4 ha per 100 beds. 40 sqM per bed has been found to be reasonable. However, it can be changed according to the actual situation prevailing at a particular site/location. Computations: Total area of hospital: = total number of beds x 40 square metres per bed = 105 beds x 40 = 4200 square metres (for 100% occupancy) = 130 beds x 40 = 5200 square metres (for 80% occupancy)

**For effective use of land:**
- Smaller hospitals up to 100 beds should be single-storey constructions unless other parameters dictate that they be multi-storeyed. For such a construction, the **recommended minimum area** of the site of a 100-bed hospital is 1.5 hectares.
- Greater hospitals with more than 100 beds should be multi-storey constructions unless other parameters dictate that they be single-storied.

The Rwanda Urban Planning Code (2015) proposes the following as minimum areas:

- Health post: 0.5 ha
- Health centre: 1 ha
- District hospital: 2.5 ha including landscaping; incinerator; laundry
- Referral hospital: 5 ha including landscaping; incinerator; laundry

**Technical design and standards:** Detailed physical planning standards, quality and design shall be developed by the Ministry of Health (MINISANTE) and provided to local government at district level.

**Note:** In many cases, hospital bed requirements should not be based on "international" or even national standards. Rather, an attempt should be made to approximate bed needs by district or region, taking into consideration: · the prevalence of morbidity that must be treated in a hospital, on the basis of severity and frequency, which will differ in rural, urban, semi-urban, agricultural and industrial environments; · the ability of the health services outside the hospital to reduce the need for beds; · the age, structure and concentration of the population; · communications and transport facilities; and · other

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10 The size of a district hospital is a function of the hospital bed requirement, which in turn is a function of the size of the population served. The groupings of populations around health facilities vary. In Rwanda, primary health care facilities generally serve communities of 5 000-10 000 people, and first-level referral hospitals generally serve communities of 50 000-500 000.

11 To initially determine the total area of the hospital, the number of beds must be multiplied by a factor or a standard expressed in area per bed. 40 sqM/bed has been found to be reasonable. However, it can be changed according to the actual situation prevailing at a particular site/location. Computations: Total area of hospital: = total number of beds x 40 square metres per bed = 105 beds x 40 = 4200 square metres (for 100% occupancy) = 130 beds x 40 = 5200 square metres (for 80% occupancy)
socioeconomic determinants, such as the capacity of the local area to support hospital services, including the availability and distribution of human resources and the capacity of available utilities (e.g., water and electricity supplies). The decision to build a new district hospital to augment existing facilities depends on how adequate the existing facilities are to meet the health needs of the population.

Summary of Proposed Planning Standards for Health Facilities

<table>
<thead>
<tr>
<th>Status</th>
<th>Sphere of Influence</th>
<th>Land Requirement</th>
<th>Population to be serviced</th>
<th>No. of Beds</th>
<th>Basic site services</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Referral Hospital (RH)</td>
<td>Province</td>
<td>5ha - 10ha</td>
<td>600,000 - 1,000,000</td>
<td>150 - 300</td>
<td>Piped water, electricity, parking space, optic fiber telephone, incinerator, laundry</td>
<td>Hospital should have facilities for specialist and general medical practice and diagnostic</td>
</tr>
<tr>
<td>District Hospital (DH)</td>
<td>District</td>
<td>2.5ha - 5ha</td>
<td>200,000 - 500,000</td>
<td>60 - 120</td>
<td>As above</td>
<td>Residential accommodation for a least 80% of staff.</td>
</tr>
<tr>
<td>Urban Health Centre (Poly clinic)</td>
<td>Urban Neighbourhood</td>
<td>- - 0.5ha</td>
<td>50,000 - 100,000</td>
<td>10 - 20</td>
<td>As above</td>
<td>There are only 10 observation beds. Serious cases referred to RH</td>
</tr>
<tr>
<td>Health Centre</td>
<td>8-16km radius from sub district</td>
<td>- 1ha</td>
<td>10,000 - 30,000</td>
<td>5 - 40</td>
<td>As above</td>
<td>Meeting place for family planning programmes to be added</td>
</tr>
<tr>
<td>Health Post</td>
<td>Cell</td>
<td>- 0.5ha</td>
<td>5,000 - 10,000</td>
<td>- -</td>
<td>As above</td>
<td>Only minor, health problem will be treated here. Serious cases to be referred to DH</td>
</tr>
<tr>
<td>Clinic</td>
<td>In urban and rural neighbourhood</td>
<td>- 0.5ha</td>
<td>5,000</td>
<td>- -</td>
<td>As above</td>
<td>Mostly first aid treatment and dressing of wound, injection etc.</td>
</tr>
</tbody>
</table>

5.19. Guidelines for Hotel/Guesthouses and Resorts

5.19.1. Site locations for hotels, guesthouses and resorts

- Hotels/resorts, intended to be used for tourist and recreational facilities, should be located in land within the immediate vicinity of a water body, which is subject to special protected status. The land may include beaches, banks of rivers, lakes and other water bodies.
– Guest Houses & hotels are permitted uses in residential zone, intended to be used for a community dwelling and shall be located in urban sub-centres.
– Hotels shall have located with access to basic resources, like water, electricity, drainage system, waste disposal, telecommunication…
– Such development will usually be located on a plot with sufficient spatial separation between buildings to maintain ventilation, privacy and light.
– Adequate parking facilities will be required, providing a minimum of one parking space for each unit.
– They shall be located predominantly in inner-city areas and developing areas close to major roads so as to make maximum use of existing services and transport facilities in these areas on major roads close to public transport, near universities and other tertiary institutions and schools or adjacent to facilities they service.
– Commercial and industrial development will be excluded from the close vicinity, but ground floor units may be used for small scale business enterprises and shops servicing a local community.
– The maximum height or number of stories will be determined by the engineering planning requirements depending on the location (e.g. near a flight path height restrictions will be imposed or height restrictions may be imposed for reasons of the desired form of the urban landscape).

5.19.2. Planning and design standards

(a) An EIA License must be required from authorized organs.
(b) Buildings should respect lake, river, swamp and parks buffers and road widths provided by laws: 50m from lakes, 20m from swamp, 10m from rivers High Water Mark, 22m, 6m and 3.5m for a classified road;
(c) For optimal use of land and availability, proposed planning and capacity standards are expressed as minimum hotel density of 100 hotel rooms per hectare for intensive multi-storey residential accommodation in the form of flats or apartments. Guest houses, motel and resorts should contain more than 8 rooms
(d) Parking: 1 space for every one bedroom and 1 additional visitor’s space per 5 residential units;
- conference or function facilities hotel dining room (or dining rooms) and discotheques shall be provided with additional car space

If there are bars or restaurants open to non-residents, or the hotel is used for functions (dances, conferences, weddings, etc.); the spaces required for these should be assessed separately and added on.

Note: Developers must conform to the detailed design standards for hotels and guest-houses set out by the National Agency having hotels in its attributions (RDB)

5.20. Guidelines for Places of Worship/ Religious Facilities

5.20.1. Definition
A worship place means any building or place used for the purpose of religious worship by a congregation or religious group, whether or not the building or place should also be used for other social or training activities. Religious facilities include churches, mosques and temples.
Land in the places of Worship Zone is intended to be used for activities of religious bodies to avoid situations where warehouses, open spaces, residential blocks and even classrooms and school compounds are turned to worship centres. These include activities of Catholics, Protestants, Muslims and other religious beliefs. The assembly area includes a building that is to be used for public assembly, for the purpose of worship or other purposes. It includes any secondary areas of assembly, such as choir or musician’s areas, altar areas, confessional areas, podiums, or rooms capable of being used for overspill accommodation of the congregation during a worship service.

**Note:** Ancillary areas such as kitchens, toilets, offices, washrooms and accommodation, which are not normally used for worship, are not included in the calculation of the assembly area.

Places of worship vary in size and importance. While some serve only an immediate or local need, others may have a national or international importance.

### 5.20.2. Site and Location Requirements

#### Site Location

Places of worship are set up in a number of different locations and each of these has its own requirements.

- The following typical locations are covered by this document:
  - Mixed use areas
  - Purely residential areas
  - Edge of settlement location, countryside location

- It is the duty of the permit authority to ensure that the interests and concerns of the following three groups are given due consideration:
  - Future occupants of the site – require a focus on the development site and its use
  - Neighbours – require a focus on the interface between the development and neighboring areas and
  - Community – require a focus on the identity of the locality and streetscape issues.

- The local authority should balance the following:
  - Protection of residential neighborhood from uses objectionable or detrimental to its amenities.
  - Allowance for possible location within residential areas of civic, cultural and community facilities which serve and which are compatible with residential development.

- Smaller worship facilities would be allowed on plots the size of which do not generally exceed local plot size; where the local population belongs predominantly to the applicant’s religion and where the level of disturbance to nearby residents would be acceptable.

- Premises which are intended to serve a wider catchment area should be of sufficient size and located in mixed-use areas where residential activities do not predominate such as town centres, main roads, and fringe of commercial zones.

- Major places of worship likely to attract a large number of devotees or crowd may be more appropriate in edge of settlement locations or in the countryside

- Places of worship shall be located within communities to serve religious interests of residents. They should be easily accessible by both pedestrians and motor vehicles. When they also comprise of premises for other socio-cultural facilities such as schools and dispensaries, they should be located in residential neighborhoods due to increased use of church compounds during weekdays.

- Recommended walking distance to places of worship from homes is between 15 and 30 minutes.
Permitted uses include houses for religious leaders/pastors, social centres, basic schools, playgrounds, open spaces, bookshops, canteens.

Prohibited uses include industries, animal husbandry, transportation, warehouses, and markets. Recommended site should cater for worship centres, open spaces, parking spaces for vehicles and other related uses.

No place of worship should be allowed adjoining a restaurant/bar or a place of public entertainment.

Large scale places of public worship should be located on land zoned for Commercial Core, Mixed Use, Business Park, Light Industrial, Public Recreation, or Private Recreation.

**Plot Size**

It is important to recognize that there is no standard plot size and area required is influenced by nature and scale of development. Although they are essentially places of worship, they also comprise of premises for other socio-cultural facilities such as schools and dispensaries. Hence when planning for them, provision must be given for their possible future expansion.

For efficient use of land, priority should be given to the capacity to develop vertically. It is important to note that an area of 1,000 (25 x 40 m) - 2,000 sqM (40 x 50 m) space provision is adequate for such facilities.

**Setbacks/ Buffer Zone and Height**

Setbacks refer to distances between front, side and rear facades and their respective boundaries. Setbacks serve to protect local amenities.

A minimum setback of 3 metres on rear and side boundaries should be complied. Front setbacks will be those prescribed with respect to road category.

**Indicative Building Setbacks to Road frontages**

<table>
<thead>
<tr>
<th>Type</th>
<th>Setback</th>
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<tbody>
<tr>
<td>Motorways</td>
<td>15.0m</td>
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<tr>
<td>Road A</td>
<td>6.0m</td>
</tr>
<tr>
<td>Road B</td>
<td>6.0m</td>
</tr>
<tr>
<td>Urban Roads</td>
<td>4.5m</td>
</tr>
<tr>
<td>Other Roads</td>
<td>3.0m</td>
</tr>
</tbody>
</table>

In the context of places of worship, an increased setback may be needed to accommodate outdoor activities associated with the place of worship. A greater setback also provides a passive buffer for noise abatement and privacy, reducing overshadowing and overlooking.

Large scale places of public worship should be located a minimum of 250 metres away from any other existing or approved large scale place of public worship.

**Parking Space**

Minimum parking of 1 car parking space for every 10 worshippers should be allocated and maximum shall depend on size of the facility to be provided.
It is essential that off-street parking be provided to ensure minimum disturbance to local residents and for road safety.

- All required parking must be provided on site, through at grade or basement parking.
- Minimum parking of 1 car parking space for every 10 worshippers should be allocated and maximum shall depend on size of the facility to be provided or a rate of 1 car space per 8m² of public floor area should be provided.
- In local neighborhoods with small communities, parking for vehicles off the site may lead to cost savings and save on-site space. However, this option should only be considered when the existing street is wide enough to accommodate additional parked cars on a modest scale in a safe and efficient manner.

- **Building Form and Character**
  - Places of public worship in residential zones must be designed to maintain the character of the residential area.
  - The front entrance of all places of public worship must be clearly visible from the street.

- **Landscaped Area**
  - In residential zones a two metre wide landscaped area must be provided alongside and rear boundaries.
  - A landscape master plan and report for places of public worship must be submitted to District Land Bureau.

- **Acoustic Privacy**
  - Design (building layout, building orientation) and materials used for places of public worship shall provide reasonable acoustic privacy to surrounding residential and business users.
  - In extreme cases, proposed developments generating noise should explore both passive and other means of abating noise.

- **Public Consultation**
  - In predominantly residential areas, the community concerns should be addressed through public consultation carried out by the developer and the permit authority before issuance of the building permit through on all contiguous owners and property owners across the road.
  - The public will be given time to make representations to the permit authority and the outcome of the consultation exercise should be used to provide for design adjustments.

### 5.21. Planning Standards for Cemeteries

In Rwanda, the problem of cemetery land use did not receive due recognition until recently when the GoR adopted the first law regulating cemeteries. The use of land for cemetery purposes has now become a publicised concern for local authorities. DCs pointed out the need to include the cemetery land use in District land use plans. The Law N° 11/2013 of 11/03/2013 determines the Organisation and Use of Cemeteries. According to the Law, the number, boundaries, surface area and materials constituting their fences shall be determined by the District Council. The following are indicative guidelines for reference:
Site location and Physical suitability

Accessibility: A cemetery must have its principal access on an arterial or collector street. In cemetery land use consideration is that cemeteries must be located within easy commuting distance of population centres.

Physical suitability: Cemeteries shall be located away from wetlands, floodplains and sensitive environmental areas. They must be located on ground where the water table is not higher than 3 - 4 metres below the ground surface and not on rocky ground.
If near wetland, an EIA should be conducted and should have a buffer distance of 200-300 m.

Zoning:
- In urban areas, as opposed to prohibition of cemeteries, zoning implies planned location in accordance with surrounding land use, the master plan, and the future logical growth of the city. In general, cemeteries should be located outside or at the periphery of the urban area near residential areas, preferably away from busy routes where funeral processions would not disturb normal traffic.
- In rural areas where land is available, the responsible local authority should acquire land for the purpose in question.
- Suitability of soils should be the main consideration. Firm and non-porous soils are recommended for grave yards.

Lot sizes: Planning standards requires taking into consideration the mortality rate of the region. Typical requirement is 4 to 10 hectares for a human cemetery in rural areas where land is available.

Catchment: One cemetery per Cell or urban area / District urban centre. In general the site size will relate to population grouping:
- Population of up to 5,000 persons: 0.5ha to 1ha.
- Population 5,000 to 15,000: 1ha to 1.5ha.
- Population up to 100,000 persons: 10 ha

Proposed standards: 0.9 Ha / 1,000 persons (Rwanda Building Code of 2015)

Burial Plot Sizes and design parameters:
- Maximum of 3 m² of outside dimensions (1.5 meter by 2 meter) per grave and maximum size (inside dimensions) shall be 1.00 meter by 2.4 meters
- Minimum depth of excavation shall be at least 1.5 meter-deep and filled well and firmly.
- For plots fronting roads, a minimum setback from the right-of-way of 1 meter shall be required where no above ground structure may be constructed.
- Maximum height of structure above ground shall be 60 centimetres.
- Cemeteries (public, private) shall have fences whose height is at least one and half (1.5m) metres.

**Note:** Consideration must be given to re-using cemeteries after full occupation.

### 5.22. Guidelines for Establishing Petrol Stations

- **Site location, plot size and requirements:**
  - The area of land to be developed should be sufficient to allow maneuvering of vehicles within its cartilage. The minimum size (min. 844m) and shape of the plot for the petrol filling station would need to be such that it suitably accommodates fuel pumps, offices, stores, compressor room, air pump and kiosks without causing any hindrance to the movement of vehicles of expected maximum dimensions, within filling stations and in the access area. Thus the plot size should range between 844 and 1100Sqm with a minimum frontage of 9 m on the primary street.
  - The distance from the edge of the road to the nearest pump should not be less than 15 meters and buildings are to be located a minimum of 12 m from road property boundaries to provide adequate area for manoeuvring of vehicles in the service area.
  - Stations should be located at a minimum of 100 m from any public institution and semi-public buildings such as schools, churches, public libraries, auditoriums, hospitals, clinics, theatres, public playgrounds, etc. However, other small and medium commercial activities may be located within the specified limits.
A petrol station should be sited 50 meters away in all angles of the built-up areas and petrol pumps located a minimum 30 m from any residential building to create a buffer zone for the residential house - the buffer zone can be devoted to any non-residential land use. In view of the interference with amenity which petrol service stations in predominantly residential areas are likely to give rise, by virtue of such matters as fumes, odours, noise, congestion of traffic, unusually long hours of operation and so on, an application for a petrol service station in such an area shall only be granted if the applicant is able to establish that such a facility is necessary in order to meet the needs of the residents of the area.

Where the site adjoins the side or rear boundary of a residential lot, a solid wall 3 m in height should be constructed and maintained along that lot boundary.

A petrol service station shall be permitted only on a site specifically zoned for the purpose or by special consent in areas zoned Special Shopping, General Shopping, General Business (Central Area), Harbour, Indeterminate or for industrial purposes (SEZs).

A petrol filling station should be sited between 300 and 400 meters away from the next petrol station. The total number of stations within 2 km radius of the site should not be more than four (4)

Distance between one petrol station and another should be of 150 m

Stations should be located within a growth center or an urban area except in circumstances where it can be shown through appropriate studies that the need exists otherwise.

The minimum site area for proposed gas stations shall be determined by relevant authority base on special specifications to be applied facilities.

Wherever possible, stations should be erected on level rather than sloping site to prevent rolling or discarded materials such as cans, drums, etc.

When sited in shopping centres, stations should be located in an isolated area of the development as long as planning criteria are met.

- **Environmental protection measures**

  - All other technical specifications and minimum standards for design, security measures and installations should be set by relevant government authority to meet basic safety, health, operational and environmental protection.

  - Environmental impact on streams, lakes, ponds, aquifer, etc., will be taken into consideration.

  - An Environmental Impact Assessment must be required from the applicant before establishing a petrol station project and before licensing and construction of any petrol station.

  - Periodic environmental audits shall be performed regularly on already existing tanks.

  - All service areas should be paved to avoid dust nuisance.

- **Drainage**
- The surface water from the site shall be collected through a proper reticulation network and reused for the general cleaning of site and washing of vehicles. Any excess water shall be channel through a grease trap and a hydro-carbon separator prior to discharge in an absorption pit.

5.23. Guidelines on the Conversion of Land

The Conversion of land is the process through which the ownership of land may change from either public to private or vice versa. This may be by a way of allocation or compulsory acquisition, reversion of leasehold interest, transfers or surrenders. Conversion of land may be done on the following considerations:

- Public needs, or in the interest of defence, public safety, public order, public morality and public health.
- Land use planning.
- Ecologically sensitive land that has been endangered or has endemic species of flora and fauna or critical habitats.
- Management of erosion, floods, earth landslides or water logging.
- Protection of forests and wildlife reserves, wetlands, buffer zones of such reserves or environmentally sensitive areas.
- Protection of watersheds, rivers catchment areas, public water reservoirs, lakes beaches, fish landing areas.
- National, cultural and historical features of exceptional value.
- Investment land benefiting the people.

5.24. Guidelines on Land Recovery by the Government

The following are the guidelines on land recovered by the government:

- Establish measures to ensure that the lease conditions in government title deeds are reviewed upon their expiry.
- Enforce the compulsory acquisition procedures of land meant for public utilities (e.g. cemeteries, sanitary landfills, waste transfer sites, public toilets etc.)
- Recover illegally acquired public land.
- Introduce economic disincentives to discourage holding of land for speculation purposes.
CHAPTER SIX: ENVIRONMENTAL AND OTHER IMPACTS OF THE GUIDELINES

6.1. Introduction

The preparation of National Land Use Planning Guidelines has been made on the basis of sufficient investigation and assessment of their environmental and other effects. The assessment provided information on the environmental, economic and social effects of the guidelines so as to provide background information for the preparation, decision-making on, and implementation of these guidelines. The assessment describes the consequences of the implementation of the National Land Use Planning Guidelines. It also included an assessment of situations where only a few of the numerous guidelines pertaining to the same issues are implemented. Several of the forecast inconveniences are, in fact, caused by the implementation of one guideline, while another guideline pertaining to the same issue is only implemented partially, or not at all. As the guidelines are very broad, the assessment is qualitative and general. The presentation of the main outcome of the assessment is given according to the various dimensions of the effects.

6.2. Impacts on Transportation and Community Services

The guidelines have an impact on traffic, particularly revenues of the use of private cars in urban areas and the commuting areas of town, enhance cohesion of the community structure and support light traffic and public transportation. However, if the implementation of these land use planning guidelines increases the population in urban areas and villages, it may again, at the local level, increase traffic volumes.

The increased cohesion of the community structure, the infill building close to public transport routes, the cooperation between various modes of traffic and the development of traffic crossroads support public transport, especially in growth areas. The guidelines will therefore improve prerequisites for walking and cycling especially in urban areas, the guidelines will also further promote the development of existing communication networks.

Community services will be safer and economic with proper land use reservations, protection of ground water areas, and increased utilization of the modern networks and other technical service systems. A more cohesive community structure will reduce the need to build new community service networks. In some situations, the guidelines while promoting the quality of the environment and the recreational opportunities may impede the development of communication networks and community services.

6.3. Impacts on the Regional and Community Structure

Many of the guidelines, when implemented, will improve the fundamentals for development both in developing and stagnating centres and areas: the centres form networks, supra-regional development zones arise, national communication networks grow, the interaction between rural and urban areas increases, community structures become more cohesive, and with the
Improvement of the quality of living environment and recreational areas, the attractiveness of areas increases. Many of the guidelines contribute to more cohesive community structures in urban settlements and villages, and particularly in growing urban regions. With increasing cohesion, the community structures function better and more economically. Improved communication networks may, however, contribute to splitting up the community structure. Support to villages and other rural centres may improve developments in surrounding areas with dispersed settlement.

6.4. Impacts on Natural Resources and Ecological Conditions

Many of the guidelines promote a better planned and sustainable use of the natural resources especially the guidelines pertaining to a more cohesive community structure will help to reduce the consumption of natural resources and diminish emissions and discharges, especially the emission of greenhouse gases. On the other hand, insofar as the guidelines increase economic growth and traffic, the guidelines also contribute to more energy consumption and emissions. With a more cohesive community structure, traffic emissions will be concentrated to smaller areas, which may, again, heighten locally the harmful consequences of the emissions. The guidelines promote the preservation of valuable natural resources, extensive cohesive areas in their natural state, and biological diversity, especially in areas outside the settlements. It also promotes the creation and preservation of open space, green wastes, parks and recreation facilities. As building is concentrated to existing settlements and as the recreational use of natural areas as well as tourism are channelled to specific areas and routes, this will diminish harmful environmental impacts in other natural areas. Correspondingly, harmful environmental impacts may increase in the green areas of dense settlements, on recreation and tourist routes, and in centres and their neighbourhoods.

6.5. Impacts on the Landscape, Town Image and Cultural Heritage

The National Land Use Guidelines will contribute to the preservation of the landscape and, particularly, the national cultural heritage, and to its being considered in land use planning. In settlements which are still being developed, and where the landscape is split up, the effects of greater cohesion will probably be positive. The negative effects that dispersed building outside settlements has on the landscape and cultural heritage will diminish. On the other hand, a greater cohesion brought about by more infill development in areas, which are characterized by open cultural landscape, and historical sites may, again, be negative.

6.6. Impacts on People and Communities

As a result of greater cohesion, the prerequisites for service production and the availability of services will be improved in residential areas near major centres, and in smaller centres and villages. A greater cohesion may lead to urbanized housing, and, particularly in urban regions, to an increase in blocks of flats. Many of the guidelines support public commuter transport in dense population centres. When implemented, the guidelines may lead to increased migration from areas of dispersed settlements to centres and villages where building is concentrated. Many guidelines support outdoor recreation both on the basis of individual’s right and through organized recreation and tourist services. The guidelines support the careful
consideration of factors harmful to human health and of risks as well as the prevention and mitigation of damages to health. The guidelines promote an improvement of the quality and pleasantness of the environment, the opportunities to outdoor recreation, and light traffic thereby promoting pedestrian and or non-motorised oriented society and thus contributing to better physical and psychic health.

6.7. Impacts on the Economy and Business Industry

When implemented, many of the land use planning guidelines promote economic growth, provide better prerequisites for business and industry, and promote employment. This is particularly true on the guidelines promoting urban and village centres development, networking of centres, and the formation of development zones, the reservation of areas for business and industry, and the development of communication networks.

Insofar as the guidelines support a good environment and better opportunities for recreation, they increase the attractiveness of the areas. The care and management of a natural and cultural environment improves the preconditions for recreational and tourist entrepreneurship. A greater cohesion of the communities will improve the prerequisites and economic success for service enterprises, along with infill development. The guidelines will strengthen the status of centres as places of business and, possibly increase the conditions for local businesses. If the settlements in rural area continue, and if urban population increasingly engages in tourism, there will be greater opportunities for building services in the rural areas. If the guidelines render the establishment of new major commercial centres more difficult, the prerequisites of trade in the form of large units may, in some cases, deteriorate.

6.8. Impacts on Planning and Decision-Making

The land use planning guideline supports a coordinated planning process which facilitates decision-making, harmonization of interests and economically, socially and environmentally sustainable solutions as envisaged by the Vision 2020 and the Medium Term Plans. The guidelines will also contribute to the implementation of international agreements and commitments. The workload may increase, especially in the local authorities and the regional councils, and this may create a need for increased resources or a reorganization of existing ones. The need for cooperation between district councils themselves, between those responsible for land use planning, business and industry and the citizens may increase. There will be an increased need for cooperation between government authorities.
CHAPTER SEVEN: LEGAL IMPLICATION, IMPLEMENTATION AND FOLLOW-UP OF THE GUIDELINES

7.1. Legal implications of the national land use planning guidelines

The implication is that Government authorities must consider national land use planning guidelines, promote their implementation and assess the impact of their actions on land use. On the basis of the effects pertaining to guiding land use and its planning, the National Land Use Planning Guidelines would provide viable bottom up harmonization strategy, which will inform the enactment, review and/or amendment or repeal of regulations, standards and laws.

The National Land Use Planning Guidelines should be approved and provided as Appendix to the revised Rwanda National Land Use and Development Master Plan.

7.2. Land Use Planning

The implementation of the National Land Use Planning Guidelines will be promoted by means of land use planning and the means available to government authorities. In planning at the district and local level, the guidelines will be made concrete while taking into consideration the specific features of different areas and while coordinating the national guidelines with the regional and local goals.

Bearing in mind the character of the guidelines, the functioning of the land use planning system and the effective coordination and guidance by Rwanda Land Management and Use Authority and Ministry of Natural Resources (MINIRENA), it is purposeful to render the guidelines more precise at the local level by formulating them as land use planning principles and area reservations. They will then, through the guiding effect of the district land use plan, influence local land use planning. It is natural to render the guidelines more concrete at the sectoral and local level because in addition to land use planning, the district and local authorities are responsible for regional and local development issues respectively. The importance of the local development plans is heightened when the district land use plans are made concrete at the local level. The local land use master plans gives general indications of land use and harmonizes other functions within the area of the Districts. The local development plan is a major development instrument for local land use, and it is closely related to strategic planning and other development work at the local level.

In guiding land use planning, MINIRENA/Rwanda Land Management and Use Authority should consult with other lead agencies and provide expert assistance so as to ensure and to promote the consideration of the National Land Use Planning
Guidelines and their implementation. MINIRENA/ Rwanda Land Management and Use Authority are expected to play a leading role in guiding land use planning at the national level; they should coordinate the regional and local authorities in order to ensure that the guidelines are taken into account in regional and local land use planning respectively. The Kigali City and District One Stop Centres (OSCs) are responsible for guiding land use at local level within their respective jurisdiction.

7.3. **Activities of the Government Authorities**

Government authorities should look for solutions which promote the implementation of these guidelines. On the other hand, government authorities should refrain from such measures which make guideline implementation more difficult. The authorities should thus assess the effects of their activities as regards the National Land Use Planning Guidelines. This assessment is important, especially in preparation of major plans and programs in different sectors of the administration.

The promotion of the guidelines calls for a new work culture and increasing cooperation between MINIRENA/ Rwanda Land Management and Use Authority and other government authorities. MINIRENA/Rwanda Land Management and Use Authority shall ensure continual discussions with relevant government authorities/agencies on the implementation of the NLUPG.

7.4. **Follow-Up of the Implementation**

MINIRENA, MINALOC, Rwanda Land Management and Use Authority are charged with following the implementation of the NLUPG in connection with land use planning. MINIRENA and Rwanda Land Management and Use Authority should work closely with the regional authorities and the key lead agencies (especially the Ministry of Local Government and Ministry of Infrastructure/Rwanda Housing Authority) to ensure that the spirit of National Land Use Planning Guidelines is incorporated in the regional and local land use plans, and the joint master plans. The District One Stop Centre Offices will further supervise, in their respective areas of jurisdiction the integration of NLUPG into the local land use planning. NLUPG will be reviewed as need arises. On the basis of these assessments, Rwanda Land Management and Use Authority will necessary, coordinate the revision and modification of the guidelines to incorporate emerging issues, knowledge and realities. In addition, the need for revision of the NLUPG will be assessed on the ground of problems possibly encountered in their implementation.

**Conclusion**

Rwanda is the most densely populated country in Africa with limited land resources. There is therefore an increasingly urgent need to match land types and land uses in the most rational way possible, so as to maximize sustainable production and satisfy the diverse needs of society while at the same time conserving fragile ecosystems and our genetic heritage.
Land use planning guidelines is fundamental to this process. It is a basic component, whether we are considering mountain ecosystems, savannahs or hilly zones, and underlies the development and conservation of forestry, range and inland as well as other resources. Land use planning guidelines is also a key element in all types of agricultural development and conservation.

These guidelines are intended to help all those involved in planning the development, management and conservation of rural lands. This includes not only specialists in land-use planning but also different Ministries, extension workers, forest officers, and many others who contribute to or are involved in planning the use of land resources. This publication provides an overview for people who commission and adopt land-use plans. It also provides practical advice for those who have to prepare such plans.

Land use planning guidelines encompasses physical, social and economic factors in such a way as to assist and encourage land users to select land-use options that increase their productivity, sustainably and meet the needs of society. Communities and other land users can, and should, take an active part in land-use planning, bringing to bear their special knowledge of problems, constraints and needs for improvement.

The principle guidelines and methods outlined here provide a framework for the development of detailed procedures that will deal directly with the specific problems and opportunities of land use in the country.
References

1. MINALOC, 2008, Integrated Development Program (Imidugudu)
3. MININFRA, 2015, Urban Planning and Building Regulations
5. MINIRENA (2004), National Land Policy
9. durban.gov.za/City_Services/development_planning_management/Land_Use_Management/Town_Planning_ Regulations/Land_Use/Pages/Petrol_Service_Stations.aspx)
16. City of Medford Land Use Requirements for Cemeteries and Mausoleums
www.ci.medford.or.us/files/cemetery%20and%20mortuary%20requirements%202010.pdf

### APPENDIX I: Binding Directives for Land Use Changes of Areas and Hubs of National Interests till 2020 (NLUDMP)

<table>
<thead>
<tr>
<th>ID</th>
<th>MAP SYMBOL</th>
<th>FEATURE</th>
<th>DIRECTIVES.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE</td>
<td></td>
<td>SOCIO-ECONOMIC</td>
<td>Binding regulation for the interpreter of the Plan (National and local government; general public; private investors and entrepreneurs; etc.) stipulated in the new legislation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Area and hub of national interest for sound urban development:</td>
<td>Reserved for urban expansion. The preparation and adoption of an Urban Development Plan (approved by District Council should precede implementation of major land use changes.</td>
</tr>
<tr>
<td>SE1</td>
<td>Point</td>
<td>-Prioritized District Centre for urban development</td>
<td>Points out the District Centres to coordinate public investments for urban development for the planning horizon up to 2020 (yellow Scenario). An Urban Development Plan shall be prepared.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The remaining District Centres to be developed if more resources are available for the planning horizon up to 2020 (Green Scenario).</td>
</tr>
<tr>
<td>SE2</td>
<td>Polygon</td>
<td>-Delineated area for urban development</td>
<td>Area reserved for urban development. The responsible authority is requested to establish an urban policy for sustainable development according to the Plan's Umujyi concept. An Urban Development Plan shall be prepared.</td>
</tr>
<tr>
<td>SE3</td>
<td>Point</td>
<td>(Area and) hub of national interest for education</td>
<td>Reserved for an Education Sector Plan initiative to provide equal distribution of tertiary education hubs in the country and to promote district development potentials. The proposed geographic location is an indication in a national perspective and the site location will further be looked into in the respective IDDP.</td>
</tr>
<tr>
<td>SE4</td>
<td>Point</td>
<td>(Area and) hub of national interest for health.</td>
<td>Reserved for a Health Sector Plan initiative to provide equal distribution of secondary health hubs in the country and to promote district development potentials. The proposed geographic location is an indication in a national perspective and the site location will further be looked into in the respective IDDP.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hub of national interest for economic development:</td>
<td></td>
</tr>
<tr>
<td>SE5</td>
<td>Point</td>
<td>-First Priority ‘Market Centre’ (A trading centre with a market)</td>
<td>Reserved for the development of market activities of an existing trading centre cum market. The centre must be located in close proximity to a main (national/district?) road; at least 10 Km away from a centre of similar function. The centre must have at least one substantial value-added manufacturing enterprise or large</td>
</tr>
</tbody>
</table>
### Area and hub of national interest for sustainable agriculture production

#### SE6 Polygon
- **Valuable agriculture land**
  
  Fertile land reserved for increased agricultural production to attain national food security and increased exports to improve foreign exchange earnings and employment opportunities. New development other than Imidugudu villages should be restricted, in order to preserve valuable agricultural land. Alternative sustainable solutions for technical infrastructure should be encouraged, for example ecological sanitation.

#### SE7 Point
- **Site purposed for Imidugudu Settlement**
  
  Four Km is an idea but not a mandatory distance between two villages.
  
  No location of villages will be found at present due to corrupt data. MINALOC will provide an updated dataset of Imidugudu sites to the districts for analysis and prioritization in the 2012 revision of the District Development Plans.
  
  Careful analysis to restore and maintain ecological balance should precede establishment of the sites located at the map. An Action Area Plan shall be prepared and approved by District (and Sector?) Council before implementation.

### Area and hub of national interest for sustainable forestry production

#### SE8 Polygon
- **Corridor to protect and create biodiversity**
  
  No support for continued agricultural production will be provided by the government. Compensation for a landowner who wants to facilitate the land use change towards forestry land use will be given.

#### SE9 Polygon
- **Land with a slope exceeding 30 degrees**
  
  No government support for maintained agricultural production will be supported. Program for tree planting will be provided for land owner who wants to change existing farmland towards forestry land use.

### Area and hub of national interest for sustainable mining exploitation

#### Point or polygon
- **Natural resource reserved for the exploitation of Rwanda’s mineral wealth within acceptable environmental parameters and...**
encouragement of safe and healthy mining practices. An Environmental Impact Assessment must proceed implementation.

<table>
<thead>
<tr>
<th>SE10</th>
<th>Point</th>
<th>-Mineral deposits</th>
<th>No land use change be allowed that obstructs exploitation. Social and Environmental Impact Assessments must be conducted prior to mining activities. Exploitation shall comply with relevant environmental standards.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE11</td>
<td>Polygon</td>
<td>-Exploration and Exploitation Concession areas</td>
<td>No land use change be allowed that obstructs exploitation. Please observe that some concessions are found in Protected Areas that must be resolved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Area and hub of national interest for industrial development.</strong></td>
<td>Reserved for major industrial development within acceptable environmental parameters. New residential development should not be permitted in industrial areas, in order not to impose obstacles to industrial production. Attention should be given to protect surrounding areas from negative environmental impact.</td>
</tr>
<tr>
<td>SE12</td>
<td>Point</td>
<td>Industrial zone</td>
<td>Indicative location on Map. The precise location will be defined and decided on in the respective DDP 2012. An Environmental Impact Assessment (EIA) in combination with an Action Area Plan (AAP) must precede implementation.</td>
</tr>
<tr>
<td>SE13</td>
<td>Point or polygon</td>
<td><strong>Area and hub of national interest for tourism development.</strong></td>
<td>Prioritized for the exploitation of Rwanda’s tourist assets within acceptable environmental parameters, fully utilize the country’s scenic and biophysical resources and cultural and historic sites within environmentally sustainable limits. District with an area of national interest for tourism development shall include more details about the potentials in the IDDP. Likewise, an area shared between more than one district will prompt joint studies for inter-district harmonization of the national interest. More information about the tourist potential for an area is found in the ‘National Tourism Master Plan’. An Environmental Impact Assessment (EIA) in combination with an Action Area Plan shall be prepared and approved by District Council before implementation of a major tourist hub development. A socio economic analysis should be a prerequisite to any implementation of a major tourist hub.</td>
</tr>
</tbody>
</table>

| IS | INFRASTRUCTURE | **Area and hub of national interest for transportation:** | |
| IS1 | Polyline | -Proposed new or improvement of National and District Road | A planning reserve of 60 M along both sides of the tentative alignment is demarcated on the Map which should be applied in the IDDP Land Use Plan. No land use change that is in conflict with the national interest will be allowed until the respective infrastructure plan has been approved by concerned authorities. |
| IS2 | Polyline | -Proposed railway | A planning reserve of 500 M along both sides of the tentative alignment is demarcated on the Map which should be applied in the IDDP Land Use Plan. No land use change that is in conflict with the national interest will be allowed until the respective infrastructure plan has been approved by concerned authorities. |
| IS3 | Polygon | -Proposed new international airport | The area includes noise polluted area not suitable for residential land use. No land use change that is in conflict with the national interest will be allowed. An Environmental Impact Assessment (EIA) in combination with an Action Area Plan (AAP) must precede implementation. |
| IS4 | Area and hub of national interest for water provision and sanitation. | | Reserved for major provider of water or environmentally sound waste management. No land use change that causes risk of pollution will be allowed for a water source. |
| IS5 | Point or polygon | -(Proposed) Protected source of major water supply | Water body or ground reservoir strictly reserve for production of clean water. Efforts should be made to protect watersheds and catchment areas as a management tool for water resources conservation and protection. No activities or land uses that can pollute the source are allowed in the area. Penalty should be paid for littering and polluting. |
| IS6 | Point or polygon | -(Proposed) Major landfill and/or recycling plant | The area includes odor polluted area not suitable for residential or agricultural land use. No major land use change that is in conflict with the national interest will be allowed until the respective infrastructure plan has been approved by concerned authorities. |
| IS6 | Area and hub of national interest for energy/power supply: | | Reserved for the provision and distribution of energy (not only electricity) on a full cost recovery basis and increase the reliability of supply and transmission to main consumption areas in the country within environmentally sustainable limits. |
| IS7 | Polyline | -Proposed surfaced gas pipeline | A planning reserve of 200 M along both sides of a tentative alignment is demarcated on the Map which should be applied in the IDDP Land Use Plan. No land use change that is in conflict with the national interest will be allowed until the respective infrastructure plan has been approved by concerned authorities. |
| IS8 | Polyline | -Proposed power line | A planning reserve of 100 M along both sides of a tentative alignment is demarcated on the Map which should be applied in the IDDP Land Use Plan. No land use change that is in conflict with the national interest will be allowed until the respective infrastructure plan has been approved by concerned authorities. |
**IS9**  | Point  | Proposed energy production | No major land use change that is in conflict with the national interest will be allowed. An Environmental Impact Assessment (EIA) in combination with an Action Area Plan (AAP) must precede implementation.

**IS10**  | Area and hub of national interest for ICT: | http://fr-mg42.mail.yahoo.com/neo/launch?rand=3sod4jghc3q1k

**IS11**  | Point Cellular Communication Pylon | Reserved for (mobile) phone transmitter. Sharing of pylons between mobile providers is a mandatory requirement which among other implies a distance of at least 1 km away from a pylon of similar function.

Regulation from Rwanda Utilities Regulatory Agency specifies the following:

‘Passive infrastructure sharing’ means the sharing of non-electronic infrastructure and facility. It includes sharing of physical sites, buildings, shelters, towers/masts, electric power supply and battery backup, grounding/earthing, air conditioning, security arrangement, poles, ducts, trenches.

‘Active infrastructure sharing’ means the sharing of electronic infrastructure and facility. It includes sharing of Base Transceiver Station (BTS), spectrum, antenna, feeder cable, Radio Access Network (RAN), microwave radio equipment, billing platform, switching centers, router, Base Station Controller (BSC) /Radio Network Controller (RNC), optical fiber/ wired access and backbone transmission network, database etc.

**IS12**  | Polyline Fiber transmission | A planning reserve of 5 M along both sides of a proposed tentative alignment is demarcated on the Map which should be applied in the IDDP. No land use change that is in conflict with the national interest will be allowed until the respective infrastructure plan has been approved by concerned authorities.

**EN**  | ENVIRONMENT

Area and hub of national interest to protect biodiversity: | Protected by special legislation

**EN1**  | Polygon Protected Wetland | Discharges of untreated waste water to the water bodies or the ground should be forbidden. Waste water should either be discharged into sewerage networks or be collected in watertight reservoirs (cess-pools), and it should be treated before discharge. All wastewater storage sites shall be positioned above the 1/100 year flood line.
### Rwanda National Land Use Planning Guidelines

<table>
<thead>
<tr>
<th>EN2</th>
<th>Polygon</th>
<th>-Proposed Buffer Zone around protected wetland</th>
<th>A buffer zone of 50 M around the wetland, protected by special legislation, is demarcated on the Map which should be applied in the IDDP. No land use change that is in conflict with the national interest will be allowed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN3</td>
<td>Polygon</td>
<td>-Protected Forest</td>
<td>Logging and charcoal production not permitted.</td>
</tr>
<tr>
<td>EN4</td>
<td>Polygon</td>
<td>-Proposed Buffer Zone around protected forest</td>
<td>A buffer zone of 1 Km around the forest, protected by special legislation, is demarcated on the Map which should be applied in the IDDP. No land use change that is in conflict with the national interest will be allowed. No sites for Imidugudu villages should be allocated in the buffer zone.</td>
</tr>
<tr>
<td>EN5</td>
<td></td>
<td>Areas to be reserved to achieve Vision 2020 target of 30% forest cover of total land area</td>
<td>Very strong incentives by the sector authorities both at central and local levels must be provided so that the individual farmer will shift from farming to productive forestry.</td>
</tr>
<tr>
<td>EN6</td>
<td>Polygon</td>
<td>National Park</td>
<td>National Parks shall be established for the protection of biodiversity and sustainable management of wildlife. In addition to the three existing parks, new ones will be established to protect critical ecosystems such as watersheds and wetlands, in accordance to the new Wildlife Policy.</td>
</tr>
<tr>
<td>EN7</td>
<td>Polygon</td>
<td>-Proposed Buffer Zone around National Park</td>
<td>Buffer zones will be established around the national parks to provide them with additional protection. Corridors will also be established where feasible to link the parks and to provide connectivity and gene flow. The actual width of the buffer zones and corridors will be negotiated with the neighboring communities and other land-owners, according to the needs of each park. One kilometer width is considered to cater for any potential park extension and will serve to limit intensive land use activities around parks.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Area and hub of national interest to protect cultural heritage (National Monuments)</td>
<td>National Monuments will be established, gazetted and protected under appropriate law, for the protection of natural, geological, archeological, cultural or historical features of national, regional or international interest or importance. No land use change that is in conflict with the national interest will be allowed.</td>
</tr>
<tr>
<td>EN8</td>
<td>Point</td>
<td>-Genocide Memorial Sites</td>
<td>An inventory should be made by the responsible authority.</td>
</tr>
<tr>
<td>EN9</td>
<td>Point</td>
<td>-Historical and cultural monuments, buildings and sites of high importance</td>
<td>Describes the heritage qualities in urban and rural landscapes. Penalty should be paid for littering and polluting.</td>
</tr>
</tbody>
</table>
### RWANDA NATIONAL LAND USE PLANNING GUIDELINES

<table>
<thead>
<tr>
<th>EN10</th>
<th>Point</th>
<th>-Prioritized (Cooperative) Centre for Art &amp; Craft</th>
<th>Important hub for preservation and development of traditional arts and crafts. An inventory should be made by the responsible authority.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN11</td>
<td>Polygon</td>
<td><strong>Area (and hub) of national interest to prevent natural hazards:</strong> landslides, flooding, volcano eruption and earth quakes</td>
<td>For existing built-up area exposed to hazards: Rezoning and/or other measures to control development that respond to site conditions and reduces vulnerability to man-made and natural hazards.</td>
</tr>
</tbody>
</table>

## BM BASE MAP

<table>
<thead>
<tr>
<th>BM1</th>
<th>Polyline</th>
<th>National boundary</th>
</tr>
</thead>
<tbody>
<tr>
<td>BM2</td>
<td>Polyline</td>
<td>District boundary</td>
</tr>
<tr>
<td>BM3</td>
<td>Point</td>
<td>District centre</td>
</tr>
<tr>
<td>BM4</td>
<td></td>
<td>Name of District and District Centre</td>
</tr>
<tr>
<td>BM5</td>
<td></td>
<td>Name of man-made or natural feature</td>
</tr>
<tr>
<td>BM6</td>
<td>Polyline</td>
<td>National road</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A Right of Way of 22 M on both sides of the road centre line where no land use change that is in conflict with the national interest will be allowed.</td>
</tr>
<tr>
<td>BM7</td>
<td>Polyline</td>
<td>District road</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A Right of Way of 16 M on both sides of the road centre line where no land use change that is in conflict with the national interest will be allowed.</td>
</tr>
<tr>
<td>BM8</td>
<td>Point</td>
<td>Border post</td>
</tr>
<tr>
<td>BM9</td>
<td>Pont</td>
<td>Airport</td>
</tr>
<tr>
<td>BM10</td>
<td>Point</td>
<td>Power line</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A Right of Way of 10 M along the line alignment where no land use change that is in conflict with the national interest will be allowed.</td>
</tr>
<tr>
<td>BM11</td>
<td>Polygon</td>
<td>Water body (Wetlands, lakes and rivers)</td>
</tr>
<tr>
<td>BM12</td>
<td>Polygon</td>
<td>Forest</td>
</tr>
<tr>
<td>BM13</td>
<td>Point</td>
<td>Tertiary Education Facility</td>
</tr>
<tr>
<td>BM14</td>
<td>Point</td>
<td>Secondary Health Facility</td>
</tr>
</tbody>
</table>
The **Land Use Plan (LUP)** presents the existing and proposed land use features for planning components during the planning period.

The Plan defines binding directives and guiding principles for sustainable land use, which according to law should be adhered to in District Planning. The table below complements the LUP map with information for decision making regarding land use changes in the district.

The **Feature** column follows the content and the legend of the LUP map. **Directives** present what should be considered for the respective feature. **Data Source** indicates the origin (the data custodian) of the data used in the LUP.

Please note that this is a generic gross list meaning that not all features will be represented in all the districts and have to be customized according to the specific situation at the respective district.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Directives</th>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TITLE</strong>&lt;br&gt;E.g.: PROPOSED LAND USE 2013-2017</td>
<td>The Land Use Planning Law Official Gazette no 31 of 2012-07-30 stipulates (article 8: Enforcement) that ‘Without prejudice to what is stipulated in the National Land Use and Development Master Plan, every District shall prepare specific master plans based on the District Development Plan.’ It means that a land use plan shall be introduced as a component of the district development planning which is the start to institutionalize an Integrated District Development Plan (IDDP) protocol.</td>
<td></td>
</tr>
<tr>
<td><strong>Subtitle</strong>&lt;br&gt;E.g.: Land Use Plan (LUP) for NAME OF YOUR DISTRICT</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SOCIIO-ECONOMIC</strong>&lt;br&gt;(Housing and Urbanization)</td>
<td>Legend Title</td>
<td></td>
</tr>
<tr>
<td>Urban Area Delineation</td>
<td>The Land Use Planning Law Official Gazette no 31 of 2012-07-30 stipulates that: ‘Land use and development plans and urban area plans which were adopted before this law shall remain in force but subjected to amendments that will align them with the National Land Use and Development Master Plan’. ‘Within a period not exceeding two years the concerned authority shall harmonize all master plans in line with the NLUDMP.’ The delineation depicted on the LUP map is the official demarcation of the urban area and the urban development plan shall comply.</td>
<td>RLMUA, MINALOC, RHA, NISR</td>
</tr>
<tr>
<td>Prioritized District Centre for Urban Development</td>
<td>From EDPRS2 proposed for Nyagatare, Muhanga, Huye, Musanze, Rubavu and Rusizi District centres. Points out the District Centres to coordinate and promote public (and private) investments for urban development for the planning horizon up to 2017.</td>
<td>MINICOFIN</td>
</tr>
<tr>
<td>Built-up Area</td>
<td>Only conglomerations of houses are captured. Include open fields such as sports fields and marketplaces in the built-up areas. As a rule-of-thumb, no area is captured as Built-up area if there is only one row of houses on each side of the road. Minimal functional area: approximately 40 000 SqM (200 x 200 meters depending on shape). Minimal functional width: approximately 50 meters depending on significance. Two polygons are linked if the distance between the polygons is less then approximately 75 meters, depending on appearance.</td>
<td>RLMUA</td>
</tr>
<tr>
<td>Imidugudu Village</td>
<td>Site suitable for a proposed Imidugudu village in accordance to guidelines and standards.</td>
<td>MINALOC/DDP</td>
</tr>
<tr>
<td>Proposed Imidugudu Village</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tertiary School</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed Tertiary School</td>
<td>NLUDMP SE03: Proposal from an Education Sector (Master) Plan initiative to provide equal distribution of tertiary education hubs in the country and to promote district development. The proposed geographic location is an indication in a national perspective and the site location might further be looked into in the DLUP.</td>
<td>MINEDUC</td>
</tr>
<tr>
<td>Secondary School</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed Secondary School</td>
<td>The location of a new secondary school shall observe the service pattern of existing schools, sector population density and other relevant factors in order to improve the general accessibility to education facilities. The catchment radius for a unit is 5 Km.</td>
<td>DDP</td>
</tr>
<tr>
<td>Primary School</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed Primary School</td>
<td>The location of a new primary school shall observe the service pattern of existing schools, sector population density and other relevant factors in order to improve the general accessibility to education facilities. The catchment radius for a unit is 5 Km. Five (5) kilometers are set by Ministry of Education to be the maximum walking distance (catchment radius) between primary/secondary schools and home. However, for planning purposes, two (2) kilometers are expected and proposed as ideal walking distance for a primary school pupil. For secondary school students three (3) kilometers are proposed.</td>
<td>DDP</td>
</tr>
<tr>
<td>(Health)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Referral Hospital</td>
<td>Besides from symbol insert polygon if delineation of hospital is known.</td>
<td>MINSANTE</td>
</tr>
<tr>
<td>District Hospital</td>
<td>Besides from symbol insert polygon if delineation of hospital is known.</td>
<td>MINSANTE</td>
</tr>
<tr>
<td>Proposed Secondary Health Unit</td>
<td>NLUDMP SE04: Proposal from a Health Sector (Master) Plan initiative to provide equal distribution of tertiary education hubs in the country and to promote district development. The proposed geographic location is an indication in a national perspective and the site location might further be looked into in the DLUP.</td>
<td>DDP</td>
</tr>
<tr>
<td>Primary Health Centre</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed Primary Health Centre</td>
<td>The location of a new health centre shall observe the service pattern of existing health centres, sector population density and other relevant factors in order to improve the general accessibility to health facilities. Five (5) kilometres</td>
<td>DDP</td>
</tr>
<tr>
<td>Land Use Planning Guidelines</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td><strong>(Protection)</strong></td>
<td>Are set by Ministry of Health to be the maximum walking distance (catchment radius) between the health centre and home. Also called ‘Security’ in the attribute database.</td>
<td></td>
</tr>
<tr>
<td>Police Station</td>
<td>MININTER</td>
<td></td>
</tr>
<tr>
<td>Court</td>
<td>MININTER</td>
<td></td>
</tr>
<tr>
<td>Prison</td>
<td>MININTER</td>
<td></td>
</tr>
<tr>
<td>‘Jail’ can also be used instead of prison if preferred.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>(Recreation)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Playground</td>
<td>MINISPOC</td>
<td></td>
</tr>
<tr>
<td><strong>(Cultural Heritage)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Genocide Memorial Site</td>
<td>MINISPOC/CNLG/GPS</td>
<td></td>
</tr>
<tr>
<td>Historical or Cultural Monument</td>
<td>MINISPOC/GPS</td>
<td></td>
</tr>
<tr>
<td><strong>(Commerce)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market Centre to Be Prioritized for Development</td>
<td>NLUDMP SE05: Reserved for the development of market activities of an existing trading centre cum market. The centre must be located in close proximity to a main (national/district?) road; at least 10 Km away from a centre of similar function. The centre must have at least one substantial value-added manufacturing enterprise or large scale distribution depot within its boundary which “exports” goods or services to its hinterland. A study area for development around the location should be earmarked in the IDDP and no major land use change that is in conflict with the national interest will be allowed. An Action Area Plan shall be prepared and approved by District (and Sector?) Council before implementation.</td>
<td></td>
</tr>
<tr>
<td>Market with a Trading Centre</td>
<td>MINICOM</td>
<td></td>
</tr>
<tr>
<td>Market</td>
<td>MINICOM</td>
<td></td>
</tr>
<tr>
<td>Trading Centre</td>
<td>MINICOM</td>
<td></td>
</tr>
<tr>
<td>Centre for Art &amp; Craft</td>
<td>MINICOM/GPS</td>
<td></td>
</tr>
<tr>
<td><strong>(Agriculture)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irrigated Land</td>
<td>MINERENA/RLMU A</td>
<td></td>
</tr>
<tr>
<td>Coffee Plantation</td>
<td>MINERENA/RLMU A</td>
<td></td>
</tr>
<tr>
<td>If the delineation is known use polygon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coffee Washing Station</td>
<td>MINERENA/RLMU A</td>
<td></td>
</tr>
<tr>
<td>Tea Plantation</td>
<td>MINERENA/RLMU A</td>
<td></td>
</tr>
<tr>
<td>If the delineation is known use polygon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tea Factory</td>
<td>MINERENA/RLMU A</td>
<td></td>
</tr>
<tr>
<td>Rice Factory</td>
<td>MINERENA/RLMU A</td>
<td></td>
</tr>
<tr>
<td>Diary</td>
<td>MINAGRI?</td>
<td></td>
</tr>
<tr>
<td>Milk Collecting Station</td>
<td>MINAGRI?</td>
<td></td>
</tr>
<tr>
<td>Fish Farming</td>
<td>MINAGRI?</td>
<td></td>
</tr>
<tr>
<td>(Mining)</td>
<td>MINERENA/RLMU A</td>
<td></td>
</tr>
<tr>
<td>------------------------------</td>
<td>----------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Mine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mineral Deposit</td>
<td>NLUDMP SE10: No land use change be allowed that obstructs exploitation. Social and Environmental Impact Assessments must be conducted prior to mining activities. Exploitation shall comply with relevant environmental standards. MINERENA/RLMU A</td>
<td></td>
</tr>
<tr>
<td>Mineral Concession</td>
<td>NLUDMP SE11: No land use change be allowed that obstructs exploitation. MINERENA/RLMU A</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(Industry)</th>
<th>MINICOM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial Zone</td>
<td></td>
</tr>
<tr>
<td>Proposed Industrial Zone</td>
<td>NLUDMP SE12R: Reserved for major industrial development within acceptable environmental parameters. New residential development should not be permitted in industrial areas, in order not to impose obstacles to industrial production. Attention should be given to protect surrounding areas from negative environmental impact. From EDPRS2 proposals are for Huye, Rusizi, Nyabihu and Bugesera Districts. Indicative location in LUP. The precise location will be defined and decided on in the respective DDP 2013-2017. An Environmental Impact Assessment (EIA) in combination with an Action Area Plan (AAP) must precede implementation MINICOM</td>
</tr>
<tr>
<td>Industrial Plant</td>
<td>Major industry outside urban area MINICOM</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(Tourism)</th>
<th>RDB/GPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area of National Interest for Tourism</td>
<td>NLUDMP SE13: Prioritized for the exploitation of Rwanda’s tourist assets within acceptable environmental parameters, fully utilize the country’s scenic and biophysical resources and cultural and historic sites within environmentally sustainable limits. District with an area of national interest for tourism development shall include more details about the potentials in the DDP. Likewise, an area shared between more than one districts will prompt joint studies for inter-district harmonization of the national interest. An Environmental Impact Assessment (EIA) in combination with an Action Area Plan shall be prepared and approved by District Council before implementation of a major tourist hub development. A socio economic analysis should be a prerequisite to any implementation of a major tourist hub. RDB/GPS</td>
</tr>
<tr>
<td>Tourist Attraction</td>
<td></td>
</tr>
<tr>
<td>Hotel</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INFRASTRUCTURE</th>
<th>Legend Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Transportation)</td>
<td></td>
</tr>
<tr>
<td>National Road with 22 M Right of Way</td>
<td>A Right of Way of 22 M on both sides of the road centre line. MININFRA</td>
</tr>
<tr>
<td>National Road with a 60 M Planning Reserve</td>
<td>Proposed upgrade of national interest MININFRA</td>
</tr>
<tr>
<td>District Road with 16 M Right of Way</td>
<td>A Right of Way of 16 M on both sides of the road centre line MININFRA</td>
</tr>
<tr>
<td>District Road with 60 M Planning Reserve</td>
<td>NLUDMP IS01: No land use change that is in conflict with the national interest will be allowed until the respective infrastructure plan has been approved by concerned authorities. MININFRA</td>
</tr>
</tbody>
</table>

Land Use Planning Guidelines 123
| Sector Road | Proposed railway with a planning reserve of 500 M along both sides | MININFRA | NLUDMP IS02: No land use change that is in conflict with the national interest will be allowed until the respective infrastructure plan has been approved by concerned authorities.  
MININFRA; MINEAC |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Harbor</td>
<td>?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Airport</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed New International Airport</td>
<td>NLUDMP IS03: The area includes noise polluted area not suitable for residential land use. No land use change that is in conflict with the national interest will be allowed. An Environmental Impact Assessment (EIA) in combination with an Action Area Plan (AAP) must precede implementation</td>
<td>MININFRA;</td>
<td></td>
</tr>
<tr>
<td>Airstrip</td>
<td>Indicates a field not used for commercial traffic</td>
<td>MININFRA;</td>
<td></td>
</tr>
<tr>
<td><strong>(Power Supply)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Line with a Right of Way of 10 M</td>
<td>NLUDMP IS08: No land use change that is in conflict with the national interest will be allowed until the respective infrastructure plan has been approved by concerned authorities.</td>
<td>MININFRA/REG</td>
<td></td>
</tr>
<tr>
<td>Proposed Power Line with a Planning Reserve of 100 M</td>
<td></td>
<td>MININFRA/EREG</td>
<td></td>
</tr>
<tr>
<td>Power Plant</td>
<td></td>
<td>MININFRA/REG</td>
<td></td>
</tr>
<tr>
<td>Proposed Methane Power Plant</td>
<td>NLUDMP IS09: No major land use change that is in conflict with the national interest will be allowed. An Environmental Impact Assessment (EIA) in combination with an Action Area Plan (AAP) must precede implementation.</td>
<td>MININFRA/REG</td>
<td></td>
</tr>
<tr>
<td>Proposed Hydro Power Plant</td>
<td>NLUDMP IS09: No major land use change that is in conflict with the national interest will be allowed. An Environmental Impact Assessment (EIA) in combination with an Action Area Plan (AAP) must precede implementation.</td>
<td>MININFRA/REG</td>
<td></td>
</tr>
<tr>
<td>Proposed Geothermal Power Plant</td>
<td>NLUDMP IS09: No major land use change that is in conflict with the national interest will be allowed. An Environmental Impact Assessment (EIA) in combination with an Action Area Plan (AAP) must precede implementation.</td>
<td>MININFRA/WASAC</td>
<td></td>
</tr>
<tr>
<td>Gas Pipeline</td>
<td></td>
<td>MININFRA/REG</td>
<td></td>
</tr>
<tr>
<td>Proposed Gas Pipeline with a planning reserve of…..M</td>
<td>NLUDMP IS07: No land use change that is in conflict with the national interest will be allowed until the respective infrastructure plan has been approved by concerned authorities.</td>
<td>MININFRA/REG</td>
<td></td>
</tr>
<tr>
<td><strong>(Information and Communication Technology)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optic Fiber Network</td>
<td>Not provided</td>
<td>MININFRA; MYICT</td>
<td></td>
</tr>
<tr>
<td>Proposed Optic Fiber Network a planning reserve of 5 M along both sides</td>
<td>Not found today</td>
<td>MININFRA; MYICT</td>
<td></td>
</tr>
<tr>
<td>Optic Fiber Network Node</td>
<td>Can also be called Telecentre</td>
<td>MININFRA; MYICT</td>
<td></td>
</tr>
<tr>
<td>Cellular Communication Pylon</td>
<td></td>
<td>MININFRA; MYICT</td>
<td></td>
</tr>
<tr>
<td>Proposed Pylon (with a planning reserve of?? M)</td>
<td>NLUDMP IS11: Reserved for (mobile) phone transmitter. Sharing of pylons between mobile providers is a mandatory requirement which among other implies a distance of at least 1 km away from a pylon of similar function.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Regulation from Rwanda Utilities Regulatory Agency specifies the following:

‘Passive infrastructure sharing’ means the sharing of non-electronic infrastructure and facility. It includes sharing of physical sites, buildings, shelters, towers/masts, electric power supply and battery backup, grounding/earthing, air conditioning, security arrangement, poles, ducts, trenches.

‘Active infrastructure sharing’ means the sharing of electronic infrastructure and facility. It includes sharing of Base Transceiver Station (BTS), spectrum, antenna, feeder cable, Radio Access Network (RAN), microwave radio equipment, billing platform, switching centres, router, Base Station Controller (BSC)/Radio Network Controller (RNC), optical fibre/ wired access and backbone transmission network, database etc.

(Water Supply)

<table>
<thead>
<tr>
<th>Water Tap</th>
<th>Might be too detailed for the district level analysis, preferably used in a Sector Land Use Plan (SLUP)</th>
<th>MININFRA/GPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Protected Water Source</td>
<td>NLUDMP IS05: Water body or ground reservoir strictly reserved for supply of clean water. Efforts should be made to protect watersheds and catchment areas as a management tool for water resources conservation and protection. No activities or land uses that can pollute the source are allowed in the area. Penalty should be paid for littering and polluting.</td>
<td>MININFRA/RLMUADDP</td>
</tr>
</tbody>
</table>

(Waste Management)

<table>
<thead>
<tr>
<th>Waste Water Treatment Plant</th>
<th></th>
<th>MINIRENA/REMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recycle Plant/Land Fill</td>
<td></td>
<td>MINIRENA, REMA/GPS</td>
</tr>
<tr>
<td>Proposed Recycle Plant/Land Fill a planning reserve of ...meter</td>
<td>NLUDMP IS06: The area includes od or polluted area not suitable for residential or agricultural land use within the buffer zone. No major land use change that is in conflict with the national interest will be allowed until the respective infrastructure plan has been approved by concerned authorities.</td>
<td>MINIRENA, REMA</td>
</tr>
</tbody>
</table>

ENVIRONMENT

Legend Title

| River | | MINIRENA/RLMUACO |
| Buffer Zone around River (10 M) | | MINIRENA/RLMUACO |
| Lake/Dam | | MINIRENA/RLMUACO |
| Buffer Zone around Lake (50 M) | | MINIRENA/RLMUACO |
| Wetland | NLUDMP EN01: Discharges of untreated waste water to the water bodies or the ground should be forbidden. Waste water should either be discharged into sewerage networks or be collected in watertight reservoirs (cess-pools), and it should be treated before discharge. | MINIRENA/RLMUACO |
| Buffer Zone around Wetland (50 M) | NLUDMP EN02: A buffer zone of 50 M around the wetland, protected by special legislation. No land use change that is in conflict with the national interest will be allowed. | MINIRENA/RLMUACO |
| Valuable Land for Agriculture | NLUDMP EN06: Fertile land reserved for increased agricultural production to attain national food security and increased exports to improve foreign exchange earnings and employment opportunities. New development other than Imidugudu villages should be restricted, in order to preserve valuable | MINAGRI |
agricultural land. Alternative sustainable solutions for technical infrastructure should be encouraged, for example ecological sanitation.

<table>
<thead>
<tr>
<th>Area</th>
<th>Description</th>
<th>Authority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest</td>
<td>NLUDMP EN03: Logging and charcoal production not permitted.</td>
<td>MINIRENA/RLMUA</td>
</tr>
<tr>
<td>Proposed Buffer Zone</td>
<td>NLUDMP EN04: A buffer zone of 1 Km around the forest, protected by special legislation, is demarcated on the Map which should be applied in the IDDP. No land use change that is in conflict with the national interest will be allowed. No sites for Imidugudu villages should be allocated in the buffer zone.</td>
<td>MINIRENA/RLMUA</td>
</tr>
<tr>
<td>Green Corridor to Protect and Create Biodiversity</td>
<td>NLUDMP SE08: Corridors are established where feasible to link the parks and to provide connectivity and gene flow. No support for continued agricultural production will be provided by the government. Compensation for a landowner who wants to facilitate the land use change towards forestry land use will be given.</td>
<td>MINIRENA/RLMUA</td>
</tr>
<tr>
<td>Slopes more than 30 Degrees Proposed for Reforestation</td>
<td>NLUDMP EN05: Areas to be reserved for reforestation to achieve Vision 2020 target of 30% forest cover of total land area (Vision 2020). EN06: Very strong incentives by the sector authorities both at central and local levels must be provided so that the individual farmer will shift from farming to productive forestry.</td>
<td>MINIRENA/RLMUA</td>
</tr>
<tr>
<td>National Park</td>
<td>NLUDMP EN06: National Parks are established for the protection of biodiversity and sustainable management of wildlife. In addition to the three existing parks, new ones will be established to protect critical ecosystems such as watersheds and wetlands, in accordance to the new Wildlife Policy.</td>
<td>MINRENA/RDB</td>
</tr>
<tr>
<td>Buffer Zone around National Park (1 Km)</td>
<td>NLUDMP EN07: Buffer zones are established around the national parks to provide them with additional protection. Corridors will also be established where feasible to link the parks and to provide connectivity and gene flow. The actual width of the buffer zones and corridors will be negotiated with the neighboring communities and other land-owners, according to the needs of each park. One kilometer width is considered to cater for any potential park extension and will serve to limit intensive land use activities around parks.</td>
<td>MINIRENA/RLMUA</td>
</tr>
<tr>
<td>(Area (and hub) of national interest to prevent natural hazards)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Fault Line**

NLUDMP EN11: For existing built-up area exposed to hazards: Rezoning and/or other measures to control development that respond to site conditions and reduces vulnerability to man-made and natural hazards.

<table>
<thead>
<tr>
<th><strong>BASE MAP</strong></th>
<th><strong>Legend Title</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>National boundary</td>
<td>RLMUA</td>
</tr>
<tr>
<td>Provincial Boundary</td>
<td>RLMUA</td>
</tr>
<tr>
<td>District Boundary</td>
<td>RLMUA</td>
</tr>
<tr>
<td>Sector Boundary</td>
<td>RLMUA</td>
</tr>
<tr>
<td>District Office</td>
<td>RLMUA</td>
</tr>
<tr>
<td>Sector Office</td>
<td>RLMUA</td>
</tr>
<tr>
<td>Sector Name</td>
<td>RLMUA</td>
</tr>
<tr>
<td>Contour Line 25 M</td>
<td>Contour Line 25 M Equidistance</td>
</tr>
<tr>
<td>Place Name</td>
<td>Place Name or Name of Man-made or Natural Feature of Importance</td>
</tr>
<tr>
<td>(Name of Neighbouring District)</td>
<td>Found in the Index Map</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>INDEX MAP</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Title: Districts of Rwanda</td>
<td>Names (labels) of districts in the map.</td>
</tr>
</tbody>
</table>

**GENERAL INFORMATION and RESERVATIONS**

The Plan is adopted by NAME OF THE AUTHORITY HERE on DATE HERE

The Plan is prepared by NAMES HERE,

The Directives that accompany this Plan are found in a Textbook. For more details please contact CONTACT DETAILS HERE

The LUP is a part of an integrated district development planning approach and has linkages with the District Development Plan (DDP) for THE NAME OF YOUR DISTRICT. For more details please contact CONTACT DETAILS HERE

The geodata used is captured from various sources. The custodian of the sector data, not the author of the LUP, is responsible for the completeness and positional accuracy of the data.

Upon request a customized map with selected features can be prepared. Please contact the authors for more details and support.

Projection: TM_Rwanda, GCS ITRF_2005

Reservation: The presentation on this map is strictly for planning purpose and has no legal implication on administrative or property boundaries

| **NORTH ARROW** | |
| **SCALE BAR** | |
| **FILENAME** | |
APPENDIX III: Checklist for assessing compliance of an Local Urban Development Plan (LUDP) with the NLUDMP Directives

Land Use Master Plan and Detailed Physical Plan's Compliance with NLUDMP

The Land Use Planning Law Official Gazette no 31 of 2012-07-30 stipulates that

‘Land use and development plans and urban area plans which were adopted before this law shall remain in force but subjected to amendments that will align them with the National Land Use and Development Master Plan’.

‘Within a period not exceeding two years the concerned authority shall harmonize all master plans in line with the NLUDMP.’

In the law there are other directives to follow:

‘In the future instead of all types of names for urban plans being used previously: local development plan, master plan, etc. there will be one –Urban Development Plan (UDP)’

‘The planning of land use and development must prioritize higher density, multi-family residential settlements either located in an urban or rural area’

‘The land use must prevent urban sprawl and maximize mixed zoning and integrated land uses’

‘The land use must focus on integrated land uses like residential, commercial, civic and community and light industrial in settlement areas in which people live and work to minimize physical distances’.

The NLUDMP recognizes the need for sound urban planning in the following way:

‘The Imidugudu Policy needs an urban ‘sister’ to prevent accelerated (and uncontrolled) migration to existing urban areas, predominately Kigali City. This ‘Umujyi’ Policy aims to counteract unplanned habitation and the increase of informal settlements with poor services and unhealthy conditions. Rwanda is still a low urbanized country and has a unique opportunity to set the standards for sustainable urban development that most African countries fail to do at the moment. The next ten years will be crucial if Rwanda will be a success story in this respect or join the others that have flopped.

Likewise, the urban planning should now take advantage of available spatial data in combination with modern analysis and presentation tools, strengthen the participatory process at local government level, practice conscious and applied direction of public (and private) efforts to develop district centres into urban growth points. In order to make it possible to design a modular alternative of sustainable urban development.’
For assessing LUP preparation and a first assessment if the existing DPP complies with the Legislation and the NLUDMP a checklist with indicative questions can be answered:

<table>
<thead>
<tr>
<th><strong>Delineation:</strong></th>
<th>Is it in compliance with the one found in the NLUDMP? If not, what are the rationales behind the delineation found in the present DPP?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Binding Directives:</strong></td>
<td>Has the DPP observed and analyzed the Binding directives found in the NLUDMP? If yes: have the directives been adhered to?</td>
</tr>
<tr>
<td><strong>Environment:</strong></td>
<td>Has the DDP respected the Directives for Areas and Hubs of National Interest? Have environmental considerations considered in preparing the land use plan; Has Strategic Environmental Assessment (SEA) study conducted and applied to key development zones for various land uses and/or projects planned to be developed within the delineated these zones?</td>
</tr>
<tr>
<td><strong>Mixed zoning:</strong></td>
<td>Is mixed zoning found in the DPP? If yes: how great share of the total land use area assigned for residential?</td>
</tr>
<tr>
<td><strong>Mixed (Income) Housing:</strong></td>
<td>Is mixed housing found in the DPP? If yes: how great share of the total land use area assigned for Low, Medium and High Income Groups?</td>
</tr>
<tr>
<td><strong>High density:</strong></td>
<td>Is this planning principle practiced in the DPP?</td>
</tr>
<tr>
<td><strong>Multi-family:</strong></td>
<td>Is this planning principle practiced in the DPP?</td>
</tr>
<tr>
<td><strong>Integrated land use:</strong></td>
<td>Is this planning principle practiced in the DPP?</td>
</tr>
<tr>
<td><strong>Sustainable urban node:</strong></td>
<td>Has the DPP observed the requirement of a functioning and sustainable urban node in the preparation? (See template checklist)</td>
</tr>
<tr>
<td><strong>Planning Process:</strong></td>
<td>Have all steps respected during preparation of the LUP?</td>
</tr>
<tr>
<td><strong>Transparency:</strong></td>
<td>Has the district been supplied with all plan documentation inclusive of GIS data by the consultant in order to be able to manage the DPP for the future?</td>
</tr>
</tbody>
</table>
APPENDIX IV: Flow Chart of Environmental Planning

1. Is there a need for land uses of such types and scales? (Yes/No)
   - Yes: Identify appropriate environmental concerns for particular land uses

2. Are the land uses environmental facilities? (Yes/No)
   - No: Ensure adequate provision of suitable land and access

3. Are the land uses in conflict with the environmental factors influencing the development area? (Yes/No)
   - No: Identify adjoining incompatible uses in the same development area
   - Yes: Are there alternative sites? (Yes/No)
     - Yes: Consider alternative sites
     - No: Can the conflict be resolved or can appropriate development controls be imposed?

4. Is it necessary to put the incompatible uses in the same development area? (Yes/No)
   - Yes: Apply environmental standards and guidelines to the generation and evaluation of land use layout options

5. Can the adverse impacts be limited to acceptable levels through proper land use zoning and site layout? (Yes/No)
   - Yes: Environmentally acceptable land use plan

6. Is it feasible to impose development restrictions and/or control measures to achieve required standards? (Yes/No)
   - No: Consider alternative development options, trade-offs, and their implications
   - Yes: Environmentally acceptable land use plan

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