

**REPUBLIC OF RWANDA**



**MINISTRY OF INFRASTRUCTURE**

# **Environmental & Social Management Framework**

**Development of Urban Infrastructure in six Secondary Cities of  
Rubavu, Rusizi, Musanze, Muhanga, Huye and Nyagatare of Rwanda,  
and the City of Kigali**

**Final Report**

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## ACRONYMS

AADT	Annual Average Daily Traffic
CEP	Contractor's Environmental Plan
DD	Detailed Design
DC	Design Consultants
DWQ	Drinking Water Quality
EA	Environmental Assessment
EIA	Environmental Impact Assessment
EMF	Environment Management Framework
EMP	Environmental Management Plan
EMS	Environmental Management System
EMU	Environmental Management Unit
FEA	Final Environmental Approval
GEMM	General Environmental Mitigation Measures
GoR	Government of Rwanda
HSE	Health, Safety and Environment
IDA	International Development Association
IFIs	International Financing Institutions
LEP	Law on Environmental Protection
LODA	Local Development Agency
MININFRA	Ministry of Infrastructure
MINIRENA	Ministry of Natural Resources
MS	Management Support Consultants
NGOs	Non-Government Organizations
NPE	National Policy for Environment
OP	Operational Policy
PAPs	Project Affected Persons
PBMC	Performance-Based Maintenance Contract
PC	Public Consultations
PMU	Project Management Unit
PPE	Implementing Personnel Protective Equipment
PAC	Project Audit Consultant
PSC	Project Supervision Consultant
RE	Resident Engineer
SDGs	Sustainable Development Goals
SE	Site Engineer
SLMP	Safety Labour Management Plan
SSIP	Site Specific Implementation Plan
TCDD	Technical Control of Detailed Design
WB	The World Bank Group
WMP	Waste Management Plan

## EXECUTIVE SUMMARY

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The Ministry of Infrastructure of the Republic of Rwanda (MININFRA) is in an advance stage of preparation of a Government of Rwanda (GoR) and the World Bank funded Urban Infrastructure Development Project in the six secondary cities of Muhanga, Musanze, Huye, Rubavu, Rusizi, Nyagatare, and Agatare area of Nyarugenge District in the City of Kigali in Rwanda. This Environment Management Framework is a study guide for Environment Impact Assessment (EIA) of on the biophysical and socio-cultural systems of proposed subproject sites in the seven Districts of Muhanga, Musanze, Huye, Rubavu, Rusizi, Nyagatare and Nyarugenge so as to inform the statutory requirement and conduct of EIA decisions in lieu of the planned Urban Infrastructure Development Project, and to reveal where specific land-uses may best be practiced and to offer performance standards for maintaining appropriate use of the respective project sites. The Rwanda Urban Development Project (RUDP) seeks to improve the infrastructure in the selected towns so as to stimulate economic growth and subsequent spar increase in employment and better living conditions as a way of addressing the project growth in urban population in Rwanda. Specifically the project seeks to improve the quality and safety on priority urban roads, ensure appropriate and able drainage of the towns, and put in place adequate sanitation as well promote connectivity of commercial areas of towns to markets within and outside of the towns.

Urban Infrastructure Development Project aims to improve the road network, drainage and sanitation of the seven cities, and bring these towns to appreciable standard of infrastructure development of economic growth. The Local Development Agency (LODA) will support the Government of Rwanda (GoR) in the implementation of the first phase of Urban Infrastructure Development Project. The project has four components: Component 1 - Performance Based Grants to Support Infrastructure Investments for Basic Services; Component 2 - Facilitating Local Economic Development in the six secondary cities; Component 3 - Upgrading of the Agatare Informal Settlement in Nyarugenge District of the City of Kigali; and Component 4 - Technical Support for the Implementation of the National Urbanization Strategy including project design, supervision, management and monitoring. The first phase of Urban Infrastructure Development Project is expected to include a number of subprojects with each City undertaking physical (roads, drainage of sanitation) infrastructure works worthy USD 4 million; while the Agatare area in the City of Kigali (which will only be one phase) will have infrastructure works of up to USD 10 million. The project preparation including putting in place Resettlement and Environment and Social Management Frameworks and Resettlement Action Plans, and compensation and resettling of displaced people will be funded by GoR, while the implementation of the prepared projects will be financed by World Bank through LODA and District Local Governments. LODA will host the Project Management Unit, and together with MININFRA, which is the Executing Ministry, and Rwanda Housing Authority, which will provide the needed technical backup to the implementing agencies (the respective Districts), will be responsible for monitoring and supervising for the Urban Infrastructure Development Project.

Among key findings during the EMF development are, first, the identification of the project sites for the respective proposed subprojects in the different cities with some of them prioritized for the first phase of the RUDP. The prioritized subprojects were reviewed and found to fall in Category B according to the World Bank Categorization, requiring that the selected priority subprojects be environmentally screened for EIA development. This formed the basis for the EIA development guidelines within the EMF. The second major finding was that the choice of subprojects for first phase of the RUDP in the six secondary cities covered only roads and drainage subprojects, all of which are already existing infrastructure that only require upgrading, and hence posing limited environmental challenges. The third key findings, was that the implementation of the priority subprojects in the first phase does not affect any ecologically or socially sensitive or protected area,

and no major environmental concerns were identified during the rapid environmental assessment of the project sites for selected priority subprojects. However in the Agatare area safety issues along the primary drainage channels to be rehabilitated under the RUDP were raised, as well as the relative steep terrain areas in a few project sites for implementation of the priority subprojects. These and other basic environmental issues will be critically assessed as part of the EIA process guided by the EMF.

# 1. INTRODUCTION

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## 1.1 Project Description

The Rwanda Urban Development Project (RUDP) for six secondary cities and the City of Kigali (CoK) of Rwanda will include a number of infrastructure activities, such as construction of secondary urban roads, drainage, medium to small scale water and sanitation facilities, small scale solid waste management interventions, street lighting, etc. which will potentially trigger the Bank policies WB OP 4.01 – Environmental Assessment, OP 4.11 – Physical Cultural Resources and OP 4.04 – Natural Habitats. The policy on Natural Habitats may be relevant to the project, as several of the secondary cities are located in proximity to lakes, rivers and wetlands, which may require specific design and/or mitigation measures. World Bank Operation Policy on Involuntary Resettlement OP 4.12 will also be triggered as there is a risk that informal settlement upgrading in secondary cities and Kigali may result in displacement of households and expropriation of land. As part of the World Bank requirement for safeguards to ensure that the project either completely avoids or minimize such negative impacts, the GoR is required to prepare a Environmental Management Framework (EMF).

The Rwanda National Environment Policy (NPE) and Rwanda Environment Management Authority (REMA) EIA guidelines require that the proponent of any development puts in place a policy for management of environment and mitigating of environmental impacts during the implementation, decommissioning and operationalization of the proposed development. Included in this policy is a mandatory EIA development for some projects such as urban infrastructure projects resulting informed prediction of environmental impacts and an Environment Management Plan (EMP) for addressing the identified impacts. In case of RUDP, the Ministry of Infrastructure of the GoR (MININFRA) is required to put in place a policy framework to guide the EIA development for the respective infrastructure subprojects that will provide guidance for the environment management of the different project sites for the RUDP. To achieve this, information that is relevant to the respective project sites has been collected, analyzed, interpreted and developed into a user-friendly decision-support system to inform EIA development and decisions that follow. The key roles of the EMF are to:-

- Provide information that support the compilation of EIA's; enable informed participation by Interested and Affected Parties (IAP's) and inform decisions by authorities
- Identify areas where activities could potentially be excluded from EIA
- Identify areas where additional EIA's may need to be undertaken
- Provide guidelines to inform the decision-making process
- Provide a mechanism to monitor and evaluate the EMF's success

This EMF will clarify both Rwandan and World Bank requirements for and principles on EIA development processes, implementation arrangements for the EMPs, monitoring of the implementation of the EMPs for the respective subprojects by the GoR and the Bank during the development of urban infrastructure in six secondary cities of Rwanda including Rubavu, Rusizi, Musanze, Muhanga, Huye and Nyagatare; and in Agatare Area of Nyarugenge District of the CoK. The EMF includes brief description of the project and project components; a description of the anticipated subproject types and their locations; the programme implementation arrangements; details of the project and project components for which land for resettlement is required; the

principles and objectives governing for EIA developments; a description of the process for preparing and approving EMPs; a description of the implementation process, linking implementation of planned civil works to EMP implementation and monitoring; a description of mechanisms for consultations with, and participation of the citizens in the project sites in the EIA development, and in the EMP implementation and monitoring; and arrangements for monitoring by the implementing agency and or independent monitors.

### **1.1.1. Background to the Project**

With funding from the World Bank, the Government of Rwanda (GoR) through the Ministry of Infrastructure (MININFRA) is in the process of preparing an investment proposal to support the development of six secondary cities of Rwanda including Musanze, Rubavu, Nyagatare, Huye, Rusizi, and Muhanga; as well as development of infrastructure in Agatare areas of Nyarugenge District in the City of Kigali. The proposed investment aims to improve urban management, infrastructure services and local economic development. The key project elements components include:

2. *Performance Based Grants to Support Infrastructure Investments for Basic Services* (including settlement upgrading) in the secondary cities of Rubavu, Rusizi, Musanzi, Muhanga, Huye, and Nyagatare that have been identified in the National Urbanization Strategy to serve as poles of future urban and economic growth. The focus will be on supporting district governments in improving core infrastructure and services in the core urban centers of these six districts. Districts would be provided with grants based on their performance in critical institutional areas such as urban management (including, but not limited to, procurement, financial management, revenue collection, and planning and budgeting).
3. *Facilitating Local Economic Development in the six secondary cities*: Linked to the infrastructure investments, support will be provided to secondary cities in promoting local economic development this could include infrastructure investments to facilitate markets, and technical assistance to district governments in enabling and partnering with the private sector (e.g., through guidance on Public Private Partnership (PPP) arrangements).
4. *Upgrading of the Agatare Informal Settlement in Nyarugenge District of the City of Kigali*. This intervention includes planning, facilitation and implementation of the Agatare neighbourhood upgrading intervention, and is intended to serve as a pilot for testing approaches for community based urban regeneration that can subsequently be scaled up to other parts of Kigali and to secondary towns.
5. *Technical Support for the Implementation of the National Urbanization Strategy*: Targeted capacity building support will be provided to districts and national government agencies working to enable an equitable urbanization process which also promotes economic growth. In the six secondary cities the focus will be on (a) improving urban management, spatial planning systems through use of GIS and support to the ongoing effort to revise master plans, as well as enhancing the capacity of cities to plan, develop and execute capital investment plans in view of their long term urbanization trends, (b) supporting the development of a systematic methodology and approach on urban upgrading (e.g., land sharing for housing, community roles in housing development etc.) and for sharing its knowledge between Kigali and other districts, (c) at the national level, support could be provided to national government entities such as RHA to establish an urban observatory, including the systematic collection of data on demand and supply aspects of housing.
6. *Project Management Support*: Support will be provided to the implementing agencies at national level and to the Districts on project management, including for the recruitment of staff as needed (e.g. engineers, financial management, procurement, Social and Environmental Safeguards specialists). The districts may also be provided with technical assistance for

managing and implementing infrastructure works.

### 1.1.2 Project objectives and outputs

The overall objective of the proposed project is to support Rwanda’s urbanization process by delivering basic services that will improve living conditions and promote local economic development. The project is guided by Rwanda’s Urbanisation and Rural Settlement Sector Strategic Plan 2013-18, which appropriately recognizes and calls for the need to ensure socially equitable development and environmental integrity in all urban infrastructure developments. The Sector Strategy promotes the development of secondary cities while creating a network of urban and urbanizing centres. Additional overall urban development guiding principles to be followed in preparing this project are: (a) designs which will encourage densification of the cities, resulting in reduced urban infrastructure and services costs, (b) local economic development must also be taken into consideration in the dialogue with the cities as to investment options, and (c) the investment options must be ranked as well using social inclusive growth as a major criteria.

### 1.1.3 Anticipated subproject types and locations

The following project types with respective purposes and focus have been identified in each of the six secondary cities and the CoK. However, during the Citizen’s Engagement Process some of the sub-projects were eliminated, others decided upon and others pending feasibility assessment thus the prioritization list of projects has not been included pending finalisation of feasibility studies.

Table 1: A summary of subprojects under the RUDP for the first phase

Area	Proposed Projects
Rubavu	<ul style="list-style-type: none"> <li>▪ Five (5) roads subprojects totalling to 3.851km along with associated roadside drainages</li> <li>▪ Five (5) drainage subprojects totalling to 2.031km</li> </ul>
Rusizi	<ul style="list-style-type: none"> <li>▪ Five (5) roads subproject totalling 4.957km with associated roadside drainages.</li> <li>▪ One (01) drainage system totalling to 0.31km</li> </ul>
Musanze	<ul style="list-style-type: none"> <li>▪ Two (2) roads totalling to 2.77Km in length</li> <li>▪ Four (4) Drainage systems totalling to 12.14km plus a one crossing over a gorge created by one of the seasonal volcanic rivers as well as stabilization of the walls of the gullies of the two volcanic rivers in central town area.</li> </ul>
Muhanga	<ul style="list-style-type: none"> <li>▪ Eleven (11) roads totalling to 4.957Km with associated roadside drainage systems</li> <li>▪ Six (6) drainage subprojects totalling to 1.406km</li> </ul>
Huye	<ul style="list-style-type: none"> <li>▪ Five (5) priority roads subprojects totalling to 4.12km to be upgrade from murrum to tarmac with associated drainage systems.</li> <li>▪ One (01) priority drain of 3.86km</li> </ul>
Nyagatare	<ul style="list-style-type: none"> <li>▪ Five (5) road subprojects totalling to 5.77km in distance</li> <li>▪ Four (4) drainage subprojects totalling to 1.604 km</li> </ul>
Agatare informal settlement, Nyarugenge District, CoK	<ul style="list-style-type: none"> <li>▪ Upgrading of informal settlements through improvement in roads and drainage infrastructure services, with roads subprojects totalling to 16.93km (but of varying widths) and drainage subprojects totalling to 2.50km, all together worth USD 10 million.</li> </ul>

#### 1.1.4 Subprojects for which land acquisition and resettlement are required

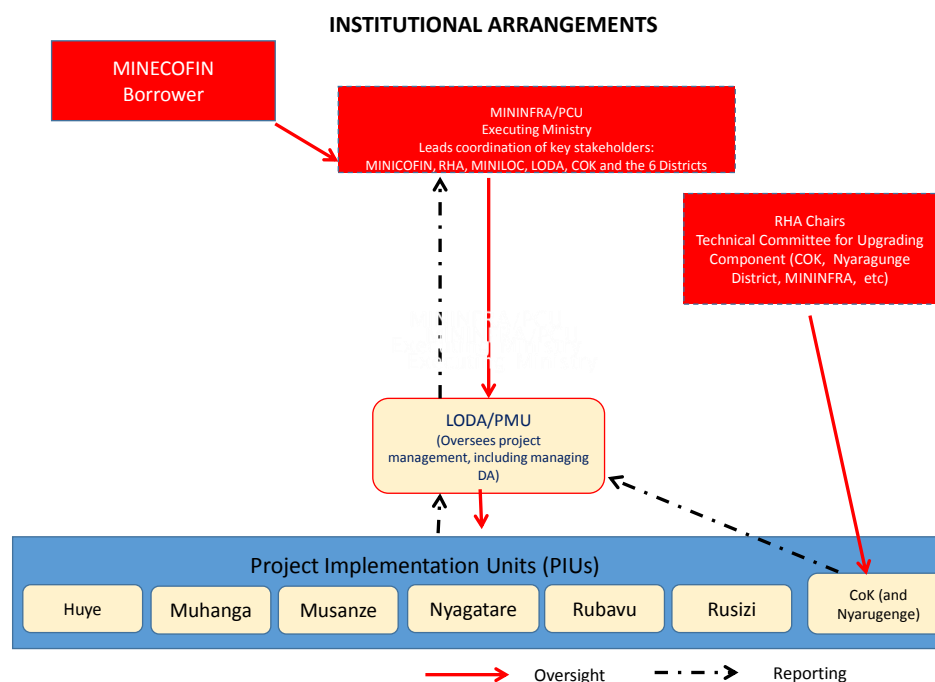
1. **Rubavu:** None of the selected and prioritized subprojects in the first phase will require land acquisition or demolishing of existing property.
2. **Rusizi:** None of the selected priority subprojects in the first phase will lead to acquisition of land or involuntary displacement of people.
3. **Musanze City subprojects:** Adjustments made by local authorities with concurrence of the citizens to refer any priority subproject that will lead to expropriation to the second phase. Therefore none of the selected subprojects for the first phase will lead to expropriation of people's land and or property thereon.
4. **Muhanga :** Similarly, in the City of Muhanga, the localy authorities together with the citizens agreed to pass on any project that required expropriation to the second phase of the RUDP where funds will have planned and availed for expropriation. Therefore no subproject included on the priority list for phase one will require expropriation.
5. **Huye:** Following the World Bank Mission (November 9<sup>th</sup> to 20<sup>th</sup>) visit to the City of Huye subprojects that had been prioritized **for the first phase**, a revision has been suggested to drop one of the earlier roads subproject in the higher end part of the city, and replace it with one serving many more people and going through an economically lower end of the city. The replacement however may lead to significant expropriation costs and involuntary displacement of 20 to 30 households. This is currently being considered by the City as to the city's ability to compensate the affected persons during the first phase. The RAP has been prepared to incorporate the latest project design (the RAP has been publicly disclosed in Rwanda and Bank Infoshop).
6. **Nyagatare:** In the first phase the focus for the City of Nyagatare will be on majorly roads and the three (3) drainage subprojects. Out of these none of the subprojects implementation will lead to involuntary displacement of people or impact any ecologically sensitive areas.
7. **Agatare informal settlement, Nyarugenge District, CoK:** For purposes of this EMF the planned works and projects for infrastructure development in Agatare area is considered as one subproject. Given that Agatare is heavily settled area there will be some land acquisition and involuntary displacement of people and their property for nearly all proposed roads and footpaths subprojects, and for the primary and secondary drainage channels. However, due to effective citizen engagement and technical planning versatility, the level of involuntary displacement has been significantly reduced to about 42 households from the original envisaged 300 households, that will be involuntarily displaced. Another 218 households will be mostly minimally partially affected with implementation of the respective subprojects. Key environmental issues in Agatare are the steep slopes and safety concerns along the deep and exposed primary drains in the area resulting from years of eroding of the banks. The RAP for the first phase of project implementation has been prepared and publicly disclosed.

#### 1.2 Infrastructure development program implementing arrangements

The RUDP is about enhancing the service delivery in urban sectors of secondary cities and CoK. This project to handle challenges of the secondary cities and the project expansion requires effective coordination among key actors including LODA, RHA, RTDA, RRA, WASSAC together an effective means of citizen engagement in planning, implementation and monitoring of the planned infrastructure. Key aspect of the RUDP will be learning by doing through peer learning, collaboration with private sector in service delivery and economic development, and promoting and ensuring inclusive urbanization.



## 1.2.1 Institutional Arrangements



The Central Government, principally MININFRA, LODA and RHA, will have an oversight role over the implementing agencies which include the Districts of the six secondary cities and Nyarugenge District of the CoK. The oversight will include coordination and monitoring of performance of implementation of the respective subprojects, risk management, monitoring & evaluation and disclosure of information, developing and putting in place performance agreements, and developing and implementing the communication strategy for Urban Development Project. The MININFRA will be the project executing Ministry with the key role of coordinating the implementing agencies (Districts with six secondary cities and CoK) and other key players including relevant Ministries (MINECOFIN, MINALOC, MINIRENA, MINICOM), Provincial Administrations with the concerned Districts, RGB, RHA, RTDA, LODA, WASSAC, RRA, REMA & RDB among others.

LODA will be responsible for management of the funds, and will host the Project Management Unit (PMU). LODA will also manage and oversee the implementation of the subprojects by the beneficiary Districts and CoK. The project implementing agencies will include the Districts of the six secondary cities and Nyarugenge District of the CoK. The roles of the implementing agencies will include:

- Contracting and implementing physical works, according to agreed procurement procedures
- Managing sub accounts (SOEs etc) according to agreed FM arrangements
- Providing quarterly financial reports on physical and financial progress
- Environmental and Social Safeguards Implementation
- Informing and engaging citizens
- Ensuring availability of district officers

Under each District the Executive Secretary will be directly responsible for effective implementation of the project. Implementing agencies will also be directly responsible for the following activities in preparation of the project:

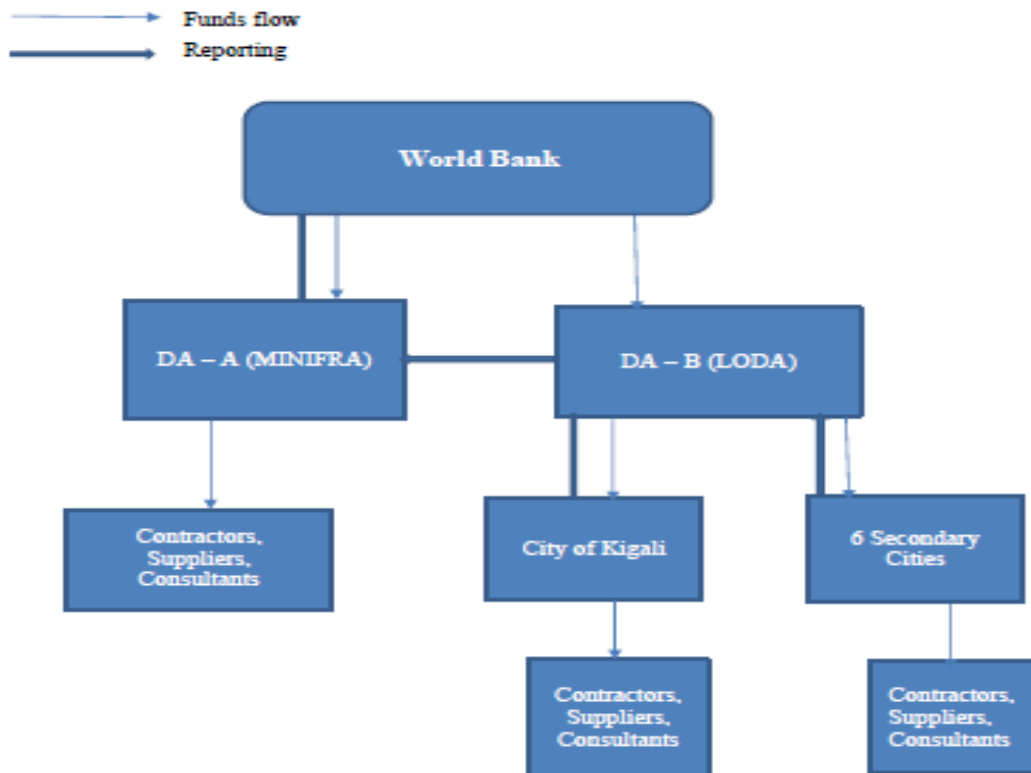
- Review investment priorities identified by Feasibility Study Consultants
- Consult locally – CSO, private sector, communities etc
- Confirm selection of subprojects by 23rd of October
- Collaborate closely with consultants preparing the project (FS & Safeguards consultants)
- Disclose executed budget for 2014/2015 by December 2015

### 1.2.2 Implementing support from LODA

- Single Project Implementation Unit (Municipal Engineer/Coordinator, Financial Management Specialist, Social and Environmental Safeguards)
- Capacity and Implementation Support Team
- Construction Supervision Consultants

### 1.2.3 Funding and Funds Management

Funding of the Urban Development Project for the six secondary cities and Nyarugenge District of the CoK, will be provided the Bank and GoR. In this project, as is typical for all dealings of the Bank with GoR, the borrower will be MINECOFIN, however to support decentralization efforts the project funds will be provided to the District through LODA. MININFRA will have a project account for national coordinating activities. The Districts will be responsible for management of the expenditure of the allocated funds. Proposed funds flow scheme is presented below:



**Source:** World Bank Mission

### **1.2.3.1 Funds Allocation Procedure Options**

#### **Phase I allocation:**

All the six Districts will receive same amount of US\$ 4million giving a total initial disbursement of US\$24million; and CoK will receive up to US\$10 million for the Nyarugenge District in respect to the Agatare area infrastructure development.

#### **Phase II allocations:**

Phase II allocation will be based and triggered by performance measurements at the Mid Term Review of the first phase with performance ward options of either fixed amount of say US\$ 5million per District of the undisbursed amount at the MTR, or using allocation of top-up grant using a formula such as phase II allocation equal to base allocation plus top up.

### **1.3 Methodology and Consultation**

The preparation of the EMF was undertaken by the consultant using the following approach and methodology.

#### **1.3.1 Detailed and in-depth literature review**

In the absence of a proper detailed feasibility study report for the proposed projects, the consultant relied on the rapid environmental and social assessment reports that the consultant prepared. A review on the existing baseline information and literature material was undertaken and helped in gaining a further and deeper understanding of the project. The consultant undertook detailed review and analysis of the national relevant legislations, policies and guidelines including the World Bank Safeguards Policies, international conventions related to this project and other relevant documents.

#### **1.3.2 Field Visits and Initial Environmental/Social Assessment**

The consultant made visits to the already identified sub-projects project sites Rubavu, Rusizi, Musanze, Muhanga, Huye, Nyagatare, Nyarugenge District, CoK (Agatare informal settlement)) in order to familiarize with the issues on the ground and appreciate the concerns. An Initial Environmental and Social Assessment was undertaken and Rapid Assessment Reports prepared.

#### **1.3.3 Citizens Engagement and Stakeholder Meetings**

Various discussions / meetings were held with the LODA and MINAGRI staff, World Bank Country office staff and various Local Government Officials as well as Citizen Engagements at Districts. These discussions were very insightful in understanding the issues and are the basis for most of the measures contained in this EMF.

#### **1.3.4 Preparation of EMF**

Preparation of the EMF involved:

- a) Collation of baseline data on the environmental conditions of the project area;
- b) Identification of positive and negative environmental and social impacts;
- c) Identification of environmental and social mitigation measures;
- d) Preparation of screening procedures to be used while screening subproject proposals; and
- e) Formulation of environmental and social monitoring plans

## 2. ENVIRONMENTAL AND SOCIAL BASELINE

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This section describes the overall baseline condition of Rwanda in terms of bio-physical environment, as well as the socio-economic and cultural attributes.

### 2.1 Physical Environment

Rwanda is a mountainous landlocked country, located in Central Africa, at latitude 2.00 S and longitude 30.00 E, bordered to its south by Burundi for about 290km, Tanzania to its east for 217 km, Uganda to its north for 169km and the Democratic Republic of Congo (DRC, formerly Zaire) to its west for 217 km. Rwanda has a total surface area of 26, 338 sq. km of which the total land area is 24, 948 sq. km and 1, 390 sq. km is water. Rwanda can be divided into six topographical regions which are:

- From west to east are the narrow Great Rift Valley, which slopes sharply to Lake Kivu
- The Volcanic Virunga Mountains, whose highest peak, the snow capped Mount Karisimbi, towers over the high north western lava plains.
- The steep north-south rise of the Congo – Nile Basins divide, whose width averages 25 km.
- The ridge of the Congo – Nile Basins divide, with an average elevation of 2750m above sea level.
- The central plateaus east of the mountains, which are covered by rolling hills.
- The savannas and swamps of the eastern and south eastern border areas which cover one-tenth of the nations land area and include the vast Kagera National Park.

Most of Rwanda is at least 900m above sea level; the central plains have an average elevation of 1932m, while south-eastern Rwanda has a relative drier climate.

#### 2.1.1 Climate

Rwanda enjoys a tropical temperate climate due to its high altitude. The average annual temperature ranges between 16°C and 20°C, without significant variations. Rainfall is abundant with two main seasons. Winds are generally around 1.3 m/s. In the high regions of the Congo-Nile ridge, average temperatures ranges between 15 and 17°C and the rainfall is abundant. The volcanic region has much lower temperatures that can go below 0°C in some places. In areas with intermediary altitude, average temperatures vary between 19 and 21°C and the average rainfall is around 1000 mm /year. Rainfall is less irregular, and sometimes causes periods of drought. In the lowlands (East and Southeast), temperatures are higher with the highest going beyond 30°C in February and July-August. Rainfall is less abundant in lowlands regions ranging between 700 to 970 mm/year.

Weather in Rwandan is determined by the rainfall patterns with the climate characterized by four seasons of which two are wet and the other two are dry. However, rainfall is generally well distributed throughout the year. Eastern and South-eastern regions are more affected by prolonged droughts while the northern and western regions (Musanze, Rubavu) experience abundant rainfall (1200 mm) that usually causes erosion, flooding, and landslides.

#### 2.1.2 Topography

The Rwandan topography is hilly and mountainous with an altitude varying between 900 m and 4,519 m. Rwanda is often referred to as the country of a “thousand hills”, because of its numerous highly dissected hills, often with flat peaks and convex slopes, separated by relatively narrow

valleys, with the lowest altitude of 900m at Rusizi River and the highest altitude at Mount Karisimbi 4,519 m. The average altitude is 1,250 m above sea level. The components of that relief are:

- *Congo-Nil Ridge* over laying Lake Kivu with an altitude between 2500 m and 3000 m. It is dominated in the Northwest by the volcanic ranges consisting of five volcanic massifs of which the highest is Karisimbi with 4507 m.
- *The central plateau* presents a relief of hills with an altitude ranging between 1500m and 2000m.
- *The lowlands of the East* are dominated by a depression characterized by hills with more or less round top and 1000 to 1500 m in altitude.
- *The lowlands of the South-West in Bugarama plain* with an altitude of 900 m are part of the tectonic depression of the African Rift Valley.

### **2.1.3 Hydrology**

Rwanda has a relatively big quantity of water with rivers, lakes and wetlands occupying 8% of country's surface area (211,000 ha) of which lakes, rivers and wetlands make up 128000 ha, 7260 ha, 77000 ha respectively.

### **2.1.4 Surface water**

Rwanda has a dense hydrographical network of  $\pm 2$  km/km<sup>2</sup> (length of the superficial flow network by km<sup>2</sup> of surface). The country is divided into two hydrographical basins with a separating line called Congo-Nile Ridge, moving from the North to the South and perpendicular to the volcanic chain, making natural obstacles exchange between the catchments basins of the Northern Kivu and the Southwest of Uganda and those of Rwanda. In the West of that line there is the Congolese basin (33% of the surface of the national territory) that drains 10% of water resources of the country. It comprises rivers Sebeya, Koko, Rusizi, Rubyiro, as outflows of Lake Kivu (102800 ha on the Rwandan side, 473 m of maximum depth), Ruhwa and many other small rivers.

Rwanda's water resources cover a surface area estimated at about 212 000 ha, made of rivers and wetlands; the water of wetlands cover some 77 000 ha, that is 37% of the total surface. Rwanda is divided into two major drainage basins, the Nile to the east and the Congo to the west. The Congo River Basin covers 25 percent of Rwanda and receives 10 percent of the total national rainfall. The rainfall regime has a strong influence on the hydrological regime. The country experiences floods during the long rainy season (March – May) and floods subside during the long dry season (June – September).

The catchment/watershed of these marshlands are the many hills that catch rain water and drains slowly to the lower areas where the marshlands modify the movement of water in the channel network by lowering the peak flow and volume of flood discharges. Ground water in most of these marshlands areas is struck at a depth of 8m. The marshlands provide recharge of the ground water through percolation during water retention time in the area. According to a study by FAO, the total area of marshlands of Rwanda is estimated at about 165 000 ha which are partially exploited depending on their degree of flooding. However, only 4 000 ha of wetland are fully equipped with irrigation and drainage systems and 1 200 ha are partially equipped.

Most rivers originate from the slopes of the Congo-Nile ridge. The two main rivers, namely Nyabarongo and Akanyaru, together with their numerous tributaries form downstream from Lake Rweru, the river Akagera which drains the best part of Rwanda's waters towards the Nile, forming the border with Burundi in the south and Tanzania in the east. Rivers Nyabarongo and Akagera are

closely associated with vast marshes and numerous shallow lakes found along these rivers. The ecology of these ecosystems is very dynamic and complex; the vegetation of marshes and the size of the lakes change continuously with the rainfall and the flow rate of the rivers.

Rwanda has 28 lakes of significant size. Six among the largest are entirely within the national territory: Runhondo, Muhazi, Mugesera, Ihema, Rwanye and Burera. Another three including Rugwero, Cyahoha and Kivu, are shared with neighboring countries. The largest and most spectacular is Lake Kivu, so large as to seem almost like a sea to the landlocked inhabitants. Lake Kivu lies at 1,460m above sea level and is 90 km long (north-south) and 49 km wide (east-west). Lake Kivu has an average depth of 220m, and a maximum depth of 475m with a rough, jagged coast. Lake Kivu is shared between Rwanda and the Democratic Republic of Congo in Western Rwanda at the foot of the Virunga Volcanoes. Great volumes of dissolved methane gases that may be developed as energy sources exist in its deep waters. Lake Kivu drains to the south into Lake Tanganyika by the swiftly descending Rusizi River. The Central Plains are drained by the Nyabugogo, and Akanyaru rivers. Rwanda's eastern border is formed by the Akagera River on its way to Lake Victoria. The rivers and lake cover some 135,000 ha, or 5% of national territory.

### **2.1.5 Quality of water**

In general the pH of surface waters range between 6 and 7.5; and waters in rivers are characterized by high sediment loads attributed to erosion caused by extensive agriculture, mining and activity from the volcanic regions with potential for contamination with organic matter and nutrients, leaked mineral fertilizers, arsenic, lead, mercury, fluoride, iodide and other toxic metalloids and heavy metals. The microbiological pollution is often observed and is a result of domestic wastes and debris carried by storm water into the natural water bodies. Of increasing occurrence is on the lakes is the water hyacinth and other aquatic plants.

### **2.1.6 Wetlands**

Wetlands cover a total area of 164,000 ha or about 6% of the territory, and include a variety of ecosystems, ranging from large, permanently flooded swampy peat-lands to smaller, seasonally flooded wetlands with a more mineral soil. The main swamps are Akanyaru (30,000 ha) on the border with Burundi, Mugesera- Rugwero in the southeast, Kagera swamps along the Tanzania border in the east, Nyabarongo (10,000 ha) and the Rugezi wetlands (5,000 ha) in the north. The wetlands serve as troughs for sediment particles and play an important role in the national water balances by acting as a buffer, thus reducing the maximal flow rates during the rainy season and maintaining a relatively high flow rate during the dry season.

Currently, an estimated 94,000 ha have been brought under agriculture, the large majority of this being spontaneous agriculture with maize, sweet potatoes and beans. In addition, the wetlands are used for a variety of traditional activities including the collection of leaves to make handicrafts, extensive grazing and making of bricks. Wetlands also provide a spawning habitat for fish, and are of great significance for biodiversity conservation. Five wetlands have been described as crucial for the protection of birdlife. These wetlands also support a number of globally threatened species and restricted range species, such as water turtles, crocodiles, snakes, otters and a large variety of water birds including herons, egrets, ducks, warblers and weavers. Some 180 bird species have been identified in the wetland habitats of Rwanda, including 6 European migrant birds.

### **2.1.7 Underground water**

The outflow of the underground renewable water resource is estimated at 66 m<sup>3</sup>/s. Out of this, the

22,000 known sources contribute an output of 9 m<sup>3</sup>/s. In general, little information is available on underground resources.

### **2.1.8 Pedology and Soils**

The Rwandan pedology is characterized by six types of soils namely: Soils derived from schistose, sandstones and quartzite formations (50%); Soils derived from granite and gneissic formations (20%); Soils derived from basic intrusive rocks (10%); Soils derived from recent volcanic materials (10%); Soils derived from old volcanic materials (4%); Alluvial and colluvial soils (6%). There is also an assortment of deposits of minerals such as tin, wolfram, Colombo tentelite and gold with the mining sector playing significant role in the national economy and as one of the key drivers of foreign direct investment in the country. Rwanda's soils contain many of the metal compounds found in laterite soils, but are generally lighter, more fertile, more workable, and less problematic to farmers than true laterite soils. There are two sub zones, with vastly different soils. To the northwest and the lower portions of the larger river valleys are very fertile volcanic soils covering approx. 10% of the country. Elsewhere, the largely metamorphic bedrock has produced generally poor quality with fertility varying and depending on extent of erosion and leaching.

About 30% of Rwanda's land is suitable for farming, and another 30% for grazing. Except where the land is seriously eroded or leached by heavy farming, the soils have good humus content and fertility. Intensive food crop production, often on steep slopes, has led to serious soil erosion. Pastureland has also been overgrazed in many areas. Population pressure on the richer lands is sufficiently intense that soil damage, which is due to leaching, erosion, and intensive farming without adequate fertilizer, is an increasingly serious problem.

The over dependence on agriculture, high population density, and rugged mountainous terrain with steep slopes that makes them prone to serious erosion and leakage of nutrients, and being among the least users of mineral fertilizers, combine to deplete the soils of needed nutrients and consequent reduction in agricultural productivity and production. Rates of nutrient depletion range from moderate, 30 to 60 kilograms of NPK5 per hectare per year in the humid forest areas and wetlands to high, above 60 kilograms in the highland areas. It is estimated that in bad years, the difference between nutrient inputs and nutrient losses in Rwanda can be as bad as -136 kilograms of NPK per hectare. Nutrient imbalances are highest where fertilizer use is particularly low and nutrient loss, mainly from soil erosion, is high.

Rwandan soils are naturally fragile. The highland soils are particularly prone to erosion and landslides especially regions of the Congo-Nile ridge, valleys and lowlands (peat lands) as well as highland meadows. The slopes of hills are exposed to erosion notably in the case of clay-sandy or gravelly soils. In the wide water surfaces of eastern regions like Bugesera and Rusizi, the valleys are of vertisols and alluvial types are fertile. The slope slight as they may be, are threatened by erosion due to the weak permeability of soils

## **2.2 Biological Environment**

Rwanda is covered with diverse ecosystems that include mountains, ombrophile forests, gallery forests, savannahs, wet and aquatic zones, wood and agro ecosystems. All these ecosystems have a rich flora and fauna. From the initial environment assessment, the proposed sub projects do not affect any critical natural habitats, as it is implemented in the already urbanized areas.

### **2.2.1 Flora**

Rwanda's remaining natural forests, the Nyungwe Forest, the Gishwati Forest and the Mukara Forest, are highland forests around the volcanoes, have a high degree of biological diversity and rare animal species, such as mountain gorillas, Ruwenzori colobus monkeys and golden chimpanzees. It is estimated that there are 2150 plant species to be found in Rwanda, with around 700 species of these acknowledged to have medicinal value. Towards the east of the country lies the Akagera National Park, the Mutara game reserve forests galleries and wooded savannahs. Population pressures have already drastically reduced the land area of the natural forests of Rwanda from about 30% to presently fewer than 10% in less than a century. The deforestation of Rwanda's remaining forests is also the result of high fuel wood consumption. Heavily populated and cultivated areas adjacent to the natural forest, as well as the recent wars, have resulted in massive deforestation and loss of genetic diversity within Rwanda's natural forest.

Clearance for farming and pasture land has also contributed to the reduction in vegetation cover, as well as harvesting for fuel wood and timber for housing and small scale mining. Production of export crops is also a factor in forest destruction: half the forests around the volcanoes in the north were cleared for pyrethrum plantations in the 1960's, and areas around the Nyungwe were cleared for tea plantations. Preliminary estimates indicate that the protected areas and forest reserves were seriously damaged as a result of recent wars. From an estimated pre-1994 total surface area of 417,000 ha, it is thought that they have been reduced to approximately 226,000 ha. Specifically, the Akagera National Park was reduced to less than one-third of its original size when the Umutara prefecture was created in 1996 for the resettlement of returning refugees. The Gishwati Forest has all but disappeared (from a pre-war estimate of 37,000 ha, only about 2,000 ha now remain).

The *Gishwati forest* that covered 21,000 ha before 1981, consisted of only 600 ha in 2002. The natural forest of *Mukura* that stretches on 3,000 ha in 1960 covered only 800 ha in 2002. Regarding tree species and altitude, it is similar to that of *Gishwati* (2000~3000 m). Relict forests and savannahs in the East are located around the Akagera Park and have a variety of endemic and rare species whose majority is used in traditional medicine. *Gallery forests* accommodate an important biodiversity with endemic and rare species. That is for instance the case of the *Blighia unijugata*, *Grewia forbesi*, *Rhus vulgaris*, *Pterygota mildbraedii* and *Ficus sp.*

### 2.2.2 Fauna

The dense high altitude forests of Volcanoes National Park is home to about half (320) of the World's remaining population (650) of Mountain Gorillas. Mountain gorillas eat large amounts of vegetation from more than 70 different plant species and spend about 30% of each day foraging for food. They consume roots, leaves, stems of herbs, vines from trees, shrub-sized plants, wild celery, gallium, vines, berries, barks and bamboo shoots. Among the 12 species of primates in the Nyungwe National Park, are the black and white Colobus monkeys that wonder around in huge troupes, some of which are made up of over 300 agile individuals. There are also known to be 275 species of birds in the Nyungwe. In the Akagera National Park is the largest variety of wildlife species that include Buffalo, zebras, antelope, warthogs, chimpanzees, lions, elephants, rhinoceros, hippopotamus, as well as the rare species – such as the giant pangolin, or anteater. The main threat they face is the destruction of their habitats and poaching.

Rwanda as a whole is known for its rich variety of flora is accompanied by an equal variety of fauna, including several species of birds and primates. The country has more than 275 species of birds, 24 of which are endemic to Albert Rift. Thirteen types of primates have been identified, representing fifth of Africa's primate species among which is the most threatened. Most of these species are concentrated in large wetlands of (Kagera, Kamiranzovu Rugezi, and Rweru-Mugesera) and protected areas of Nyungwe and Akagera.



## **3. POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK FOR RWANDA**

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### **3.1 Introduction**

The Environmental Management Framework (EMF) aims to identify the range of required environmental management measures that need to be taken during the planning, design, implementation and operation phases of Urban Infrastructure for Roads, Drainage and Sanitation facilities, in order to ensure compliance with the national and WB requirements. EMF provides general policies, guidelines, codes of practice and procedures to be integrated into the implementation of the Project. It defines the steps, processes, and procedures for screening, alternative analysis, assessment, monitoring and management of the environmentally-related issues. In addition, EMF presents overview of environmental policies and legal regime of Rwanda and WB safeguard policies; includes institutional and capacity assessment related to environmental management; and describes the principles, objectives and approach to be followed while designing the site-specific environmental mitigation measures. A generic sample environmental mitigation and environmental monitoring plans are included in the document as annexes.

The EMF is intended to be used as a practical tool during program formulation, design, implementation, and monitoring of Urban Infrastructure Development related activities. The project will include a number of infrastructure activities, such as construction of secondary urban roads, drainage, medium to small scale water and sanitation facilities, small scale solid waste management interventions, street lighting, etc. which will potentially trigger WB OP 4.01 – Environmental Assessment, OP 4.11 – Physical Cultural Resources and OP 4.04 – Natural Habitats. As part of the World Bank requirement for safeguards to ensure that the project either completely avoids or minimize such negative impacts, the GoR will have to prepare an Environmental Management Framework (EMF) to describe the potential environmental and social impacts, develop a screening mechanism and inform preparation of EIAs and EMPs for RUDP subprojects, once final subproject design becomes available.

### **3.2 Legal and Institutional Framework for EMF**

The Republic of Rwanda has developed policy and strategies; legal instruments and institutional framework for environmental protection and conservation. The strategies and action plans that reflect the national priorities for Environmental Natural Resources (ENR) sector that are in line with the Rwanda's second phase Economic Development and Poverty Reduction Strategy (EDPRS II), a medium-term framework for achieving the country's long term development aspirations as embodied in Rwanda Vision 2020, and the Sustainable Development Goals (SDGs) priorities. The environmental policies are prepared by the MINIRENA, and regulated and enforced by the Rwanda Environmental Development Authority (REMA), while the Environmental Impact Assessment (EIA) is reviewed and cleared by Rwanda Development Board (RDB). Rwanda Natural Resources Authority (RNRA) is an authority that leads the management of promotion of natural resources which is composed of land, water, forests, mines and geology. It is entrusted with supervision, monitoring and to ensure the implementation of issues relating to the promotion and protection of natural resources in programs and activities of all national institutions. Since 2003, most of the sectoral legislations on environment and natural resources have been under review, environmental policies and laws have been repealed and new ones enacted in line with the Constitution of 2003. The Republic of Rwanda has acted number of organic law for the protection and conservation of environment. Some of these relevant to the project are:

- a) Sector Guidelines for Environmental Impact Assessment (EIA) for Road Development Project (August, 2009);
- b) Environmental Impact Assessment: Law no 003/2008 and no 004/2008 August 2008; Cabinet Approval in its Session of 14/11/2007 (Pursuant to Organic Law No 04/2005 of 08/04/2005 especially in Article 67, 68, 69 and 70);

Alongside the local efforts, the GoR has signed international protocols for conservation and protection of environment and natural resources. The article 66 of the Environmental Organic Law requires that there be established, at the Provincial, District, Town, Sector and the Cell levels; Committees responsible for conservation and protection of the environment. The organization, functioning and their responsibilities would be determined by Prime Minister’s Order. The executive committee of the District is responsible to initiate the expropriation and District Council implements the expropriation after considering the decision of the Land Committee (Expropriation law, 2010).

An EIA process in Rwanda includes 5 steps: (i) project application and registration, (ii) screening, scoping and terms of reference, (iii) EIA study and report, (iv) submission of an EIA report and finally (v) decision making. Screening enables categorisation of projects in any one category out of three according to their Impact Level (IL). As per World Bank environmental assessment category RUDP falls in Category B.

### 3.2.1 Legal basis for development of EMF

Environmental legislation in Rwanda has several laws and regulations and the majority of these are harmonized with regional and international protocols on environment management and protection. In the juridical system of the Republic of Rwanda, the Environmental Impact Assessment procedure is regulated by the Ministerial Order N° 003/2008 of 15/08/2008; whereas the *Ministerial Order* N°004/2008 of 15/08/2008 establishes the list of works, activities *and* projects *that are required to undertake a mandatory* EIA. This list includes physical infrastructure *activities*. Environmental Safeguard Policies of the World Bank relevant for Urban Infrastructure Development Project are: OP/BP 4.01 Environmental Assessment; OP/BP 4.04 Natural Habitats; OP/BP 4.11 Physical Cultural Resources; OP/BP 4.12 Involuntary Resettlement.

Table 2: Legal framework for Environmental Protection and Management in Rwanda

<p>The Constitution of the Republic of Rwanda, 2003</p>	<p>The Constitution of the Republic of Rwanda as promulgated in 2003 makes clear the requirement for equitable and participatory development for all citizens of the country, and makes quality and healthy environment as a basic right with every citizen required to protect, safeguard and promote a healthy environment. In this regard there are principally two articles among other provisions that are basis for environment regulatory framework as detailed below:</p> <ul style="list-style-type: none"> <li>• Article 45 of the constitution states that all citizens have the right to participate in government of the country, whether directly or through freely chosen representatives in accordance with the law. All citizens have the right of equal access to public service in accordance with their competence and abilities.</li> <li>• Article 49 states that every citizen is entitled to a healthy and satisfying environment. Every person has the duty to protect, safeguard and promote the environment. The state shall protect the environment. The law determines the modalities for protecting, safeguarding and promoting the environment.</li> </ul>
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<p>Law on Environmental Protection - Organic Law n° 08/2005 of 08/04/2005</p>	<p>The Law on Environment Protection sets the modalities for protection, conservation and promotion of the environment in Rwanda. The law gives right to every natural or legal person in Rwanda to live in a healthy and balanced environment while obligating each and every citizen to contribute individually or collectively to safeguard country's natural, historical and socio-cultural heritage. The framework of the law on the protection and management of natural resources centers on avoiding and reducing the disastrous consequences on environment. It measures result from an environmental evaluation of policies, programs and projects, aimed at preventing the consequences of such activities. It provides for a right to a healthy and productive life in harmony with nature and to equitably meet the needs of the present and future generation.</p>
<p>Ministerial Order determining the length of land on shores of lakes and rivers transferred to public property - N° 007/16.01 of 15/07/2010</p>	<p>This law sets the boundary for development and settlement activities next to water bodies. This Order aims at setting aside the length of land on shores of lakes and rivers affected in the public domain for environmental protection. The land within a distance of fifty (50) meters from the lakeshore is public property. The land within a distance of ten (10) and five (5) meters from the shore of big rivers and small rivers respectively is public property. The length set is calculated beginning from the furthest line reached by water depending on successive flooding record; and such land is statutorily regarded as a protected area and not is allowed to erect private property on such land. The only activities aimed at protecting the water bodies are permitted in these protected areas. Specifically the following are protected: dumping solid wastes; and dumping liquid wastes.</p> <p>Additional relevant laws in ensuring environmental quality and sustainable resource utilization in regards to the proposed subprojects include:</p> <ul style="list-style-type: none"> <li>▪ Law and statutory guidelines on Environmental Impact Assessment</li> <li>▪ The Law on Waste Management</li> <li>▪ The Law on Protection against Environmental Noise</li> <li>▪ The Law on natural water resources and discharges/effluents</li> <li>▪ The Law and guidelines on Occupational Safety and Health</li> <li>▪ Law N° 43/2013 of 16/06/2013 governing land in Rwanda</li> <li>▪ Law N° 13/2014 of 20/05/2014 on mining and quarry operations</li> <li>▪ Law N°47bis/2013 of 28/06/2013determining the management and utilization of forests in Rwanda</li> <li>▪ Ministerial Order N° 001/16.01 of 03/01/2012 on explosives used in mining, quarrying and infrastructure activities</li> <li>▪ Law N°55/2011 of 14/12/2011governing roads in Rwanda</li> <li>▪ Ministerial Order N°008/MINIRENA/2015 of 18/06/2015 establishing a list of protected trees</li> <li>▪ Law N° 32/2015 of 11/06/2015 relating to expropriation in the public interest</li> <li>▪ Law N° 70/2013 of 02/09/2013 governing biodiversity in Rwanda</li> <li>▪ Ministerial Order N°003/16.01 of 15/07/2010 preventing activities that pollute the atmosphere</li> <li>▪ Prime Minister's Instructions N° 005/03 of 27/12/2013 preventing air pollution caused by vehicular emissions and machines using petroleum products in Rwanda</li> </ul>
<p>Law N° 32/2015 of</p>	<p>The Expropriation Law provides for public dissemination on the importance of</p>

11/06/2015 Relating to Expropriation in the Public Interest	<p>the project to be established and the need for expropriation. Article 12 of the Expropriation Law stipulates that the relevant Land Committee, after receiving the request for expropriation, shall examine the basis of that project proposal. In case it approves the basis of the project proposal, the relevant Land Committee shall request, in writing, the District authorities concerned to convene a consultative meeting of the population where the land is located, at least within a period of thirty (30) days after receipt of the application for expropriation, and indicating the date, time and the venue where the meeting is to be held. The relevant Land Committee shall take a decision within a period of at least fifteen (15) days after the consultative meeting with the population.</p> <p>Article 3 stipulates that it is only the Government that shall order expropriation in the public interest, and must be done with prior and fair compensation. The law also bars anybody from interfering of stopping expropriation "on pretext of self-centred interests". Accordingly Article 3 provides for any underground or surface activity carried out with in public interest on any land but with due and fair compensation to the land owner. Article 4 requires that any project, at any level, which intends to carry out acts of expropriation in the public interest, must budget and provide funding for valuation of the property of the person to be expropriated and for fair compensation.</p>
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### 3.2.2 Relevant Government Policies, Strategies and Guidelines

Relevant policies, strategies and guidelines for the government of Rwanda relevant to EMF are presented below:

Vision 2020	<p>Environment protection and management rank among the main pillars of vision 2020. By 2020, the Government intends to have built a nation where pressure on natural resources mainly lands, water, biomass; biodiversity will have reasonably been decreased and the pollution process and environmental degradation reversed. The management and protection of these resources and environment are more rational and strictly under control in order to preserve and conserve for the future generations a basic heritage which is likely to ensure sustainable development.</p> <p>To achieve these objectives, Rwanda will ensure: 1) that the environment issue is integrated into all education, sensitisation, and development policies and programmes as well as in all decision-making processes, 2) the promotion of grassroots' communities participation with more involvement of women and the youth in environment protection and management; 3) that the precaution principle is set up to alleviate negative effects of socio-economic activities to our environment; 4) a diversification of energy sources that will be made available to the population to decrease pressure on biomass; 5) that the "polluter-pays" principle as well as preventive and penal measures are set up to safeguard the environment; 6) that a study on environmental impact be conducted for any development project and programme; 7) the planning of industrial sites establishment and control of their effects on environment and the population; 8) the promotion of more environment friendly transport, stocking and industrial products and waste</p>
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	<p>elimination technologies; 9) regulations relating to mine exploitation and mine discharge treatment are applied; 10) rehabilitation of former quarry sites; 11) that the Bureau of Standards for local and imported products is strengthened; 12) a statistic database on natural resources and environment and a quick alert system to mitigate anticipate natural disasters are set up and that a scheme for victims of a natural calamity is created; 13) that Rwanda Environment Management Authority (REMA) is set up and supported, (14) the cooperation with other countries and international institutions in the area of environment protection and management.</p> <p>Public institutions should sensitize and urge the private sector, civil society, donors and grassroots' communities to efficiently contribute to natural resources management and environment protection. The implementation of laws and regulations, adoption and dissemination of environment friendly technologies will constitute a big priority for both central and local Governments.</p>
<p>Rwanda Environmental Policy</p>	<p>The overall objective of the Environmental Policy is the improvement of man's wellbeing, the judicious utilization of natural resources and the protection and rational management of ecosystems for a sustainable and fair development. The policy seeks to achieve this through improved health and quality of life for every citizen and promotion of sustainable socio-economic development through a rational management and utilization of resources and Environment, integrating Environmental aspects into all the development policies, planning and in all activities carried out at the national, provincial and local level, with the full participation of the population, conservation, preserve and restoration of ecosystems and maintenance of ecological and systems functions. With reference to the National Policy on Environment (NPE) in Rwanda, as of November 2003, to ensure a sustainable environment protection and management, the following principles mention among others that were adopted:</p> <ul style="list-style-type: none"> <li>▪ It is every person's right to live in a safe and stable environment, but on the other hand, they must keep it salubrious,</li> <li>▪ The national economic growth must be based on rational use of resources and take into account environmental dimensions,</li> <li>▪ Active and effective participation of the whole population for environment protection and management,</li> <li>▪ A special emphasis must be laid on environmental education and sensitisation programme at all levels with more involvement of women and the youth,</li> <li>▪ Environmental impact is to be analysed while conducting studies of development projects.</li> </ul> <p>As regards natural resources management (lands and water), the NPE proposes among others:</p> <ul style="list-style-type: none"> <li>▪ To ensure the preservation and protection of soils against any form of degradation,</li> <li>▪ To ensure that a prior study of environmental impact which underlines costs and benefits from slopes and underlying ecosystems protection is conducted for any development projects</li> <li>▪ To encourage programmes of rainwater collection, stocking and use.</li> </ul>

	<p>With regard to health and sanitation, the NPE proposes among others:</p> <ul style="list-style-type: none"> <li>▪ Setting up of a system of waste collection, transport, disposal and elimination,</li> <li>▪ Establishing of norms for zone protection between dumps, human buildings and water sources,</li> <li>▪ Setting up of an appropriate canal and evacuation system for waste waters and rainwater in towns and resettlement sites "Umudugudu".</li> </ul>
Health Sector Policy	<p>One of the objectives of Rwanda Health Sector Policy is to improve the quality of life and demand for services in the control of disease. The policy identifies the most common illnesses as a result of unhealthy living or working environment. The health sector policy required for the proposed infrastructure subprojects emphasis be put on ensuring quality environment and environmental control of the disease vector especially in marshland areas.</p>
Agriculture Policy	<p>The main objective of Rwanda agricultural policy is to intensify and the transform subsistence agriculture into a market oriented agriculture, and which requires the modern inputs, notably improved seeds and fertilizers. To achieve sustainable agricultural development, the policy emphasizes rational use and environmentally sustainable exploitation of natural resources for food production.</p>
Land Policy	<p>The Rwanda land policy calls for rational use and sound management of national land resources, and that land use be based on established master plans. The policy also provides development of land use plans based on suitability of the areas/lands thus distinguishing the different categories of land and their purpose. On the use and management of hillsides and marshlands, the policy stipulates that marshlands meant for agriculture should be cultivated after adequate planning and Environmental Impact Assessment.</p>
Water and Sanitation Policy	<p>The Water and Sanitation Sector is based on vision 2020, millennium development goals and poverty reduction strategy. The policy provides for decentralization in line with the national decentralization policy, institutional aspects, integrated watershed management, monitoring and assessment and participatory approach to water and sanitation among other sectoral reforms in Rwanda.</p>
National Water Resources Management Policy	<p>The water policy aims at fair and sustainable access to water, improvement of the management of water resources, etc. through reforestation on hillsides and water catchments areas. This policy would seem in conflict with other sector policies including agriculture and marshland development. The policy also calls for a holistic approach to the management of water resources while integrating other policy provisions related to forests, wetlands, agriculture and land.</p>
National Biodiversity Strategy and Action Plan	<p>This strategy defines the objectives and priorities for the conservation and sustainable management of biodiversity. The plan includes hillsides and wetlands and protected areas as some of the areas that need to be conservation. The strategy focuses on five major areas i.e. improved conservation of protected areas and wetlands; sustainable use of biodiversity in natural ecosystems and agro-ecosystems; rational use of biotechnology; development and strengthening of policy, institutional, legal and human resources frameworks; and equitable sharing of benefits derived from the use</p>

	of biological resources. The Action Plan consists of urgent and priority actions which are attainable in a period of five years.
National Poverty Reduction Strategy	The National Poverty Reduction Strategy identifies the transformation of the subsistence agriculture, into a modernized agriculture, which is market oriented as one of the priority sectors. Other priority areas include human development which covers the actions of improving living conditions of the poor, economic infrastructure, governance, development of the private sector and the institutional reinforcement.
Expropriation of land and property in public interest	Law N° 32/2015 of 11/06/2015 Relating to Expropriation in the Public Interest. This Law determines procedures relating to expropriation in the public interest. Expropriation is the taking of private property in the public interest aimed at development, social welfare, security and/or territorial integrity for public good or State interest. An expropriator is a government organ with responsibilities and powers conferred by law to carry out expropriation in public interest. An Act of public interest is defined as an Act of Government, public institution, non-governmental organization, legally accepted associations operating in Rwanda or an individual with a public interest aim. According to Article 5, acts of public interest include roads and railway lines; water pipes and public reservoirs; water sewage and treatment plants; water dams; rainwater pipes built alongside the roads; waste treatment sites; electric lines; gas and oil pipelines and tanks; communication lines; airports and airfields; motor car parks, train stations and ports; biodiversity, cultural and historical reserved areas; facilities meant for security and national sovereignty; hospitals, health centres, dispensaries and other public health related buildings; schools and other related buildings; Government administrative buildings and those of public institutions; public entertainment playgrounds, gardens and buildings; markets; cemeteries; genocide memorial sites; activities to implement land use and development master plans; minerals and other natural resources in the public domain; any other that is determined by an Order of the Minister in charge of lands, on the Minister's own initiative or upon request by relevant public institution.

### 3.2.3 Institutional Arrangement, Mandates and Remits for EMF

The Ministry of Natural Resources (MINIRENA) is the key institution in the Republic of Rwanda responsible for formulation and implementation of the environmental policy matters. The other aspects of environmental management related to road rehabilitation projects are dealt with several other institutions, among which the most prominent are the Rwanda Environment Management Authority (REMA); Rwanda Development Board (RDB); Rwanda Natural Resources Authority (RNRA); Rwanda Utilities Regulatory Agency (RURA) among others. In case of any technically or circumstantially perceived environmental risk or threat, the proprietor is obliged to request from REMA the opinion of the need and, if necessary, the conditions for undertaking EIA. Depending upon the assessment of potential significance of environmental impacts, REMA can decide if there is a need to apply partial or full EIA procedure for the relevant road section. Details on responsibilities and roles of the different institutions are as detailed below:

Table 3: Institutional framework for environment management in Rwanda

MINIRENA	MINIRENA has the responsibility for developing land utilization policies (including surveying, land classification, land laws and land tenure); the development of environmental policies and procedures (including impact assessments), protection of natural resources (water, land, flora, and fauna), environmental
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	<p>legislation, biodiversity, and other environmental aspects informed by the Environment Law among others.</p> <p>Chapter IV of the Organic Law Article 65 clearly calls for the need to subject projects to mandatory Environmental Impact Assessment. Article 65: Further specifies that every project shall be subjected to environmental impact assessment prior to its commencement. It shall be the same for programs, plans and policies likely to affect the environment. Specific details of projects referred to in this Article shall be spelt out by the order of the Minister in charge of environment. Article 66 states that Environmental Impact Assessment (EIA) shall include at least the following:</p> <ul style="list-style-type: none"> <li>▪ A brief description of the project and its variants.</li> <li>▪ Analysis of direct and indirect foreseeable consequences on the environment.</li> <li>▪ Analysis of the initial state of the environment.</li> <li>▪ Measures envisaged reducing, preventing or compensating for the consequences.</li> <li>▪ Reasons for the choice.</li> <li>▪ A summary of requisitions from clause 1 to 5 of this article;</li> <li>▪ A definition of the evaluation and monitoring methods used regularly and environmental indicators before (initial state), during and after implementation of the project or, as the case may be, at the final evaluation stage of the project;</li> <li>▪ A financial evaluation of measures recommended preventing, reducing or compensating for the negative effects of the project on the environment and measures for regular monitoring and control of relevant environmental indicators.</li> </ul>
<p>Rwanda Environment Management Authority</p>	<p>With regards to the management of the bio-physical environment throughout Rwanda, the overall responsibility lies with the Rwanda Environment Management Authority. In November 2003, the Government of Rwanda approved the law establishing the Rwanda Environment Management Authority (REMA). The functions of REMA include;</p> <ul style="list-style-type: none"> <li>▪ To advise the Government on legislative and other measures for the management of the environment or the implementation of relevant international conventions, treaties and agreements in the field of environment, as the case may deem necessary.</li> <li>▪ To take stock and conduct comprehensive environmental audits and investigations, to prepare and publish biannual reports on the state of natural resources in Rwanda.</li> <li>▪ To undertake research, investigations, surveys and such other relevant studies in the field of environment and disseminate the findings.</li> <li>▪ To ensure monitoring and evaluation of development programs in order to control observance of proper safeguards in the planning and execution of all development projects, including those already in existence, that have or are likely to have significant impact on the environment.</li> <li>▪ To participate in the set up of procedures and safeguards for the prevention of accidents and phenomena which may cause environmental degradation and propose remedial measures where accidents and those phenomena occur.</li> <li>▪ To render advice and technical support, where possible, to entities engaged</li> </ul>



	<p>in natural resource management and environmental protection.</p> <ul style="list-style-type: none"> <li>▪ To provide awards and grants aimed at facilitating research and capacity-building in matters of environmental protection.</li> </ul>
Rwanda Development Board	<p>This is a one stop institution bringing together several government bodies in Rwanda focussed on promoting investment in Rwanda. RDB has a department responsible for EIA processes including reviewing all projects EIA reports before approval of the implementation of the projects, a duty that was previously undertaken by REMA.</p>

**3.2.4 International Environment Management obligations**

Rwanda also adheres to several international agreements, treaties and conventions. However although in many cases Rwanda is signatory and in many others the international instruments have been ratified, the required legal and management frameworks/ tools have not yet been appropriated developed. Among other conventions ratified by the Republic of Rwanda, the most important ones which have influenced or influence the national policy with regard to environment are:

- Convention on Biological Diversity of June 10, 1992 ratified on March 18, 1995.
- United Nations Convention on Desertification Control of June 17, 1991 and ratified on October 22, 1998.
- RAMSAR Convention on February 2, 1971 on wetlands

## 4. WORLD BANK ENVIRONMENTAL AND SOCIAL SAFEGUARD POLICIES

### 4.1 Introduction

The World Bank requires that an EMF be prepared whenever the Bank's OP 4.01 is likely to be triggered for any proposed subproject where the exact dimensions and location of the subprojects is not yet defined so as to clarify the EIA development guidelines prior to appraisal of the project. In this regard, this EMF has been prepared to guide the EIA development for the proposed urban infrastructure subprojects and investments under the RUDP in line with the relevant laws of Rwanda and the Environmental and Social Safeguard Policies of the World Bank. In the following sections, the Bank's safeguards policies and their applicability are presented. Review of the proposed subprojects and a rapid assessment of the project sites in the six secondary cities and Agatare area in CoK, it was found the World Bank Safeguard Policies listed below will be triggered. Additional Bank policies may apply while not all policies selected above may apply simultaneously as more elaborate plans and designs for the proposed subprojects are laid down. Therefore, a complete description of the Bank safeguards and their triggers for applicability can be found on the World Bank's official web site [www.worldbank.org](http://www.worldbank.org) and summarized in this chapter, to be used as part of the Environmental Management process. These are described below:

### 4.2 Environmental Assessment (OP4.01, BP 4.01, GP 4.01)

This policy requires Environmental Assessment (EA) of projects proposed for the Bank financing so as to help ensure that the investments made are environmentally sound and sustainable. The EA is seen as a tool to improve decision making, and as a process whose breadth, depth, and type of analysis depend on the nature, scale, and potential environmental impact of the proposed investments under the specific project (RUDP in this case). The EA process takes into account the natural environment (air, water, and land); human health and safety; social aspects (involuntary resettlement, vulnerable peoples, and cultural and archaeological property) and transboundary and global environmental aspects.

The Bank Operational Policy 4.01 requires that the EMF report must be disclosed as a separate and stand alone document by the GoR and the Bank as a condition for bank appraisal. The disclosure should be both in Rwanda where it can be accessed by the general public and local communities and at the Info-shop of the World Bank. It is also a requirement of this policy that the date for disclosure must precede the date for appraisal of the program. The policy also calls for the RUDP to be environmentally screened to determine the extent and type of the EA process required. In this regard, the World Bank system assigns a project to one of three project categories, as defined below:

Table 4: World Bank Categorization of subprojects

Category "A" Projects	This category has mandatory full EIA requirement for the investments planned since the impacts are considered severe and adverse to the environment and likely irreversible and diverse with attributes such as pollutant discharges large enough to cause degradation of air, water, or soil; large-scale physical disturbance of the site or surroundings; as well as including extraction, consumption or conversion of substantial amounts of natural resources; measurable modification of hydrological cycles; use of hazardous materials in more than incidental quantities; and involuntary displacement of people and other significant social disturbances.
Category B	Under Category B an EIA is not always required, but careful consideration through

<p>“B” Projects:</p>	<p>Environmental Screening is required, and if founded necessary a full EIA must be undertaken. Category B projects have impacts that are ‘less significant’ and not as sensitive, numerous, major or diverse. Few, if any, impacts are irreversible, and remedial measures can be more easily designed.’ Typical projects include rehabilitation, maintenance, or upgrades, rather than new construction. Nearly all the RUDP investments are found to follow in Category B.</p>
<p>Category “C” Projects</p>	<p>No EIA or other analysis is required. Category C projects result in negligible or minimal direct disturbance of the physical environment. Typical projects include education, family planning, health, and human resource development.</p>

The RUDP has thus been screened and assigned an EA Category B. This category of projects is defined as follows. Category B projects are likely to have potential adverse environmental impacts on human populations or environmentally important areas – including wetlands, forests, grasslands, and other natural habitats – and are less adverse than those of category A projects. These impacts are site specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for Category A projects. The EA process for category B projects examines the potential negative and positive environmental impacts and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance. Therefore, this EMF sets out to establish the EA process to be undertaken for implementation of project activities in the proposed RUDP when they are being identified and implemented.

The EIA process for RUDP investments will lead to screening of all planned physical facilities and implementation activities, as well as activities in the operational phase of the facilities to be developed, so as to identify any potential adverse impacts as well as the corresponding mitigation measures, for incorporation into the planned activities during and after implementation of the subprojects. These mitigations measures form part of the Environment and Social Management Plan contained within the EIA report for the respective subprojects.

**4.3 Natural Habitats (OP 4.04)**

This Bank Operational Policy recognizes that conservation of natural habitats, like other measures that protect and enhance the environment, is essential for long term sustainable development. The Bank therefore supports the protection, maintenance, and rehabilitation of natural habitats. Natural habitats are land and water areas where (i) the ecosystems biological communities are formed largely by native plant and animal species, and (ii) human activity has not essentially modified the areas primary ecological functions. All natural habitats have important biological, social, economic, and existence value. Therefore, the Bank natural habitats operation policy (OP 4.04) is triggered in all cases where the proposed investments are likely to have potential adverse impacts on Rwanda’s natural habitats including wetlands, underground water sources, open water bodies, and forests. The Bank natural habitats operational policy requires that any activities funded under the RUDP that adversely impacts these ecosystems, must have a successfully mitigation plan so as to maintain the overall balance and integrity of the ecosystems impacted. This requires that RUDP designs appropriate conservation and mitigation measures to remove or reduce adverse impacts on these ecosystems or their functions, keeping such impacts within socially defined limits of acceptable change. Specific measures may depend on the ecological characteristics of the affected ecosystem. Such measures must include provision for monitoring and evaluation to provide feedback on conservation outcomes and to provide guidance for developing or refining appropriate corrective actions. Activities that risk to significantly degrade or convert critical natural habitat will not be funded under the project.

#### **4.4 Physical Cultural Resources - OP/BP 4.11**

Physical cultural resources are defined as movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Their cultural interest may be at the local, provincial or national level, or within the international community. Physical cultural resources are important as sources of valuable scientific and historical information, as assets for economic and social development, and as integral parts of a people's cultural identity and practices. The Bank assists countries to avoid or mitigate adverse impacts on physical cultural resources from development projects that it finances. The borrower addresses impacts on physical cultural resources in projects proposed for Bank financing, as an integral part of the environmental assessment (EA) process. When the project is likely to have adverse impacts on physical cultural resources, the borrower identifies appropriate measures for avoiding or mitigating these impacts as part of the EA process. These measures may range from full site protection to selective mitigation, including salvage and documentation, in cases where a portion or all of the physical cultural resources may be lost.

#### **4.5 Involuntary Resettlement (OP 4.12)**

The objective of the Involuntary Resettlement Operation Policy (OP 4.12) is to avoid, where feasible, or minimize, while exploring all viable alternative project designs, displacement and having to resettle people. This policy is triggered in situations involving involuntary taking of land and involuntary restrictions of access to legally designated parks and protected areas and or socioeconomic places. The policy aims to avoid involuntary resettlement to the extent feasible, or to minimize and mitigate its adverse social and economic impacts. Involuntary Operation Policy (OP 4.12) covers direct economic and social impacts that both result from Bank-assisted investment projects, and are caused by (a) the involuntary taking of land resulting in (i) relocation or loss of shelter; (ii) loss of assets or access to assets, or (iii) loss of income sources or means of livelihood, whether or not the affected persons must move to another location; or (b) the involuntary restriction of access to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons. For project activities that impact people and livelihoods in this way, RUDP will have to comply with the requirements of the disclosed RPF and RAPs to comply with this policy. The Involuntary Resettlement Operational Policy prescribes compensation and other resettlement measures to achieve its objectives and requires that borrowers prepare adequate resettlement planning instruments prior to project appraisal of proposed projects.

OP 4.12 requires the displaced persons and their communities, and any host communities receiving them, are provided timely and relevant information, consulted on resettlement options, and offered opportunities to participate in planning, implementing, and monitoring resettlement. Appropriate and accessible grievance mechanisms are established for these groups. In new resettlement sites or host communities, infrastructure and public services are provided as necessary to improve, restore, or maintain accessibility and levels of service for the displaced persons and host communities.

A separate Resettlement Policy Framework (RPF) has therefore been prepared that establishes standards and procedures for identifying the project affected persons (PAPs), mechanisms and processes for contesting the developed list, valuation of land and property thereon, communication of the processes and results, an elaborate grievance redress mechanism and process, and the preparation of Resettlement Action Plans (RAPs), as required. The RAPs would be prepared by RUDP and its implementing partners. In this case, the World Bank reserves the right to also approve this RAP as a condition for RUDP investments to be financed. This policy would be triggered when a project activity, in the cases mentioned above, for example, causes the involuntary taking of land

and other assets resulting in: a). Relocation or loss of shelter, b). Loss of assets or access to assets, c). Loss of income sources or means of livelihood, whether or not the affected persons must move to another location, d). Loss of land.

#### 4.6 Forests (OP 4.36)

The Forests Operational Policy aims to reduce deforestation, enhance the environmental contribution of forested areas, promote afforestation, reduce poverty, and encourage economic development. The policy recognizes the role forests play in poverty alleviation, economic development, and for providing local as well as global environmental services. Success in establishing sustainable forest conservation and management practices depends not only on changing the behaviour of all critical stakeholders, but also on a wide range of partnerships to accomplish what no country, government agency, donor, or interest group can do alone. The forest strategy suggests three equally important and interdependent pillars to guide future Bank involvement with forests including harnessing the potential of forests to reduce poverty, integrating forests in sustainable economic development, and protecting vital local and global environmental services and forest values. This policy applies to the following types of Bank-financed investment projects: (a) projects that have or may have impacts on the health and quality of forests; (b) projects that affect the rights and welfare of people and their level of dependence upon or interaction with forests; and (c) projects that aim to bring about changes in the management, protection, or utilization of natural forests or plantations, whether they are publicly, privately, or communally owned. Since the RUDP is primarily in the urban areas and that the selected project sites are not on or near forested areas, the Bank’s Operation Policy on forests will not be triggered in the implementation of the RUDP.

#### 4.7 Consultation and Disclosure Requirements (OP 17.50)

This is support decision making tool for the borrower and the Bank that allows for the public to have access to information on the environmental and social aspects of the proposed projects. It is mandated by six safeguard policies that have specific requirements for disclosure including in-country before project appraisal in local language and in English; and at the World Bank INFO – Shop before project appraisal in English where documents can be in draft but must meet the Bank’s standards. Consultation under this operational policy, which is now referred to as citizens’ engagement, is triggered by environmental assessment and involuntary resettlement. It is a two-way process in which beneficiaries provide advice and input to the design of the proposed projects that affect their lives and environment. It promotes dialogue between government, communities, civil society and implementing agencies in regards to all aspects of the project. For category B projects, like those of RUDP, at least one citizen engagement must be undertaken before appraisal – which in the case of RUDP has been conducted across the seven beneficiary cities.

#### 4.8 Activities Triggering World Bank Safeguard Policies

An analysis of World Bank Safeguard Policies that will be triggered under the implementation of the proposed projects is presented below:

Table 5: World Bank Safeguard Policies under RUDP

Safeguard Policy	Triggered	Comment
Environmental Assessment (OP	Yes	All subprojects involve infrastructure development and will automatically trigger EA safeguards. The subprojects concerned

4.01, BP4.01, GP 4.01)		include upgrading of roads from murrum to asphalt, and rehabilitation and construction of drainage channels. This subprojects fall under World Bank category B.
Natural Habitats (OP 4.04, BP 4.04, GP4.04)	Yes	Especially drainage systems that will be set up will be directing the waste and storm water into the natural habitats – mainly wetlands. This is likely to trigger OPs 4.04, BP 4.04 GP 4.04.
Forests (OP4.36, GP 4.36)	No	Construction of roads and drainage infrastructure in only limited situations will likely affect planted trees along the roads and drainages. This require special permission from the urban authorities to fell, and in most cases they are way off the road. As such the WB OP 4.36 & G.P 4.36 will not be triggered.
Involuntary Resettlement (OP 4.12, BP 4.12)	Yes	A number of sub projects including especially in Nyarugenge District of CoK and a few of the roads in the six secondary cities will involve displacement of people and acquisition of land. This is likely to trigger OP 4.12.
Projects on International Waterways (OP BP 7.50)	Likely No	Rusizi and Rubavu Districts, the projects require special designing to limit the impact on international waters of Lake Kivu. Also other road works and drainages are associated with rivers and wetlands that feed into River Akanyaru and Akagera that drain into Lake Victoria and eventually the Nile hence any activity on these tributaries has implication on international water source shared water bodies. This in particular is referred to the Bank for legal interpretation on whether the said operational policies will be triggered given that naturally the water drains in these particular water bodies and implementation of the subprojects will reduce siltation and possible pollution into the said international waters (Lake Kivu & Lake Victoria).
Physical Cultural Resources (OP 4.11)	Yes	The proposed sites could be points where human remains of the genocide are buried and unknown. Such discoveries will require special removal.

#### 4.9 WBG/IFC Environmental, Health and Safety Guidelines

The World Bank Group Environmental, Health and Safety (EHS) Guidelines 2008 as updated from time to time, contain guidelines for environment, health and safety for the development of the infrastructure and other projects. They contain generic and sector specific performance levels and mitigation measures for management of environmental impacts, community health and safety, occupational health and safety, and emissions, that are considered to be achievable in new facilities at reasonable costs using existing technologies. They apply to the project as relevant, and can be found on the website of the International Finance Corporation (which is part of the World Bank Group):

[http://www.ifc.org/wps/wcm/connect/topics\\_ext\\_content/ifc\\_external\\_corporate\\_site/ifc+sustainability/our+approach/risk+management/ehsguidelines](http://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+sustainability/our+approach/risk+management/ehsguidelines)

#### 4.10 Implication of GoR Policies in RUDP – instruction on how to integrate national laws and their requirements with the Project/Bank Requirements

It is a key tenet of the National Social and Economic Development Strategy EDPRS III to foster environmental sustainability and eliminate or curb any negative impacts of any development

undertaken within the framework of National Development. Therefore environmental protection and management are basic requirements for any development project undertaken in Rwanda. Except NPE and Organic Law on Environment Management, all other policies, strategies and legal instruments do not explicitly require any environmental assessment of the Project-related activities. Most of the policies, strategies and legal instruments emphasize the need for environmental consideration along with the project planning and implementation. RUDP according to Rwanda laws is environmental categorized as a Category 2 project, and like the Bank's categorization will have to undergo environmental screening and nearly all cases full EIA. The Project Management Unit (PMU) under LODA will ensure, on a case-by-case basis that the environmental management will be an integral part of the respective subprojects planning, design, implementation, and operation and maintenance (O&M). The PMU and the respective implementing agencies will screen and monitor the environmental issues during infrastructure construction and or rehabilitation and in subsequent operation & maintenance phases and ensure efficient application of environmentally-related measures, as defined in site-specific EMPs.

## **5. ENVIRONMENTAL AND SOCIAL IMPACTS IDENTIFICATION AND MANAGEMENT**

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### **5.1 Introduction**

The Environmental Management System (EMS) establishes the criteria to identify the level of Environmental Assessment (EA) and the processes involved, their sequence to conduct the EA studies for various components/phases of the planned roads and drainage infrastructure works including their legal requirements and implications. Understanding the required level of EA will help the RUDP in assessing the requirements related to needs of the external services to be engaged at planning and design stages and requirements related to the Project Supervision Consultant (PMU) during the project implementation stage. Once the need/justification of a sub-project is finalized based on the engineering parameters (like traffic, economic and financial analysis), the process of Environmental Management System starts. First step in EMS is screening of the project components to ascertain the category of Environmental Assessment required.

The category of EA can be assessed by MININFRA or if desired can be offered to some agency or independent environmental expert. It is important to note though the responsibility for the approval of EA and follow on the implementation of the EMP rests with the implementing agencies not the independent environment expert or consultants. The MININFRA, as the Executing Ministry, has to ensure that all legal rules and regulations set by REMA through Ministerial Order on EIA are adhered to.

### **5.2 General Principles for Environmental Management**

#### **5.2.1 Introduction**

All RUDP sub-projects are classified as Environmental Category B, as there mainly existing roads and or drainages which are all limited in length and will basically involve rehabilitation and upgrading or re-surfacing with asphalt with the possibility of minor alignment changes for safety purposes. It is not envisioned that any roads will be significantly widened or involve opening up of new land to create road ways and drainage channels. This EMF document and three site-specific EMPs were prepared prior to November 2015, modelled on EA and EMPs already implemented by CoK in the Agatare area of Nyarugenge District. The EMF outlines the environmental policy, legal, and administrative framework for undertaking the Project, presents environmental baseline information and potential environmental impacts and includes the range of available mitigation measures that may be adopted, based on each particular situation. The EMF also contains a description of the environmental management system and institutional arrangements to be applied as well as recommendations for capacity building measures especially at the District level as implementing agencies during project implementation in order to ensure environmental sustainability. The EMF includes a generic sample environmental mitigation and environmental monitoring plans.

#### **5.2.2 General responsibilities under Implementing Agencies**

- The implementing agencies/PMU at LODA will be responsible for the environmental compliance monitoring and oversight to ensure overall project environmental compliance. The consultants that would be hired by MININFRA would assist implementing agencies to carry out this mandate.
- Implementing agencies will follow the related government rules (laws, ordinances, acts etc.) and WB Operational Policies and Guidelines. This EMF would serve as a base for ensuring this compliance.



- Implementing agencies will ensure participation of local communities in planning and implementation of sub-projects.
- Implementing agencies will be responsible for obtaining and ensuring Environmental Approvals required from RDB for all RUDP sub-projects for which EIA study is required. All the activities proposed under the project will abide by General Environmental Mitigation Measures (GEMM) prepared under EMF.
- The requirements of EMP, EMF and Rwandan standards will be included in all sub-project's civil works contracts through a set of special environmental clauses included in the Technical Specification of the bidding documents.
- Environmental Management Plan along with EMF will be incorporated in the bid document's work requirements. Penalty clauses for not complying with EMP requirements will be incorporated.

### 5.3 Environmental Assessment Procedure

- For all subprojects Environment Consultant will carry out the environmental screening.
- Implementing agencies will ensure that proper environmental screening will be done by the EIA experts or firm contracted by MININFRA.
- Project Audit Consultant (PAC) and or the implementing agencies will review and clear all screening reports.
- MININFRA will conduct verification of some screening on a sample basis.
- MININFRA and PMU through their Environmental Experts will ensure that environmental considerations are given sufficient attention. To this end, it will carry out preparation of the specific EMPs for all road maintenance subprojects based on screening criterion.
- For each sub-project which is placed within the natural/cultural protected areas, MININFRA will have to obtain all necessary preconditions from relevant institutions, and prepare EIA to be submitted to RDB.
- Implementing agencies will obtain Environmental Clearance from RDB according to the procedure described within the Ministerial Order on EIA.
- Bid documents will be prepared by implementing agencies, and will include site-specific EMPs. The EMP implementation should be done by relevant contractors.
- RUDP works will be supervised by PMU and monitoring should be done by PAC.
- Implementing agencies will ensure that environmental assessment addresses all potential environmental direct and indirect impacts of the sub-project throughout its life: pre-rehabilitation, road rehabilitation and operation stages; and that the specified mitigation measures have been implemented. Subsequent activities related to future infrastructure maintenance will follow GEMM, prepared under EMF.

The Environmental Assessment Process is presented in Table below.

Table 6: Environmental Assessment Steps for Roads and Drainage Infrastructure

<b>Bid Documents for Detailed Design (including EMF)</b>	<b>Implementing Agencies</b>
Environmental Screening and Scoping	Safeguard Consultants (SC)
EMP with Cost Estimate, (and EIA Study if requested by REMA). Environmental Specialist for implementing agencies and WB Safeguard specialist will check and approve EMP documents	SC
Bid Documents for planned infrastructure works (including EMP and EMF)	Implementing agencies
EMP Implementation	Contractor
Supervision	SPIU/implementing

	agencies
Monitoring	SPIU/implementing agencies

### 5.3.1 Bid Documents for Detailed Design

Implementing agencies will prepare the Bid Documents for detailed design. Bid Document will contain provisions related to environmental protection during the detailed design phase, including designer’s obligation to produce site-specific EMP documents for each sub-project. The Safeguards Consultants will be obliged to produce EIA Study if necessary (depending upon the MININFRA’s Decision) and to present it during the public consultation process.

### 5.3.2 Screening and Scoping

#### 5.3.2.1 Screening

Safeguards Consultants working closely with Design Consultants for MININFRA are obliged to perform all environmental screening activities as a process by which the appropriate level and type of EIA will be determined for a given subproject on the basis of its likely environmental impacts. The methodology for screening includes definition of environmental screening category, desk study, reconnaissance survey and literature available.

- i. **Screening Criteria:** SC should note site-specific environmental risks and impacts, land zoning requirements and prepare documentation for environmental license/permit in accordance with procedure described within this EMF.
- ii. **Screening Category:** All RUDP sub-projects are classified as Environmental Category B, Depending on subproject EA Category, they could be additionally divided into “B” or “Low B” Category. Project recognized as “Low B” environmental category requires only EMP, Checklist EMP or application of regulations/standards. Project recognized as “B” environmental category contains all “Low B” requirements, together with the activities which are in detail presented within here.
- iii. **Desk Study:** Purpose of this activity is to collect the secondary information and choose the methodology for carrying out EIA Study (if requested by REMA) and determining responsibilities of EA team members for preparing site-specific Environmental Management Plan. It shall include:
  - Gathering and reviewing existing environmental data (secondary data) relevant to the proposed development, in the form of topo sheets, physical maps, thematic maps showing details of soil type, geology, seismic activity, hydrology etc.
  - Collect all the earlier carried out environmental and engineering studies in project area.
- iv. **Reconnaissance survey – field research:** Purpose of this activity is to collect the first hand information about the project area by verifying the data collected during desk study, assessing the likely impacts, identifying the major/main issues and preparing the methodology for detailed investigation.
- v. **Determining Degree of Impact:** Once all project environmental aspects are identified, the level of impact that may result from each of the activity will be assessed. In assessing the level of impact that an activity may cause, two key elements are considered namely:
- vi. **Consequence:** the resultant impact (positive or negative) of an activity’s interaction with the legal, natural and/or socio-economic environments; the categorization for consequence is presented in Table 7.

- vii. **Likelihood:** the likelihood that an activity will occur. The categorization for likelihood is presented in Table 8.

Table 7: Consequence Categories and Rankings

Consequence Category	Addressed
Significant	Most severe, alternative will be proposed through environmental hazard risk management
Major	Severe, alternative/avoidance will be proposed through environmental hazard risk management
Moderate	Less severe, measures will be proposed to minimize impact
Minor	Less severe, mitigation measures will be proposed
Negligible	Less severe, mitigation and enhancement measures will be prepared if possible
None	No impact, enhancement measures will be proposed if possible
Positive	Positive impact

Table 8: Likelihood Categories and Rankings

Likelihood Category	Definition
Certain	The activity will occur under normal operating conditions.
Very likely	The activity is very likely to occur under normal operating condition.
Likely	The activity is likely to occur at some time under normal operating condition.
Unlikely	The activity is unlikely to but may occur at some time under normal operating condition.
Very unlikely	The activity is very unlikely to occur under normal operating conditions but may occur in exceptional circumstances.

### 5.3.2.2 Scoping

The next step in the EA preparation will be to define RUDP activities and the physical, regulatory and environment of the area in which development will occur. This will be achieved through scoping. Scoping will identify which of the activities has a potential to interact with the environment. Scoping will be conducted early in the EA process so that a focus on the priority issues (i.e. those that have the greatest potential to affect the natural and/or environment) can be established for the rest of the EA process. Key elements/inputs to the scoping exercise will be as follows:

- Gathering and reviewing existing environmental data like atmosphere, climate, topography, congestion area, alternative requirement, land use pattern, hydrology and drainage pattern, major rivers and waterways, religious, cultural and archaeological sites and sensitive areas.
- Identifying project stakeholders; including PAPs, Government and non-government agencies, utility companies, REMA, RDB etc.
- Assemble and review relevant legislative requirements, environmental standards and guidelines (national and international) associated with the proposed development as well as WB Operational Policies and standards.
- Gathering existing information sources and local knowledge;
- Informing stakeholders of the project and its objectives and get input on the EA;
- Identifying the key environmental concerns related to a project and the relative importance of issues;

- Defining/preparing the EA work program, including a plan for public and stakeholder involvement;
- Carrying out monitoring of natural environment including air, water, soil, noise etc.
- Defining the range of project alternatives to be considered.
- Obtaining agreement/consensus on the methods and techniques to be used in EA studies and document preparation;
- Determining/freezing the spatial and temporal boundaries for the EA study.

Focus of scoping will be on the collection and analysis of pertinent data and the assessment of significant environmental attributes. The end result will be a work program which is well focused and cost-effective. The following issues will be addressed through scoping, but will not be limited to:

- To improve the quality of EA information by focusing scientific efforts and EA analysis on truly significant issues;
- To ensure environmental concerns identified and incorporated early in the project planning process, at the same time as cost and design factors are considered;
- To ensure research efforts are not wasted on insignificant issues, rather focused on core issues.
- Reducing the likelihood of overlooking important issues;
- Reducing the chance of prolonged delays and conflicts later in the EA process by engaging stakeholders in a constructive participatory process early in the EA process.

### 5.3.3 Environmental Management Plans, Request for Decision about Need for EIA and EIA Study

Design Consultants and or MININFRA Safeguards Consultants are obliged to produce Request for opinion regarding necessity of EIA procedure for each sub-project which is found to be completely or partially placed adjacent or within the nature/cultural protected area. DC will provide this Request to implementing agencies together with other relevant project documentation, which mandatory include preconditions of institutions in charge of the environmental protection. Based on the extent of environmental impact obtained from the environmental screening, the decision for further environment impact assessment will be made. If RDB decide that full EIA procedure is needed for the particular sub-project – Safeguards Consultants will prepare EIA Study and complete public disclosure process (as outline herein). The EIA Study should include, but not be limited to:

- **Project Description:** description of the existing as well as proposed scenario in respect to right of way, planned road and or drainage works, cross drainage structures, community facilities, traffic projections etc.
- **Environmental Regulatory Framework:** presents the legal and administrative framework of the GoR and WB environmental guidelines. This section should present various approvals applicable for the project at RDB.
- **Analysis of Alternatives** to be carried out during feasibility stage, covered in the Environmental screening and scoping report, and the approved alternative to be discussed in detail along with environmental attributes under impact.
- **Baseline Environmental Status,** the existing environmental conditions, by conducting a recognizance survey along with collection of secondary information. Primary data for various environmental parameters are to be generated using suitable monitoring devises.
- **Environmental Impacts,** addressing all the anticipated impacts on the physical and social environment of the subproject. The quanta of all the impacts on natural environment and social/cultural environment are presented in the forming Table 6.
- **Mitigation Measures**

- **Monitoring Plan**
- **Non-Technical Summary**

According to the Rwandan Law on EIA, public consultations or citizen engagements must be performed for each subproject covered with the EIA Study and/or EMP. The consultation is to be carried out in order to hear and record reactions of the local population and the project affected people, to record their views on the impacts caused and the suggested remedies to be adopted. For each RUDP sub-project the Safeguards Consultants are obliged to produce a site-specific EMP document. EMP is an Action Plan that indicates which of the EA report recommendations and alternatives will actually be adopted and implemented. EMP could be produced as a part of Detailed Design or as a free-standing document. It will ensure incorporation of the relevant environmental factors into the overall project design and will identify linkages to other safeguard policies relating to the project. EMP also ensures that the environmental mitigation measures and their practical monitoring become a legal responsibility of implementing agencies.

Recommended content of EMP document is:

- Executive Summary
- Project description
- Policy, legal and administrative framework
- Baseline conditions assessed during route survey
- Summary of predicted adverse environmental and social impacts related to project;
- Description of mitigation measures and plan
- Description of monitoring activities and plan
- Institutional arrangements and reporting procedures
- Stakeholder engagement – information disclosure, public consultations and participation

## **5.4 Determination of Potential Environment and Social Impacts**

### **5.4.1 Envisaged Positive Impacts**

The key positive impacts from RUDP include:

- i. Improved connectivity in the cities 1) Increased economic/commercial activity 2) improved movement of goods and services 3) creation of economic opportunities 4) better access to social and economic facilities in the cities 5) appreciation of the value of land and property thereon.
- ii. Environmental Protection 1) Control of flooding 2) Improvement in sanitation 3) Management of garbage and faecal waste 4) improved occupation and health
- iii. Poverty Alleviation 1) Increased income generating activities
- iv. Employment creation for city dwellers
- v. Increased migration from rural to urban areas due to congested rural areas thus land fragmentation and low productivity.

Highlighted in summary below are the potential adverse impacts that could occur when the planned investments of the RUDP are undertaken. An EMP has been prepared and details the potential adverse impacts for each of the proposed activities.

### **5.4.2 Project Activities and Anticipated Adverse Impacts**

The critical project activities that could potentially lead to adverse impacts mentioned below include:

- i. Clearing of the proposed project sites for construction activities will be undertake and will involve clearing and cutting down of crops, vegetation, trees and structures that could be in the different project sites.
- ii. Excavation works for the rehabilitation and construction of the different roads and drainage channels
- iii. Quarrying and mining for stones and sand for road and drainage construction works
- iv. Establishment of construction camps for the dam construction activities
- v. Disposal/dumping of rubble and other waste generated in clearing and excavation of project sites.
- vi. Water quality and quantity degradation (both surface & ground water)
- vii. Soil erosion and quality deterioration
- viii. Loss of biodiversity, Ecological imbalances and Ecosystems disturbance
- ix. Surface water sedimentation
- x. Damage to aquatic habitats
- xi. Sanitation and waste management problems
- xii. Pathogen breeding ground
- xiii. Loss of protected trees
- xiv. Borrow PMU impacts
- xv. Downstream flooding and water use denial

#### **5.4.3 Socio-cultural and Economic Impacts**

- i. Displacement of local inhabitants
- ii. Loss of businesses and livelihoods
- iii. Social disharmony and loss of social cohesion
- iv. Grievances and conflicts associated with expropriation
- v. Damage to property
- vi. Water use conflicts
- vii. Land ownership conflicts
- viii. Damage of aesthetics of the area/land
- ix. Food insecurity attributed to by displacement of subsistence farming
- x. Camp construction related impacts
- xi. Traffic congestion

#### **5.4.4 Public Health Impacts**

- i. Air pollution and other dust related impacts especially during construction activities
- ii. Noise during construction especially during construction activities
- iii. Spread of communicable diseases such as HIV/AIDS with aggregation of workforce

#### **5.4.5 Localized Impacts**

Most of the developments or subprojects planned under the RUDP Project will vary from medium to small in scale. Consequently the significance of the direct negative environmental and social impacts is likely to be moderately to lowly significant except where the activities are poorly designed to lead to accumulated impacts. A number of the proposed activities in the subprojects can lead to both localized and cumulative impacts on biodiversity, wetlands, soils and water quality. Land degradation may arise due to subprojects that involve intensification of commercial and settlement activities that lead to pollution. The environmental and social screening tools are critical in identifying and mitigating the potential impacts as they relate to different subprojects.

The loss of excavated loose soils, lime, stone dust, tar, oils and fuel through erosion and storm water with rain into wetlands, surface waters, and underground waters will lead to pollution, especially due to surface runoff into adjacent watercourses, including infiltration into groundwater. This must be carefully monitored through monitoring and use of routine reporting tools. Training must be given to all staff and attendant communities for proper handling and application of these materials as part of local capacity building component.

#### **5.4.6 Cumulative Impacts**

Many of the subprojects may result in cumulative impacts on natural resources. Cumulative impacts are those that may result from individually small-scale activities with minimal impacts but which over time can combine to have a significant impact. Cumulative impacts can also be defined as impacts that potentially develop from the combined impacts of more than one subproject and or subproject activity. Examples include:

- i. Attraction of rural dwellers to cities as labourers and for better living conditions with development of commerce and social infrastructure.
- ii. Increased siltation and sedimentation of the natural water bodies and valley
- iii. Increased water levels and standing waters in the wetlands with drainage channels directed to low lying areas – wetlands

The stakeholders will be provided with an opportunity to learn how to avoid or mitigate localized impacts from initial subprojects so that measures can be integrated in subsequent activities.

#### **5.4.7 Strategic Impacts**

The main objective of the RUDP is to support Rwanda's urbanization process by putting in place infrastructure for delivering basic services that will improve living conditions and promote local economic development within urban areas in an environmentally sustainable manner. This will be achieved by assisting the six secondary cities of Muhanga, Musanze, Huye, Rubavu, Rusizi and Nyagatare, and Agatare area of Nyarugenge District of the CoK, so as to develop the roads, drainage and sanitation systems for better connectivity with the cities and increased facilitation of economic/commercial and social activities in the respective cities.

Table 9: Possible Impacts of Road Rehabilitation and Maintenance Related Activities

Impact on:	Earth works including quarrying	Laying of pavement including pavement machine crusher waste (labor operation affected quarrying operation & plants camps) maintenance	Vehicle & machine operation & maintenance and fueling	Concrete & cruncher plants	Sanitation & waste (labor camps)	Project operation	Improper disposal of liquid and solid waste
Air	Dust generation	Dust due to aggregates	SPMs, NOx, SOx	Dust pollution	Odor / smoke	SPMs, NOx, SOx	
Noise	Noise pollution and vibration		Noise pollution	Noise pollution		Noise pollution	
Water		Possible water contamination from asphalt batch plant	Possible water contamination	Possible water contamination in equipment maintenance areas	Possible water contamination	Possible water contamination as consequence of accidents and emission build-up	Possible water contamination
Soil			Possible soil contamination				Possible soil contamination
Vegetation and local fauna	Lowered productivity loss of ground for vegetation		Removal vegetation	Lower productivity use as fuel wood	Felling of trees for fuel and poaching	Impact of pollution on vegetation, lowered productivity, toxicity of vegetation	
local community	Disturbance		Disturbance	Disturbance	Poaching and health & social related incidents	Collision with traffic	



Worker's health and safety	Increase of stagnant water and disease	Asphalt odor and dust	Collisions with vehicles, pedestrian and livestock. Accidental injury/death of workers operating road rehabilitation equipment	Impact on health due to inhalation of dust	Increase in communicable diseases	Collisions with pedestrians and livestock	
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#### 5.4.8 Bid Documents for Rehabilitation Works, including EMP and provisions from EMF

Implementing agencies will prepare Bid Documents for the planned works. EMP document together with EMF will be an integral part of Bid Document for each project. In line with this, implementing agencies will ensure following:

- Prepare cost estimates, to be incorporate in Bid Documents.
- Environmental Management Plan along with the good environmental guidelines to be incorporated in the bid document's work requirements.
- Preparation of work requirement (addendum/corrigendum to road specifications) and Corrigendum / Addendum to the works specification as special provisions to be incorporated in bid document. Penalty clauses for not complying with EMP requirements to be incorporated.
- The contractor has to follow all traffic safety measures as defined in the technical specification. Damage shall be levied at the pre-determined rate per day per location for non – conformity of traffic safety measures as per the decision of the engineer.
- The contractor has to follow all environmental mitigation measures as defined in the technical specification and in site-specific EMP. Damage shall be levied at the pre-determined rate per day per location for nonconformity of EMP-prescribed measures, as per the decision of the Engineer.
- The contractor has to ensure that sufficient number of sets of good quality personnel protective equipment (PPE) should be provided to staff and labor engaged to work on site. Damage shall be levied at the pre-determined rate per day for non-conformity, as per the decision of the Engineer.

### 5.5 Environmental and Social Management Process

The Environmental Management Plan outlined here below consists of a set of measures for: a) screening (i.e. determination of potential adverse environmental and social impacts), b) mitigation, c) monitoring and d) institutional arrangements to be undertaken during planning, design, procurement, construction and post-construction stages of the activities to be financed in the RUDP, to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels. The EMP includes the actions needed to implement these measures. Refer *Annex 2* for EA process in Rwanda, including EMP. For the purposes of this EMP the activities in the RUDP that are likely to have adverse impacts are mainly expected to arise from drainage infrastructure especially the flood control which entails the construction of different faculties.

Table 10: Generic Environmental Management for Roads and Drainage Works

Activities	Negative Impacts	Mitigation Measures	Responsible Institution	Cost Estimates (USD)	Comments
Road rehabilitation and Construction,	Housing/structure and property destruction or land acquisition	Put in place a RAP according to the RPF to properly resettle and compensate the displaced persons or PAPs and lost or damaged property	RUDP Executing Ministry - MININFRA	Identification of PAPs, land and property, valuation, compensation and resettlement	Sociologist and the Valuer on must conduct a census and valuation in line with RUDP Feasibility Study Report

	Localised vegetation and crop destruction	Provide compensation for crops and vegetation destroyed in accordance with the RPF	MININFRA	Assessment and Monitoring including compensation cost for land acquired, structures destroyed, crop loss, vegetation destroyed.	The RUDP Environmental Specialist with input RUDP Consultants must work with the design team to ensure mitigation measures are incorporated in the design.
	Localised soil disturbances and erosion	Undertake Soil control measures	RUDP Contractors	Costs inbuilt within the contract sums following the respective EMPs	The RUDP Environmental Specialist with input RUDP Consultants must work with the design team to ensure mitigation measures are incorporated in the design.
	Noise and dust related impacts during construction and operation	Use dust and noise mitigation measure to minimise impacts e.g. PPEs, watering of construction sites to reduce dust, undertake construction in dry season etc	RUDP Contractor	Costs inbuilt within the contract sums following the respective EMPs	Environmental Specialist with input RUDP Consultants must work with the design team to ensure mitigation measures are incorporated in the design.
	Borrow pits related impacts including becoming breeding sites for malaria vector, hazard spots that could cause drowning, scarring of the environment.	Select borrow Pits in areas not considered ecologically fragile or sensitive, rehabilitate borrow Pits, and ensure that the borrow Pits have drains to ensure that stagnant water	Districts as implementing agencies and RUDP Contractors	Monitoring and supervision costs for implementing agencies	Engineering supervising consultants to guide the Contractors accordingly.

		which are			
Rehabilitation or construction of drainage channels	Housing/structure and property destruction or land acquisition	Put in place and implement a RAP according to the RPF to properly resettle and compensate the displaced persons or PAPs and lost or damaged property	RUDP Executing Ministry - MININFRA	Identification of PAPs, land and property, valuation, compensation and resettlement	Sociologist and the Valuer on must conduct a census and valuation in line with RUDP Feasibility Study Report
	Localised vegetation and crop destruction	Provide compensation for crops and vegetation destroyed in accordance with the RPF	MININFRA	Assessment and Monitoring including compensation cost for land acquired, structures destroyed, crop loss, vegetation destroyed.	The RUDP Environmental Specialist with input RUDP Consultants must work with the design team to ensure mitigation measures are incorporated in the design.
	Localised soil disturbances and erosion	Undertake Soil control measures	RUDP Contractors	Costs inbuilt within the contract sums following the respective EMPs	The RUDP Environmental Specialist with input RUDP Consultants must work with the design team to ensure mitigation measures are incorporated in the design.
	Pointed delivery of waste and storm water to low lying areas causing localized flooding and or pools of waters that could breed disease causing agents or destroy crops and property	Ensure that design of the drainage system is comprehensive and considers both the source and destination of the wastewater and storm water	Design Consultants and RUDP Contractors	Design and implementation costs	Supervising engineering consultants must ensure that the project is well executed or adjusted not to cause or transfer problems downstream

	Accidental destruction of cultural heritage objects during civil works	The current and proposed project sites do not have known physical cultural resources. However the contractor will use a set of chance find procedures to provide appropriate protocol. (Annex 4)	RUDP Contractors  INMR	Implementation costs	Document all accidental finds.
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**5.5.1 EMP Implementation**

Construction/Rehabilitation Contractor is responsible for undertaking all activities related to environmental protection during road rehabilitation works. During the EMP preparation phase, potential negative environmental impacts should be identified and implementing agencies will be obliged to ensure implementation of adequate mitigation measures.

**5.5.2 Supervision**

Implementing agencies are responsible for the supervision of the EMP implementation in the Project, which will be done through the consulting services (PMU). Following the approval of the Contractor’s EMP document (CEP), the Contractor together with the Implementing agency on the Contractor’s staff who will be responsible for implementation supervision of CEP will meet PMU on-site. If the plan is appropriate and implementable, PMU will advise PE that the Contractor can now commence the work. Additionally, an independent Project Audit Consultant (PAC) will review works or contracts believed to have sensitive environmental or social impacts, or those requiring special oversight as determined by the MININFRA and WB. Among other issues, PAC’s review will cover engineering designs and social and environmental safeguard related actions.

**5.5.3 Monitoring**

Implementing agencies and PMU will monitor overall environmental performance during project implementation. Each RUDP sub-project will have a site specific EMP document in which a monitoring plan(s) and check-lists are presented. For each of the environmental components, the monitoring plan specifies the parameters to be monitored; location of the monitoring sites and duration of monitoring. The monitoring plan also specifies the applicable standards, implementation and supervising responsibilities. A generic Monitoring Plan for planned road works is presented within the Annex 5 of this EMF document. In addition to the critical locations selected during design stage, the environmental monitoring will also be done at the construction camp site and any other plant site as determined relevant during road rehabilitation works stage. Monitoring and reporting arrangements are presented within this EMF Document.

**5.6 Monitoring and Reporting Arrangements**

The main components of the monitoring plan include: environmental issue to be monitored and the

means of verification; specific areas and locations; parameters to be monitored; frequency; and institutional responsibilities for monitoring and supervision. Site-specific monitoring checklists will be prepared by the designers for the each sub-project, and be included as an integral part of site-specific EMP. Monitoring checklist should be prepared using the generic monitoring plan presented within this EMF document and respecting significant site-specific impacts and proposed mitigation measures elaborated in site-specific EMP document.

The contractors will be responsible for providing “zero monitoring” results prior to commencement of works, according to the EMP monitoring plans; they will also have a dedicated public liaison officer, who will establish communication with the local residents that may be affected by the project and be responsible to inform them about all of the project related activities, especially those related to environmental impacts of the project and planned mitigation measures. The contractors are obliged to engage certified laboratory to undertake measuring and sampling of the requested potential pollutants in accordance with site-specific EMPs. The contractors will prepare their compliance reports in respect to EMP, which document the implementation of environmental mitigation and protection measures (together with prescribed monitoring activities carried out during the reporting period) on quarterly basis and submit them to District Project Manager – District Executive Secretary. However, in case of any kind of accident or endangerment of protected environments, reporting to District Executive Secretary will be immediate. Each contractor is also obliged to produce and deliver to District Executive an Annual Environmental and Social Report (AESR) covering all project activities during one calendar year. AESR document should be produced respecting the proposed template – a sample screening checklist for AESR presented within the Annex 3 of this EMF document.

The technical management of the one stop centre will supervise all of the contractor’s monitoring activities prescribed within the detailed design and site-specific EMPs. As provided by law REMA will have the authority for immediate suspension of works if performance is found be in serious contravention of the environmental standards and regulations. REMA will then inform MININFRA and LODA about suspension and order to proceed according to detailed specific directive on corrective actions. Monitoring and compliance in accordance with EMF and site specific EMPs, including monitoring of implementation of site-specific measures on each sub-project/section during project implementation will be undertaken by District and its implementation unit, and reported in writing to the MININFRA and the Bank on semi-annual basis. Annual Environmental Health and Safety (AEHS) reports, including monitoring indicators and reporting on the implementation of the requirements set forth in the EMPs will be prepared by District and submitted for the Bank’s review. In case of fatalities or major incidents on sites, the District will immediately report to WB and EIB. Upon Project completion, the District will be in charge of future operation and maintenance of rehabilitated road sections. Routine and random monitoring will be undertaken as scheduled in the monitoring plan.

## **5.7 Mitigation and Management Plan**

### **5.7.1 Mitigation Measures**

Mitigation measures will be considered starting with the Environmental Assessment process. Impacts identified as severe in consequence category and or likelihood category will be further analyzed to identify additional mitigation measures that are potentially available to eliminate or reduce the predicted level of impact. Potential mitigation measures will include:

- Vegetation restoration plan
- Engineering design solutions
- Alternative approaches and methods to achieving an activity’s objective

- Stakeholders participation in finalizing mitigation measures
- Construction practice, including labour welfare measures.
- Operational control procedures
- Management systems

Mitigation is an integral part of impact evaluation. It looks for better ways of doing things so that the negative impacts of the proposal are eliminated or minimized and the benefits are enhanced. As soon as significant adverse impacts are identified, discussions should be held to see if they can be designed out through changes in project design, location or operation. It is important therefore, that there is good integration between the EIA team and project design engineers. Project specific environmental mitigation measures are consisting part of each EMP document. A wide list of possible impacts and proposed mitigation measures has been presented in this EMF document under the General Environmental Mitigation Measures (GEMM).

The EMP should be developed so as to counter the impacts assessed and also the likely impacts during the implementation of the works and operational phase.

### **5.7.2 Mitigation Plan**

The findings and proposed mitigation measures should be compiled into an Environmental Mitigation Plan. It summarizes all the anticipated environmental impacts and its associated mitigation measures during the design, rehabilitation and operational phases. It makes reference to the preconditions obtained from the relevant institution, law and contract documents, approximate location, timeframe, and the responsibility for its implementation and supervision.

#### **5.7.2.1 Design Phase**

Mitigation measures will be incorporated as part of the standard design and rehabilitation practices and as such their costs will be included in the cost of the planned works. This will be refined during the detailed design stage. In addition to addressing the requirements of the Mitigation Plan the following additional activities will be carried out during the design phase in preparation for the mobilisation of the project: The Site Organization Plan will be prepared as part of Detailed design. Design phase will take place just after the appraisal of the subproject. Site organization study incorporates environmental, health and safety protection measures that meet legal and Lender requirements (including the measures defined in the EMP and Safety Labour Management Plan (SLMP). Implementing agencies are responsible for checking ensuring that EMP and SLMP requirements are incorporated into the site organization.

#### **5.7.2.2 Contractor Management**

The EMP recommendations and proposed mitigation measures will be attached to the Bidding Documents and subsequently the resulting contracts. Mitigation measures will be incorporated as part of the standard design and construction/rehabilitation practices and as such their costs will be included in the cost of the planned works. Each EMP will be submitted to RDB and WB for approval. To ensure compliance with WB environmental policies, all construction activities will be monitored and documented for mitigation of environmental impacts. The Contractor will comply with WB and local environmental procedures and appropriate to Rwandan environmental laws including sanitary standards, rules and regulations for construction activities and appropriate engineering practices.

Experience shows that inadequate application of EMP by the Contractor may occur due to weak linkages of EMP with the other contract documents. To prevent this occurring, EMP is to become

integral part of the bid and contract documents. It is the Contractor's obligation to cost the implementation of the environmental mitigation measures in his overall cost. The Contractor will be required to provide a short statement that confirms that:

- The EMP conditions have been costed into the bid price;
- The Contractor has a qualified and experienced team who will be responsible for implementation of the environmental compliance requirements as stated in EMP;
- The Contractor (and its sub-contractors) will comply with Republic of Rwanda national laws, EU standards and Lender requirements.

During the implementation of works, the Contractor will work according to the requirements of the Contractor's Environmental Plan (CEP), which is fully-compliant with the site-specific EMP. CEP will be prepared by the Contractor and approved by implementing agencies. Supervision and monitoring of CEP activities will be undertaken as follows:

- The contractor has the responsibility for preparing and implementing CEP as per the works contract.
- Resident Engineer (RE) will direct the Contractor with regard to compliance with CEP.
- Implementing agencies will carry out independent monitoring of the works and can issue Defect Notices to RE who will transmit these to the Contractor.
- Contractor will have his own representative on site – the Site Engineer (SE) who will be responsible for implementing the contract and complying with CEP.

### **5.7.2.3 Contractor's Camp and Facilities**

The location and development of the Contractor's facilities (this applies to all types of facilities, storage areas, workshops, labour camps (if needed), concrete batching areas, asphalt plants, etc.) will be approved by RE. Locations will be selected so that:

- i. They do not interfere with the environment and social well-being of the surrounding communities in respect to noise, dust, vibration and other physical impacts.
- ii. The size of contractor's facilities are limited to absolute minimum to reduce unnecessary clearing of vegetation.
- iii. Sanitary waste and grey waters are treated before release into surface water systems, in accordance with the Law on Water and Rwanda Utilities Regulatory Authority requirements.
- iv. The sites are properly drained. Paved areas, including vehicle parking areas, workshops and fuel storage areas are to drain to an oil and water separator,
- v. Fuel storage areas are not located within 20m of a water course. The contractor's facilities are to be contained within an adequate security fence.
- vi. Clearing of sites and removal and disposal of vegetation should be limited to absolute minimum for safe conduction of related activities.
- vii. Wherever possible limit area to be cleared and avoid excessive machine disturbance of the topsoil.
- viii. Cleared material is to be piled into manageable sized heaps according to disposal or re-use requirements.
- ix. Prevention of soil erosion on construction site - the contractor will be responsible for ensuring that the erosion is contained by soil conservation protection methods. The contractor will: (i) Limit the extent of excavation to reduce soil erosion potential; (ii) Apply soil conservation protection methodology to susceptible areas to prevent / minimize storm water runoff carrying eroded materials off-site; and (iii) Avoid excavation and operating machinery in wet ground conditions.



- x. Where fuel in excess of 5,000 litres is stored on site, it will be stored in sealed tank(s) on a concrete base that is designed to hold 110% of the tank(s) capacity.
- xi. All workshops would be provided with oil and water separators.
- xii. The contractor must have trained personnel who are competent in fuel handling procedures and for cleaning up accidental spills.
- xiii. All waste oil, oil and fuel filters will be collected and disposed of in secure landfill areas or turned over to the Investor (as specified in the contracts). At the closure of the site, all contaminated soil will be excavated, removed and replaced with fresh topsoil.

#### **5.7.2.4 Environmental Documentation plans during implementation of the subprojects**

Considering the possible impacts, it is essential for the Contractor to prepare and later conscientiously implement EMP-related activities throughout the duration of the project. The Contractor is obliged to produce the following documents before start of the works:

- i. Layout of the work camp and details of the proposed measures to address adverse environmental impacts resulting from its installation. Description and layout of equipment maintenance areas and lubricant and fuel storage facilities including distance from water sources/bodies;
- ii. Sewage and septage management plan for provision of sanitary latrines and proper sewage collection and disposal system to prevent pollution of watercourses;
- iii. A plan (mechanism and organizational structure) detailing the means by which local people and other project affected persons can raise grievances arising from the rehabilitation process and how these will be addressed (e.g., through dialogues, consultations, etc.) ;
- iv. Soil Management Plan detailing measures to be undertaken to minimize effects of wind and water erosion on stockpiles, measures to minimize loss of fertility of topsoil, timeframes, haul routes and disposal site;
- v. Dust management plan which shall include schedule for water spraying on access road and in nearby settlements along the project road, as well as list of equipment to be used, which applies to all of the construction sites and haul roads. During rehabilitation, when dust may be generated, the Contractor will monitor the worksite conditions and apply dust control measures, which include reducing construction traffic movements and spraying water on exposed areas;
- vi. A plan indicating the location of the proposed material extraction site as well as rehabilitation measures to be implemented for the borrow areas and access roads upon project completion;
- vii. Waste and wastewater management plan. All construction waste materials including drums, lumber, sand and gravel, cement bags etc. are to be suitably disposed of. If these cannot be recovered for scrap value these materials should be taken to an approved landfill sites for safe disposal. The Plan should cover all aspects of waste management, including implementation of practice standards such as reduce, re-use and recycle. It should specify final disposal alignments for all waste and demonstrate compliance to national legislation and best practice procedures on waste management. The Plan will, as a minimum, include details of temporary waste storage, waste transfer and pre-treatment prior to final disposal or recycling. Licensed/approved facilities for solid and liquid waste disposal must be used and a duty of care and chain of custody for all waste leaving the site will be followed.
- viii. Oil and fuel storage management plan. The Contractor's Plan should cover all procedures for storage, transportation and usage of oils and fuels, refuelling of plant and machinery and procedures for minimizing the risk of ground and water contamination. All oils and fuels will be required to be stored within secondary containment of 110 % capacity and all spillages

- shall be cleaned up immediately. Re-fuelling vehicles will carry Spill Kits to enable spillages to be cleaned up as soon as possible.
- ix. In-river works management plan. The Contractor's Plan should cover procedures and plans for safeguarding aquatic habitats and fish during in-river work and will complement the Construction Method Statements.
  - x. Camp management plan. The Contractor's Plan should contain procedures for establishing and operating construction camps in order to safeguard nearby communities and environmental resources.
  - xi. Emergency response plan. The Contractor's Plan should contain procedures for emergency response in the event of accidents or major incidents, in order to safeguard people, property and environmental resources. Details of the spill response equipment to be provided on site are to be specified.
  - xii. Noise – all equipment is licenced and approved in accordance with local standards. This applies to all machinery, vehicles and construction sites where noise and vibration may affect susceptible receptors. The contractor will be responsible for ensuring that noise and vibration does not affect the adjacent communities, in accordance with the Law on Noise Protection. While it is unlikely that noise and vibration will be an issue due to the large distances between the activities and the communities, the Contractor will confine all work to daylight hours (0700hrs - 1900hrs) should the community find that any night time operations become a nuisance.
  - xiii. Rehabilitation Plan: Rehabilitation of construction sites and removal of contractor's facilities following successful completion of subproject activities. This includes removal of all waste materials, machinery and any contaminated soil. The contractor will develop a plan for handover, sale or removal of all plant, vehicles and machinery to ensure that no unserviceable items are left on the construction site, in accordance with the Law on Waste Management and Law on Environmental Protection. Should the Contractor fail to remove the waste, implementing agencies is entitled to withhold payment and arrange the clean-up and deduct the cost of the clean-up activities and administrative charges from the final payment.

#### **5.7.2.5 Health and Safety**

Before commencing work, the Contractor will be required to identify potential hazards. Provisions for emergency responses are to be included in the Contractor's site safety plan which is to include nomination of a person who will be immediately contacted should an accident occur. The site safety plan will be submitted to PMU for approval one week prior to starting of the work.

- i. The contractor will be required to keep the site free of drugs and alcohol.
- ii. The contractor's site safety plan will include provision for a safe work environment and provide safety measures and protective equipment to all workers, including hand, head, eye and ear protection and safety footwear.
- iii. The site safety plan will include provision or first aid facilities on-site and employ a trained first aid person, in accordance with the Law on Safety and Health at Work.
- iv. The contractor will provide supplies of potable water, toilets and wash water to the workers.
- v. Safety and Labour Management Plan (SLMP), prepared by Contractor, will be an integral part of the bidding documentation, in order to ensure adequate H&S provisions during rehabilitation works.
- vi. Contractor is obliged to perform all project activities by respecting SLMP recommendations and all Rwandan laws and sub-laws which are covering H&S issues.
- vii. Contractor is responsible to ensure workers are properly certified to use the equipment
- viii. Contractor is insured against accidents.

Implementing agency and Contractor together have responsibility for reporting and investigating incidents. In order to safeguard the local communities from the increased vehicle movements, the Contractor is to ensure that:

- All trucks and equipment is maintained in a safe operating condition,
- All drivers and machinery operators are trained and act responsibly,
- All loads are secured and all loads with potential dust generating materials will be covered with tarpaulins,
- The Contractor will immediately remove any drivers that ignore any of the community safety requirements,
- Speed limits will be observed at all time.

Prior to commencement of construction activities/site works, all of the above plans will be submitted by the Contractor to implementing agency for approval.

#### **5.7.2.6 Operational (Post-Rehabilitation) Phase**

- i. **Traffic and People Safety:** During operation, according to the assessment performed within the design phase, road safety features will include (i) measures to slow the traffic at sensitive places (schools, markets, etc.); (ii) dust suppression sealing; (iii) improvements in road signage and pavement markings, and (iv) attention to road accident black spots.
- ii. **Road Maintenance:** Routine maintenance (grading, grass cutting, drain clearing, and pothole patching and shoulder repairs, together with regular control and maintenance of drainage structures and retention) will be undertaken on a regular basis. Seasonal maintenance such as post-flood repairs, emergency maintenance to reinstate roads after major failures, and the regular upkeep of safety features and road signs will be undertaken as necessary. Major maintenance that include resurfacing and repairs are typically scheduled over periods of several years.

Table 11: Generic Environmental and Social Management Plan

No.	Environmental Parameter	
Effective Implementation of Environmental Management Measures		
1. Soil /Aggregate		
1.1	Disposal of Debris and Other Wastes	<p>No-objection from land owner / Revenue Authorities as may be applicable.</p> <p><b>Disposal Areas</b></p> <ul style="list-style-type: none"> <li>• No residential areas are located downwind side of these locations;</li> <li>• Dumping sites are located at least 1000 m away from sensitive locations such as all notified forestlands, all water bodies, and productive lands</li> <li>• Available waste lands are given preference.</li> </ul> <p><b>Specifications for Waste Disposal</b></p> <ul style="list-style-type: none"> <li>• In case of bituminous wastes, debris are to be disposed in a minimum 60cm thick clay lined Pits so as to eliminate any chances of leaching and top layer shall be covered with soil/good earth so as to enable natural re-vegetation of the disposed area/site. Care should be taken not to dispose these wastes near farmland and water bodies.</li> <li>• In case of filling of low-lying areas with wastes, it needs to be ensured that the level matches with the surrounding areas. In this case care should be taken that these low lying areas are not used for rainwater storage</li> <li>• In case oil and grease are trapped for reuse in a minimum 60cm thick lined PMU, care shall be taken to ensure that the PMU should be located at the lowest end of the site and away from the residential areas.</li> <li>• * All arrangements for transportation during road rehabilitation works including provision, maintenance, dismantling and clearing debris, where necessary will be planned and implemented as approved and directed by the Engineer.</li> </ul>

1.2	Borrowing of Earth (in case of opening of new borrow areas)	<p><b>Borrow Area Selection</b></p> <p>Borrowing in some areas is prohibited. However, earth available from excavation for road side drains as per design, may be used as embankment material (if necessary and applicable), subject to approval of the Engineer, with respect to acceptability of material. Borrowing to be avoided on the following areas:</p> <ul style="list-style-type: none"> <li>• Lands close to toe line and within 0.5 km from toe line.</li> <li>• Irrigated agricultural lands (In case of necessity for borrowing from such lands, the topsoil shall be preserved in stockpiles.</li> <li>• Grazing land.</li> <li>• Lands within 1km of settlements.</li> <li>• Environmentally sensitive areas such as reserve forests, protected forests, sanctuary, wetlands. Also, a distance of 500 m should be maintained from such areas.</li> <li>• Unstable side-hills.</li> <li>• Water-bodies (only if permitted by the local authority, and with specific pre-approved redevelopment plans by the concerned authority and engineer-in-charge)</li> <li>• Streams and seepage areas.</li> <li>• Areas supporting rare plant/ animal species;</li> </ul>
		<p><b>Documentation of Borrow PMU</b></p> <p>The contractor must ensure that following data base must be documented for each identified borrow areas before commencing the borrowing activity that provide the basis of the redevelopment plan.</p> <ul style="list-style-type: none"> <li>• Drainage along with offset distance;</li> <li>• Area (Sq.m);</li> <li>• Photograph and plan of the borrow area from all sides;</li> <li>• Type of access/width/ etc. from the roadway;</li> <li>• Soil type, Slope/drainage characteristics;</li> <li>• Water table of the area or identify from the nearest well, etc.;</li> <li>• Existing land use, for example barren / agricultural / grazing land;</li> <li>• Location/name/population of the nearest settlement from borrow area;</li> <li>• Quantity excavated (likely and actual) and its use;</li> <li>• Copy of agreement with owner/government; and</li> <li>• Community facility in the vicinity of borrow PMU.</li> <li>• Rehabilitation certificate from the land owner along with at least four photograph of the rehabilitated site from different angles.</li> </ul>
1.3	Contamination of Soil by Fuel and Lubricant	Location of fuel storage and refilling areas at least 500m from all cross drainage structures and important water bodies and storing of fuel and lubricants on a sand flooring of at least 6" thick, done on brick edge flooring lined with polyethylene sheet

1.4	Quarry Operations and Management (if new quarries are opened)	<p>To minimize the adverse impact during excavation of material following measures are need to be undertaken:</p> <ul style="list-style-type: none"> <li>• Adequate drainage system shall be provided to the excavated area</li> <li>• At the stockpiling locations, the Contractor shall construct sediment barriers to prevent the erosion of excavated material due to runoff.</li> <li>• Construction of offices, laboratory, workshop and rest places shall be done in the up-wind of the plant to minimize the adverse impact due to dust and noise.</li> <li>• The access road to the plant shall be constructed taking into consideration location of units and also slope of the ground to regulate the vehicle movement within the plant.</li> <li>• The followings precautions shall be undertaken during quarry operations.</li> <li>• Overburden shall be removed.</li> <li>• During excavation slopes shall be flatter than 20 degrees to prevent their sliding.</li> <li>• The Contractor shall ensure that all workers related safety measures shall be taken.</li> <li>• The Contractor shall ensure maintenance of crushers regularly as per manufacturer's recommendation.</li> <li>• During transportation of the material, measures shall be taken to minimize the generation of dust and to prevent accidents.</li> </ul>
<b>2. Water</b>		
2.1	Labour Camp, Sanitation and Waste Disposal in Construction Camps	Construction labour camps shall be located at least 500m away from the nearest habitation complying to all relevant legal requirements.
<b>3. Air Pollution</b>		
3.1	Generation of Dust	<ul style="list-style-type: none"> <li>• All vehicles delivering materials should be provided with tail guard and shall be covered to avoid spillage of materials.</li> <li>• No fugitive dust emission at settlement sites arising from maintenance activities shall be allowed. All such operation leading to dust pollution in settlement areas shall be performed with necessary dust suppression by adequate water sprinkling to keep the dust below visible limit. Such measures shall be taken to ensure no dust pollution arises from construction stock piles</li> </ul>
3.2	Concrete Mix Plants and Batching Plants	<ul style="list-style-type: none"> <li>• Concrete mix plants to be used at least 1000m from the nearest habitation in the cross wind direction.</li> <li>• In case if new Concrete mix plants/Batching plants are set up, the conditions of REMA shall be strictly adhered</li> </ul>

3.3	Odour from Construction Labour Camps.	<ul style="list-style-type: none"> <li>Construction worker's camp shall be located at least 500 m away from the nearest habitation.</li> <li>The waste disposal and sewerage system for the camp shall be properly designed, built and operated so that no odour is generated.</li> </ul>
3.4	Pollution from Crusher	All crushers used in construction shall conform to relevant dust emissions control stipulated as per REMA norms
<b>4. Noise Pollution</b>		
4.1	Noise from Vehicles, Plants and Equipment	<ul style="list-style-type: none"> <li>Any activities related to road maintenance operations and/or associated facilities near settlements shall not be carried out during night time (10:00 PM to 6.00 AM).</li> <li>Workers in vicinity of strong noise, and workers working with or in crushing, compaction, batching or concrete mixing operations shall wear earplugs.</li> </ul>
<b>5. Flora and Fauna</b>		
5.1	Loss or Damage of Vegetation	All works shall be carried out in a manner that ensures minimum damage or disruption to the flora. Prior tree felling permission under law on forests will be obtained before felling any tree. Trees or shrubs will only be felled or removed that impinge directly on the permanent works or necessary temporary works with prior approval from the Engineer.
5.2		<ul style="list-style-type: none"> <li>The Engineer shall approve such felling; only when the IMPLEMENTING AGENCIES secures receives an "Approval" for such felling from the Department of Forests, as applicable.</li> </ul>
5.3	Loss, Damage or Disruption to Fauna	<ul style="list-style-type: none"> <li>All works shall be carried out in a manner to ensure minimum damage to the fauna.</li> <li>Construction workers shall be instructed to protect natural resources and fauna, including wild animals and aquatic life, Hunting and unauthorized fishing are prohibited.</li> </ul>
<b>6. Disruption to Users</b>		
6.1	Loss of Access	<ul style="list-style-type: none"> <li>At all times, the Contractor shall provide safe and convenient passage for vehicles, pedestrians and livestock to and from side roads and property accesses connecting the project corridor. Work that affects the use of side roads and existing accesses shall not be undertaken without providing adequate provisions to the prior satisfaction of the Engineer.</li> <li>The works shall not interfere unnecessarily or improperly with the convenience of public or the access to, use and occupation of public or private roads, and any other access footpaths to or of properties whether public or private.</li> </ul>

6.2	Traffic Jams and Congestion in Road Crossing Areas	<ul style="list-style-type: none"> <li>Detailed Traffic Management Plans (TMP) shall be prepared and submitted to the Engineer for approval 5 days prior to commencement of maintenance works on any cross-section with road. The traffic control plans shall contain details of temporary diversions, details of arrangements for road rehabilitation works under traffic and details of traffic arrangements after cession of work each day.</li> <li>Temporary diversion for road traffic (including scheme of temporary and acquisition) will be constructed with the approval of the Engineer.</li> <li>Special consideration shall be given in the preparation of the traffic control plan to the safety of pedestrians and workers at night</li> <li>The temporary traffic detours in settlement areas shall be kept free of dust by frequent application of water.</li> </ul>
6.3	Traffic Control and Safety	<ul style="list-style-type: none"> <li>The Contractor shall take all necessary measures for the safety of traffic during road rehabilitation works and provide, erect and maintain such barricades, including signs, markings, flags, lights and flagmen as may be required by the Engineer for the information and protection of traffic approaching or passing through the cross section.</li> <li>All signs, barricades, pavement markings shall be as per road specification</li> </ul>
<b>7. WORKERS' ACCIDENT RISKS</b>		
7.1	Risk from Operations	The Contractor is required to comply with all the precautions as required for the safety of the workmen as per the International Labour Organization (ILO) convention. Contractor has to ensure that all operators of heavy or dangerous machinery are properly trained/certified, and also insured. The contractor shall supply all necessary safety appliances such as safety goggles, helmets, masks, books, etc., to the workers and staff. The contractor has to comply with all regulation regarding safe scaffolding, ladders, working platforms, gangway, stairwells, excavations, trenches and safe means of entry and egress.
	Risk from Electrical Equipment	Adequate precautions will be taken to prevent danger from electrical equipment. No materials on any of the sites will be so stacked or placed as to cause danger or inconvenience to any person or the public. All necessary fencing and lights will be provided to protect the public. All machines to be used in the road rehabilitation will conform to the relevant Rwandan Standards, will be free from patent defect, will be kept in good working order, will be regularly inspected and properly maintained as per BS provisions and to the satisfaction of the Engineer.
7.2	Risk at Hazardous Activity	All workers employed on mixing material, cement, lime mortars, concrete etc., will be provided with protective footwear and protective goggles. Workers, who are engaged in welding works, would be provided with welder's protective eye-shields. Stone-breakers will be provided with protective goggles and clothing and will be seated at sufficiently safe intervals.



<b>8. WORKERS' RESIDENCE AND HEALTH CONCERNS</b>		
8.1	First Aid	<ul style="list-style-type: none"> <li>• Medical facilities shall be provided to the labour at the construction camp. Visits of doctor shall be arranged twice a month. A separate room for medical checkups and keeping of first aid facilities should be built. Workplaces remote and far away from regular hospitals will have indoor health units with one bed for every 250 workers. Suitable transport will be provided to facilitate take injured or ill person(s) to the nearest approachable hospital.</li> <li>• First Aid Box will be provided at every construction campsite and under the charge of a responsible person who shall always be readily available during working hours.</li> </ul>
8.2	Rehabilitation of Labour and Construction Camp	<p>At the completion of road rehabilitation works, all construction camp facilities shall be dismantled and removed from the site. The site shall be restored to a condition in no way inferior to the condition prior to commencement of the works. Various activities to be carried out for site rehabilitation include:</p> <ul style="list-style-type: none"> <li>• Oil and fuel contaminated soil shall be removed and transported and buried in waste disposal areas.</li> <li>• Soak Pits, septic tanks shall be covered and effectively sealed off.</li> <li>• Debris (rejected material) should be disposed of suitably.</li> <li>• Underground water tank in a barren/non-agricultural land can be covered. However, in an agricultural land, the tank shall be removed.</li> <li>• If the construction camp site is on an agricultural land, preserve top soil and good earth can be spread back for a minimum 30cm for faster rejuvenation of the land.</li> <li>• Proper documentation of rehabilitation site is necessary. This shall include the following: <ul style="list-style-type: none"> <li>- Photograph of rehabilitated site;</li> <li>- Land owner consent letter for satisfaction in measures taken for rehabilitation of site; and</li> <li>- Undertaking from contractor;</li> </ul> </li> </ul> <p>In cases, where the construction camps site is located on a private land holding, the contractor would still have to restore the campsite as per this specification. The rehabilitation is mandatory and should be include in the agreement with the landowner by the contractor. Also, he would have to obtain a certificate for satisfaction from the landowner.</p>
<b>9. DAMAGE AND LOSS OF CULTURAL PROPERTIES</b>		
9.1	Conservation of Religious Structures	<ul style="list-style-type: none"> <li>• All necessary and adequate care shall be taken to minimize impact on cultural properties which includes cultural sites and remains, places of worship including temples, churches, etc., graveyards, monuments and any other important structures as identified during design and all properties / sites / remains notified. No work shall spill over to these properties, premises and precincts. The design options for cultural property relocation and enhancement need to be prepared.</li> <li>• All conservation and protection measures will be taken up as per design. Access to such properties from the road shall be maintained clear and clean.</li> </ul>

9.2	Chance found Archaeological Property	<ul style="list-style-type: none"> <li>• During earth excavation, if any property is unearthed and seems to be culturally significant or likely to have archaeological significance, the same shall be intimated to the Engineer. Work shall be suspended until further orders from the Implementing Agency/PMU. The Archaeological Department shall be intimated of the chance find and the Engineer shall carry out a join inspection with the department. Actions as appropriate shall be intimated to the Contractor along with the probable date for resuming the work.</li> <li>• All fossils, coins, articles of value of antiquity and structures and other remains or things of geological or archaeological interest discovered on the site shall be the property of the Government, and shall be dealt with as per provisions of the relevant legislation.</li> <li>• See Annex 4 for more details.</li> </ul>
<b>10. ENVIRONMENTAL ENHANCEMENT</b>		
10.1	RUDP Landscape	Protect all the trees, re-vegetation of RUDP project embankments and other slopes, edge treatment of water bodies shall be taken up as per detailed design.

## 6. EMF IMPLEMENTATION ARRANGEMENTS

### 6.1 Introduction

The following section captures the institutional arrangements for EMF implementation by concerned officials of executing and implementing agencies, their consultants and working contractors. An organizational structure shall be developed at the corporate and site level to aid effective implementation of the EMF. The beneficiary Districts are the Implementing Agencies for the RUDP and will be responsible for the implementation and compliance with the EMF, EMP, EIA and Monitoring Plan. Implementing agencies are also responsible for:

- Implementation of requests for environmental protection given by: Government environmental authorities and EIA Studies (if requested by REMA or RDB), World Bank and other related institutions, Compliance with the Law on Environmental Protection,
- Implementation of requests for environmental protection through contractors specifications,
- Supervision of the project through the consulting services for supervision and implementation of the project,
- Supervision of environmental monitoring through the consulting services,
- Preparation of the final environmental reports.

Project Management Unit (PMU) within LODA will be responsible for day to day project implementation, while the implementing agencies will use own staff to implement the Bank financed projects and will organize and integrate such staff within the One Stop Centres. The Head of the One Stop Centre will reports to the District Executive Secretary in management of the implementation of these projects. LODA has staff with experience in a number of international financial institutions funded projects including World Bank. The PMU will be staffed with specialists to manage financial management, procurement, environmental, social and technical aspects.

The key positions of the PMU are listed below: Project Director, Project Coordinator, Project Procurement Specialist, Project Financial Specialist, Environmental and Social Safeguards Specialist(s), Infrastructure (roads and drainages) Safety Specialist, Road Construction/Rehabilitation Manager, Drainage Construction/Rehabilitation Manager, Road Rehabilitation Specialists, Drainage Rehabilitation and Construction Specialists.

### 6.2 Environmental Management Unit - Functions and Staffing Responsibilities

The Environmental Management Unit (EMU) will be formed as a part of PMU. Functions and staffing responsibilities of EMU are listed in Table 8. In order to effectively manage the EA process and EMP implementation, EMU will be established and made operational prior to appraisal of the subprojects by the Bank. The Environmental Specialist of PMU (ESPMU) and the Assistant Engineer (for the Environmental Aspects) will be engaged during the project implementation period as an EMU.

**Table 12: Functions and Responsibilities of EMU**

Designation	Function / Responsibilities
Assistant Engineer Environment	<ul style="list-style-type: none"> <li>• Assist ESPMU in Environmental Assessments for the projects;</li> <li>• Assist ESPMU in obtaining relevant Environmental Approvals for the project;</li> <li>• Assist ESPMU and PAC DC in preparation of the training materials and in conducting training;</li> <li>• Liaise with the contractors, PAC and DC and local communities on the</li> </ul>

	<p>implementation of EMF and EMP;</p> <ul style="list-style-type: none"> <li>• carry out site inspections, check and undertake periodic environmental monitoring and initiate necessary follow-up actions;</li> <li>• assist in the preparation of periodic reports for dissemination to WB, MININFRA, RDB, REMA etc.</li> </ul>
EMU	<ul style="list-style-type: none"> <li>• Assist DC and MININFRA Safeguard Consultants in conducting environmental screening and categorization of sub- projects;</li> <li>• Assist DC and MININFRA Safeguard Consultants in the preparation of Environmental Assessment Studies (if requested by REMA);</li> <li>• Assist implementing agencies in implementation of EMF during the project implementation period;</li> <li>• Control of integration of EA and resulting EMP into the sub-project design and implementation plans (contract documents);</li> <li>• Ensure incorporation of appropriate environmental specifications (on the basis of screening and GEMM) into the respective bidding &amp; contract documents;</li> <li>• Assist implementing agencies Engineers at site by providing appropriate environmental advice, and developing appropriate environmental mitigation measures for the sub-projects;</li> <li>• Carry out participatory consultation during planning, design and implementation of the sub-projects;</li> <li>• Prepare periodic progress reports on the implementation of EMF and EMPs for transmission to the WB throughout the project implementation period.</li> </ul>
Environmental Specialist of SPIU (ES-SPIU)	<ul style="list-style-type: none"> <li>• Proper and timely implementation of EMF;</li> <li>• screening and categorization of sub-projects;</li> <li>• carry out site inspections, check and undertake periodic environmental monitoring and initiate necessary follow-up actions;</li> <li>• control of compliance of GEMM and EMP during sub-projects design and implementation including post-rehabilitation stage;</li> <li>• assist IMPLEMENTING AGENCIES/PIUs in obtaining Environmental Approvals from the RDB;</li> <li>• review and approve the Contractor's Implementation Plans for the environmental measures, as specified in EMP;</li> <li>• dialogue with the local population to ensure that environmental concerns and suggestions are incorporated and implemented in the project;</li> </ul>

### 6.3 Implementation Support

#### 6.3.1 Design and Supervising Consultants

One subcomponent of RUDP covers the design and supervising costs for the entire planned infrastructure works covered under Phase I. Main activities of DC related to environmental protection during project preparation are:

- Environmental screening and preparing sub-project specific environment screening/assessment report with EMP
- Producing Request for Opinion about Need for EIA for all sub-projects
- Obtaining preconditions from relevant institutions
- Producing Request for EIA for each sub-project which is found to be adjacent or within the nature/cultural protected area
- Producing EMP documents for all sub-projects

- Producing Terms of Reference for EIA Studies (if requested by the REMA)
- Ensure the implementation of the various mitigation measures proposed for the protection of bio diversity etc., prior to the commencement of road rehabilitation activities at that particular sub-section of the project road.

The main activities of District Project Management Units related to environmental protection during project implementation are: Supervising the implementation of EMP(s); Producing the Monthly Progress Reports and submitting them to the PMU and Monitoring of project progress including EMP and GEMM implementation.

### **6.3.2 Management Support Consultants**

RUDP includes project management support (PMS) and capacity building to implementing agencies, as may be necessary in procurement, financial management, environmental and social safeguards and annual program planning. Project will finance consultants to provide project management support to the PMU during project implementation. They will support the PMU in, among others, the: Supervision of the implementation of civil works; Environmental and social supervision of safeguards implementation; Annual program planning and preparation including the economic analysis; and Overall project management. In addition to the consultants, the PMU will draw staff members from other implementing agencies departments as necessary. Prior to project start, the Bank together with LODA and MININFRA will provide a two-day training workshop for the PMU to manage the implementation of the Project.

### **6.3.3 Project Supervision Consultants**

In respect to environmental requirements, the specific roles and responsibilities of Project Supervision Consultant shall include, but not limited to the following:

- Supervise the implementation of the EMP by the Contractors;
- Monitor and review the screening and categorization process for each sub-project;
- Review and approve site specific environmental enhancement/mitigation designs worked out by the Contractor;
- Hold regular meetings with the EMU;
- Review the Contractors Environmental Implementation Plans to ensure compliance with the Environmental Management Plan (EMP);
- Develop good practice construction guidelines to assist the contractors in implementing EMPs;
- Prepare and submit regular environmental monitoring and implementation progress reports;
- Continuously interact with the Environmental Engineers/Environmental specialist of EMU regarding the implementation of the environmental provisions;
- Ensure that proper environmental safeguards are being maintained at all ancillary sites such as brick fields, borrow areas, brick crushing area, materials storage yards, worker's camps etc. from which the contractor procures material for road rehabilitation works;
- Supervise the proper construction and maintenance of the facilities for the labour camps, including the provisions for the safety and health of workers and their families;
- Ensure that proper facilities are available for the monitoring of water quality and vehicular emissions as provided for in the environmental monitoring plan during the road rehabilitation period.

### **6.3.4 Project Audit Consultants**

RUDP has a subcomponent that is dedicated to Project Audits which includes: (i) the Integrated

Performance Audit which will review engineering designs, management of social and environmental issues, procurement, quality assurance, contract management and compliance to agreed conditions, quality of project supervision, review of traffic safety implementation, and achievement on ground to trigger disbursement. An independent Project Audit Consultant (PAC) will perform annual audits and results monitoring and evaluation. RUDP will also include observing social and environmental safeguards, as defined by the relevant policy framework documents and plans. A comprehensive review will be carried out by PAC on randomly-selected road sections of about 20 percent of the civil works contracts and other activities under the project. Besides the random selection of contracts, the review may also include works or contracts believed to have sensitive environmental or social impacts or requiring special oversight as determined by the MININFRA and WB.

#### **6.4 Contractor**

The Contractor will be responsible for implementation of all environmental related activities under the project. Each Contractor is obliged to follow the EMF and EMP provisions during project implementation, including preparation and delivering to implementing agencies for approval of the site specific implementation plans. Construction Contractor will make proposal for environmental protection, including safety of persons associated with the works and the public, during a pre-construction period. The proposal will be reviewed and approved by implementing agencies. In this regard, attention will be given to:

- Taking all reasonable steps to protect the environment on and off-site to avoid damage or nuisance to Implementing persons or property arising from its operations,
- Maintaining conditions of safety for all Implementing persons entitled to be on site, and
- Provision of all lights, guards, fencing, warning signs, traffic control and watching for protection of the works and other property and for the safety and convenience of the public.

During implementation of the subprojects, a public liaison officer, named by the Contractor will establish communication with the local residents affected with the project and will be responsible to inform them about all project activities, especially related to environmental impacts of the project and planned mitigation measures. The Contractor will also be responsible for familiarizing themselves with the following "Chance Finds Procedures" in case culturally valuable materials are uncovered during excavation or any project activities, including:

- Stop work immediately following the discovery of any materials with possible archaeological, historical, paleontological, or other cultural value, announce findings to project manager and notify relevant authorities and implementing agencies;
- Protect artefacts using plastic covers, and implement measures to stabilize the area, if necessary, to properly protect artefacts;
- Prevent and penalize any unauthorized access to the artefacts; and
- Restart road rehabilitation works only upon the authorization of the relevant authorities.

#### **6.5 Monitoring**

The PMU will be responsible for collecting the data required for monitoring and evaluation which will in turn be reviewed by implementing agencies. Indicators will be measured against the agreed targets and compared to the defined baselines. Project progress reports, including monitoring indicators and reporting on the implementation of the requirements set in the EMPs will be prepared on a quarterly basis and submitted for WB review. Monthly progress reports prepared by the supervision consultants will be submitted by PMU to WB for review upon a request. The Construction contractor is obliged to perform all monitoring activities (sampling, measurement, etc.) prescribed

within the Monitoring Plan of EMP document produced for sub-project on which the Contractor is engaged. Supervision Consultant is responsible to monitor all construction activities, including environmental protection during project rehabilitation. PSC will be authorized to perform additional sampling in case he finds this needed.

## **6.6 Capacity Building**

RUDP has a subcomponent which covers capacity building measures to implementing agencies, as may be necessary in environmental and social safeguards and annual program planning. Capacity building can be achieved by: Training program for the existing staff and Technical Assistance: knowledge sharing and on-the-job training and mentorship.

## **6.7 Rwanda EIA Procedure and Environmental Approval**

### **6.7.1 Environmental Approval Procedure**

Legislative basis for EIA in Rwanda is found in NPE and Organic Law on Environment Protection and Management. The REMA and RDB are the two regulatory bodies responsible for enforcing NPE, Organic Law on environment protection and management, and the Ministerial Order on EIA. It is the responsibility of Executing Ministry (MININFRA) to conduct EIA for the proposed projects given that there is more than one District involved in the RUDP, while the responsibility to review EIA for the purpose of environmental clearance of the project lies with RDB. Final Environment Approval has to be obtained by MININFRA from RDB for all RUDP sub-projects. The EIA could be required for such sub-projects in accordance with the Rwandan legislation. The procedure for "B" Environmental Category (which in major part correspond to Projects on Category 2 List according to the Ministerial Order on establishing the List of Projects for which the Impact Assessment is mandatory and the List of projects for which the EIA can be requested (*Ministerial Order* N°004/2008 of 15/08/2008) includes submission of: Request for Decision about Need for EIA by MININFRA, Environmental Impact Assessment (EIA) by Safeguard Consultants on behalf of MININFRA including the Environmental Management Plan (EMP) development. The EIA report can only be considered and approved by RDB on inclusion of a satisfactory EMP(s).

Most of the RUDP sub-projects will be implemented within the non-sensitive areas in environmental point of view, so they could be categorized as a "Low B" Environmental Category. However, according to Rwanda Law for Environment Management and the Ministerial Order on the list of projects that require EIA (No. 004/8/2008 of 15<sup>th</sup> August, 2008), all construction and infrastructure rehabilitation projects must undertake full EIA; implying that all subprojects of the RUDP will have to be environmentally assessed beyond the initial environmental examination or environmental screening, and EIA report produced with associated EMPs for the respective subprojects. The environmental management process for such projects for obtaining of Environmental Clearance includes: Screening/Scoping in order to determine what are the likely potential issues; Request by MININFRA to approve the Terms of Reference for the EIA development; conducting of a full Environmental Impact Assessment procedure by the Safeguards Consultants, submission of the EIA report to RDB by MININFRA for approval; and issuance of Environmental Clearance for the RUDP by RDB.

The environmental impact assessment, based on Ministerial Order on EIA (Order No. 003/8/2008 of 15<sup>th</sup> August, 2015), has been so far efficiently implemented since the law on EIA was put in place. With this instrument, impacts of any pollution originating from the future facilities and/or related activities can be foreseen and prevented or mitigated; yet the placement of the approval with RDB

has also served to make the process faster and more direct.

## **6.8 Principles of Environmental Management for RUDP**

According to the Initial Environmental Screening and Rapid Assessment all the subprojects on the priority list for Phase I of the project are classified as Environmental Category B according to WB classification. The subprojects involve existing roads of average 1.5 km each, and provision of drainage system along the planned roads or in areas prone to flooding. The upgrade, resealing or widening of the roads and provision of drainage systems was found not elevate the status of the projects a higher category of environmental concern. The REMA and RDB will be responsible for the environmental compliance monitoring and oversight to ensure overall project environmental compliance. General responsibilities of REMA and RDB are presented within the section 3.4 in chapter 3 of EMF document.

Environmental assessment procedure for any of the RUDP sub-projects contain: environmental screening; preparation of detailed design for the respective sub-projects; preparation of the site-specific EMPs based on screening criterion; obtaining all the necessary preconditions, conditions and opinions from the relevant institutions; preparing the EIA Studies (if required); and obtaining the Final Environmental Approval(s) for the respective sub-projects. Regarding the implementation of site-specific EMP(s), a construction/rehabilitation contractor will be responsible for undertaking all activities related to environmental protection during construction or rehabilitation works; while REMA will be responsible for the supervision of EMP implementation and for the compliance enforcement measures. Additionally, an independent Project Audit Consultant (PAC) will review works and contracts that may have sensitive environmental or social impacts, or those requiring special oversight as determined by LODA and WB.

## **6.9 Implementation of Environment Management and Mitigation Measures**

All RUDP subprojects works in the Phase I are small and with minimal environmental and social impacts. Most of the impacts are of temporary character, can be successfully mitigated and will disappear after the works are completed. The possible direct negative impacts as consequence of the road rehabilitation activities, if not mitigated, will relate to waste management; noise and health & safety management; and possible soil and water pollution from the construction activities. Off-site impacts may be related to quarry, borrow PMU and asphalt plant operations, which if not managed properly may cause localized adverse impacts. The contractor's yard and camps can also be potential sources of temporary adverse impacts. Potential mitigation measures to address the above impacts have been discussed in EMF and include: specific management programs; engineering design solutions; alternative approaches and methods to achieve the activity objectives; stakeholder participation in finalizing mitigation measures; operation control procedures; and application of management systems. Project specific environmental mitigation measures are the main part of each of the site-specific EMPs. A Generic Mitigation Plan for roads, drainage and sanitation construction and rehabilitation RUDP works is presented in section 8 of this document, to be used as a reference material while developing the scope of the site-specific EMPs.

Environmental mitigation measures will be incorporated as a part of the standard design, construction and rehabilitation practices in each bidding document, and as such costs of their implementation will be included in the overall sub-project rehabilitation cost. As a part of the project requirements, each contractor will be obliged to produce the following documents before start of the works: Waste and Wastewater Management Plan; Oil and Fuel Storage Management Plan; Noise Management Plan; Layout of the Work Camp, and Camp Management Plan; Sewage Management Plan; Soil Management Plan; Dust Management Plan; In-river Works Management Plan; and



Emergency Response Plan.

### **6.10 Implementation arrangements**

The District, as the subprojects' implementing agencies, will be responsible for the implementation and compliance with the EMF, site-specific EMPs and monitoring plans. The District Executive Committees will also be responsible for the supervision of the respective subprojects implementation while LODA will be responsible for managing and coordinating the Districts in regards to ensuring compliance to the EMPs and will supervise the environmental monitoring (through the consulting services and preparation of the periodic environmental reports for the overall RUDP implementation). The One Stop Centres in the respective Districts will be responsible for the day-to-day project implementation, using own staff from the Infrastructure and Planning Departments. The Engineer in charge Infrastructure in the Districts will be directly responsible for supervising the contractors, and he will report to the Head of the One Stop Centre who will report to the District Executive Secretary who will be designated and serve as the Project Manager at District level. District Executive will report to Head of Project Management Unit in LODA in regards to the implementation and supervising of the RUDP.

The MININFRA and the RHA will technically backstop the District in monitoring and supervising the subprojects implementation in coordination with the PMU in LODA. The PMU's Environmental Specialist will be engaged during the whole project implementation period and will be responsible for monitoring and evaluation of environmentally-related indicators, to be measured against the agreed targets with the respective EMPs and EMF, and compared to defined baselines. Project progress reports, including monitoring indicators and reporting on the implementation of the requirements set in the site-specific EMPs, will be prepared on a quarterly basis and submitted to MININFRA and WB for review. Monthly progress reports prepared by the supervision consultants will be submitted by PMU to MININFRA and WB for review upon request.

An independent REMA certified Environmental Auditor will perform annual audits and results monitoring and evaluation. A comprehensive review will be carried out by Environmental Auditor on randomly-selected sections of the planned infrastructure on about 20 percent of the sub-projects. Besides the random selection of contracts/sub-projects, the review may also include works or contracts/sub-projects believed to have sensitive environmental or social impacts, or on those requiring special oversight as determined by REMA and WB.

### **6.11 ESMF Implementation Budget**

The overall budget for implementation of the ESMF is ????. This budget includes implementations of capacity building measures, among others.

## **7. PUBLIC / CITIZEN ENGAGEMENT AND DISCLOSURE PROCESS / PROCEDURES**

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### **7.1 Introduction**

Citizen engagement is both an essential criteria and important strategy for an integrated environmental and social analysis process, the project design and its implementation. Views of the project affected Implementing persons and NGOs have been fully taken into account during the project preparation and continue to form a basis for further design and implementation of the sub-projects throughout the RUDP implementation period. The purpose of the stakeholder consultation is to identify the views of local communities, major institutional and other stakeholders, and to assess any mitigation measures which may be undertaken to minimize any adverse impacts of the proposals under consideration.

### **7.2 Citizen Engagement / Public Consultations and Information Disclosure Process**

As required by the Rwanda Ministerial Order for EIA and the WB's Safeguards Policies, citizen engagements (public consultations) will be undertaken on a generic version of seven site-specific EMP documents that will be produced for seven sample sub-projects, one for each District. Citizen engagement and information disclosure will be obligatory for all site-specific EMP documents which will be prepared under RUDP. Beneficiary consultations will be conducted during the design and later during the infrastructure construction/rehabilitation phase, and issues related to environmental and social issues raised and complaints received during consultations, field visits, informal discussions, written communications etc. will be followed up. The relevant records will be kept in the project offices both at the District and at LODA.

Information Disclosure Framework in case of any specific EIA preparation (according to national legislation) is presented in table 6.1 of EMF document. Basic stages for public consultations or citizen engagement in this case are: initial consultation, decision about scope and content of EIA study, draft EIA study and final Environmental Approval. Each of these stages is followed with adequate process of public consultations, in line with the national legal requirements.

A project-specific grievance redress mechanism will be implemented to ensure that all complaints from the local communities are dealt with appropriately, with corrective actions being implemented, and the complainants being informed of the outcome. Districts as implementing agencies will maintain a 'Complaints Database', which will contain all the information on complaints or grievances received from the communities or other stakeholders. Public discussion and disclosure of this Environmental Management Framework document will be completed in early December of 2015.

### **7.3 Citizen Engagement and Information Disclosure**

#### **7.3.1 Citizen Engagement (Public Consultation)**

As required by the World Bank Safeguards Policies, citizen engagement is undertaken for draft version of the EMP documents. Public consultation and information disclosure will be obligatory for all EMP documents which will be prepared under RUDP.

For all remaining EMP documents, following procedure will take place:

- Implementing agencies will announce invitation for public consultations for the public, institutions and organizations interested in EMP for road rehabilitation works on particular RUDP

sub-projects.

- The in-country disclosure of EMP document will start when invitation to the interested parties will be published in the daily newspaper "New Times", inviting the citizens, authorities and relevant institutions to have an insight into the proposed road rehabilitation works and environmental impact of the project with mitigation and monitoring measures.
- Citizens and other interested parties and organizations will be invited to participate in process of public consultation on draft EMP document.
- Prior to announcement in the newspaper, the EMP will be delivered to the respective concerned Districts, Sectors and Cells.
- Representatives of the local municipality will inform the public through their local media of the time and place of public consultations. Invitation will also be placed on implementing agencies web site. Insight into the EMP document will be ensured on following addresses:
- The premises of the MININFRA, RTDA, RHA, and LODA in Kigali on working days from 11:00 AM to 01:00 PM
- The premises of the relevant Districts, during normal working days.
- Citizen Engagement and presentation of EMP document will be held in the premises of the concerned District.
- Questions raised and clarification provided will be presented within the EMP's Report on Citizen Engagement.
- Detailed Report on Citizen Engagement process will be presented within the final version of EMPs documents.

Beneficiary consultations will be conducted during the construction/ rehabilitation works of Phase I, and records of environmental and social issues raised and complaints received during consultations, field visits, informal discussions, formal letters, etc., will be followed up. The records will be kept in the project office in implementing agencies.

In advance of the work commencing implementing agencies will provide information in:

- Newspaper articles in minimum one national and also in one local media.
- Posters on main notice board at all community centres
- Radio announcements of road diversions
- Implementing agencies and relevant contractors will also provide contact details of community liaison officers who are appointed to work with local communities.

### **7.3.2 Information Disclosure and Dissemination of EIA Studies**

For all the sub-projects for which the EIA Study will be required, the documents including the mitigation measures and consultation process will be made available for public review in both English and Kinyarwanda. The summary EA will be published on implementing agencies and WB websites. The relevant information prior to public consultations in a timely manner and in a form that is meaningful for, and accessible to, the groups being consulted, will be disseminated as outlined above. The framework for the information disclosure is shown in Table 8.

Table 13: Information Disclosure Framework in case of EIA preparation

Stage of Consultation	Information dissemination tools
Initial Consultation, Decision about scope and Content of EIA Study	Documentation of a summary of the project description and objectives, and potential adverse effects of the proposed project will be delivered to the RDB. Interested public will be invited to participate during process of decision making regarding Scope and Content of EIA Study.
Draft EIA Study	Implementing agencies will deliver a Draft EIA Study for approval to the RDB. Second round of public consultation will be organized and Draft EIA Study will be disclosed on implementing agencies web site and delivered to the municipalities which are potentially affected with the project. A public presentation of Draft EIA Study will be organized on a local level, in one of the Districts which RDB recognized as a most relevant local community.
Final Environmental Approval	RDB will make final decision regarding Environmental Approval for EIA Study. Interested parties will be invited to protest in case they find EIA procedure was irregular and/or their complaints are not properly integrated within the Final EIA Study.

#### 7.4 Grievances Redress Mechanism

A Grievance Redress Mechanism will be implemented to ensure that all complaints from local communities are dealt with appropriately, with corrective actions being implemented, and the complainant being informed of the outcome. It will be applied to all complaints from affected parties. Implementing agencies will maintain a Complaints Database, which will contain all the information on complaints or grievances received from the communities or other stakeholders. This would include: the type of complaint, location, time, actions to address these complaints, and final outcome. The contractor, in coordination with implementing agencies, shall set-up a grievance redress committee that will address any complaints during project implementation. Grievances should be resolved within 15 working days.

In addition, for resettlement related complaints, the sub project RAP team (comprised of Sociologist, a Land Surveyor and Valuation Experts) will facilitate the establishing of the grievance redress mechanisms in accordance to the guidelines outlined herein the RPF under the District Executive Secretary on behalf of the District Council. The following levels of grievance resolution are provided for by Law, however, the RPF provides details of the process and institutions involved:

- a) Resettlement and Compensation Committee
- b) Role of District Executive Committee, CoK and or MININFRA in resolution of contestations to the expropriation list and valuation for compensation and resettlement
- c) Approval and timeframe for payment of compensation
- d) Retraction of expropriation
- e) Cell Adjudication Committee (CAC)
- f) High Court

A grievance form is presented below and hard copies will be made available at community centres.

Table 14: Sample Grievance Reporting Form

Grievance Reference Number (to be filled in by [name ]):			
Contact Details		Name:	
		Address:	
		Tel:	
		e-mail:	
How would you prefer to be contacted? Please tick box	By post	By phone	By e-mail
Name and the identification information (JMBG from identity card).			
Details of your grievance. Please describe the problems, how it happened, when, where and how many times, as relevant			
What is your suggested resolution for the grievance?			
How to submit this form to implementing agencies		By Post to:	
		By hand: please drop this form at	
		By e-mail: Please email your grievance, suggested resolution and preferred contact details to:	
Signature		Date	

## **8. ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES**

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### **8.1 Introduction**

The environmental impacts identified at this stage are preliminary in nature and will need to be further elaborated specifically (subproject wise) and potential for occurrence has to be ascertained during further stages of subproject design and implementation. This section details out the potential environmental impacts of the sub-projects funded by WB under RUDP. The overall mitigation measures will broadly fit in the following strategies:

- Impact avoidance: changing project location, design and road rehabilitation methods to avoid impacts.
- Impact minimization: where impacts cannot be avoided, implementing mitigation measures to reduce the impact to acceptable levels.
- Compensation: where impacts cannot be avoided or sufficiently mitigated, arranging compensation.
- Enhancement: measures, which, at little cost to the project, give appreciable environmental benefits.

Of the possibilities for funding provided to the cities including roads, drains, water and sanitation, and waste management, the cities have prioritized roads and drainage systems as the areas where they are faced with most challenges, and that whose infrastructure if developed with stimulate local economic development most. It was therefore the choice of cities to prioritize roads and drainage infrastructure development subprojects in the seven cities. The main activities of the subprojects are as follows: Construction Camp; Earth works for foundation of the road and or filling of deep potholes; Repairing of bridges/culverts; bituminous pavement works for pothole & crack repairing; Slope protection repairing works for road & bridge/culvert and Removal of construction waste. The potential impacts along with possible mitigation measures due to the above subproject activities are given below.

### **8.2 Potential negative Impacts and recommended Mitigation Measures**

Road and Drainage infrastructure works on proposed subprojects will have only minor impacts on the environment (environmental category B). Most of the impacts are of temporary character and they will disappear after the road rehabilitation works are completed. The possible temporary impacts as consequence of the road rehabilitation activities will consist of among others: disruption of current traffic circulation; roadway safety; damage to access roads; noise, waste and dust nuisance; and air emissions; potential impacts of soils and water resources; brief disturbance to biota, and momentary interference to neighbouring settlements through various road rehabilitation and operation activities. Off-site activities include quarry, borrow pit and asphalt plant operations and destination of the wastewater and storm water through the drainage channels which if not managed properly, may cause localized adverse impacts. The Contractor's yard and workers' camp can be potential sources of temporary adverse impacts. The potential impacts and recommended mitigation measures are described below as well as a sample subproject characteristic impacts and mitigation measures.

**Table 15: Summary of key impacts during construction phase**

Impact	Significance	Comment
impacts on land use/settlements,	low	There will be no land acquisition as defined by WB OP 4.01 during the project implementation. In case of any land acquisition – RFP document is prepared for this Project
ground and surface water,	low	Due to low amount of drainage water that can be potentially drained into any river which is bridged by the road sections the consequential impact is expected to be minimal to negligible. In any case, impact can be mitigated by following GEMM prescribed measures
air quality,	low	Temporary impact. Local air quality may experience some moderate and temporary deterioration due to dust from construction traffic and elevated levels of nitrogen oxide (NOx) and sulphur oxide (SOx) from construction equipment exhausts. Impact can be mitigated by following GEMM procedures
flora and fauna (protected areas and species),	low	Minimal loss or damage of vegetation and loss and damage or disruption to fauna can occur during works. Impacts can be offset or mitigated by following GEMM procedures. There will be no negative impacts on protected areas due to nature of works.
noise and vibration,	low	Only limited temporary impact during the rehabilitation phase. Mitigation measures in form of noise deflecting shields will be placed where the work-scheduling activities cannot have desired effect. Impact can be mitigated by following GEMM procedures.
soil quality,	low	Soil contamination can occur from: drainage of dredged materials, spillage of hazardous and toxic chemicals and erosion from road rehabilitation material Impact can be mitigated by following GEMM procedures
waste,	low	Health hazards and environmental impacts can happen due to improper waste management practices. Impact can be mitigated by following GEMM procedures
access/crossing points of the main road and local roads,	low	The rehabilitation and widening works will not affect existing crossing points.
cultural and religious issues,	low	Regular rehabilitation activities could, if not properly managed, cause disturbance to the cultural and religious sites. Impact can be avoided by implementing EMP related measures.
cumulative impacts etc.	Medium/moderate	Temporary, rehabilitation works may cause a slight increase of noise levels and air pollutants concentrations during the works only

Roads subprojects that are within RUDP belong to the local roads network, on which significant increase of road traffic as a result of the works is not expected, since they are the primary transport routes for communication between settlements within cities. In respect to impact of the potential increase of the vehicle speed on rehabilitated roads, this issue will be addressed through the project's road safety component, which will include implementation of the active and passive

measures to control the vehicle speed on rehabilitated road sections.



### 8.2.1 Environmental Impacts during Road Rehabilitation Phase

Road rehabilitation works on proposed sub-projects will have only minor impacts on the environment. Most of the impacts are of temporary character, can be successfully mitigated and will disappear after the road rehabilitation works are completed. The possible direct negative impacts as consequence of the road rehabilitation activities, if not mitigated, will relate to waste management; noise and health & safety management; and possible soil and water pollution from the construction activities. Off-site impacts may be related to quarry, borrow pit and asphalt plant operations, which if not managed properly may cause localized adverse impacts. The contractor’s yard and camps can also be potential sources of temporary adverse impacts. Potential mitigation measures to address the above impacts have been discussed in EMF and include: specific management programs; engineering design solutions; alternative approaches and methods to achieve the activity objectives; stakeholder participation in finalizing mitigation measures; operation control procedures; and application of management systems. Project specific environmental mitigation measures are the main part of each of the site-specific EMPs. A more extensive list of possible impacts and proposed mitigation measures is presented below.

Table 16: Environmental Screening of potential impacts of the RUDP

Aspect	Impact	Mitigation Measures
Erosion of embankment slopes	The earthworks for the road sub-project activities might cause negative impacts in form of erosion on embankment slopes, dust, noise and vibration to disturb the local people.	Excavation and/or filling will be done in such a way that the slope of the road embankment should be within right of way and will not disrupt drainage problems. The Contractor should use erosion control measures such as re-vegetation of disturbed areas and placing of tarps. The Contractor shall stabilize the cleared areas not used for road rehabilitation activities with vegetation or with the appropriate surface treatments as soon as practicable following completion of activities.
Potential air pollution - Dust	Possible sources of air pollution will be dust due to maintenance activities, machinery movement and other sources. Road rehabilitation works involve breaking up, digging, crushing, transporting, and dumping small quantities of dry materials. Locally, the air quality may experience some moderate and temporary deterioration due to dust from construction traffic and elevated levels of nitrogen oxide (NOx) and sulphur oxide (SOx) from construction equipment exhausts. The dust may settle on vegetation, crops, structures and buildings.	Spraying of water is the main way of controlling dust. Water is, in any case, required to be added to fill material during the rehabilitation of the road base. Spraying of road surfaces, including haul roads from borrow pits and quarries, should be undertaken during road rehabilitation works, particularly in the vicinity of settlements.
Potential water contamination	Water contamination may occur during the rehabilitation of the project road from site runoff, spills from the equipment	Fuel and lubricant spills can occur at the Contractor’s work camp while maintaining and washing equipment and work

	<p>maintenance areas and sanitary wastewater effluent from the work camps. As for the potential pollution during operation, these are mostly limited to accidents. In such a case, procedures for action in incidental situations, as defined by the concerned public agency and existing law, will apply. Paving/re-paving of the road stretches can cause the air and water contamination from new asphalt batch plant if there is a need to build it. However, construction of new asphalt plants is not expected to be carried out under RUDP. The contractors will use asphalt from the already approved and licensed establishments.</p>	<p>vehicles. During the normal operations, these areas should be equipped with the adequately sized, gravity oil separator. Should spills occur in any part of the road, especially where the rivers are closest to the road, to mitigate the problem the Contractor should use absorbing materials, such as absorbent mats/fabrics, or sand and scrape off the contaminated soils and dispose them in approved facility, in accordance with the Water Law.</p>
<p>Potential contamination of soils due to improper waste disposal</p>	<p>Potential contamination of soils and watercourses as a result of improper disposal of liquid and solid wastes from road rehabilitation activities.</p>	<p>The mitigation measure to avoid contamination of soils and watercourses is to ensure that waste materials are properly disposed to the suitable locations. Partly, inert waste materials (for example concrete from bridge rehabilitation) can be used as filling material for rehabilitation of road sub-grade. Contractor should produce a Waste Management Plan for the Project. Mitigation measures should, among other requirement, contain contractor obligations to:</p> <ul style="list-style-type: none"> <li>• Locate the garbage pit/waste disposal site min 500 m away from the residence so that peoples are not disturbed with the odour likely to be produced from anaerobic decomposition of wastes at the waste dumping places. Encompass the waste dumping place by fencing and tree plantation to prevent children to enter and play with. All solid waste will be collected and removed from the work camps and disposed in approval waste disposal sites.</li> <li>• In case oil and grease are trapped for reuse in a minimum 60cm thick lined pit, care shall be taken to ensure that the pit should be located at the lowest end of the site and away from the residential areas.</li> </ul> <p>In case of filling of low-lying areas with wastes, it needs to be ensured that the level matches with the surrounding areas. In this case care should be taken that these low lying areas are not used for rainwater storage</p>

Impact on Fish habitat	Adverse impact on fish habitat may occur by performing following activities: work within or adjacent to watercourse, deposition of toxic concrete or concrete leachate into watercourses, disposal of fine sediments in stream channel as a result of using earth cofferdams to isolate bridge foundation structures from the watercourse.	To avoid the negative impacts following mitigation measures could be used: <ul style="list-style-type: none"> <li>• Restrict in-stream work to periods outside fish spawning period;</li> <li>• Use clear-span bridge structures wherever possible to eliminate need for in-stream road rehabilitation work;</li> <li>• Ensure that concrete works (material) are isolated from the watercourse;</li> <li>• Ensure that concrete trucks and other equipment used to handle concrete are washed down in an area that is isolated from the watercourse so as not to allow toxic leachate to enter fish bearing streams;</li> </ul> Construct in-stream foundation works in the dry season so as to avoid the need for earth cofferdams; or use steel caisson type cofferdams instead of earth cofferdams so as to minimize risk of introducing sediments into a fish-bearing watercourse.
Equipment maintenance and fuelling	Equipment maintenance and fuelling may cause contamination of soils and watercourses, including groundwater, if handling of lubricants, fuels and solvents is improper or careless.	To avoid damage to natural environment there is a need to ensure proper handling of lubricants, fuels and solvents while maintaining the equipment.
Bridge deck paving and bridge painting	Negative impacts can occur due to incidental or careless deposition of toxic asphalt substances or toxic paints into watercourses.	<ul style="list-style-type: none"> <li>• Ensure that asphalt is not deliberately or accidentally deposited into watercourses;</li> <li>• Ensure that sand-blasting operations are contained within protective shrouds and that paint over-spray and dripping is contained by shrouds and tarps.</li> </ul>
Occupational Health and Safety	Roads in good condition will reduce traffic blocks, engine idle time and damage to motor vehicles. The ensuing benefits to public health and economy though marginal benefits will also add to the main benefit of smooth and faster traffic flow. Construction workers may be affected adversely due to hazardous working environments where high noise, dust, unsafe movement of machinery etc. may be present. Similarly, safety of road users may be affected during rehabilitation works.	The Contractor shall instruct his workers in health and safety matters, and require from the workers to use the provided personal safety equipment. Contractor has to ensure that all operators of heavy or dangerous machinery are properly trained/certified, and also insured. He will have to provide first aid facilities, rapid availability of trained paramedical personnel, and emergency transport to nearest hospital with accident and emergency facilities. The contractor will responsible for ensuring that all construction vehicles observe speed limits on the

		construction sites and on public roads. Safety of the road users will be ensured by implementing adequate temporary traffic arrangements including signals, traffic lights etc. for the areas where the rehabilitation activities are carried out.
Noise	Noise caused by the rehabilitation works will have only a temporary impact. Although temporary and mostly moderate, road rehabilitation-related noise impacts in the vicinity of residential areas may cause negative health impact, if not mitigated.	Relatively small traffic load on proposed road and non-presence of significant amount of residential buildings placed close to the road lead to the conclusion that noise barriers will not be implemented within this project. In sensitive areas (schools, nature parks, hospitals) special care regarding noise emission will be taken by the Contractor, strictly respecting the EMP requirements. In case of noise disturbance with noise emissions which are above permitted level, temporary noise barriers should be considered as appropriate mitigation measure. Awareness building and administrative measures should be taken to ensure proper maintenance of vehicles. In case of exceeded noise limits for sensitive areas the Contractor should erect temporary shields to prevent a free noise spreading to the sensitive receptors.
Potential Cumulative impacts	Rehabilitation of the road sections under RUDP Project will not result in any cumulative impacts.	

### 8.2.2 Environmental Impacts during Operation Phase (post-construction/rehabilitation phase)

Table 17: Suggested mitigation measures for the RUDP Environmental Impacts

Aspect	Impact	Mitigation Measures
Road Accidents	After completion of the rehabilitation activities there is a possibility that number of road accidents may increase due to higher number of vehicles using the roads at increased speeds.	Traffic signs should be installed in accordance with the national legislation. The Contractor's Site Specific Implementation Plan should contain procedures for emergency response in the event of accidents or major incidents, in order to safeguard people, property and environmental resources.
Noise Quality	During operation, passing vehicles will generate noise. Noise	In open areas, traffic noise will disperse and will not

	levels may also marginally increase as more vehicles use the road at higher speeds.	create any impact. In the urbanized areas the impact of traffic noise due to operational activities after completion of the road sections rehabilitated within the RUDP Project would be minimal.
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### **8.3 General Environmental Mitigation Measures during implementation of the planned works**

The requirements of General Environmental Mitigation Measures (GEMM), EMPs and of the Rwanda standards will be included in all sub project civil works contracts through a set of special environmental clauses included in the Technical Specification of the bidding documents. The set of standard Special Environmental Clauses will be subject to revision for each sub-project to ensure the relevant issues for each sub-project are being adopted.

#### **8.3.1 Site Preparation**

The preparation of site for infrastructure development works involves: (i) clearing of land required for civil works; and (ii) management of activities such as traffic during road rehabilitation works. These activities have been detailed out for civil works of RUDP activities separately.

The activities to be undertaken by the contractor during the clearing and grubbing of the site are as follows: The clearance of site shall involve the removal of all materials such as trees, bushes, shrubs, stumps, roots, grass, weeds, part of topsoil and rubbish. Towards this end, the Contractor shall adopt the following measures: (i) Limiting the surface area of erodible earth material exposed by clearing and grubbing; (ii) Conservation of top soil and stock piling as per the measures suggested as part of GEMM (refer to section on Top Soil Management); and (iii) Carry out necessary backfilling of pits resulting from uprooting of trees and stumps with excavated or approved materials to the required compaction conforming to the surrounding area. To minimize the adverse impact on vegetation, only ground cover/shrubs that impinge directly on the permanent works shall be removed. Cutting of trees and vegetation outside the working area shall be avoided under all circumstances. The locations for disposal of grubbing waste shall be finalized prior to the start of the works on any particular section of the road. The criteria for disposal of wastes shall be in accordance with the measures given in GEMM (refer to a section on Waste Management).

In locations where erosion or sedimentation is likely to be a problem, clearing and grubbing operations should be so scheduled and performed that grading operations and permanent erosion and sedimentation control features can follow immediately, if the project conditions permit. Dismantling of structures and culverts shall be carried out in a manner as not to damage the remaining required portion of structures and other surrounding properties. The disposal of wastes shall be in accordance with the provisions given in GEMM (refer to section on Waste Management). The following precautions shall be adopted:

- The waste generated shall not be disposed of in watercourses, to avoid hindrance to the flow.
- All necessary measures shall be taken while working close to cross drainage channels to prevent earthwork, stonework as well as the method of operation from impeding cross drainage at rivers, water canals and existing irrigation and drainage systems.

The designated sites duly approved by implementing agencies shall be cleared of its existing cover for setting up of the construction sites, camps and related infrastructure facilities, borrow areas and other locations identified for temporary use during road rehabilitation works. The contractor shall comply with all safety requirements in consideration as specified in the GEMM (refer to section on Occupational Health and Safety). Before initiation of site preparation activities along these lands to be used temporarily during road rehabilitation works, it shall be the responsibility of the Contractor to submit and obtain approval of the site redevelopment plan from implementing agencies. The letter/contract agreement between the owner(s) of the land parcel for temporary usage shall include site redevelopment to its original status. The adequate mitigation measures for the same are

furnished in the GEMM (refer to section on Construction Camp Management and Borrow Areas Development & Operation).

Traffic management during road rehabilitation works is an activity specific to the contractors. Contractors must ensure a reasonably smooth flow of traffic during road rehabilitation works. The following are the general principles to be followed for traffic management during road rehabilitation works:

- Partial pavement rehabilitation over long lengths will not be permitted. The contractor should concentrate his activities over sections such that he can complete continuous fronts of up to a maximum of 1 km before starting the adjacent front. The contractor may open more than one continuous 1 km front provided that he has the separate resources to do so. The resources working on a 1 km front may not be shifted to another front until no longer required on that front.
- The road rehabilitation activities should be staggered over sub-sections to the extent that the use of plant and equipment is optimized to maximum efficiency and to avoid idling. For road widening operations, excavation adjacent to the existing road shall not be permitted on both titles simultaneously. Earthworks must be completed to the level of the existing road before excavation work on the opposite side will be permitted.
- The road rehabilitation operations taking place on a particular front must be managed efficiently such that delays between successive pavement layers are minimized.

### 8.3.2 Waste Management

Table 18: Environmental impacts and mitigation impacts for respective subprojects

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures
General Waste	Soil and water pollution from the improper management of wastes and excess materials from the construction sites.	<p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>• Develop <b>waste management plan</b> for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food waste etc.) prior to commencing of road and drainage works and submit to implementing agencies for approval.</li> <li>• Organize disposal of all wastes generated during road rehabilitation works in an environmentally acceptable manner. This will include consideration of the nature and location of disposal site, so as to cause less environmental impact.</li> <li>• Minimize the production of waste materials by 3R (Reduce, Recycle and Reuse) approach.</li> </ul>
		<ul style="list-style-type: none"> <li>• Segregate and reuse or recycle all the wastes, wherever practical.</li> <li>• Prohibit burning of solid waste</li> <li>• Collect and transport non-hazardous wastes to all the approved disposal sites. Vehicles transporting solid waste shall be covered with tarps or nets to prevent spilling waste along the route</li> <li>• Provide refuse containers at each worksite.</li> <li>• Request suppliers to minimize packaging where</li> </ul>

		<p>practicable.</p> <ul style="list-style-type: none"> <li>• Maintain all construction sites in a cleaner, tidy and safe condition and provide and maintain appropriate facilities as temporary storage of all wastes before transportation and final disposal.</li> </ul>
Hazardous Waste	Health hazards and environmental impacts due to improper waste management practices	<p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>• Collect chemical wastes in 200 litre drums (or similar sealed container), appropriately labelled for safe transport to an approved chemical waste depot.</li> <li>• Store, transport and handle all chemicals avoiding potential environmental pollution.</li> <li>• Store all hazardous wastes appropriately in banded areas away from water courses.</li> <li>• Make available Material Safety Data Sheets for hazardous materials on-site during road rehabilitation works.</li> <li>• Collect hydrocarbon wastes, including lube oils, for safe transport off-site for reuse,</li> </ul>

### 8.3.3 Hazardous Materials Management

Table 19: Environmental Impacts on Hazardous materials and proposed mitigation measures

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures
Fuels and Hazardous goods.	Materials used in road rehabilitation have a potential to be a source of contamination. Improper storage and handling of fuels, lubricants, chemicals and hazardous goods/materials on- site, and potential spills from these goods may harm the environment or health of road rehabilitation workers.	<ul style="list-style-type: none"> <li>• Prepare spill control procedures and submit the plan for IMPLEMENTING AGENCIES approval.</li> <li>• Train the relevant contractor Implementing agencies and personnel in handling of fuels and spill control procedures.</li> <li>• Store dangerous goods in bounded areas on a top of a sealed plastic sheet away from watercourses.</li> <li>• Refueling shall occur only within bounded areas.</li> <li>• Make available Material Safety Data Sheets for chemicals and dangerous goods on-site.</li> <li>• Provide absorbent and containment material (e.g., absorbent matting) where hazardous material are used and stored and Implementing agencies and personnel I trained in the correct use.</li> <li>• Provide protective clothing, safety boots, helmets, masks, gloves, goggles, to the contractor Implementing agencies and personnel, appropriate to materials in use.</li> <li>• Make sure all containers, drums, and tanks</li> </ul>



		<p>that are used for storage are in good condition and are labeled with expiry date. Any container, drum, or tank that is dented, cracked, or rusted might eventually leak. Check for leakage regularly to identify potential problems before they occur.</p> <ul style="list-style-type: none"> <li>• Put containers and drums in temporary storages in clearly marked areas, where they will not be run over by vehicles or heavy machinery. The area shall preferably slope or drain to a safe collection area in the event of a spill.</li> <li>• Take all precautionary measures when handling and storing fuels and lubricants, avoiding environmental pollution.</li> <li>• Avoid the use of material with greater potential for contamination by substituting them with more environmentally friendly materials.</li> </ul>
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### 8.3.4 Water Resources Management

Table 20: Environmental Impacts on Water Resources by the RUDP and mitigation measures

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures
Discharge from construction sites	During road rehabilitation works both surface and groundwater quality may be deteriorated due to road rehabilitation activities in the waterway/river, sewerages from construction sites and work camps. The road rehabilitation works will modify groundcover and topography changing the surface water drainage patterns of the area including infiltration and storage of storm water. These changes in hydrological regime lead to increased rate of runoff increase in sediment and contaminant loading, increased flooding, groundwater contamination, and effect habitat of fish	<p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>• Install temporary drainage works (channels and bunds) in areas required for sediment and erosion control and around storage areas for road rehabilitation materials</li> <li>• Install temporary sediment basins, where appropriate, to capture sediment-laden run-off from site</li> <li>• Divert runoff from undisturbed areas around the</li> <li>• construction site</li> <li>• Stockpile materials away from drainage lines</li> <li>• Prevent all solid and liquid wastes entering waterways by collecting solid waste, oils, chemicals, bitumen spray waste and wastewaters from brick, concrete and asphalt cutting where possible and transport to an approved waste disposal site or recycling depot</li> <li>• Wash out ready-mix concrete agitators and concrete handling equipment at washing facilities off site or into approved bunded areas on site. Ensure that tires of construction vehicles are cleaned in the washing bay (constructed at the entrance of the construction site) to remove the mud from the</li> </ul>

	and other aquatic biology.	wheels. This should be done in every exit of each vehicle to ensure the local roads are kept clean.
Soil Erosion and siltation	Soil erosion and dust from the material stockpiles will increase the sediment and contaminant loading of surface water bodies.	<p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>• Stabilize the cleared areas not used for road rehabilitation activities with vegetation or appropriate surface water treatments as soon as practicable following earthwork to minimize erosion</li> <li>• Ensure that roads used by construction vehicles are swept regularly to remove sediment.</li> <li>• Water the material stockpiles, access roads and bare soils on an as required basis to minimize dust. Increase the watering frequency during periods of high risk (e.g. high winds)</li> </ul>
Road rehabilitation activities in water bodies	Road rehabilitation works in the water bodies will increase sediment and contaminant loading, and effect habitat of fish and other aquatic biology.	<p>The Contractor Shall:</p> <ul style="list-style-type: none"> <li>• Monitor the water quality in the runoff from the site or areas affected by dredge plumes, and improve work practices as necessary</li> <li>• Protect water bodies from sediment loads by silt screen or bubble curtains or other barriers</li> <li>• Minimize the generation of sediment, oil and grease, excess nutrients, organic matter, litter, debris and any form of waste (particularly petroleum and chemical wastes). These substances must not enter waterways, storm water systems or underground water tables.</li> <li>• Use environment friendly and nontoxic slurry during road rehabilitation works of piles to discharge into the river.</li> <li>• Reduce infiltration of contaminated drainage through</li> </ul>

		<p>storm water management design</p> <ul style="list-style-type: none"> <li>Do not discharge cement and water curing used for cement concrete directly into water courses and drainage inlets.</li> </ul>
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**8.3.5 Drainage Management**

Table 21: Environmental Impacts triggered by implementation of drains and their mitigation measures

Impact Source	Environmental Impacts	Mitigation Measures
Excavation and earth works, and construction yards	Lack of proper drainage for rainwater/liquid waste or wastewater owing to the road rehabilitation activities harms environment in terms of water and soil contamination	<p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>Prepare a program for prevent/avoid standing waters, which PSC will verify in advance and confirm during implementation</li> <li>Provide alternative drainage for rainwater if the road rehabilitation works/earth-fillings cut the established drainage line</li> <li>Establish local drainage line with appropriate silt collector and silt screen for rainwater or wastewater connecting to the existing established drainage lines already there</li> <li>Rehabilitate road drainage structures immediately if damaged by contractors' road transports.</li> <li>Construct wide drains instead of deep drains to avoid sand deposition in the drains that require frequent cleaning.</li> <li>Provide appropriate silt collector and silt screen at the inlet and manholes and periodically clean the drainage system to avoid drainage congestion</li> <li>Protect natural slopes of drainage channels to ensure adequate storm water drains.</li> <li>Regularly inspect and maintain all drainage channels to assess and alleviate any drainage congestion problem.</li> <li>Reduce infiltration of contaminated drainage through storm water management design</li> </ul>

### 8.3.6 Soil Quality Management

Table 22: Environmental Impacts on soils and soil management, and mitigation measures

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures
Filling of Sites with dredge materials	Soil contamination will occur from drainage of dredged materials	The Contractor shall: Ensure that dredged sand used for land filling should be free of pollutants. Prior to filling, sand quality should be tested to confirm whether soil is pollution free. Sediments should be properly compacted. Top layer should be the 0.5 m thick clay on the surface and boundary slopes along with grass.
Road rehabilitation material stock piles	Erosion from road rehabilitation material stockpiles may contaminate the soils	The Contractor shall: Protect the toe of all stockpiles, where erosion is likely to occur, with silt fences, straw bales or bunds

### 8.3.7 Top Soil Management

Table 23: Environmental Impacts triggered by removal of top soils and mitigation measures

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures
Land clearing and earth works	Earthworks will impact the fertile top soils that are enriched with nutrients required for plant growth or agricultural development.	<p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>• Strip the top soil to a depth of 15 cm and store in stock piles of height not exceeding 2m.</li> <li>• Remove unwanted materials from top soil like grass, roots of trees and similar others.</li> <li>• The stockpiles will be done in slopes of 2:1 to reduce surface runoff and enhance percolation through the mass of stored soil.</li> <li>• Locate topsoil stockpiles in areas outside drainage lines and protect from erosion.</li> <li>• Construct diversion channels and silt fences around the topsoil stockpiles to prevent erosion and loss of topsoil.</li> <li>• Spread the topsoil to maintain the physico-chemical and biological activity of the soil. The stored top soil will be utilized for covering all disturbed area and along the proposed plantation sites</li> <li>• Prior to the re-spreading of topsoil, the ground surface will be ripped to assist the bonding of the soil layers, water penetration and re-vegetation</li> </ul>

### 8.3.8 Borrow Areas Development & Operation

Table 24: Environmental Impacts caused by borrow pits and the mitigation measures

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures
Development and operation of borrow areas	In case, the borrow pits developed by the Contractor, there will be impacts on local topography, landscaping and natural drainage.	<p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>• Identify borrow pits in consultation with the local IMPLEMENTING AGENCIES staff.</li> <li>• Obtain the borrow material from:               <ul style="list-style-type: none"> <li>- barren land or land without tree cover outside the road reserve;</li> <li>- excavating land and creating new water tanks/ponds;</li> <li>- land acquired temporarily outside the road reserve;</li> <li>- excavation of proposed culverts;</li> </ul> </li> <li>• Do not dig the borrow pits within 5m of the toe of the final section of the road embankment.</li> <li>• Dig the borrow pits continuously. Ridges of not less than 8 m widths shall be left at intervals not exceeding 300 m and small drains should be cut through the ridges to facilitate drainage</li> <li>• Slope the bed level of the borrow pits, as far as possible, down progressively towards the nearest cross drain, if any, and do not lower it than the bed of the cross-drain, to ensure efficient drainage. .</li> <li>• Do not locate the borrow pits within 500 m of any identified archaeological, religious or cultural sites if any.</li> <li>• Follow the below for restoration of borrow areas are:               <ul style="list-style-type: none"> <li>- Return stockpiled topsoil to the borrow pit if is used for agriculture;</li> <li>- Stabilize the banks of the borrow pit with the top soil if it is used for fish ponds by compaction;</li> <li>- Return stockpiled topsoil to the borrow pit and all worked areas to be stabilized through re- vegetation using local plants.</li> </ul> </li> <li>• Control at each site by ensuring that base of the borrow pit drains into a sediment trap prior to discharging from the site.</li> </ul>

### 8.3.9 Air Quality Management

Table 25: Environmental Impacts on Air Quality and Mitigation Measures

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures
Construction vehicular traffic	Air quality can be adversely affected by vehicle exhaust emissions and combustion of fuels.	<p>The Contractor should</p> <ul style="list-style-type: none"> <li>• Fit vehicles with appropriate exhaust systems and emission control devices. Maintain these devices in good working condition.</li> <li>• Operate the vehicles in a fuel efficient manner</li> <li>• Cover haul vehicles carrying dusty materials moving outside the construction site</li> <li>• Impose speed limits on all vehicle movement at the worksite to reduce dust emissions</li> <li>• Control the movement of construction traffic</li> <li>• Service all vehicles regularly</li> </ul>
Construction machinery	Air quality can be adversely affected by emissions from machinery and combustion of fuels.	<p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>• Fit machinery with appropriate exhaust systems and emission control devices. Maintain these devices in good working condition in accordance with the specifications defined by their manufacturers to maximize combustion efficiency and minimize the contaminant emissions. Proof or maintenance register shall be required by the equipment suppliers and contractors/subcontractors</li> <li>• Focus special attention on containing the emissions from generators</li> <li>• Machinery causing excess pollution (e.g. visible smoke) will be banned from construction sites</li> <li>• Service all equipment regularly to minimize emissions</li> <li>• Provide filtering systems, duct collectors or humidification or other techniques (as applicable) to the concrete batching and mixing plant to control the particle emissions in all its stages, including unloading, collection, aggregate handling, cement dumping, circulation of trucks and machinery inside the installations</li> </ul>
Road rehabilitation activities	Dust generation from construction sites, material stockpiles and access roads is a nuisance in the environment and can be a health hazard.	<ul style="list-style-type: none"> <li>• Water the material stockpiles, access roads and bare soils on an as required basis to minimize the potential for environmental nuisance due to dust.</li> <li>• Increase the watering frequency during periods of high risk (e.g. high winds). Stored materials such as gravel and sand shall be covered and confined to avoid their being wind-drifted</li> <li>• Minimize the extent and period of exposure of the bare surfaces</li> <li>• Reschedule earthwork activities or vegetation clearing activities, where practical, if necessary to avoid during periods of high wind and if visible dust is blowing off-site</li> <li>• Restore disturbed areas as soon as practicable by</li> </ul>

		vegetation/grass-turfing <ul style="list-style-type: none"> <li>• Store the cement in silos and minimize the emissions from silos by equipping them with filters.</li> <li>• Establish adequate locations for storage, mixing and loading of construction materials, in a way that dust dispersion is prevented because of such operations</li> </ul>
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### 8.3.10 Noise and Vibration Management

Table 26: Environment Impacts of Noise and Vibrations in implementation of RUDP and mitigation measures

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures
Construction vehicular traffic	Noise quality will be deteriorated due to vehicular traffic	The Contractor shall: <ul style="list-style-type: none"> <li>• Maintain all vehicles in order to keep it in good working order in accordance with manufactures maintenance procedures</li> <li>• Make sure all drivers will comply with the traffic codes concerning maximum speed limit, driving hours, etc.</li> <li>• Organize the loading and unloading of trucks, and handling operations for the purpose of minimizing construction noise on the work site</li> </ul>
Construction machinery	Noise and vibration may have an impact on people, property, fauna, livestock and the natural environment.	The Contractor shall: <ul style="list-style-type: none"> <li>• Appropriately site all noise generating activities to avoid noise pollution to local residents</li> <li>• Use the quietest available plant and equipment</li> <li>• Modify equipment to reduce noise (for example, noise control kits, lining of truck trays or pipelines)</li> <li>• Maintain all equipment in order to keep it in good working order in accordance with manufactures maintenance procedures. Equipment suppliers and contractors shall present proof of maintenance register of their equipment.</li> <li>• Install acoustic enclosures around generators to reduce noise levels.</li> <li>• Fit high efficiency mufflers to appropriate construction equipment</li> <li>• Avoid the unnecessary use of alarms, horns and sirens</li> </ul>
Road rehabilitation activities	Noise and vibration may have an impact on people, property, fauna, livestock and the natural environment.	The Contractor shall: <ul style="list-style-type: none"> <li>• Notify adjacent landholders prior any typical noise events outside of daylight hours</li> <li>• Educate the operators of construction equipment on potential noise problems and the techniques to minimize noise emissions</li> <li>• Employ best available work practices on-site to minimize occupational noise levels</li> <li>• Install temporary noise control barriers where appropriate</li> </ul>

		<ul style="list-style-type: none"> <li>• Plan activities on site and deliveries to and from site to minimize impact</li> <li>• Monitor and analyze noise and vibration results and adjust road rehabilitation practices as required.</li> <li>• Avoid undertaking the noisiest activities, where possible, when working at night near the residential areas</li> </ul>
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### 8.3.11 Tree Cutting and Afforestation

This section discusses the issue of tree cutting and afforestation. Loss of trees creates adverse environmental impacts. In order to mitigate these impacts, suitable measures have been suggested.

- a) Project Planning and Design Stage - During alignment finalization, design should be undertaken in such a way to minimize the loss of existing tree cover, encroachment of forest areas / protected areas etc. as specified in GEMM (Project Preparation). Tree felling, if unavoidable, shall be done only after compensatory plantation of at least three saplings for every tree cut is done. The plantation/afforestation would be carried out by the forest department. It should be ensured that plantation is carried out only in areas where water can be made available during dry seasons and the plant can be protected during the initial stages of their growth. The species shall be identified giving due importance to local flora. It is recommended to plant mixed species in case of both avenue or cluster plantation.
- b) Post-rehabilitation Stage - The maintenance of the saplings (including activities much as weeding, watering, planting of replacement saplings, etc. application of manure etc.) shall be the responsibility of the forest department.

### 8.3.12 Road Transport and Road Traffic Management

Table 27: Environmental Impacts caused by increased traffic and suggested mitigations

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures
Construction vehicular traffic	Increased traffic use of road by construction vehicles will affect the movement of normal road traffics and the safety of the road users.	<p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>• Prepare and submit a traffic management plan to the IMPLEMENTING AGENCIES for his approval at least 30 days before commencing work on any project component involved in traffic diversion and management.</li> <li>• Include in the traffic management plan to ensure uninterrupted traffic movement during road rehabilitation works: detailed drawings of traffic arrangements showing all detours, temporary road, temporary bridges temporary diversions, necessary barricades, warning signs / lights, road signs etc.</li> <li>• Provide signs at strategic locations of the roads complying with the schedules of signs contained in the Rwanda Traffic Regulations.</li> <li>• Install and maintain a display board at each important road intersection on the roads to be used during road</li> </ul>



		<p>rehabilitation works, which shall clearly show the following information in Rwandan:</p> <ul style="list-style-type: none"> <li>- Location: chainage and settlement name</li> <li>- Duration of construction period</li> <li>- Period of proposed detour / alternative route</li> <li>- Suggested detour route map</li> <li>- Name and contact address/telephone number of the concerned personnel</li> <li>- Name and contact address / telephone number of the Contractor</li> <li>- Inconvenience is sincerely regretted.</li> </ul>
	Accidents and spillage of fuels and chemicals	<ul style="list-style-type: none"> <li>• Restrict truck deliveries, where practicable, to day time working hours.</li> <li>• Restrict the transport of oversize loads.</li> <li>• Operate road traffics/transport vehicles, if possible, to non-peak periods to minimize traffic disruptions.</li> <li>• Enforce on-site speed limit</li> <li>• The contractor must have trained personnel who are competent in fuel handling procedures and for cleaning up accidental spills.</li> <li>• In-case of accident the Contractor should follow recommendations given in its own Emergency Response Plan.</li> </ul>

### 8.3.13 Erosion and Sedimentation Control

Table 28: Environmental Impacts leading to erosion and sedimentations and mitigation measures

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures
Clearing of construction sites	Cleared areas and slopes are susceptible for erosion of top soils that affects the growth of vegetation which causes ecological imbalance.	<ul style="list-style-type: none"> <li>• Reinstatement and protect cleared areas as soon as possible.</li> <li>• Mulch to protect batter slopes before planting</li> <li>• Cover unused area of disturbed or exposed surfaces immediately with mulch/grass tree plantations</li> </ul>
Road rehabilitation activities and material stockpiles	The impact of soil erosion are (i) Increased run off and sedimentation causing a greater flood hazard to the downstream, (ii) destruction of aquatic environment in nearby lakes, streams, and reservoirs caused by erosion and/or deposition of sediment damaging the spawning	<p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>• Locate stockpiles away from drainage lines</li> <li>• Protect the toe of all stockpiles, where erosion is likely to occur, with silt fences, straw bales or bunds</li> <li>• Remove debris from drainage paths and sediment control structures</li> <li>• Cover the loose sediments and water them if required</li> <li>• Divert natural runoff around construction areas prior to any site disturbance</li> <li>• Install protective measures on site prior to road rehabilitation, for example, sediment traps</li> <li>• Control drainage through a site in protected</li> </ul>

	grounds of fish, and (iii) destruction of vegetation by burying or gullyng.	<p>channels or slope drains</p> <ul style="list-style-type: none"> <li>• Install cut off drains' on large cut/fill batter slopes to</li> <li>• control water runoff speed and hence erosion</li> <li>• Observe the performance of drainage structures and erosion controls during rain and modify as required.</li> </ul>
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### 8.3.14 Construction Camp Management

Table 29: Environmental Impacts caused by construction and management of construction camp and suggested mitigations

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures
Siting and Location of construction camps	Campsites for construction workers are the important locations that have significant impacts such as health and safety hazards on local resources and infrastructure of nearby communities.	<p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>• Locate the construction camps at areas which are acceptable from environmental, cultural or social point of view.</li> <li>• Consider the location of construction camps away from communities in order to avoid social conflict in using the natural resources such as water or to avoid the possible adverse impacts of the construction camps on the surrounding communities.</li> <li>• Local authorities responsible for health, religious and security shall be duly informed on the set up of camp facilities so as to maintain effective surveillance over public health, social and security matters</li> </ul>
Construction Camp Facilities	Lack of proper infrastructure facilities such as housing, water supply and sanitation facilities will increase pressure on the local services and generate substandard living standards and health hazards.	<p>Contractor shall provide the following facilities in the Campsites:</p> <ul style="list-style-type: none"> <li>• Adequate housing for all workers</li> <li>• Safe and reliable water supply. Water supply from deep tube wells of 300 m depth that meets the national standards</li> <li>• Hygienic sanitary facilities and sewerage system. The toilets and domestic waste water will be collected through a common sewerage. Provide separate latrines and bathing places for males and females with total isolation by wall or by location. The minimum number of toilet facilities required is one toilet for every ten persons.</li> <li>• Provide in-house community/common entertainment facilities. Dependence of local entertainment outlets by the construction camps to be discouraged/prohibited to the extent possible.</li> </ul>
Disposal of waste	Management of wastes is crucial to minimize impacts on the environment	<p>The Contractor should</p> <ul style="list-style-type: none"> <li>• Ensure proper collection and disposal of solid wastes within the construction camps</li> <li>• Insist waste separation by source; organic wastes in one pot and inorganic wastes in another pot at household level.</li> <li>• Store inorganic wastes in a safe place within the household and clear organic wastes on daily basis to waste collector.</li> </ul>

		<p>Establish waste collection, transportation and disposal systems with the manpower and equipment/vehicles needed.</p> <ul style="list-style-type: none"> <li>• Locate the garbage pit/waste disposal site min 500 m away from the residence so that peoples are not disturbed with the odor likely to be produced from anaerobic decomposition of wastes at the waste dumping places. Encompass the waste dumping place by fencing and tree plantation to prevent children to enter and play with.</li> <li>• Do not establish site specific landfill sites. All solid waste will be collected and removed from the work camps and disposed in approval waste disposal sites.</li> </ul>
Health and Hygiene	There will be a potential for diseases to be transmitted	<p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>• Provide adequate health care facilities within construction sites.</li> <li>• Provide first aid facility round the clock. Maintain stock of medicines in the facility and appoint fulltime designated first aider or nurse.</li> <li>• Provide ambulance facility for the labourers during emergency to be transported to nearest hospitals.</li> <li>• Initial health screening of the labourers coming from outside areas</li> <li>• Carryout short training sessions on best hygiene practices to be mandatorily participated by all workers. Place display boards at strategic locations within the camps containing messages on best hygienic practices</li> </ul>

### 8.3.15 Cultural and Religious Issues

Table 30: Social and environmental impacts to culturally important issues and suggested mitigations

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures
Road rehabilitation activities near religious and cultural sites	Disturbance from road rehabilitation works to the cultural and religious sites, and contractors lack of knowledge on cultural issues cause social disturbances.	<p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>• Communicate to the public through community consultation and newspaper announcements regarding the scope and schedule of road rehabilitation, as well as certain road rehabilitation activities causing disruptions or access restriction.</li> <li>• Do not block access to cultural and religious sites, wherever possible</li> <li>• Restrict all road rehabilitation activities within the foot prints of the construction sites.</li> <li>• Stop road rehabilitation works that produce noise (particularly during prayer time) should there be any church/religious/educational institutions close to the construction sites and users make objections.</li> <li>• Take special care and use appropriate equipment when working next to a cultural/religious institution.</li> </ul>

		<ul style="list-style-type: none"> <li>• Resolve cultural issues in consultation with local leaders and PSC</li> <li>• Establish a mechanism that allows local people to raise grievances arising from the road rehabilitation process.</li> </ul>
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### 8.3.16 Occupational Health and Safety

Table 31: Environmental impacts on safety and occupational health of works and suggested mitigations

Project Activity / Impact Source	Environmental Impacts	Mitigation Measures
Best practices	Road rehabilitation works may pose health and safety risks to the construction workers and site visitors leading to severe injuries and deaths. The population in the proximity of the construction site and the construction workers will be exposed to a number of (i) biophysical health risk factors, (e.g. noise, dust, chemicals, construction material, solid waste, waste water, vector transmitted diseases etc.), (and (ii) road	<p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>• Implement suitable safety standards for all workers and site visitors which should not be less than those laid down on the international standards (e.g. WB's 'Environmental Health and Safety Guidelines') and contractor's own national standards or statutory regulations, in addition to complying with the national standards of the Government of Rwanda (e.g. 'The Rwanda Labour Code')</li> <li>• Provide the workers with a safe and healthy work environment, taking into account inherent risks in its particular road rehabilitation activity and specific classes of hazards in the work areas,</li> <li>• Provide Implementing personal protective equipment (PPE) for workers, such as safety boots, helmets, masks, gloves, protective clothing, goggles, full-face eye shields, and ear protection. Maintain the PPE properly by cleaning dirty ones and replacing them with the damaged ones.</li> <li>• Safety procedures include provision of information, training and protective clothing to workers involved in hazardous operations and proper performance of their job.</li> </ul>

	accidents from construction traffic.	<p>Contractor should instruct/train workers on proper behaviour with local communities.</p> <ul style="list-style-type: none"> <li>• Appoint an environment, health and safety manager to look after the health and safety of the workers</li> </ul>
Accidents	Lack of first aid facilities and health care facilities in the immediate vicinity will aggravate the health conditions of the victims	<ul style="list-style-type: none"> <li>• Provide health care facilities and first aid facilities are readily available. Appropriately equipped first-aid stations should be easily accessible throughout the place of work</li> <li>• Document and report occupational accidents, diseases, and incidents.</li> <li>• Prevent accidents, injury, and disease arising from, associated with, or occurring in the course of work by minimizing, so far as reasonably practicable, the causes of hazards. In a manner consistent with good international industry practice.</li> <li>• Identify potential hazards to workers, particularly those that may be life-threatening and provide necessary preventive and protective measures.</li> <li>• Provide awareness to the construction drivers to strictly follow the driving rules</li> <li>• * Provide adequate lighting in the construction area and along the roads</li> </ul>
Water and sanitation facilities at the construction sites	Lack of Water sanitation facilities at construction sites cause inconvenience to the construction workers and affect their personal hygiene.	<ul style="list-style-type: none"> <li>• The contractor should provide portable toilets at the construction sites, if about 25 people are working the whole day for a month. Location of portable facilities should be at least 6m away from storm drain system and surface waters. These portable toilets should be cleaned once a day and all the sewerage should be pumped from the collection tank once a day and should be brought to the common septic tank for further treatment.</li> <li>• Contractor should provide bottled drinking water facilities to the construction workers at all the construction sites.</li> </ul>

## 9. MONITORING AND REPORTING ARRANGEMENTS

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### 9.1 Monitoring

A generic monitoring plan for the proposed Project has been prepared. The main components of the monitoring plans include:

- Environmental issue to be monitored and the means of verification,
- Specific areas, locations and parameters to be monitored;
- Applicable standards and criteria;
- Monitoring of noise levels near residential areas
- Monitoring of the procurement of materials (checks that valid permits are in place)
- Duration and frequency; and
- Institutional responsibilities for monitoring and supervision.

A site specific monitoring checklist will be prepared by Safeguard Consultants for each subproject, as an integral part of Site Specific EMP document. Monitoring checklist should be prepared based on the generic monitoring plan presented within this EMF document and respecting significant site specific impacts and proposed mitigation measures elaborated in site specific EMP document. The field monitoring checklist will be used by the supervising field engineers. The signed checklists will be provided to implementing agencies, which will be responsible for the follow-up and compliance reporting.

Implementing agencies will maintain a Complaints Database, which will contain all the information on complaints or grievances received from the communities or other stakeholders. This would include: the type of complaint, location, time, actions to address these complaints, and final outcome. Prior to the commencement of works implementing agencies will submit to WB for its approval Environmental Management Plan for each particular road section which is subject of RUDP. The Contractor will provide "Zero monitoring" results prior to commencement of earth works, during its own mobilization phase. To ensure that the proposed mitigation measures will be carried out by the Contractors during the construction stage, implementing agencies will undertake the following:

- a) Clearly set out in the tender and contract documents the Contractor's obligation to prepare CEP and undertake environmental mitigation measures as specified in the Environmental Mitigation Plan in Annex 4 (to be appended to Contract specifications);
- b) No compensation for the costs of the required environmental mitigation measures and monitoring activities in the form of the particular item in the BoQ shall be given to the Contractor, except for the water quality analysis and noise measurement. It shall be regarded as if the Contractor has included these costs in the other items of the BoQ. Real expenditures of water quality analysis and noise measurement in scope defined by the BDs and the Contract shall be compensated to the Contractor in the form of the particular item in the BoQ.

For noncompliance with requested environmental mitigation measures and monitoring activities the Contractor shall suffer specific liquidated damages in a form of demerit points. Demerit points are provided as a measure that should stimulate the Contractor to carry out his obligations in an organized and timely way and to perform his duty meeting high standards even though those tasks does not appear to be of a serious nature. Demerit points have in the same time two meanings – numeric and monetary.

Each demerit point has associated monetary value which represents permanent payments reduction for determined noncompliance of the contracted obligations. Number of received demerit points has cumulative effect. If during the Contract the Contractor receives more than certain number of demerit points specified in the BDs and the Contract, the Contractor will for a period of 2 years not be allowed to compete for any other implementing agencies works contract. Also, if the Contractor is awarded over a specified number of demerit points, the Employer has a right to terminate the Contract. Monetary value of each demerit points as well as limits for other possible actions by the Employer shall be clearly specified in the BDs and the Contract.

Application of explained two measures - compensation for specific costs and penalties for noncompliance – should assure implementation of all requested environmental mitigation measures and monitoring activities, and explicitly require the Contractor to recruit an environmental specialist. The contractor will be responsible for the implementation of environmental mitigation measures during construction and shall employ an environmental specialist who will supervise implementation of the Contractor's environmental responsibilities and coordinate with implementing agencies and MININFRA. The Contractor, in coordination with implementing agencies, shall set-up a grievance redress committee that will address any complaints during project implementation.

During project implementation, implementing agencies shall monitor the compliance of the Contractor in respect to EMP provisions. It is proposed that SPIU employ an environment specialist (with civil engineering/environmental management background) to assist the environmental supervision. Upon Project completion, implementing agencies will be in charge of the operation and maintenance of the rehabilitated road sections. Routine and random monitoring will be undertaken as scheduled in the monitoring plan. Implementing agencies is also responsible for supervision of the project through the consulting services for supervision and implementation of the Project and supervision of environmental monitoring. Construction Contractor will make proposal for environmental protection, including safety of persons associated with the works and the public, during a pre-construction period within the Environmental Management Plan. This proposal will be reviewed by implementing agencies in order to obtain the "no objection" to the proposal's recommendations. In this regard, attention will be given to:

- Taking all reasonable steps to protect the environment on and off site and avoid damage or nuisance to persons or property arising from its operations,
- Maintaining conditions of safety for all persons entitled to be on site and
- Provision of all lights, guards, fencing, warning signs, traffic control and watching for protection of the works and other property and for the safety and convenience of the public.

REMA will have the authority for immediate suspension of works if performance is not in accordance with environmental standards and regulations. Inspection will then inform implementing agencies about suspension and order to proceed according to its directive. During the implementation of RUDP, the public has the right to participate either directly or indirectly, which introduces the possibility to present its interests and opinion in the process of decision making. During process of public consultations interested public should collect all project information, including all environmental issues related to this project. Opinions and suggestions should be incorporated within the final version of EMP document which will be an integral part of project bidding documentation. A grievance mechanism will be maintained by implementing agencies via their website.

During rehabilitation works, a public liaison officer, named by the Contractor, will establish communication with the local residents affected with the project and will be responsible to inform them about all project activities, especially related to environmental impacts of the project and planned mitigation measures.

## 9.2 Environmental Monitoring during Road rehabilitation Phase

SPIU will supervise all contractors' internal environment management activities prescribed within the detailed design and EMP document. The Contractor is obliged to carry out any required measuring, sampling of potential pollutants using certified laboratory to perform the analyses. SPIU will be responsible for monitoring of the implementation of the EMPs, apply the Monitoring Check Lists developed by the Safeguards Consultant as an integral part of EMP document for each Sub-project. Monitoring activities will include, but not be limited on following issues:

Table 32: Monitoring activities

Monitoring Aspect	Monitoring activities
Potential water contamination	<ul style="list-style-type: none"> <li>• Inspection of drainage works to ensure implementation of environmental best management practices (periodical inspection, should be done by the road inspection organization)</li> <li>• Test roadside soils for elevated levels of heavy metals, particularly lead and cadmium (long-term investigation, can be done as a contract work by a research institute)</li> <li>• Test aggregates to ensure they are contaminant free (periodical test, can be done by the road inspection organization)</li> </ul>
Noise Quality	Contractor is obliged to perform noise level measurement according to the monitoring plan of EMP document. Within the zone with sensitive recipients Contractor will monitor the noise levels once at the beginning of the project and later on quarterly basis, and on complaint. If the results of monitoring are not satisfactory, monitoring should be conducted on monthly basis.
Waste Disposal	Periodic inspection of road rehabilitation works helps to ensure proper handling of waste materials.
Bridge widening and culvert lengthening	<p>Monitoring of the influence of mitigation measures used in the bridge widening and culvert lengthening has following aspects:</p> <ul style="list-style-type: none"> <li>• Determination of optimal in-stream construction time window (should be known before starting of the operation but it is important information for other analogous cases)</li> <li>• Monitoring work to ensure in-stream work avoids or minimizes damage to fish habitat (foresees periodical inspection trips)</li> <li>• Periodic inspection of works to ensure aquatic habitat protection measures are being implemented</li> <li>• Inspection during concrete pours to ensure proper handling of concrete and proper cleanup and disposal of waste concrete</li> <li>• Inspection of foundation rehabilitation works to ensure application of environmental best management practice.</li> </ul>
Equipment Maintenance and Fuelling	To avoid possible leakage of lubricants and fuel and following pollution, periodic inspection of equipment maintenance, fuelling and materials storage areas is needed to ensure the best management practices being implemented.
Bridge deck paving and bridge painting	<ul style="list-style-type: none"> <li>• Inspection of bridge paving works to ensure asphalt is being contained on bridge deck and not being allowed to spill over into watercourse</li> </ul>



	<ul style="list-style-type: none"> <li>• Inspection of sand blasting and painting operation to ensure that proper containment is in place.</li> </ul>
Occupational Health and Safety	Worker Safety can be increased by periodic monitoring of on-the-job safety.

### 9.3 Construction Monitoring and Post Auditing

Construction Monitoring, including field inspections and surveys, should be carried out by an environmental expert to ensure that environmental protection requirements are being met. It is important to plan and budget for environmental monitoring as part of the project. If road rehabilitation works are to be contracted out, RUDP to reconfirm that specific environmental requirements during road rehabilitation works (as already specified) are built into bidding documents and contracts. For all RUDP sub-project which will belong to the group of project for which full EIA procedure is mandatory (see chapter 2.3) a Post Rehabilitation Monitoring will be organized by implementing agencies in order to identify environmental changes resulting from the implementation of the project. In the context of EIA Studies, post rehabilitation monitoring programs are carried out to achieve the following results:

- To ensure that the facility is meeting all environmental regulatory requirements, and that commitments made in the EIA Study and/or the conditions of approval are being met;
- To test impact hypotheses, and to verify the predictions and assessment of environmental impacts, thus contributing to better assessments in the future;
- To evaluate the performance effectiveness of mitigation;
- To compare actual and predicted changes to the environment, so that immediate actions can be taken to mitigate unanticipated impacts;
- To strengthen confidence by both government and the public in the EIA process, the decisions made the road design etc.

### 9.4 Reporting Arrangements

#### 9.4.1 Safeguards Consultant to the executive and implementing agencies

Safeguards Consultant will prepare a site specific EMP document for each subproject, as a part of detailed EIA report; and will prepare EMP presentation and will organize and perform EMP presentation and consultation to the interested parties and stakeholders. Safeguards Consultant will prepare and submit to implementing agencies a detailed report on citizen engagement. Comments, remarks and suggestions collected during public consultation process should be integrated within the final EMP document.

#### 9.4.2 Contractor to implementing agencies

The Contractor will prepare his compliance reports in respect to EMP and his SSIP as a Quarterly Progress Reports and submit them to implementing agencies, in English language, in hard copy and electronic versions. Construction Contractor will provide quarterly reports to implementing agencies which document the environmental mitigation and protection measures, together with prescribed monitoring activities carried out during that quarter's reporting period. Construction Contractor will take care of the environment quality according to the mitigation and monitoring plan which are part of EMP.

The same applies to the Environmental Monitoring and Supervision Contractors for their part of

mitigation and environmental monitoring activities. If any kind of accident or endangerment of environment happens, reporting will be immediate. Implementing agencies and the Contractor have joint responsibility for reporting and investigating incidents. The Contractor is obliged to inform the project manager and local authorities about accident immediately after it happened. In case that project manager is not responding on a call, the Contractor is obliged to inform implementing agencies about accident.

#### **9.4.3 Annual Environmental & Social Report**

Each Contractor is obliged to produce and deliver to implementing agencies an Annual Environmental and Social Report (AESR) covering all project activities during a calendar year. AESR document should be produced respecting the proposed template – a sample screening checklist for AESR presented within the Annex 3 of this EMF document.

#### **9.4.4 Project Supervision Consultant to implementing agencies**

The findings of the regular monitoring activities, including activities specified in the Generic Monitoring Plan carried by the Contractor will be included in the quarterly progress reports.

#### **9.4.5 Implementing agencies to LODA, MININFRA, & WB**

Annual Environmental Health and Safety (AEHS) reports, including monitoring indicators and reporting on the implementation of the requirements set forth in the EMPs will be prepared by implementing agencies and submitted for the Bank's review. World Bank will review the reports and verify their contents through periodic site visits. Implementing agencies shall provide Annual reports to MININFRA and WB regarding the status of implementation of mitigation measures by the Contractors, additional mitigation measures that may need to be implemented, incidents of non-compliance with applicable environmental permits, complaints received from local residents, NGOs, etc. and how these were addressed.

In case of fatalities or major incidents on site the implementing agencies will immediately report to LODA, MININFRA and the Bank. Monitoring and compliance in accordance with EMF and site specific EMPs, including monitoring of implementation of site-specific measures on each sub-project/section during project implementation will be undertaken by implementing agencies and its implementation unit, and reported in writing to the Bank on semi-annual basis. An environmental specialist will be appointed to the Project by implementing agencies to ensure quality in the implementation of EMPs.

#### **9.5 RUDP Results Monitoring and Evaluation**

The SPIU will perform annual audits and results monitoring and evaluation. SPIU's review may, among other issues, also include works or contracts believed to have sensitive environmental or social impacts or requiring special oversight as determined by EIB and WB. SPIU will report on project implementation progress, compliance as defined in the Project Operations Manual and other project documents, shortfalls in performance if any, the reasons and actions to remedy them. SPIU's review will also cover engineering designs (with attention on EMP document and Detailed Design of Environmental Protection) and social and environmental safeguards.

## **10 TRAINING AND CAPACITY BUILDING**

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### **10.1 Introduction**

Although implementing agencies has significant experience with Bank projects and procedures since 2004, given the large size and scope of the new project, implementing agencies may experience some difficulties in adequately managing and implementing the road rehabilitation program including the environmental aspects with the current staff. In addition, given that the PMU consists primarily of regular implementing agencies employees, they may have other institutional responsibilities beyond the project. RUDP will finance consultants to provide project management support to PMU during project implementation. They will support PMU in, among others, the: (i) supervision of the implementation of civil works; (ii) environmental and social supervision of safeguards implementation; (iii) annual program planning and preparation including the economic analysis; and (iv) overall project management. In addition to the consultants, SPIU will draw staff members from other implementing agencies departments as necessary.

LODA will finance consultants to provide project management support to the District Project Implementation Units (DPIU) during the Project implementation. The consultants will support DPIU in, among others: (i) supervision of civil works implementation; (ii) environmental and social supervision of safeguards implementation; (iii) annual program planning and preparation including the economic analysis; and (iv) overall project management.

A comprehensive training program planned for the project staff of PMU and DPIU will address all components of RUDP. The environmental training may be broadly divided into several main topics: Principles and policies for (natural and social) environmental mitigation in development projects; Legal and institutional aspects; Project mandates; Likely (natural and social) environmental impacts and losses in road strengthening and widening projects; EMP monitoring, evaluation and reporting methods; and Mechanisms for inter-sectoral and inter-agency collaboration.

A key concept in training programs is to provide training through a combination of formal classroom training and practical on-the job sessions. Technical assistance should be made available to provide training, guidance and advisory support in all aspects of works implementation in order that the key players (environmental as well as technical team) become fully conversant with, and capable of carrying out their respective duties. Training for the various categories of staff will need to be carried out through different approaches, such as on-site and classroom training, workshops, seminars and practical on-the-job training.

### **10.2 Training on Road Safety Inspection and Audit; and Road Safety Awareness Campaigns**

Training and testing to be carried out according to prevalent EU directives until the equivalent Rwandan legislation is established. Road safety campaigns to pre-selected schools in the vicinity of the roads to be rehabilitated under the first phase. The terms of reference for the training and the campaigns will be agreed with MININFRA and WB. The schools will be identified prior to start of construction. PAC will review the teaching and testing materials and records of the awareness campaigns. PAC will also interview a 20 percent random sample of trainees and visit a 20 percent sample of the schools interviews students and school administrators. Implementation will be evaluated against the ToR.

### **10.3 Training plan for implementing agencies and other stakeholders**

Respecting the fact that the Contractors' staff was not adequately trained for implementing this type of contract and implementing agencies' staff was not adequately trained for supervision and monitoring of Performance Based Maintenance Contracts (PBMC), a Subcomponent 2C of RUDP (Strengthening maintenance management) includes the training for staff and contractors on PBMC.

### **10.4 Modes of Environmental Training**

- a) Training Strategy - A key concept in training programs is to provide training through a combination of formal classroom training and practical on-the-job sessions. Technical assistance should be made available to provide training, guidance and advisory support in all aspects of works implementation in order that the key players (environmental as well as technical team) become fully conversant with, and capable of carrying out their respective duties. Training for the various categories of staff needs to be carried out with varying durations and through different approaches, such as on-site and classroom training, workshops, seminars and practical on-the-job training.
- b) Concept of Training - Training is always an effective up-front quality assurance measure. Experience shows that there is a great demand for training in technical subjects for the government staff in charge of work supervision. Effective training programs involve both the introduction of new technology as well as in-depth studies of the particular skills required in each position in implementing agencies. As the training content for these reasons relate to practical hands-on skills, the training often consists of dissemination of best practices and work methods which have been proved most effective in projects with similar tasks and working conditions.
- c) Training Methods - The most effective way of addressing such training needs is by carrying out the training in an environment which to the extent possible resembles the real situation in which the trainees will eventually operate.
- d) Classroom Sessions - Although training needs to focus on practical skills, which are best, taught in the field, there is always a demand for a certain theoretical foundation on which the practical skills are placed. For example, experience shows that it is useful to review basic methodology and regulations, which in turn is explained in the context of environmental management system in civil works. Also for technical subjects such as impact categorization, selection of mitigation measures, EMP as part of bidding document and others, there is a demand for an introduction to the subjects in a class-room environment, during which (i) the theory is reviewed, and (ii) a general briefing of the field exercises is conducted, before the field sessions commence. After the initial classroom training and skills development sessions, further practical training should be carried out in a full-scale demonstration situation. This includes establishing training/demonstration sites fully equipped with the same type of tools and equipment that contractors will be using.
- e) On-the-job Training - It has been proved that on-the-job training is the most effective method of training most categories of government staff. This involves the extensive use of practical demonstrations and skill training at full-scale training sites. This approach is very effective for the training of managers, engineers and supervisors with the on-site training being supported by classroom components tailored for the various categories of staff.
- f) Workshops - Intensive refresher courses for periods of one to three days are useful for addressing specific problem areas. Such workshops are organized to supplement on-the-job training for some of the technical and administrative staff. Short workshop can either be arranged through the provision of technical assistance, an in-house training facility, or by contracting other training institutions within the country.

- g) Seminars - Seminars are useful as a means for disseminating data and information, in particular for senior government officials at central and local level, as well as representatives of other government agencies. Seminars can be an effective platform for policy makers, planners and administrators to review the importance of an Environmental Management System. Equally important, this type of seminar is important in terms of creating awareness of the potential of utilizing new organizational arrangements, work methods, and involvement of the private sector, beyond the boundaries of a particular program.

## **10.5 Training Program for Contractors, Project Supervisors and Project Staff**

A comprehensive training program should be planned for the project by the Project Management Unit (PMU) intended to address all components of the RUDP. Developing a comprehensive idea about the Environmental requirements, SPIU will fix the role/responsibility to effectively manage the environment components involved. As discussed earlier SPIU may or may not take the services of external agency. In general the training program is proposed by the planning consultant, during the design stage of project. The program should be intended for all Contractors, PSC and the project staff. As and when found necessary PMU in consultation with EMU will select appropriate modules for the training of contractors and for the training of engineers responsible for supervision and maintenance work.

The training components may be broadly divided into the following categories:

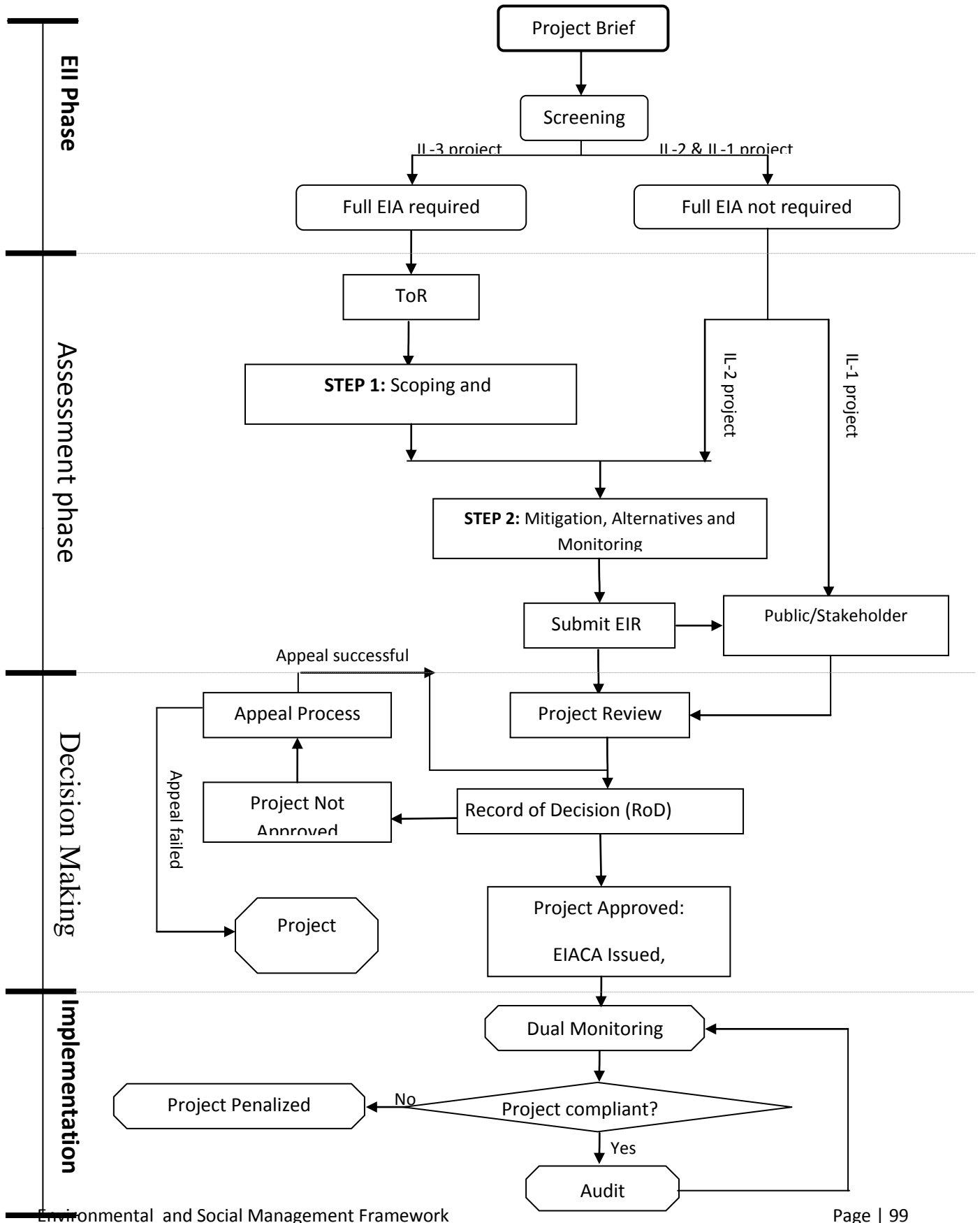
- Principles and policies for (natural and social) environmental mitigation in development projects;
- Legal and institutional aspects; project mandates;
- Probable (natural and social) environmental impacts and losses in road strengthening and widening; and waterways projects;
- The EMP
- Monitoring, evaluation and reporting methods and mechanisms and,
- Inter-sectoral and inter-agency collaboration, etc.

## ANNEXES

### Annex 1: Summary of Environmental and Social Regulatory Framework for Rwanda

Environmental management laws	Organic Law No. 4 of 2005 defines projects to undergo mandatory EIA
Water management laws	Water Law No. 62/2008, embraces modern principles of sustainable water resources.
Wetlands management laws	Organic law on environmental protection and management –2005, ORTPN – 1972 amended 2003 Wetland protection, Land law – 2005 and Wildlife Act
Forest management laws	National Forest Law 2010 provides for establishment, development and sustainable management, including conservation and rational utilization of forest for socioeconomic Development
Wildlife management laws	The Wildlife Policy still under review by the parliament
Land management and Involuntary Resettlement laws	The organic law determines the use and management of land in Rwanda. It also institutes the principles that are respected on land legal rights accepted on any land in the country as well as all other appendages whether natural or artificial. <i>The Law Relating to Expropriation in the Public Interest, Law No. 18/2007 of 19/04/2007.</i> The Law determines the procedures relating to expropriation in the public interest. Expropriation is the taking of private property in the public interest aimed at development, social welfare, security and/or territorial integrity.
Gender Legal framework related to access to natural resources	The Constitution of Burundi 2005 National Policy on Gender Family code
<b>International Conventions</b>	
Convention of Biological Diversity	Ratified
Wetlands Convention	Ratified
UN Framework on Climate Change	Ratified
Convention to combat Desertification	Ratified
Convention on Migratory species	Ratified
World Heritage Convention	Ratified

## Annex 2: Environmental and social assessment process for Rwanda



### Annex 3: Environmental and Social Screening Checklist

The Environmental and Social Screening Checklist is designed to avail information to the decision-makers and reviewers so that impacts and their mitigation measures, if any, can be identified and/or that requirements for further environmental analysis be determined. This Form will be filled for each investment project and be used for the registration of the project at the National Environmental Authority accompanied with the Terms of Reference of the ESIA study.

- Name of sub-project.....
- Sector.....
- Name of the Village/Ward/Town/District/Municipality in which the sub-project is to be implemented.....
- Name of Executing Agent.....
- Name of the Approving Authority .....
- Name, job title, and contact details of the person responsible for filling out this ESSF:
- Name: .....
- Job title:.....
- Telephone numbers:.....; E-mail address.....
- Date:
- Signature:.....

#### PART A: BRIEF DESCRIPTION OF THE PROJECT

- Please provide information on the type and scale of the sub-project (area, required land, approximate size of total building floor area).
- Provide information about actions needed during the construction of facilities including support/ancillary structures and activities required to build it, e.g. need to quarry or excavate borrow materials, laying pipes/lines to connect to energy or water source, access road etc.
- Describe how the sub-project will operate including support/activities and resources required to operate it e.g. roads, disposal site, water supply, energy requirement, human resource etc.

#### PART B: BRIEF DESCRIPTION OF THE ENVIRONMENTAL AND SOCIAL SITUATION AND IDENTIFICATION OF POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS

Describe the project location, project site, surroundings (include a map, even a sketch map)

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Describe the land formation, topography, vegetation in/adjacent to the project area

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Estimate and indicate where vegetation might need to be cleared.

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#### Environmentally sensitive areas or threatened species

Are there any environmentally sensitive areas or threatened species (specify below) that could be adversely affected by the project?

- (i) Intact natural forests: Yes \_\_\_\_\_ No \_\_\_\_\_
- (ii) Riverine forest: Yes \_\_\_\_\_ No \_\_\_\_\_
- (iii) Surface water courses, natural springs Yes \_\_\_\_\_ No \_\_\_\_\_
- (iv) Wetlands (lakes, rivers, swamp, seasonally inundated areas)  
Yes \_\_\_\_\_ No \_\_\_\_\_
- (v) How far is the nearest wetland (lakes, rivers, seasonally inundated areas)? \_\_\_\_\_ km.
- (vi) Area of high biodiversity: Yes \_\_\_\_\_ No \_\_\_\_\_



(vii) Habitats of endangered/ threatened, or rare species for which protection is required under Rwanda national law/local law and/or international agreements. Yes \_\_\_\_\_ No \_\_\_\_\_  
(viii) Others (describe). Yes \_\_\_\_\_ No \_\_\_\_\_

### **Rivers and Lakes Ecology**

Is there a possibility that, due to construction and operation of the project, the river and lake ecology will be adversely affected? Attention should be paid to water quality and quantity; the nature, productivity and use of aquatic habitats, and variations of these overtime.  
Yes \_\_\_\_\_ No \_\_\_\_\_

### **Protected areas**

Does the project area (or components of the project) occur within/adjacent to any protected areas designated by government (national park, national reserve, world heritage site etc.) Yes \_\_\_\_\_  
No \_\_\_\_\_

If the project is outside of, but close to, any protected area, is it likely to adversely affect the ecology within the protected area areas (e.g. interference with the migration routes of mammals or birds). Yes \_\_\_\_\_ No \_\_\_\_\_

### **Geology and Soils**

Based upon visual inspection or available literature, are there areas of possible geologic or soil instability (prone to: soil erosion, landslide, subsidence, earthquake etc.)? Yes \_\_\_\_\_ No \_\_\_\_\_

Based upon visual inspection or available literature, are there areas that have risks of large scale increase in soil salinity?  
Yes \_\_\_\_\_ No \_\_\_\_\_

Based upon visual inspection or available literature, are there areas prone to floods, poorly drained, low-lying, or in a depression or block run-off water Yes \_\_\_\_\_ No \_\_\_\_\_

### **Contamination and Pollution Hazards**

Is there a possibility that the project will be at risks of contamination and pollution hazards (from latrines, dumpsite, industrial discharges etc.) Yes \_\_\_\_\_ No \_\_\_\_\_

### **Landscape/aesthetics**

Is there a possibility that the project will adversely affect the aesthetic attractiveness of the local landscape? Yes \_\_\_\_\_ No \_\_\_\_\_

### **Historical, archaeological or cultural heritage site**

Based on available sources, consultation with local authorities, local knowledge and/or observations, could the project alter any historical, archaeological, cultural heritage traditional (sacred, ritual area) site or require excavation near same?  
Yes \_\_\_\_\_ No \_\_\_\_\_

### **Resettlement and/or land Acquisition**

Will involuntary resettlement, land acquisition, relocation of property, or loss, denial or restriction of access to land and other economic resources be caused by project implementation? Yes \_\_\_\_\_  
No \_\_\_\_\_

If "Yes" Involuntary Resettlement OP 4.12 is triggered. Propose the appropriate mitigation measures to be taken.

### **Loss of Crops, Fruit Trees and Household Infrastructure**

Will the project result in the permanent or temporary loss of crops, fruit trees and household infra-structure (such as granaries, outside toilets and kitchens, livestock shed etc.)?

Yes \_\_\_\_\_ No \_\_\_\_\_

**Block of access and routes or disrupt normal operations in the general area**

Will the project interfere or block access, routes etc. (for people, livestock and wildlife) or traffic routing and flows?

Yes \_\_\_\_\_ No \_\_\_\_\_

**Noise and Dust Pollution during Construction and Operations**

Will the operating noise level exceed the allowable noise limits? Yes \_\_\_\_\_ No \_\_\_\_\_

Will the operation result in emission of copious amounts of dust, hazardous fumes? Yes \_\_\_\_\_ No \_\_\_\_\_

**Degradation and/or depletion of resources during construction and operation**

Will the operation involve use of considerable amounts of natural resources (construction materials, water spillage, land, energy from biomass etc.) or may lead to their depletion or degradation at points of source? Yes \_\_\_\_\_ No \_\_\_\_\_

**Solid or Liquid Wastes**

Will the project generate solid or liquid wastes? (including human excreta/sewage, hospital waste). Yes \_\_\_\_\_ No \_\_\_\_\_

If "Yes", does the project include a plan for their adequate collection and disposal? Yes \_\_\_\_\_ No \_\_\_\_\_

**Occupational health hazards**

Will the project require large number of staff and laborers; large/long-term construction camp? Yes \_\_\_\_\_ No \_\_\_\_\_

Are the project activities prone to hazards, risks and could result in accidents and injuries to workers during construction or operation? Yes \_\_\_\_\_ No \_\_\_\_\_

**Will the project require frequent maintenance and or repair** Yes \_\_\_\_\_ No \_\_\_\_\_

**Public Consultation**

Has public consultation and participation been sought? Yes \_\_\_\_\_ No \_\_\_\_\_

**PART C: MITIGATION MEASURES**

For all "Yes" responses, describe briefly the measures taken to this effect.

#### **Annex 4: Sample Chance Finds Procedure**

Institute of National Museums of Rwanda (INMR) is responsible for recovering these items. Chance find procedures will be used as follows:

- a) Stop the construction activities in the area of the chance find;
- b) Delineate the discovered site or area;
- c) Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be present until the responsible local authorities and the equivalent take over;
- d) Notify the supervisory Engineer who in turn will notify the responsible local authorities and the General Authority of Antiquities<sup>6</sup> immediately (within 24 hours or less);
- e) Responsible local authorities and the General Authority of Antiquities would be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures. This would require a preliminary evaluation of the findings to be performed by the archeologists of the General Authority of Antiquities (within 72 hours). The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage; those include the aesthetic, historic, scientific or research, social and economic values;
- f) Decisions on how to handle the finding shall be taken by the responsible authorities and the General Authority of Antiquities. This could include changes in the layout (such as when finding an irremovable remain of cultural or archeological importance) conservation, preservation, restoration and salvage;
- g) Implementation for the authority decision concerning the management of the finding shall be communicated in writing by the General Authority of Antiquities; and
- h) Construction work could resume only after permission is given from the responsible local authorities and the General Authority of Antiquities concerning safeguard of the heritage.

These procedures must be referred to as standard provisions in construction contracts, when applicable, During project supervision, the Site Engineer shall monitor the above regulations relating to the treatment of any chance find encountered are observed

## Annex 5: Content of an EIA Report

An EIA report has the following objectives:

- a) To enable the developer to plan, design and implement mitigation measures for significant adverse environmental impacts and to maximise social benefits from a proposed project.
- b) For the decision-makers to objectively evaluate the proposed project.
- c) To provide information on environmental impacts and mitigation measures for local communities and any other stakeholders to be able to contribute their opinions.

The EIA report should entail;

- i) **Executive summary** of the EIA report which should be brief and focus on following matters:
  - Name and location of the project;
  - Name of the developer
  - Name of the agency preparing EIA report;
  - Main impacts identified;
  - Mitigation recommendations;
  - Environmental monitoring plan.
- ii) **Objectives of the project**, including ideas, intentions and particular objectives.
- iii) **Description of the proposal and its alternatives**. In this part, it is necessary to describe in detail the proposed project and its alternatives including those not subjected to pre-feasibility study or feasibility study. Attention should be concentrated to the comparison of different alternatives. Following are the required contents of the section "*Description of the proposal and its alternatives*":
  - The stage of the project cycle where the project is being implemented (pre-feasibility study, feasibility study or design);
  - Outlines of the plan for impact prediction and mitigation measures;
  - Raw materials, supplies, energy, water and equipment to be used for implementing the project and its alternatives;
  - Operational parameters such as capacity and product output;
  - Tables, photographs, diagrams and maps;
  - Comparison of characteristics of alternatives (extent, location, technology, products, energy and raw materials demands) in the present socio-economic, technical and environmental situation;
  - A summary of project technical, economic and environmental characteristics.
- iv) **Discussion on the proposal and its relation to relevant policies, laws and programmes** (sectoral and regional). In this section, the proposal must be shown to be in line with policies, laws, institutional framework and development strategy of Rwanda.
- v) **Description of present (baseline) environmental state (analysis of initial state)**. In this section, the environment in the project area should be appropriately described. The following aspects should be presented:

- Environmental baseline conditions (natural and socio-economic);
- Sensitivity and values (cultural, aesthetic) of environment in the project area.

v) **Impact assessment.** In this section, the spatial and temporal scope of the impacts and characteristics of different impacts (whether positive or negative, direct or indirect, their intensity, extent and significance) should be presented for the project and also for all alternatives considered. The following aspects should be presented:

- Assessment of all impacts to the local population;
- Environmental data base, study methods and assumptions;
- Limitations and reliability of the data and study results;
- Compliance with the environmental standards and license issuing procedures;
- Significance of impacts, criteria and standards used for assessment of impact significance;
- Measures to avoid and mitigate impacts.

In this section, methods of data collection, methods and criteria used for assessing degree of danger and significance of impacts must be indicated. Cumulative impacts must be emphasised. A summary table of impacts for each alternative should be provided.

vi) **Evaluation and comparison of alternatives** and selection of one that is environmentally suitable. The main content of this section is the comparison of the main positive and negative impacts, impact mitigation and monitoring measures of alternatives. The environmentally suitable alternative is determined based on the following aspects:

- Impacts with largest effects, measures for avoiding, mitigating and managing them;
- Impacts for which the developer has committed to take prevention measures and unavoidable impacts;
- Allocation of cost and benefit between the levels, partners and population of the project area;
- Information on protection measures or resettlement, acquiring opinions of the public;
- Environmental improvement opportunities.

vii) **Impact management and environmental monitoring plan (EMP).** In this section, tasks to ensure the implementation of mitigation measures and monitoring of impacts should be presented. This is a plan for monitoring and management of impacts during the implementation and operation of the project, where the responsibilities between the state and investor are differentiated. This plan includes the following contents:

- Description of mitigation measures;
- Implementation schedule including indicators, costs, etc;
- Assignment of responsibility for implementation;
- Monitoring of implementation;
- Report on evaluation of implementing such the plan.

**Annex** where tables, drawings, maps, documents and information used as reference should be presented.

## **Annex 6: Public Participation and Stakeholder Involvement**

It is a requirement that appropriate mechanisms for ensuring full involvement and participation of the public is accorded priority and should be a continuous process from screening, scoping, during EIA/EA Study report preparation, draft EIA/EA report, and during EIA/EA finalisation and review.

### **Purpose and objectives of public consultation**

The purpose of public consultation is to promote a two way communication process, and helps to:

- i. Identify public concerns and values and inform the public about proposed actions and consequences;
- ii. Collect relevant social, economic and environmental information that will help improve the understanding of a proposed development, clarify issues and improve project design;
- iii. Allow the participation of affected people in decision making process and foster a sense of local ownership;
- iv. Develop and maintain transparent procedures for project implementation.

The specific objectives of people's participation are to:

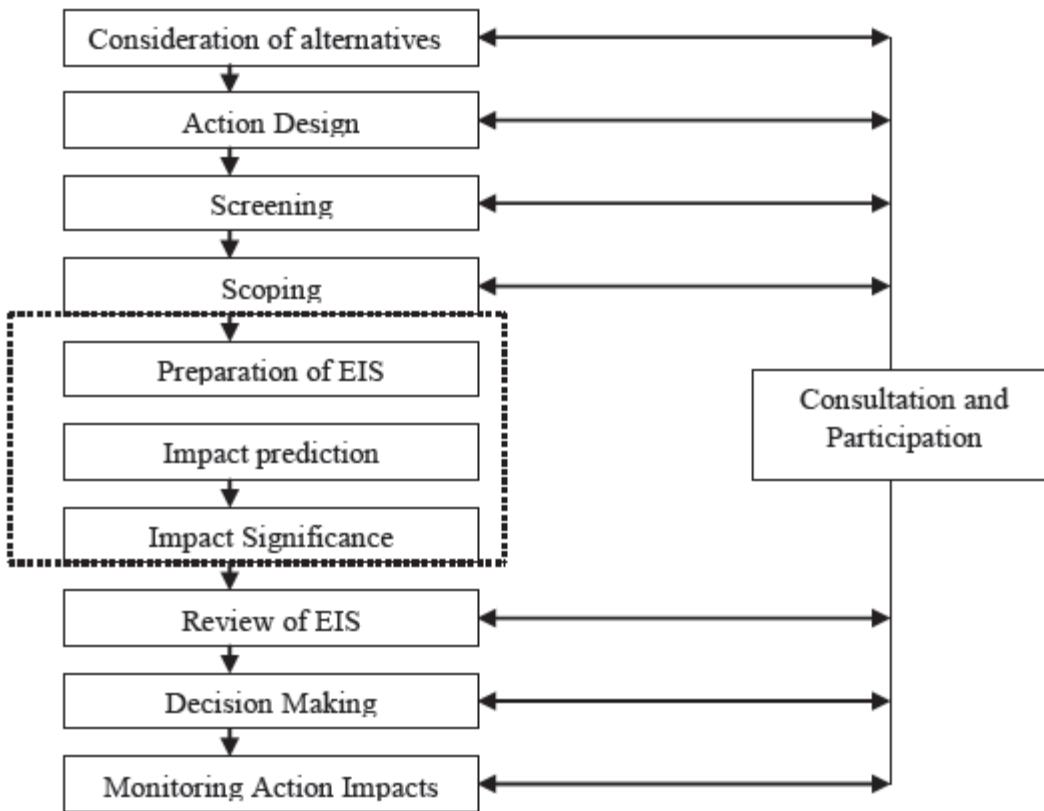
- i. Ensure that local people participate fully and have a recognised role in decision-making during project planning;
- ii. Raise environmental awareness among the local stakeholders and the implementing agencies involved with management of energy and the associated resources;
- iii. Enable a dialogue between project planners and local people on all project-relevant topics, such as social conditions, land values, resources usage, informal and customary rights, environmental concerns etc. - so that local knowledge and ideas inform the technical design and development of the project;
- iv. Ensure early detection of possible social conflicts arising from the proposed interventions, and explore ways to minimise them - e.g. through negotiation and education;
- v. Ensure the establishment of organisations and procedures to enable local people to participate in the construction, operation, and maintenance – as well as non-structural elements – of energy related projects.

### **How to involve the public in ESIA process**

There are several techniques and methods for consulting the public. Public meetings are often the principal form of consultation used in environmental assessment. However, there are other more interactive consultation and participation methods that may be applicable to water development projects. These include open houses, focus group meetings, persuasion, education, information feedback, and delegation of authority to an affected community. The public may also be appropriately involved in the ESIA process through:

- i. Informing the public about the proposed project,
- ii. Participation in scoping exercises,
- iii. Open public meetings/hearings on the projects,
- iv. Inviting written comments on proposed projects from those who can put their comments in writing,
- v. Use of community representatives,
- vi. Review of Draft Environment Impact Statements,
- vii. Making relevant documents available to any interested members of the public.

Figure below outlines the general systematic process of engaging the stakeholders, which should be adopted in assessments of the water resources related projects.



### Responsibility for Ensuring Public Participation and Involvement

One of the responsibilities of the lead agency is to ensure that the public is fully involved in the ESIA process for energy development projects through overseeing the ESIA process and reviewing the EIS. In turn, developers or project proponents are also obliged to effectively consult and involve the public throughout the ESIA process. In case the Water lead agency is the project proponent, REMA takes over the responsibility for overseeing and ensuring public participation and involvement by the said lead agency.

### Planning for Consultation and Public Participation

Planning for consultation and public involvement requires skilled professional advice, usually provided by a social scientist who is usually a member of the ESIA consultancy team. The planning ought to start with informal consultations very early in the ESIA process. The three key tasks here are to identify **WHO** will be affected, **HOW** and **WHEN** they are to be involved in the consultation process. Such planning will involve:

- i. Clearly define objectives regarding the issues to be addressed, and the key decisions involved;

- ii. Integration of consultation and participation within the ESIA and project design process. The information and internal communication requirements of the ESIA team and project designers should be taken into account;
- iii. Allowing flexibility to adapt and change as new information comes up;
- iv. Allocating adequate resources and scheduling work.

It is notable that consultation and participation is continuous throughout the ESIA process. The iterative and continuous nature of the ESIA process is set out in Figure 5.

### **Stages for public involvement in the ESIA Process**

In its broadest sense, public involvement and participation is an on-going activity which takes place throughout the entire ESIA process. The relevant stakeholders in the ESIA process are:

- i. Beneficiaries of the project - target groups making use of the water resources;
- ii. Affected people – i.e. those people that experience, as a result of the project, intended or unintended changes in water resources that they value;
- iii. General stakeholders – i.e. formal or informal institutions and groups representing either affected people or biodiversity itself.
- iv. Future generations - ‘absent stakeholders’, i.e. those stakeholders of future generations, who may rely on water resources around which decisions are presently taken.

### **Public Consultation before EIS Study is Done.**

If after receiving and screening/reviewing the developer’s project, REMA, in consultation with the Lead Agency, decides that it is necessary to consult and seek public comment, it shall, within 4 weeks from submission of the project brief and/or notice of intent to develop, publish the developers notification and other supporting documents in a public notice. When the notification is accompanied by voluminous documentation, it is permissible to publish a summary of it in a public notice, indicating the nature and location of the project, characteristics of site and specifying the places where the documents of the developer can be consulted. Objections and comments from the public and other stakeholders shall be submitted to the REMA and to the Lead Agency with 21 days from the publication of the notice.

### **Public Consultation during the EIS Study**

The team conducting the EIS Study shall consult and seek public opinion/views on environmental aspects of the project. Such public involvement shall be during scoping and any other appropriate stages during the conduct of the study.

### **Public consultation after EIS Study is done (EIS Review)**

The Environment Impact Statement (EIS) shall be a public document and may be inspected at any reasonable hour by any person. Considering the scale and level of influences likely to result from the operation of the proposed energy project, the Lead Agency, in consultation with REMA, shall decide whether a public hearing shall be held and shall decide locations where it is necessary to make the contents of the draft EIS known to the public (EIA Manual 2002). Within 2 weeks from the date of receiving the developers’ EIS, REMA shall, if it finds it necessary, publicise receipt of the EIS, identify the concerned region and concerned stakeholders, the places for inspection of the draft, and shall also make copies or summaries of the statement available for public inspection.



The public notice shall include a summary of assessment data indicating nature of the water resources related project, location, characteristics of site and the results of the assessment. It shall also specify the places where the draft EIS may be consulted, and a notification to copy /send any comments to the Authority and to Lead Agency. REMA shall also send copies of the developer's draft EIS within 14 days from the date on which it was received, to other relevant agencies and experts for comments on those aspects of the project impacts that fall under their jurisdiction. Public comments and/or objections shall be submitted to Lead Agency and to the REMA.

### **Presenting Opinions on the EIS**

Those members of the public who may have opinions from points of view for environmental conservation on the draft EIS may present their written opinions to Lead Agency and to REMA within 21 days from the day of publicity as required under the EIA Regulation for Uganda. The Lead Agency, in cases where it is presented written opinions provided for in the preceding paragraph shall send copies of them to the developer soon after expiry of the 21 days. The developer shall take all necessary steps to address the issues raised.

### **Holding public hearings**

Where the Lead Agency is of the opinion that it is necessary to hear views of the public in concerned areas regarding specific a specific energy project, shall hold public hearings on the days contained in a notice for public hearings. The public in the concerned areas may present their opinions at the public hearings from points of view for environmental conservation and socio-economic considerations. The developer may explain or present his (her) opinions at the public hearings. The developer, in case where public hearings are held, shall make a record of the opinions presented at the hearings, and shall take all necessary steps to address the issues raised.

### **Notification on Public Hearings**

Where it is necessary to hold public hearings on a proposed water resources related project, a notice for the public hearings must be made at least 10 days to the meeting. Such a notice may be:

- i. posted in or near the affected community,
- ii. Published in a daily newspaper in an official language;
- iii. Published in a local newspaper in an appropriate local language,
- iv. Notified to the public through any other suitable media.

The notice shall contain full information about the location, time of the proposed meeting, and the items to be considered by the meeting; and shall also announce that no decisions are to be made on matters not so noticed.

### **Where to hold public hearings**

- v. Project site.
- vi. Meeting place within Lead Agency/boardroom.
- vii. Any other facility with adequate capacity, and available for this purpose.
- viii. Social centers.
- ix. Any other convenient place identified for this purpose.