### Summary of the Environmental and Social Management Plan

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Butare-Kitabi-Ntendezi Road Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loan Number</td>
<td>P-RW-DB0-012</td>
</tr>
<tr>
<td>Country</td>
<td>Rwanda</td>
</tr>
<tr>
<td>Department</td>
<td>OINF</td>
</tr>
<tr>
<td>Division</td>
<td>OINF.2</td>
</tr>
</tbody>
</table>

#### A - **Brief Description of the Project and the Key Environmental and Social Components**

##### a.1 Project Activities

The project road (Butare-Kitabi-Ntendezi Road) is currently a tarred national road. The project comprises three (3) batches, the works of which are summarized below:

<table>
<thead>
<tr>
<th>Batches</th>
<th>Length</th>
<th>Summary of Works Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Batch 1: Butare-Kitabi Road Section</td>
<td>53 km</td>
<td>Periodic maintenance of the carriageway by undertaking: (i) spot repair works on the carriageway; (ii) three-layer <em>surfacing</em>; and (iii) the rehabilitation of existing drainage and protection works.</td>
</tr>
<tr>
<td>Batch 2: The Kitabiï Congo Nile Crete Road Section</td>
<td>32 km</td>
<td>Rehabilitation of the carriageway by: (i) laying a <em>road base in raw gravel</em> and unsorted shingles; (ii) laying a <em>road base in raw gravel</em>; (iii) laying a <em>finishing layer</em> in bituminous concrete; (iv) rehabilitating existing drainage and protection works; and (v) stabilizing embankments and slopes</td>
</tr>
<tr>
<td>Batch 3: Congo Nile Crete-Ntendezi Road Section</td>
<td>30 km</td>
<td>Rehabilitation of the carriageway by: (i) laying a <em>road base in raw gravel</em> and unsorted shingles; (ii) laying a <em>road base in raw gravel</em>; (iii) laying a <em>finishing layer</em> in bituminous concrete; (iv) rehabilitating existing drainage and protection works; and (v) stabilizing of embankments and slopes</td>
</tr>
</tbody>
</table>

The site needs are estimated at 140 000 m$^3$ of bastard and 150 000 m$^3$ of selected natural materials. These needs are largely covered by six bastard quarries with potential estimated at 400 000 m$^3$, and eight (8) natural material deposits amounting to 260 000 m$^3$. However, the distribution of these deposits over several locations necessitates transportation over relatively long distances. The site will provide employment to nearly 1 000 persons, of which 750 or so local hands.
a.2  **Description of the Project Environment**

*a.2.1 The main human and socio-economic characteristics* of the project impact area (PIA) are summarized below:

- The project road (national road of international importance) is the main service road linking Rwanda's West and South Provinces (project impact area), on the one hand, and the Bukavu Region in the East of the Democratic Republic of Congo (DRC), on the other. It allows for the transit of food products from, and supply of petroleum products, construction materials, second-hand clothing, etc. to the area;
- Rwanda has only one cement factory (CIMERWA) located at Mashyuza in the Western Province. It produces nearly 70,000 tons yearly, transported nationwide (although mostly towards Kigali), principally via the project road;
- Heavy truck traffic is considerable throughout the project road, especially the transport of hydrocarbons and cement;
- Due to the low income of the rural population and inadequate transport supply (the reason being the road's deteriorated condition), walking is currently one of the dominant means of mobility. At all times it returning from the market or the workplace, long columns of villagers on foot and bicycle trudge along the project road, with significant risks of accident arising from pedestrians sharing the carriageway with vehicles;
- Non-motorized carts or ñibitogotogo and head portage are the system most used to transport products and harvests. Transport using beasts of burden is practically non-existent;
- The major social constraints in the project impact area (PIA) relate to:
  - The high population density, in addition to the fragmentation of farmland;
  - The predominance of the primary sector compared to the secondary and tertiary sectors (47% of GDP and more than 90% of the active population);
  - The isolation of villages, especially due to generally unmotorable rural roads; and
  - The low literacy level;
- During the environmental and social impact assessment, close attention was given to households and vulnerable persons, including women, children and senior citizens;
- Economic diversification exists in urban centers, although more so for men than women. In the rural areas, agriculture and extensive livestock farming are the main activities; agriculture, which provides subsistence to nearly 90% of the population in the PIA, is characterized by the predominance of food crop cultivation;
- Industrial activities in the PIA are limited to agrifood industries, principally the Maraba coffee cooperatives and the Kitabi and Gisakura tea factories;
- Fish farming in ponds is also developed; several of such farms are located along the project road;
- A number of cultural and historical sites of interest lie on either side of the road, principal among which are genocide memorial sites, churches and a few mosques;

*a.2.2 The natural environment* in the project impact area (PIA) is mostly characterized by:

- The Nyungwe National Park, which borders the project road over nearly 60 km, is well known for its rich wildlife and vegetation. It contains:
  - More than 275 species of birds, 24 of them endemic to the Central African mountains region. This makes the region one of the most interesting in terms of ornithology;
  - More than 250 species of trees and shrubs, hundreds of flower varieties, including wild begonia and giant lobelia, as well as 140 varieties of orchids; and
- Land mammals: leopard, golden cat, cephalopod, porcupine, chimpanzee, black-and-white colobus, etc. Other species present include Hoest’s monkey (mountain monkey), vervet monkey, baboon, mangabey and other monkeys;

- A high percentage of these species are endemic and found only in forests around the Albertine Rift;

- The road runs alongside the Kamiranzovu Wetlands (a habitat that has remained stable over a long period ≥ at least 45,000 years) which contains otters, crabs, fish, frogs, snakes and a wide variety of birds.

**B - Major Environmental Impacts**

**b.1 Potential Impacts during Works**

The project’s potential impacts can be contained. The potential negative impacts during the works implementation phase are summarized below:

(i) **Low Impact**

- **General impact notably due to** non-compliance with the rules of good practice in works implementation, management of liquid and solid waste at living bases at variance with environmental rules;

- **Impact on water and soil** mostly linked to the risks of contaminating the water quality (by discharging polluting products), soil erosion and water stagnation in borrow areas and quarries;

- **Impact on the living environment**, mostly due to inconveniences from traffic disruption and increase of heavy traffic.

(ii) **Average Negative Impact**

- **Temporary specific impact on wildlife and vegetation**, following the installation of living bases and labor inflow: consumption of firewood by workers, potential effect of noise from site equipment and plants on the quietude of wildlife, etc.;

- **Impact on human health**, resulting from:
  - Water stagnation in the borrow zones (following their exploitation) could favor the development of diseases;
  - Increasing risk of sexually transmitted diseases (STDs) including AIDS, linked to diverse populations mixing; and
  - Increasing risk of waterborne diseases due to poor hygiene at the living bases.

- **Impact on human security** related to the risk of accident, with the movement of site machines, workers’ non-compliance with security rules (wearing of helmets, gloves, goggles and security shoes);

(iii) **Positive Impact**

- **Positive socio-economic impact**: creation of direct and indirect jobs for nearly 1000 persons, including 750 or so local hands, development of trade within the project impact area.

**b.2 Potential Impacts from Operating the Project Road**

The core potential impacts of operating the project road can be contained. Such impacts following the road commissioning are summarized below:

(i) **Average Negative Impact**

- **Risk of accidental release of pollutants** transported due to increase in traffic;

- **Impact on human health**, related to populations mixing which favors STD spread, including HIV-AIDS;

- **Negative impact on human senses**, in terms of increase in sound nuisance (especially noise) for villagers along the road following increase in traffic;
(ii) Positive Impact

- **Positive impact on the air quality**: disappearance of dust along the road, thanks to its re-vegetation; atmospheric emission along the road would fall since the emissions ratio decline with free flow traffic;

- **Positive economic impact**: reduction in the average transport time on the project road from the current 6 to 7 hours (dry or rainy season) to 3 hours following works implementation; improved access to production/marketing centers for nearly 1.9 million inhabitants; permanent link to villages and farmlands currently isolated during the rainy season, thanks to the rehabilitation of related rural roads;

- **Positive impact on human security**: in terms of improved visibility, due to enhancement of the road’s geometric characteristics; and reduction of the accident rate;

- **Positive impact on the living environment**:
  - Facilitation of access to community social centers especially for women, children and senior citizens (thanks to the rehabilitation of rural roads linked to the project road);
  - Net improvement (especially for women, children and senior citizens) following the reduction of potholes on related rural roads and improvement of comfort during travel;
  - Limitation of the risk of flooding in surrounding villages, thanks to ditch cleaning and re-profiling works, construction of outlets and drainage works;
  - Improved access and connection to isolated villages, following the rehabilitation of related rural roads; and
  - Positive impact on daily living, following the facilitation of access to areas of production.

- **Positive impact on human senses**, in terms of substantial reduction of dust along the related rural roads.

C - Improvement and Accommodating Program

c.1 Measures during the Works Implementation Phase

The environmental and social measures planned to reduce or accommodate impacts during the site phase are summarized below:

- **Measures to reduce the general impact of works**: measures principally related to the organization of works and equipment at the living bases have been planned, to reduce general works-related nuisance, as summarized hereafter:
  - Involvement of environmentalist in the project impact area (PIA) during the works implementation phase, in monitoring the deployment of measures geared towards mitigating the project’s negative impact;
  - Inclusion of negative impact accommodating measures in the specifications of contracting firms. The implementation of these measures by the contracting firms shall be monitored by: (i) the Works Control Bureau; (ii) the environmental expert in the Project Implementation Monitoring Unit; and (iii) environmental and social experts in the PIA districts;
  - Submission of the projected works organization program and the environmental and social measures implementation program by contracting firms to the Contracting Authority;
  - Counter-analysis of the initial (pre-works) and final (post-works) status;
  - Set up of an appropriate system by contracting firms that enables the above-mentioned environmentalists to manage and monitor the environment;
  - Selection and management of sites set aside for use by contracting firms;
  - Choice of a suitable period for implementing certain site operations and choice of the most adequate site methods (prefabricated sections, use of labor-intensive methods, etc.);
  - Equipment and services for managing solid waste at the living bases: bins, collection skips, dumpsite, etc.;
  - Conveniences, septic tank for the living bases, regular disinfection with lime;
  - Water-proof concrete platform equipped with pit and leakage recuperation mechanism for fuel reservoirs and emptying operations at the living bases;
- Decantation basin for site equipment washing water at the living bases; as much as possible, utilization of such water in closed circuit;
- Conversion of quarries and borrow sites at the end of works, and restoration of lands (farmland or otherwise) used during works implementation;
- Extension of the guarantee to cover environmental aspects and separate payment for works to rehabilitate sites used by contractors; and
- Installation of sign boards (metal or wood) informing users and the neighboring communities about site works.

**Water and soil conservation and preservation measures:** These mainly involve:
- The selection of sites for use by contractors (respect of minimum distances);
- The environmental management of waste water and waste from workers, waste oil and other chemical/dangerous products;
- The stabilization of slopes during works (re-vegetation, grass planting); and
- If necessary, cleaning of riverbeds affected at the end of works.

**Wildlife protection measures:** principally, these concern: vigorous check on game consumption at the living bases; protection of trees against fire; possible purchase and sale of products from protected species. It is worth noting that local departments in charge of wildlife protection already conduct such checks;

**Preservation of human senses** against works-related nuisance: in addition to restoring sites at the end of works, the following measures were also suggested:
- Measures to reduce noise, exhaust gas, dust and mud; rigorous check of site machinery, selection of sites for locating life bases and noisy site installations, information to the population, etc.;
- Systematic water-spraying of borrow sites (transport of materials), works sites (related roads) and crushing sites, to reduce dust from them; and
- Providing tarpaulin to trucks transporting materials for use in covering their buckets.

**Human health preservation measures:** these mostly concern:
- Protecting the potable water needs of the population in terms of quality and quantity;
- Sensitizing workers, the surrounding communities and road users on STDs, including AIDS (sensitization campaigns targeting workers, the surrounding communities and road users);
- Strict compliance with and monitoring of hygiene conditions on the site and the environmental management of solid and liquid wastes (collection and burying of wastes, provision of conveniences and septic tanks, and regular disinfection with lime);
- Installation and equipment of site dispensaries for the living bases;
- Monitoring of workers’ health (regular medical checks, etc.);
- Supply of condoms to workers; and
- Cleaning of affected streams, if necessary.

**Human security preservation measures:** these will focus on:
- Strengthening site road security by creating provisional diversions, additional road signs (reflective strips, road signs and signposts, etc.) and speed limitation;
- Sensitizing workers (especially drivers to respect speed limits), communities along the road and road users (sensitization campaigns and sign boards);
- Equipping workers with reflective jackets, helmets, gloves, goggles and security shoes. The wearing of such gear (provided by the works contractor) is compulsory on site and shall be required of the contractor prior to any work on the site. The Works Monitoring Bureau shall ensure strict compliance with these requirements. Any worker non-compliant with these requirements shall not be allowed on the works site. Furthermore, to guarantee constant availability of the above gear, the contractor could stock them on site and have each worker wear them on arrival, before commencing work;
- Fencing around and/or guarding living bases, borrow zones and equipment pool; and
- Fire prevention.
• **Measures related to the living environment:** these include two types of measures:
  - Preventive measures: choice of living base sites, information for users and surrounding communities, erection of sign boards, creating of provisional diversions, etc.; and
  - Compensatory measures: reconstitution of roadside hedges; compensation of owners for damage caused, handing over of wells and boreholes built for works-related needs to the surrounding community; these wells and boreholes will be transformed into potable water points.

• **Socio-economic measures planned:** these concern:
  - The contribution of women and youths to the project, within the ambit of the law – compliance with the minimum age and avoidance of dangerous work or work requiring significant effort for women; and
  - Compensation for private farmlands used as deposits and quarries.

### c.2 Measures Related to Operation of the Project Road

The planned environmental and social measures aimed at reducing or accommodating the impact of project operations are summarized below:

• **Compensation for trees felled** due to works, planting of decorative trees, reduction of noise and dust for the surrounding dwellers.

• **Wildlife preservation measures** concern increasing the number of signposts and putting in place wood barriers to prevent wildlife from crossing the road at risky zones (corners, slopes, roadside areas often visited by wildlife);

• **Water and soil conservation measures:** soil erosion control through soil treatment and re-vegetation operations, with a view to protecting and stabilizing slopes, protecting and checking the capacity of outlets and cleaning streams;

• **Measures to enhance human security and the living environment:** the purpose of these measures is to minimize the risk of accidents:
  - Rumble strips (speed bumps) at the entry of urban areas along the road;
  - Improve road signs and limit speed on approaching towns and villages, and at critical locations;
  - Widen the carriageway at tight corners (especially in sections with difficult relief) and broaden shoulders in sections with reduced visibility (where the right-of-way so permits), with a view to reserving more space to pedestrians;
  - At villages, cover gutters with slabs to facilitate access to dwellings;
  - Set up: (i) lay-by areas for transporters who need to check their engines and brakes before and after steep hills; (ii) parking areas by villages for heavy-duty vehicles; and (iii) pedestrian crossings on gutters to access dwellings and premises;
  - Separate community education and health centers along the road with protective fences; and
  - Sensitize villagers (using signposts) about the dangers of walking on the carriageway to encourage them to use the shoulders and sidewalks as much as possible;

• **Human health preservation measures:** principally, these include: sensitization against STDs, including AIDS, by erecting sign boards along major villages along the road, in addition to existing sign boards; construction of latrines at community education and health centers for hygienic needs;

• **Measures in favor of human senses:** this involves the incorporation of landscape- and security-related measures:
  - Planting decorative vegetation at the entry of towns and villages along the road; and
  - Putting guardrails in place.
D - Monitoring and Additional Initiatives

d.1 Monitoring

Two officials (environmental experts) from the district/provincial environmental departments in the project area will be charged with project monitoring. The monitoring will focus on the implementation of measures to accommodate the negative impacts, especially at borrow areas and quarries, living bases, sites, road security and environmental protection installations.

On completion of works, these experts will remain attached to the districts and provinces to guarantee the pursuit of the environmental and social protection measures. These experts will ensure the deployment of environmental and social measures contained in the Environmental and Social Management Plan.

d.2 Follow-up

Follow-up will mostly concern the negative impacts. It will be incumbent: (i) daily on the contracting firm and is billed into its contract cost; (ii) daily on the Works Monitoring Bureau and billed into its contract cost; (iii) daily on the Project Implementation Monitoring Unit (PIMU) and forms an integral part of the charges related to its operation and billed into the project cost. The PIMU has a central government expert and another expert in sexually transmitted diseases, including AIDS, from the National AIDS Control Committee; and (iv) periodically on the Contracting Authority. The choice of sampling sites, conditions for analyzing samples and using their results, the analyses frequency, the definition of standards and thresholds that would trigger the need to deploy corrective action, will be incumbent on the Works Monitoring Bureau.

Follow-up will also be conducted with a view to sensitizing the population in public places (markets, schools, health centers, district offices, etc.). That campaign will be conducted four times yearly and will address issues concerning road security, environmental protection and STD control, including HIV/AIDS. The campaign run will be consistent with the Rwanda National Program.

d.3 Additional Initiatives

Additional initiatives planned within the project framework take several forms:

- Sensitization on STD and HIV/AIDS;
- Sensitization on environmental protection;
- Sensitization on road security;
- Involvement of the population in implementing the project through community participation; and
- Related improvements: rural roads, parking and lay-by areas, speed bumps, landscape improvements, etc.

E - Institutional Arrangements and Capacity-building Needs

In Rwanda, several ministries, agencies, local and international non-governmental organizations, research and tertiary institutions share the institutional responsibility for managing the environment and natural resources, notably: the Rwanda Environmental Management Agency (REMA), the Ministry of Natural Resources (MINIRENA, formerly called MINITERRE), the Ministry of Agriculture and Livestock (MINAGRI), the Ministry of Infrastructure (MININFRA), the Ministry of Education, Science, Technology and Scientific Research (MINEDUC), the Ministry of Local Government, Community Development and Social Affairs (MINALOC).

In view of the decentralization policy adopted by the country, the environmental and social management of road sites is handled at the Administrative Region and District level, with the central government providing technical support.

Concerning the Institutional Accountability Charter, the Road Projects Implementation Monitoring Unit (PIMU), which has an environmentalist from the central Ministry of Environment (MINIRENA), will be responsible for implementing the environmental and social management component. CSEP oversees the
implementation of the Environmental and Social Management Plan (ESMP). Where the need so arises, the Rwandan Environmental Management Agency (REMA) could be called upon to issue technical advice on isolated problems.

The government environmental team responsible for monitoring the implementation of the ESMP will conduct quarterly environmental and social monitoring missions. It will forward to PIMU a quarterly report on the status of implementation of improvement and accommodating measures, new problems emerging, solutions adopted or planned, and all other useful recommendations.

F - Public Consultations and Obligation to Disseminate Information

f.1 Consultations held within the Environmental Impact Assessment (EIA) Framework

Within the EIA framework, the Consultant held two types of public consultations:

- Contact with key regional and local officials, transport professionals, traders, civil society, women’s organizations in the project area and environmental protection organizations, to inform them about the purpose of the project, request information from them on the natural, human and socio-economic environment, and obtain their views, suggestions and possible concerns regarding the project; and
- Conduct of socio-economic surveys among sector heads and village chiefs. Such surveys concerned twenty or so localities. The surveys also aimed at informing the local population, gathering a number of additional information on these villages and sounding out the population over their expectations and concerns regarding the project.

General opinion favors the project. In addition, the population requested: (i) the rehabilitation of rural roads connected to the project road and access to agricultural production areas and markets; and (ii) the protection/sanitation of education and health centers bordering the road via the construction of latrines. The choice of related activities (rural roads, sensitization) was made in consultation with the population. Based on discussions held, the list of rural roads connected to the project road was drawn up in concert with the stakeholders. Consultations with the population will continue throughout the project implementation phase, to ensure ownership of the project by the beneficiaries.

f.2 Consultations to be made during the Project Implementation Phase

The population consultation process will be based on the Environmental and Social Management Plan (ESMP) and the comprehensive summary provided at the beginning of the ESIA. Its purpose is to explain all the impacts identified and measures planned to mitigate or accommodate them, on the one hand, and the involvement and sensitization of the population, with a view to implementing the ESMP.

Indeed, the population’s involvement, for instance, in implementing road security measures during the works implementation period, is indispensable. The population will feel more at ease since it will be empowered and directly involved in subsequent maintenance works.

The consultative process will be deployed in line with the ESMP action plan. The process will involve three major stages: (i) the preparatory stage; (ii) the site installation and works implementation stage; and (iii) the works completion and participatory planning stage leading to the operating phase.

f.3 Information Dissemination

The Bank will publish this ESIA summary in its “Public Information Center”. The Government will put the ESIA summary at public disposal.

G - Cost Estimate

The cost of implementing the ESMP is summarized on the table below. The cost covers: (i) expenditures on works/environmental and social protection measures (works and sensitization); these expenditures are included in the project cost; and (ii) the cost of follow-up measures during the road operation, provided by the central and local departments in charge of the environment as part of their brief.
### Summary of the Cost of Activities

<table>
<thead>
<tr>
<th>Activities</th>
<th>Amount (in USD million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population sensitization campaign</td>
<td>0.15</td>
</tr>
<tr>
<td>Environmental protection works</td>
<td>1.80</td>
</tr>
<tr>
<td>Monitoring</td>
<td>0.10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2.05</strong></td>
</tr>
</tbody>
</table>

### H - Implementation and Reporting Schedule

The ESMP implementation schedule is summarized below.

<table>
<thead>
<tr>
<th>Activities</th>
<th>Programming</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organize information sessions on the ESMP</td>
<td>Prior to works start-up</td>
</tr>
<tr>
<td>Inform and sensitize site workers</td>
<td>Prior to works start-up</td>
</tr>
<tr>
<td>Put in place conveniences (latrines), stabilized draining areas and waste</td>
<td>Prior to works start-up</td>
</tr>
<tr>
<td>oil recuperation tanks</td>
<td></td>
</tr>
<tr>
<td>Put in place sign boards indicating the works and traffic diversion</td>
<td>Prior to works start-up</td>
</tr>
<tr>
<td>Manage liquid and solid wastes from the living base</td>
<td>During and after the works</td>
</tr>
<tr>
<td>Avoid discharging toxic products</td>
<td>During the works</td>
</tr>
<tr>
<td>Promote the use of local labor</td>
<td>During the works</td>
</tr>
<tr>
<td>Set up sign boards</td>
<td>Before and during the works</td>
</tr>
<tr>
<td>Obey speed limits</td>
<td>During the works</td>
</tr>
<tr>
<td>Use protective tarpaulin</td>
<td>During the transportation of materials</td>
</tr>
<tr>
<td>Restore borrow sites</td>
<td>After operating the quarries</td>
</tr>
<tr>
<td>Avoid storing and discharging bituminous products on the ground</td>
<td>During the works</td>
</tr>
<tr>
<td>Ensure the environmental monitoring of the ESMP</td>
<td>During and after the works</td>
</tr>
<tr>
<td>Restore sites (work areas + borrow areas)</td>
<td>At the end of works</td>
</tr>
</tbody>
</table>

The Works Monitoring Bureau will prepare monthly and quarterly reports on the implementation of the environmental and social protection measures. In addition, the Project Implementation Monitoring Unit (PIMU) will prepare monthly and quarterly reports. The quarterly reports of the Works Monitoring Bureau and PIMU will be forwarded regularly to the Bank.