



GREEN CITY KIGALI: A NEW MODEL FOR URBAN DEVELOPMENT IN RWANDA

ANNEX 6 A: ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)



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Produced by Sweco GmbH
Hanauer Landstraße 135-137
60314 Frankfurt am Main
Germany
Tel: +49 69 95921 0
www.sweco-gmbh.de

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ACRONYMS AND ABBREVIATIONS

BAU	Business As Usual
CCC	Community Coordination Committees
CBO	Community Based Organisation
CDP	Community Development Plan
CSO	Civil Society Organisation
DA	District Authorities
DLB	District Land Bureau
DLC	District Land Commission
DTF	District Task Force
EA	Environmental Assessment
EDPRS	Economic Development and Poverty Reduction strategy
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMMP	Environmental and Social Management and Monitoring Plan
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standards (of the World Bank)
ESS5	Environmental and Social Standard 5 (Land Acquisition, Restrictions on Land Use and Involuntary Resettlement)
FONERWA	Rwanda Environment and Climate Change Fund / Rwanda Green Fund
GCF	Green Climate Fund
GCK	Green City Kigali
GCK	Green City Kigali Company
GHG	Greenhouse Gases
GoR	Government of Rwanda
ha	hectare
HH	Household
HIV/Aids	Human Immunodeficiency Virus/ Acquired Immune Deficiency Syndrome
IDP	integrated Development Project
IFC	International Finance Corporation
ILO	International Labour Organisation
KfW	Kreditanstalt für Wiederaufbau (German Development Bank)
KCMP	The Kigali City Master Plan
LC	Livelihoods Committee
LMT	Livelihood Management Team
LODA	Local Administrative Entities Development Agency
LRC	Local Resettlement Committee
LRP	Livelihood Restoration Plan
MINAGRI	Ministry of Agriculture and Animal Resources
MINALOC	Ministry of Local Government
MINECOFIN	Ministry of Finance and Economic Planning
MININFRA	Ministry of Infrastructure
MoE	Ministry of Environment
NGO	Non-Governmental Organisation
NISR	National Institute of Statistics Rwanda
PAH	Project Affected Household
PAP	Project Affected Person
PIU	Project Implementation Unit
PPF	Project Preparation Fund
PS	Performance Standards
RAP	Resettlement Action Plan
RAS	Rapid Asset Survey
RAB	Rwanda Agricultural Board
REMA	Rwanda Environment Management Authority

RHA	Rwanda Housing Authority
RLMUA	Rwanda Land Management and Use Authority
RPF	Resettlement Policy Framework
RSSB	Rwanda Social Security Board
RURA	Rwanda Utilities Regulatory Authority (RURA)
RWFA	Rwanda Water and Forestry Authority
SWECO	International Consulting GCK Project (Swedish Consultants)
ToRs	Terms of Reference
USD	United States Dollar
WB	World Bank

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EXECUTIVE SUMMARY

1. Background

The Government of Rwanda has committed itself to shift towards green urbanisation focusing on nation-wide environmentally sustainable, climate resilient and green, economic growth. A number of national strategies, policies and guidelines were developed by the government to set priorities and directions on urban development to tackle challenges related to climate change, population growth and rapid urbanisation. The City of Kigali Masterplan aims at providing an urban development model for increased resilience against the consequences of climate change and a basis for sustainable urban development of Rwanda through the development of a model community at Kinyinya Hill.

The Rwanda Green Fund (FONERWA) has secured funding from the German Development Cooperation through KfW Development Bank and the Green Climate Fund's Project Preparatory Facility, to prepare a feasibility study and to conduct an international design competition and tender process to select an Urban and Architectural Design Consultant (UADC).

The upgrade of informal settlements within the frame of green city development is also pertinent to mitigation efforts. Under a business-as-usual projection, Rwanda's total emissions are forecast to more than double over the 2015-2030 period, rising from 5.3 million tCO₂e in the base year to 12.1 million tCO₂e in 2030 (excluding removals from the forest and land use sectors). The forecast indicates the growing contribution from fossil fuels to national emissions, arising from increasing demand for power generation, road transport and other modern energy uses.

According to the nationally determined contribution (NDC) of Rwanda, a detailed assessment of identified GHG mitigation options for Rwanda estimates a total emissions reduction potential of around 4.6 million tCO₂e in 2030 against the BAU emissions in the same year of 12.1 million tCO₂e. The NDC presents an unconditional contribution with a reduction of 16 per cent relative to BAU in the year 2030; equivalent to an estimated mitigation level of 1.9 million tons of carbon dioxide equivalent (tCO₂e) in that year. This is an unconditional target, based on domestically supported and implemented mitigation measures and policies. It also presents a conditional contribution: An additional reduction of 22 per cent relative to BAU in the year 2030; equivalent to an estimated mitigation level of 2.7 million tCO₂e in that year. This represents an additional targeted contribution, based on the provision of international support and funding.

This ESIA report is the output of feasibility studies that underpins a proposal by the Government of Rwanda (GOR), through its accredited entity MoE, to the Green Climate Fund (GCF). To elaborate this ESIA, a study was undertaken pursuant to the requirements for the Conservation and Management of Environment that requires all proposed development projects. The study assesses the impacts of the proposed development and proposes mitigation measures as well as an Environmental and Social Management Plan (ESMP). It was carried out through desk research, field visits and consultations with the different stakeholders and project engineers. The consultant conducted extensive literature review in relation to the proposed project. During field investigations, information on physical, ecological and socio-economic aspects of the project area and its surrounding environment were determined.

This study identified the potential adverse impacts of the project in terms of the possible effect to the environment and on the interested parties. The study looked at the different stages of the proposed development, namely;

- Project construction phase involving construction of the proposed roads and pathways to improve transport and mobility, stormwater proposed structures, sanitation, solid waste, energy and community infrastructures;
- Project operational phase involving use of the settlement infrastructures, and;
- Project decommissioning phase.

The study examines the project in terms of the components it entails and their sizes and numbers where possible or application. It also considered the zoning parameters, natural aesthetics of the project while also maintaining the environmental quality and supporting investment value.

2. Objectives of the study

Ngaruyinka project was selected as one of the GCK components in the objective to provide a model for climate responsive upgrading of informal settlement. The objective is to create a model approach which can be upscaled and applied to multiple situations across Rwanda to maximize positive climate impacts in line with the GCK approach.

The Ngaruyinka upgrade project will align with the GCF Investment Criteria, which are:

- Impact potential
- Paradigm shift
- Sustainable development
- Needs of recipients
- Country ownership
- Efficiency and effectiveness

The Upgrade of Ngaruyinka and the pilot are the two projects that were identified to be taken forward in the first phase of the implementation process for Green City Kigali (GCK). They are located close to each other, in the north-eastern corner of Kinyinya Hill creating opportunities for shared infrastructure and enabling works. Both projects are founded on the four pillars of sustainable development will deliver on the overall objectives of the GCK project.

- A 16ha pilot new-build housing area along with associated commercial and community facilities on a greenfield site.
- An 18ha urban upgrade of an existing informal settlement (Ngaruyinka).

The overall vision for the upgrade of Ngaruyinka is: *'A scalable model for sustainable informal settlement upgrading in Rwanda which through holistic, strategic and innovative urban planning reduces capital costs whilst increasing the climate-responsive return on investment'*.

A number of different technical options and infrastructures have been considered against a baseline in order to arrive at recommendations that achieve the vision of the project. Proposed infrastructures are:

- Transport and Mobility
- Stormwater Management
- Water Supply
- Sanitation
- Solid Waste Management
- Energy
- Community facilities

The result is a project with strong climate benefits, as well as social, health, economic, environmental co-benefits. These climate benefits include a reduction of CO₂ emissions by 125,032 tCO₂eq over the lifetime of the investments, as well as adapting to present and future climate risks.

Recognizing that the project may have environmental and socio-economic impacts (positive and negative) and to comply with the Rwanda requirements for the protection and conservation of the Environment and the will of the promoter to incorporate all practical cost effective measures for avoiding or minimizing negative environmental impacts, for capturing environmental benefits and for ensuring sound environmental management, an Environmental and Social Impact Assessment (ESIA) study characterizing the impacts and mitigation measures was conducted. This report documents the results of the study.

3. Approach and methodology of the ESIA study

To identify and predict the various impacts that may emanate from the project, various study methods and tools were incorporated. These included checklists, expert opinion and observations. An in-depth analysis of public concerns from the interested parties was undertaken and views incorporated in the development of the

Environmental and Social Management Plan (ESMP). This involved discussions and dialogue with the client and project engineers.

Adverse impacts

The baseline data collection was primarily investigated through desktop studies and sites visits, photographic capture and direct interviews with the interested stakeholders. Issues that arise as of significance for this project's environmental performance are the following among others:

- ✓ Vegetation clearing as new structures including roads, drainage structures, sanitation facilities and community infrastructures are constructed.
- ✓ Dust emission and incessant noise levels during the construction phase of the new proposed infrastructures.
- ✓ Noise and vibrations due to construction activities.
- ✓ Microclimate modification as land is covered by new construction structures.
- ✓ Increased runoff during land clearing and excavation related to the upgrade construction activities
- ✓ Modification of surface drainage as new drainage and road infrastructures are constructed
- ✓ Erosion of cleared areas
- ✓ Contamination of groundwater
- ✓ Effects of sewage
- ✓ Risk of Covid-19 pandemic spreading
- ✓ Effects of generated solid wastes with the construction activities
- ✓ Risk of accidents during construction and transport of construction materials
- ✓ Impact of rainwater on the project site given the land clearing and different areas covered by new structures.
- ✓ Risk of sexual abuse exploitation and harassment during the project construction and operation

However, the above potentially adverse impacts identified are mostly short term and manageable in nature and expected to occur during the construction phase but have/will be ameliorated through the following proposed mitigation measures :

- (1) Planting of more trees around the site and undertaking landscaping.
- (2) Sprinkling of water during construction to reduce emission of dust
- (3) Construction work will occur during the day to reduce noise nuisance
- (4) Landscaping of the area to reduce the effect of heat reflection and therefore reduce microclimate modification
- (5) Provide appropriate sewage facilities, storage facilities and rainwater harvesting tanks to avoid contamination of groundwater and ensure adequate supplies for the development.
- (6) Unusable construction waste, such as damaged pipes, formwork and other construction material, must be disposed of at an approved dumpsite.
- (7) Proper solid waste receptacles and storage containers should be provided in sufficient numbers, particularly for the disposal of lunch and drink boxes, so as to prevent littering of the site.
- (8) Ensure vehicular movement is well monitored and fit all workers at site with the appropriate safety gear depending on their duty station,
- (9) All workers and visitors accessing work sites every day or attending meetings shall be subjected to rapid Covid-19 screening which may include temperature check and/or other vital signs; and,
- (10) The appropriate design and construction of a storm water drainage system will adequately mitigate storm water drainage during operational phase.

Positive impacts

The positive impacts identified include creation of short-term employment across the board, a flow of income- or wealth-enhancing activities in the project area and for the country in general, community services, improved infrastructure, an added human capital that is acquired by students who enrol at the TVET School and improved infrastructure.

Recommendations to mitigate resultant negative impacts have been put forward. These include proper management of wastes both solid and liquid waste, soil maintenance through planting of trees that will also augur well for noise and dust reduction.

Environmental and Social Management Plan (ESMP)

The study has developed an Environmental and Social Management Plan (ESMP) outlining the areas of consideration though most if not all have been covered in the management measures outlined after discussion of the impacts.

Overall, the project is environmentally feasible and sound with few potential negative impacts, which can be minimized or completely mitigated through incorporation of corrective, rehabilitation, restoration and instituting of appropriate mitigation measures. These have been integrated into the project decision-making level so as to ensure the project designs take into consideration all the highlighted aspects of this study. The information presented in this environmental project report where approved will form basis for the final design stage of the project.

Recommendations

This study has proposed a number of recommendations that the project needs to implement to mitigate adverse impacts and prevent the potential ones. They include:

- (i). Landscaping of the area will reduce the effect of heat reflection thus reducing microclimate modification
- (ii). Control of storm water movement through adequate and correctly constructed storm drains will be undertaken so as to reduce the impact of soil erosion
- (iii). Wastes (solid and liquid) will be properly managed to ensure that they do not contaminate water bodies through wind or water erosion into these regimes.
- (iv). Clean up exercises will be regularly undertaken every end of business day so as to retain cleanliness within the site of each house; and,
- (v). Water use will be properly managed so as to ensure that no running water is left unattended leading to erosion.



1 INTRODUCTION

1.1 Background and links with the Green City Kigali

Rwanda is a small, hilly, landlocked country with the highest population density in Africa (415 people/km²), a population of over 12,95 million people (half of which is under 19 years) projected to rise to around 26 million by 2050. It faces significant challenges in adapting to climate change, meeting food demands and in developing sustainably. Current climate variability in Rwanda is already resulting in an increased incidence of drought, flooding and landslides. Increased heavy rainfall events are causing floods, landslides, damage to houses, roads and other infrastructure as well as creating power cuts while the occurrence of prolonged dry spells from rising temperatures is creating create heat stress and new challenges for water management and storage to cope with the future water demand from Rwanda's growing urban population.

The Intergovernmental Panel of Climate Change (IPCC) in its 4th and 5th assessments have explicitly identified informal settlements within the global south as a key factor shaping climate-related risk. This as well as the need to limit global warming to 1.5°C, presents the need for intervention in this area. Climate and disaster related risks in cities cannot be addressed without the upgrade of informal settlements. In parallel, the upgrade of settlements will be incomplete without accounting for and incorporating the risks of climate change. Kigali, where official estimates indicate the population living in unplanned settlements at a very high 77.3% (EICV 5), is at particular risk even compared to many of its neighbours. In addition, Rwanda has been identified as a country at very high risk of climate change events overall.

The Government of Rwanda has committed itself to shift towards green urbanisation focusing on nation-wide environmentally sustainable, climate resilient and green, economic growth. A number of national strategies, policies and guidelines were developed by the government to set priorities and directions on urban development to tackle challenges related to climate change, population growth and rapid urbanisation. These strategic documents outline the national growth directions in urbanization, green growth and climate resiliency, housing and planning regulations that guide the land use planning of the cities. This was also the basis for the updated City of Kigali Masterplan (2020). The City of Kigali Masterplan provides an Urban Sustainability Framework and guiding principles for the planning processes to ensure the long-term sustainability of Kigali City.

It aims at providing an urban development model for increased resilience against the consequences of climate change and a basis for sustainable urban development of Rwanda through the development of a model community at Kinyinya Hill. This objective will be achieved by integrating various solutions such as pilot developments that allow users to enjoy the social and economic benefits of urbanization while minimizing ecological footprint, as described below.

In 2019, Sweco prepared the Mid-term Feasibility Report for the GCK Project (600 ha which covers the 18ha Ngaruyinka upgrading project). In parallel, Sweco prepared a Preliminary Environmental and Social Impact Assessment (pESIA) to document potential E&S issues related to the Project and how those would be conceptually managed.

A Final Feasibility Study (FFS) was published in November 2020, which included:

- Full Sector Reports undertaken during the feasibility process (Phase A)¹;
- Urban Design Project Handbook that outlines the urban development context of the GCK and which informed the design competition process;
- Terms of Reference (ToRs) for the tender of consulting services for Urban, Infrastructure and Architectural Design Works relating to the Project;
- Illustrative Masterplan 600 ha, concept for the 16-ha pilot site, and design report for the Project;
- E&S Safeguards Documentation; and
- Relevant Project Documentation

The following different sub-components are being developed within the 600 ha Project Area:

- the Pilot Site, a 16 ha residential and commercial area that will include close to 1,700 affordable flats for 7,000 to 8,000 people;
- the masterplan for the entire 600ha project area to be incorporated into the CoK MP as a green city special planning area.
- **the Upgrade site, urban upgrade of existing 18 ha community (Ngaruyinka)** (which is subject of this ESIA);

¹ The full sector reports include: housing and building; construction industry and building materials; mechanical engineering integration/building technology; water and sewerage; energy and ICT; transport and mobility; solid waste management; urban economy; finance and legislation; job creation and local economic development; cross-cutting issues (E&S); gender analysis; and climate change.

- the Cactus Green Park, a 13 ha housing project developed by Horizon Ltd;
- an affordable housing neighbourhood development on a parcel of 22 ha (first development phase) within the 130 ha site owned by the RSSB and financed by IFC;
- Kigali International Community School (KICS) project; and
- other individual estate development projects.

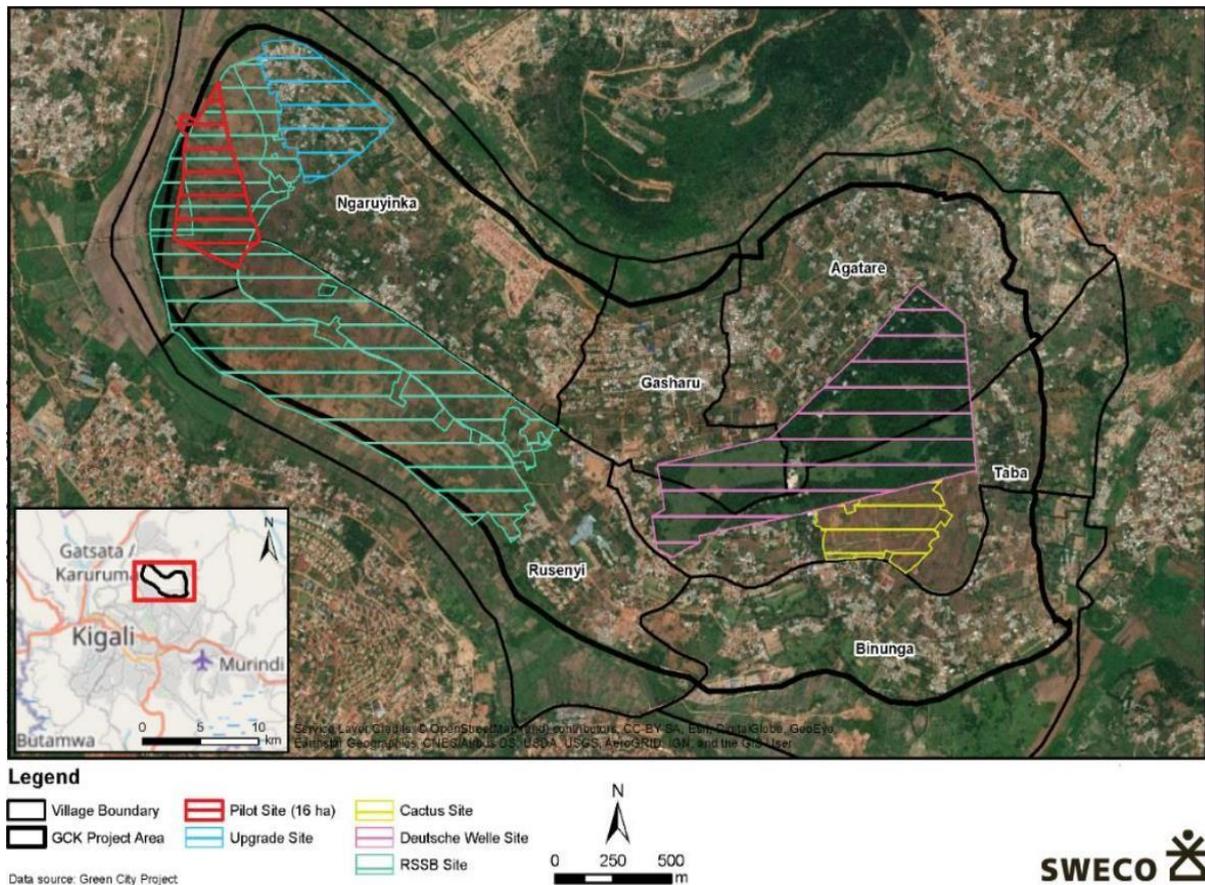


Figure 1-1 Overview of 600 ha Project Area with sub-component Sites including Ngaruyinka

The ambition for Green City Kigali is therefore to become a transformative project which will help drive systemic and sustainable change that will have a significant impact on the pattern of urban development within Kigali and throughout the country. It will contribute to the delivery of the UN 2030 Sustainable Development Goals and the New Urban Agenda together with the country’s climate change and affordable housing commitments.

This is the context within which Ngaruyinka Upgrade Project was proposed and considered. It is one of the components of Green City Kigali Project under design and development. GCK project was proposed as Rwanda seeks to increase the prosperity of its people while safeguarding its natural environment and strengthening communities socially and culturally. As is the case in much of Sub-Saharan Africa, Rwanda’s cities are predicted to grow substantially in line with the country’s growing economic prosperity. It is recognised by leaders in Rwanda that a model for sustainable urban growth is required to manage the process of urbanisation in line with its vision for green economic growth.

Through its accredited entity Ministry of Environment (MoE), the Government of Rwanda (GoR) is seeking funding from the Green Climate Fund (GCF) for the development of climate resilient for Ngaruyinka urban models in cities of Rwanda.

1.2 Project objectives, vision and alignment with GCF investment criteria

Ngaruyinka project was selected in the objective to provide a model for climate responsive upgrading of informal settlement in line with the Solution Tree Analysis in Figure below. The objective is to create a model approach which can be upscaled and applied to multiple situations across Rwanda to maximize positive climate impacts in line with the GCF approach.

The overall vision for the upgrade of Ngaruyinka is:

'A scalable model for sustainable informal settlement upgrading in Rwanda which through holistic, strategic and innovative urban planning reduces capital costs whilst increasing the climate-responsive return on investment'.

The Ngaruyinka upgrade project will align with the GCF Investment Criteria. These criteria form a frame of reference for the Multi Criteria Analysis methodology, as set out below. The criteria are as follows:

- Impact potential
- Paradigm shift
- Sustainable development
- Needs of recipients
- Country ownership
- Efficiency and effectiveness

1.3 Overview of the proposed interventions

The project at its core focuses on the sustainable upgrade of informal settlements, by piloting a realistic climate mitigative and adaptive multi-sectoral program of actions that can be used as a template for future upgrading at similar communities throughout Kigali and the country's secondary cities.

Thus, the project also includes technical assistance programs in order to facilitate this future upgrading expansion as well as to promote new sustainable greenfield housing development projects as well. Some of the specific interventions include:

- Investments in resilient infrastructure, household energy solutions and community buildings in an informal settlement on Kinyinya hill - Ngaruyinka, to serve as a model for a resilient, low emission upgrade. This would include:
 - creating a green, permeable network of swales, gullies and detention-filtration-percolation areas to increase retention of water on the hill, improve stormwater management and reduce the risk of flooding and landslides
 - creating green rights of way network to improve transport and mobility, using green construction methods and materials to minimize emissions
 - establishing community composting, neighbourhood collection points, recycling centres to improve solid waste management, reducing emissions, increasing the productivity of urban agriculture and reducing the blockage of drains with solid waste
 - expanding the central water supply, rainwater harvesting, point of use household water treatment technologies to improve the water supply and enhance water security during dry spells
 - establishing a toilet with biogas recovery and providing training on latrine improvements to improve sanitation and reduce emissions
 - installing solar PV and solar water heaters (SWH) and promoting improved cook stoves, energy efficient lighting and appliances to reduce emissions; and
 - establishing a technical and vocational education and training (TVET) centre, community focal points and market squares to enhance green skills and livelihoods development in new value chains.
- Provision of Technical Assistance (TA) to support the scale up and replication of resilient, low emission approaches through:
 - building the capacity of construction sector workers and professionals to adopt best practices in green construction
 - developing the institutional capacity of GoR agencies to support inclusive, green city development
 - providing policy support for an enabling environment that fosters increased investment in green upgrades of informal settlements
 - raising awareness and engaging citizens to increase their active participation in resilient, low emission initiatives; and
 - blueprinting the GCK and the planning code for the SPV so that it can be easily and cost effectively replicated.

In order for activities proposed under each of the project components to be implemented, there is a likelihood that both positive and negative environmental and social impacts could emerge. An Environmental Social Impact Assessment (ESIA) with an integrated Environmental Social Management Plan (ESMP) was commissioned to support the implementation of the project in environmentally sustainable manner.

The ESIA was prepared in accordance with the requirements of (i) Article 30 of the Organic Law N° 48/2018 of 13/08/2018 determining the modalities of protection, conservation and promotion of environment in Rwanda; and (ii) applicable GCF Environmental and social safeguards, adapted from the eight (8) International Finance Corporation (IFC) performance standards (PS).

1.4 Objective and scope of the ESIA

The objective of the assignment is to assist FONERWA/MoE to develop an Environmental Social Impact Assessment (ESIA) to ensure that there are sufficient safeguards and that the project is implemented in an

environmentally and socially sustainable manner and in full compliance with Rwanda's and the GCF's environmental and social safeguards.

The specific objectives are: (i) to assess the potential environmental and social impacts of the project in Ngaruyinka, whether positive or negative, and propose mitigation measures which will effectively address the impacts; and (ii) to inform the project preparation process of the potential impacts of different alternatives, and relevant mitigation measures (including implementation requirements).

A scoping study was undertaken by the consultant with an intention of collecting enough and relevant information so as to ensure a comprehensive ESIA. This stage involved consultation with the Project Executing Agency (FONERWA), and all the relevant key stakeholders who were identified through Stakeholder Identification Process. Through the scoping study, which entailed an initial and broad assessment of the project, policies, regulations and baseline data, the consultant generated a scope for the study including geographical coverage, stakeholders (interested parties), significant impacts (areas of study) and the levels of detail in each particular impact study. Scoping was restricted to the geographical location and area of influence while focusing on impacts of project components and sub-components at the proposed interventions.

The scope of work was to:

- Analyse interventions proposed for each of the proposed components within and around the sites
- Assess social, environmental and climate change effects/impacts related to the proposed project and propose mitigation/adaptation measures
- Conduct a comprehensive impact assessment of project components in Ngaruyinka
- Conduct extensive consultations with various project teams and other relevant stakeholders to obtain information and inform the different ongoing project studies including providing design and operation measures to minimize the risk of social and environmental impacts.
- Provide an environmental social management plan (ESMP) that:
 - ✓ prescribes other mitigation measures needed to ensure long-term project sustainability, including institutional Capacity strengthening for environmental social management at all levels, public safety measures during design, construction and operational phases of the project and,
 - ✓ outline indicators and set up a monitoring project to track environmental and social performance of the target sites and implementation of the mitigation measures for the refinement of future management action as required including an estimate of the costs associated with the ESMP.

1.5 Report structure

This report is organised in ten chapters. Chapter 1 gives a general background of the project; Chapter 2 deals with the project description, Chapter 3 gives a description of relevant policy, legal and institutional framework within which the project will operate; and Chapter 4 presents the Impact assessment Methodology. Chapter 5 presents the Baseline data, including Physical, Biological and social setting of the project site. Chapter 6 presents the findings of the Stakeholders' engagement and public participation. Impacts identification, evaluation for significance and proposed mitigation measures are elaborated in Chapter 7. The Project Alternative analysis and Environmental Social Management Plan are presented in Chapter 8 and 9 respectively. Chapter 10 provides conclusions and recommendations of the project.



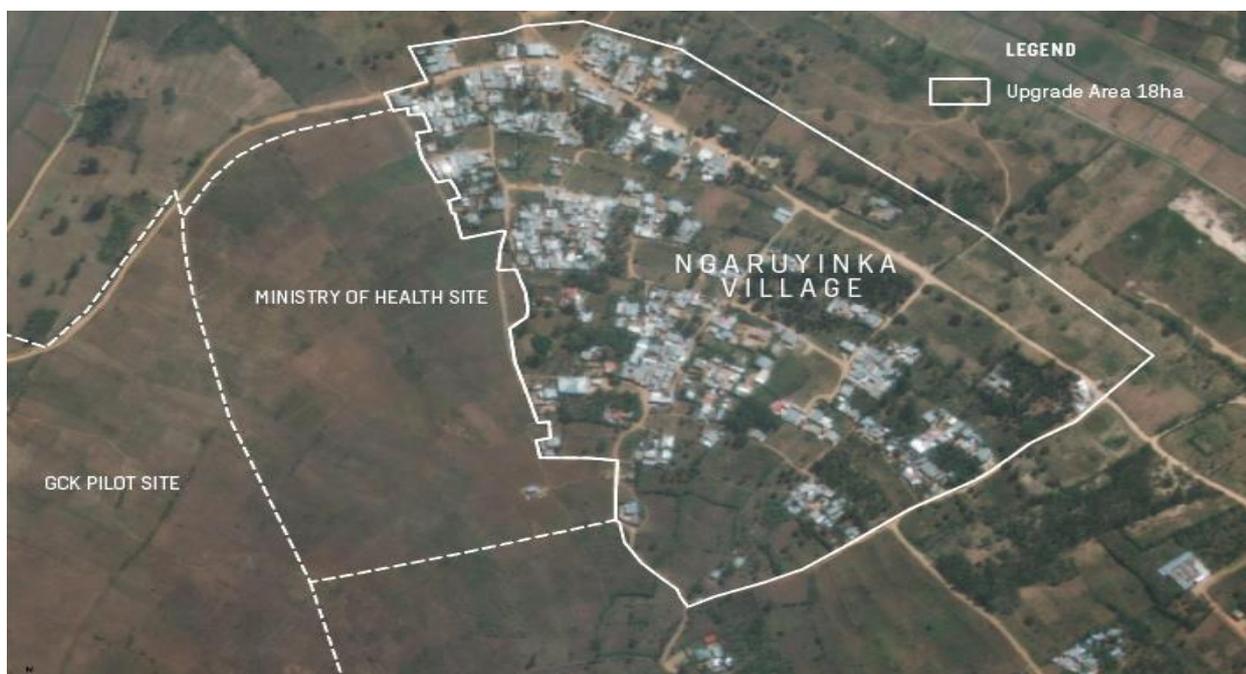
2 PROJECT DESCRIPTION

2.1 Project location

The project site is situated on Kinyinya Hill in Gasabo district and is one of the two projects that were identified to be taken forward in the first phase of the implementation process for GCK. They are located close to each other, in the north-eastern corner of Kinyinya Hill creating opportunities for shared infrastructure and enabling works. Both projects are founded on the four pillars of sustainable development will deliver on the overall objectives of the GCK project. The population of Gasabo is ranked as one of the most vulnerable districts to landslides in Rwanda (ranked second out of 30). The district is the most populated in Rwanda with 47% of the total population of Kigali² and contains 7% of all the housing in Rwanda that is susceptible to landslides due to its high population density, the high concentration of informal settlements located in landslide-prone areas and the weak building materials used in construction. The population in the project has high vulnerability to increasing climate-related risks.



Figure 2-1 Ngaruyinka upgrade area defined



² Gasabo District (2013). District development plan, Gasabo (2013-18)



Figure 2-2 Ngaruyinka upgrade area connecting to the GCK Pilot project



Figure 2-3 Ngaruyinka current social and climate challenges

2.2 Project components

The Project will upgrade an existing informal settlement (Ngaruyinka on Kinyinya hill) with low emission infrastructure that is resilient to climate change and support the use of renewable energy in the planned GCK pilot development. The informal settlement extends over 18ha on Kinyinya Hill, and the pilot is located nearby and extends over 16ha. The objective is to create a climate responsive model which can be scaled up and applied to multiple situations across Rwanda and the region. In order to promote the scale up and replication, the project will include activities to build awareness and develop institutional capacity.

The project comprises two components (aligned with the Project Results in the Theory of Change) identified through a participatory process: 1) climate responsive investments to upgrade an informal settlement, provide critical transport links, and support renewable energy investments in a nearby pilot project and 2) increased awareness and capacity for inclusive climate responsive upgrades and enabling environment for climate resilient, low emission investment.

GCK proposes an approach to local economic development where local community, government and private sector work together. It is unique in requiring a financially reproducible model suitable for developing countries as a key part of its social, economic and environmental sustainability aims.

The upgrading of the site will serve as a model for community-based resilience strengthening that can be scaled-up to other parts of Kigali and secondary cities in Rwanda. The design was guided by the National Upgrading Policy and Strategy and aims to increase resilience to climate change while also minimising resettlement, land acquisition and social disruption. Low-cost interventions were prioritised in order to increase the scope for scale up and replication.

The Project will adopt a 'spatial' focus to facilitate the integration of sectors, stakeholders and scale levels to reach sustainable and climate compatible urban development solutions. The design is informed by the programme of work undertaken over 26 months including: 1) a series of sector analyses 2) a feasibility study and a Land Development Plan for upgrading Ngaruyinka 3) a series of environmental and social safeguards documents and frameworks to guide the development of the larger 600ha green city planning area.



Figure 2-4 Green / climate responsive right of way network

2.2.1 Component 1: Climate responsive investments to upgrade an informal settlement pilot

This component will provide the necessary investments to upgrade the infrastructure and community buildings in Ngaruyinka and provide critical transport links so that they can withstand current and future climate risks, primarily flooding, landslides and heat stress. It will also support vulnerable households to adopt low emission, climate resilient technologies such as improved cookstoves and energy efficient lighting, and it will support renewable energy in the nearby 16ha GCK pilot project. The planning and design work for this component actively involved local communities and all stakeholders over a period of more than one year (see Feasibility study and LDP for more details). This component will also include integrated capacity building efforts and other measures to promote the long-term sustainability of the climate responsive investments and approaches piloted. A team of technical specialists will provide coordination, guidance and oversight of service providers on all technical aspects of Component 1. There will be consultation and continued dialogue with national and district-level administrative bodies and regular site visits and inspections of works.

Sub-component 1- Transport and mobility

This activity will address the poor quality of rights of way and access due to high levels of run-off and erosion which present significant slip and flood hazard and a constant need for repairs. The project will invest in a Green Rights of Way network using green construction methods and materials. The aim is to increase walkability, cycling and public transport over car use. The project also includes critical links to key locations near the settlement in order to encourage sustainable means of transport. As shown in maps in the LDP, the project includes a cycling and walking link to the nearest commercial area and improved road connections along the ridge road and along the bottom of the hill, which will encourage bus access to the settlement and connect it to the future GCK pilot site. Activities will involve preparing the technical design specifications and detailed design documents as well as the preparation of tender documents, procurement and delivery.

All transport and mobility investments will be reviewed and evaluated on installation and one year post installation to determine if they are operating effectively and benefits are distributed equitably particularly to the most vulnerable.

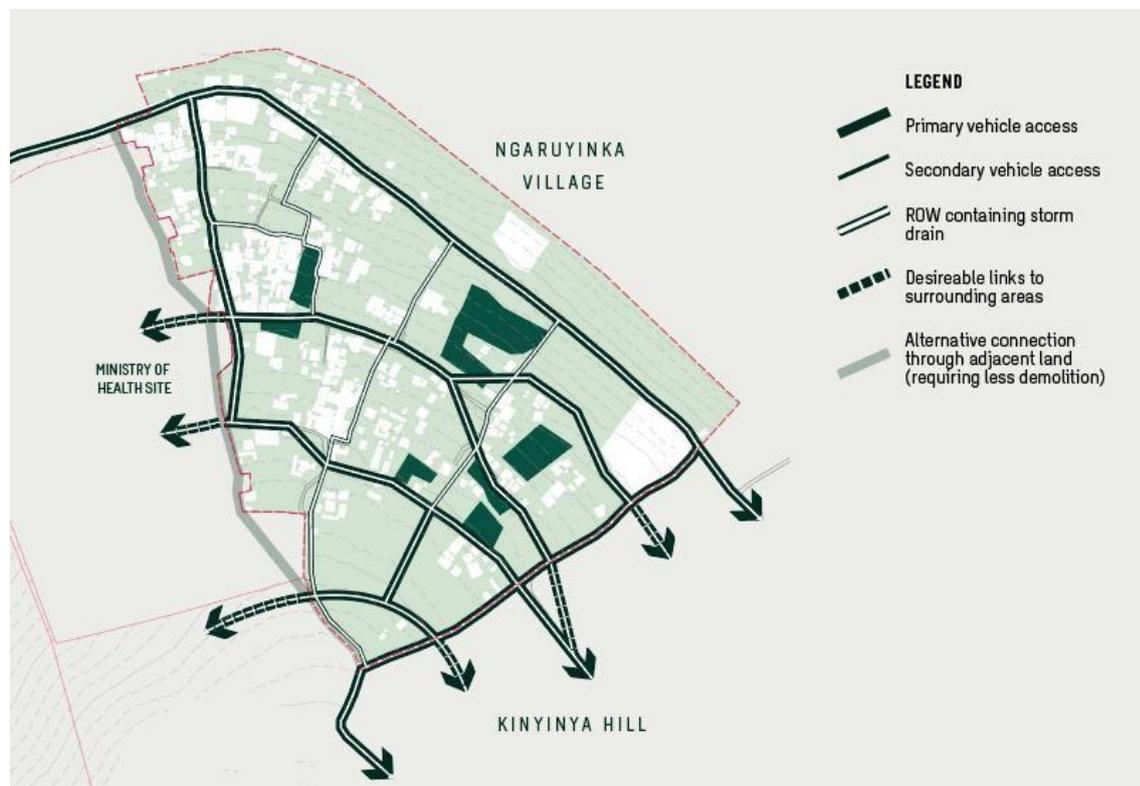


Figure 2-5 Transport and mobility

Sub-component 2- Stormwater management

The project will include investments to improve rainwater infiltration to prevent high runoff speeds and improve stormwater management. Improved stormwater management in the settlement is critical for helping the community adapt to increased rainfall events expected due to climate change. A thorough storm water intervention will solve one of the biggest problems of the settlement, the erosion problem. A nature-based solution based on strategic use of green ditches and vegetation is sought first, which will reduce both cost and carbon and maximise the many ecosystem services that are reaped as co-benefits. The stormwater management solution also forms part of the circular model for the community. It will also be protected as a resource for household water use, by rainwater harvesting systems (see activity below), replenishing the natural groundwater and watering the plants and trees of the settlement. It contributes to urban cooling and habitat biodiversity as well as potential job creation and value chains. The stormwater management approach is explained through the plan and the strategies below. A variety of measures will be used to prevent, control, and clean storm-water runoff to reduce flooding, erosion and sedimentation and to replenish groundwater. Interventions include establishing a green, permeable network of swales, gullies and detention-filtration-percolation areas to prevent erosion by absorbing rainfall energy, reducing overland flow velocity, increasing infiltration, retaining soil moisture, and binding soil particles together. Paved areas will be minimised to increase infiltration. Stormwater facilities (such as swales) will be constructed to treat, infiltrate, and distribute water. The Feasibility Study (Annex 2) and Land Development Plan (Annex 23) contain more information regarding the stormwater management and erosion control plan.

The activities include preparing technical design specifications and detailed design documents, tendering works to contractors and construction supervision. The effectiveness and impact of the stormwater management measures will be reviewed and evaluated one year after the measures have been installed.



Figure 2-6 Proposed stormwater management

Sub-component 3- Water supply

This activity will address water shortages that occur in the settlement and are expected to worsen due to climate change. The activity will enhance water security and build climate resilience through improved water access. Three interventions are planned: 1) the expansion of the central water supply in the settlement; 2) rainwater harvesting on suitable households (depending on the layout) and community buildings; and 3) point of use household water treatment technologies. Activities will involve preparing the technical design specifications and detailed design documents as well as the preparation of tender documents, procurement and delivery.

The expansion of the central water supply system is critical for increasing year-round access to an improved water supply for the settlement. Many residents, mainly women and children, walk to collect water from unsafe

surface water sources. Children are especially vulnerable to water borne diseases from these sources. Central water supply improvements will be undertaken in collaboration with the water utility, WASAC.

In addition, the project will provide technical assistance and awareness raising for household water treatment options, which can reduce reliance on charcoal and wood typically used to boil water to make it safe for drinking.

All water supply investments will be reviewed and evaluated on installation and one year post installation to determine if they are operating effectively and the benefits are distributed equitably particularly to the most vulnerable and water insecure households.

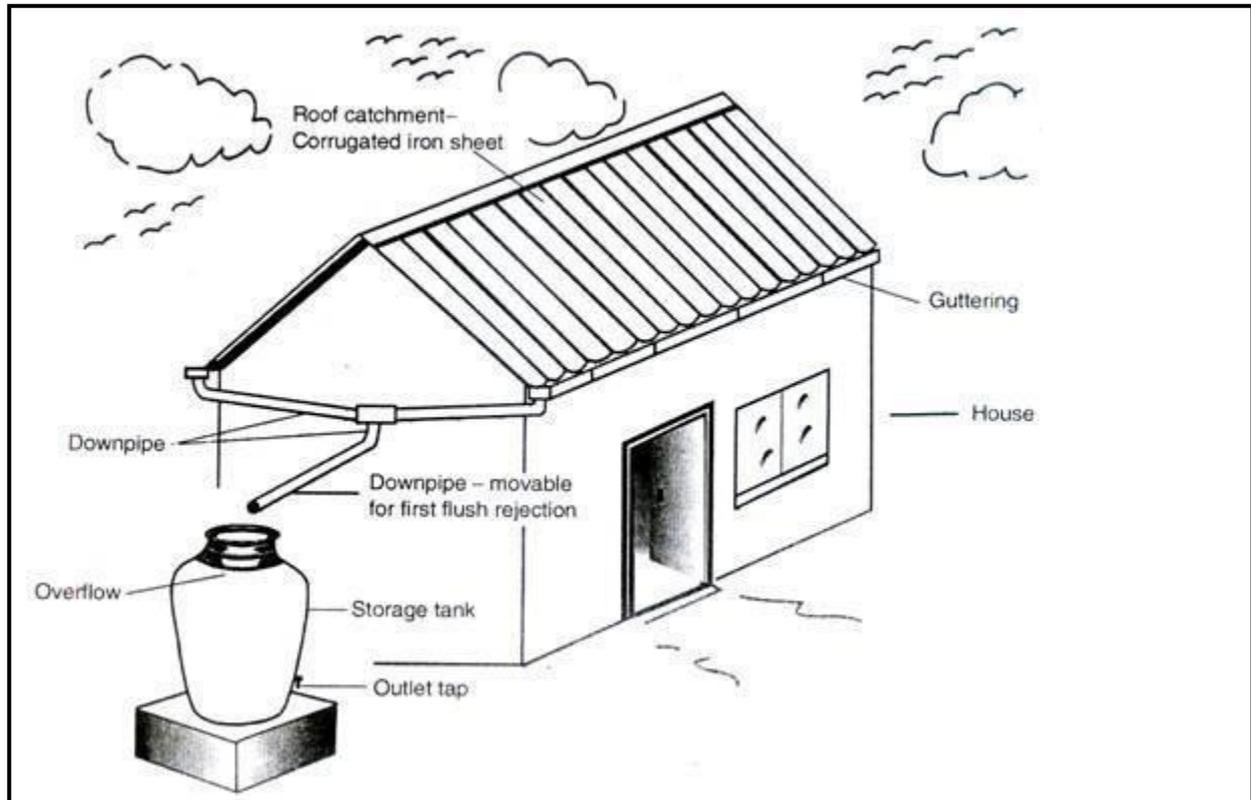


Figure 2-7 Illustration of a rainwater harvesting system³.

Sub-component 4- Sanitation

This activity will address the poor level of sanitation⁴ in the settlement which disproportionately impacts on the poorest households and is unsustainable as no further land is available to dig new latrines. In the context of increasing water scarcity, extreme weather events and a rising urban population, the potential for leaching and contamination of water sources from latrines with consequent public health risks is high. Moreover, diarrheal disease can have a significant impact on household resilience due to its impact on ability to work, attend school and the diversion of household resources into treatments.

The project will invest in toilets at the TVET and settlement area that will be connected to a biogas recovery system. The biogas produced will be used for cooking at the TVET and will offset the need to use charcoal or

³ <https://waterportal.rwb.rw/toolbox/464>

⁴ a system for the collection, transport, treatment and disposal or reuse of human excreta and associated hygiene

wood. Activities will involve preparing the detailed design documents as well as the preparation of tender documents, procurement, delivery and construction supervision.

The project will also provide technical assistance for latrine improvements, greywater management interventions and hygiene education. There will be comprehensive consultation with households to ensure that the technology and location of sanitation infrastructure is culturally acceptable.

All sanitation investments will be reviewed and evaluated on installation and one year post installation to determine if they are operating effectively and benefits are distributed equitably particularly to the most vulnerable.

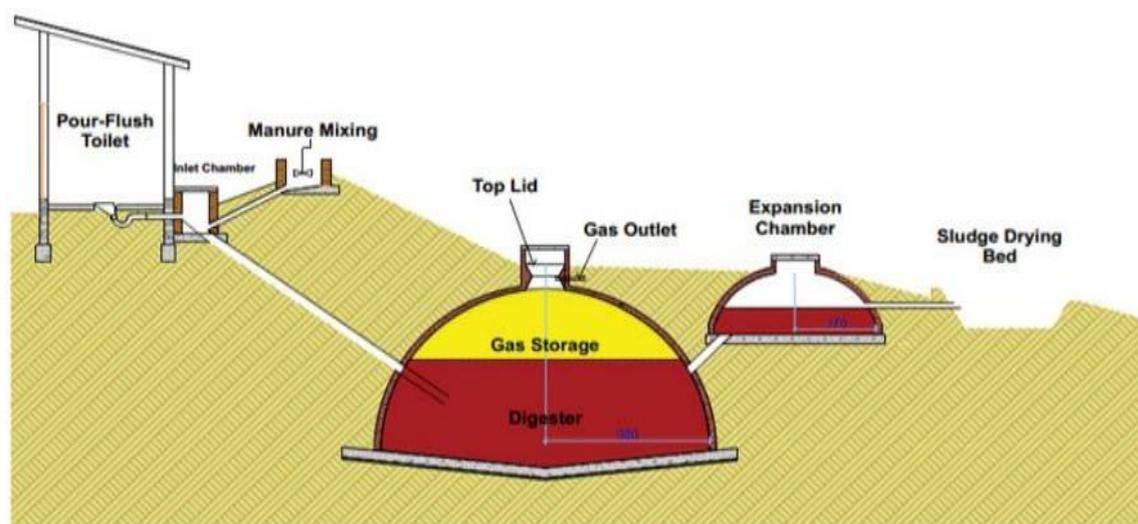


Figure 2-8 Design schematic for biogas system.⁵

Sub-component 5- Energy

This activity will address key barriers to the uptake of low emission technologies at the household level particularly the affordability and low awareness. The project will invest in a range of low emission technologies including solar PV, solar hot water heaters, and education about improved cookstoves, energy efficient lighting and appliances.

The project plans to support the GCK pilot project towards reaching net zero carbon in the future. To do this, the project plans to support the installation of a solar PV mini grid to serve the GCK pilot households and community buildings. Users would pay a tariff that covers the cost of the operation and maintenance of the PV system. To make the system more cost-effective both in terms of capital investment as well as maintenance costs, battery storage will be avoided. Instead, the pilot development will also be connected to the central grid, to cover any shortages from the PV system as well as to cover night energy use. Solar hot water heaters are also planned for the new homes in the pilot. The renewable energy interventions will serve as an example for other developments and encourage the scale up of such technologies in Rwanda.

In addition, the project plans to provide education and technical assistance related to the use of improve cookstoves, which can greatly reduce carbon emissions and improve use health, especially for women and girls. The project will also provide technical assistance related to energy efficient lighting and applications. The project will provide technical assistance to households regarding available micro-financing options to increase access to micro-finance programs targeting home-improvement, along with technical assistance to help homeowners decide which home-improvements to invest in.

Sub-component 6- Solid waste management

This activity will address the growing problem associated with the poor management of solid waste which contributes to GHG emissions, pollution and public health impacts, low recovery of expensive and scarce resources, and blockage of drainage channels. There are substantial co-benefits of waste management in the

⁵ <https://www.hilarispublisher.com/open-access/contribution-of-modern-biogas-plant-to-energy-source-and-environment-protection-in-rwanda-2165-784X-1000325.pdf>

context of climate change. The prevention and recovery of wastes (i.e., as secondary materials or energy) avoids emissions in other sectors of the economy. The climate benefits of waste practices result from avoided landfill emissions, reduced raw material extraction and manufacturing, recovered materials and energy replacing virgin materials and fossil-fuel energy sources, and carbon bound in soil through compost application. In addition, there is general global consensus that the climate benefits of waste avoidance and recycling far outweigh the benefits from any waste treatment technology, even where energy is recovered during the process.

The project will invest in community composting, neighbourhood collection points and recycling centres to demonstrate the positive impact that these interventions can have in terms of mitigating the above adverse effects of poor management of solid waste, generating employment and increased amenity value. Behaviour changes and public participation is key to a functional waste system. The project will support the development of incentives and awareness systems to motivate waste reduction, source-separation and reuse. Activities will involve preparing the detailed design documents as well as the preparation of tender documents, procurement, delivery and construction supervision.

All solid waste management investments will be reviewed and evaluated on installation and one year post installation to determine if they are operating effectively and benefits are distributed equitably particularly to the most vulnerable.

Sub-component 7- Community buildings

The project will construct a Technical and Vocational Education and Training (TVET) Centre, rehabilitate the existing market and develop community spaces. Activities will involve preparing the detailed design documents as well as the preparation of tender documents, procurement and delivery.

TVET Centres respond to the needs to different types of industries and also to the needs of learners from different backgrounds, with the goal of building the skilled and entrepreneurial workforce needed in Rwanda. The Government of Rwanda has a target that 60% of all high school students will go to TVETs by 2024. Currently, approximately 31% of students go on to TVETs, so there is a strong focus on trying to increase access to TVETs. At the project site, the TVET is an important component to leverage investments in the upgrade to enable scaling up of the upgrade components for further implementation and to therefore reach many more beneficiaries in terms of improved living conditions for more citizens, greater environmental impact, and job and value chain creation.

The TVET will offer a curriculum that provides training for the design and implementation of the solutions and technologies recommended for Ngaruyinka (such as laying stone setts and do-no, improving soil drainage, forming gabion baskets and building and maintaining rain gardens and swales). These approaches will be integrated into existing curriculums and will go through a process to obtain accreditation.

All investments in community buildings will be reviewed and evaluated on installation and one year post installation to determine if they are operating effectively and benefits are distributed equitably particularly to the most vulnerable.

2.2.2 Component 2: Increased capacity for inclusive climate responsive upgrades and enabling environment for climate resilient, low emission investment

This component will include integrated capacity building efforts and other measures to promote the scale up and replication of the climate responsive investments and approaches piloted in component 1. It addresses the low awareness and gaps in capacity that currently constrain the potential for scale up and replication.

Activity 2.1.1 Institutional capacity development of GoR agencies

This activity will strengthen the institutional capacity among GoR agencies to facilitate and oversee climate resilient low emission development of urban infrastructure and buildings. In particular, it will strengthen capacity in urban planning, building on earlier investments by UN Habitat and others.

The project will identify needs, develop and deliver a capacity building programme on climate resilient infrastructure programming for GoR staff from relevant GoR agencies, such as the City of Kigali, Ministry of Infrastructure, Ministry of Environment and Rwanda Housing Authority.

Activities will include identifying and selecting participants in consultation with the relevant GoR agencies; conducting a capacity needs assessment; developing a capacity building programme; developing training

content and materials along with a training and development calendar. The project will also establish and implement an evaluation process.

Activity 2.1.2 Blueprinting the GCK and Planning code for GoR

The project will document the development of the GCK. A design template, ToRs, and project(s) manual will be developed to utilize the sustainable design information developed during the detail design of the 16ha mixed use, sustainable and affordable housing project to create a design template for future developers to utilize to promote the scale up and replication of the GCK pilot and thereby the scale up and replication of sustainable and affordable housing projects that promote climate mitigative and adaptive principals, resource efficiency, local materials and labour – reducing the planning and design costs of future green city developments.

Activity 2.1.3 Development of recycling value chains

The project will support consumer awareness, and the collection and sorting of solid waste materials to promote recycling and circularity. The project will also seek to identify partners active in the recyclables value chain and work to enhance market opportunities for recycled materials through market facilitation.

The activities will include supporting the development of recycling groups and recycling value chains; conducting a capacity needs assessment and developing a support programme for the recycling groups, as well as facilitating linkages between recycling groups and markets and intermediaries and developing the capacity of the association to engage with stakeholders and partners and contribute expertise to policy, legislation and standard setting.

Activity 2.2.1: Technical support for an enabling environment and mainstreaming green city development standards and approaches into regulatory and planning frameworks

The project will provide support for an enabling environment through regulatory reforms eg Green City Standards and improved inter-agency coordination. There will also be provision for the integration and mainstreaming of climate responsive approaches into the regulatory framework related to urban planning and green city development.

Activities will comprise: the development of ToRs for an analysis of regulatory frameworks and the development of mainstreaming solutions; the development and implementation of a mainstreaming programme; capacity development of REMA to work with MININFRA, its line agencies and other relevant government entities to mainstream standards and approaches. Strategies and plans with a particular focus include and in line with the Green Growth and Climate Resilience National Strategy for Climate Change and Low Carbon Development; the National Informal Urban Settlement Upgrading Strategy, The National Land Use and Development Master Plan, City of Kigali Masterplan, as well as relevant land use, zoning and building regulations and guidelines (including forthcoming RHA affordable housing standards).

Activity 2.2.2: Knowledge management system developed on climate responsive regeneration

This will serve as a platform to: 1) store, manage and disseminate knowledge and information on climate responsive building methods and materials, urban planning etc.; 2) showcase successful approaches; and 3) exchange learning and experiences.

Activities will include tendering and procuring the necessary ICT equipment; collecting and documenting lessons learned on an annual basis; developing and disseminating knowledge products; developing and maintaining a website to host knowledge products and exchanges; and integrating project knowledge and learning into the curricula of the TVET.

2.3 Project risk categorisation

Considering ecological risk, risks on health and safety, resettlement and other factors, the national guidelines classify projects in IL1, IL2 and IL3 while the WB classifies projects in category A, B, or C. According to national legislation (Ministerial Order NO 001/2019 of 15/04/2019 establishing the list of projects that must undergo Environmental Impact Assessment), ESIA or partial ESIA is carried out only if a developer seeks to implement projects listed in annex I and annex II of the MO

The WB/IFC has a recommended project screening process to decide on the nature and extent of the environmental and social assessment needed for a project. Projects are categorized by the IFC Environment Division into environmental review Category A, B, C, or Financial Intermediary (FI) in accordance with the IFC's OP 4.01, Environmental Assessment. The classification of a project depends on the type, location, sensitivity and

scale of the project, as well as the nature and magnitude of its potential impacts. IFC uses four categories for its projects. They are defined as follows:

- Category A: A proposed project is classified as Category A if it is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These projects may affect an area broader than the sites or facilities subject to physical works. Environmental Authorisation (EA) for a Category A project examines the project’s potential positive and negative impacts, compares them with those of feasible alternatives (including the “without project” scenario), and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and to improve performance. For a Category A project, the project sponsor is responsible for preparing a full report, normally an Environmental Impact Assessment (EIA) and for preparing and updating an Environmental Action Plan (EAP).
- Category B: A proposed project is classified as Category B if its potential adverse environmental impacts on human populations or environmentally important areas – including wetlands, forests, grasslands, and other natural habitats – 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 scope of environmental assessment (EA) for a Category B project may vary from project to project, but it is narrower than that of EA for a Category A project. Like Category A EA, it examines the project’s potential positive and negative impacts and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance. The project sponsor is responsible for providing the required environmental and social information. The findings and results of Category B EA are described in the project documentation (i.e. Environmental Review Summary).
- Category C: A proposed project is classified as Category C if it is likely to have minimal or no adverse environmental impacts. Beyond screening, no further EA action is required for a Category C project.
- Category FI: A proposed project is classified as Category FI if it involves investment of IFC funds through a financial intermediary in subprojects that may result in adverse environmental impacts. In addition, in some financial markets’ projects IFC funds are not targeted to specific subprojects (e.g. equity in a financial institution such as a commercial bank), but the financial institution has operations which may have adverse environmental impacts (e.g. project finance). In such cases IFC may also classify the project as Category FI. If subprojects potentially result in minimal or no adverse environmental impacts, the project is characterized as C.”
 - According to the guidance and based on the GCK high-level documentation and E&S screening results from an on-site visit in 2021, the Settlement Upgrading project falls within Category B. The potential impacts and risks are mostly confined to the local area, including pollutants from construction, waste generation, worker health and safety, traffic, sexual abuse and harassment, effects to neighboring ecosystems. The project will cause very few physical displacements (33 people), which is well below the threshold of 200. All these risks are reversible and can be mitigated through appropriate engineering and mitigation measures. Therefore, a comprehensive and transparent ESIA was conducted to quantify the impacts and develop measures to minimize significant risks associated with the proposed project. The categorization also referenced the Rwanda Green Fund exclusion list, which outlines key activities that the fund cannot support or implement. This exclusion list helps confirm that the project does not fall into the high-risk Category A. The Rwanda Green Fund-FONERWA exclusion list are: Production or trade in any product or activity deemed illegal under host country laws or regulations or international conventions and agreements, or subject to international bans, such as pharmaceuticals, pesticides/herbicides, ozone depleting substances, PCBs, wildlife or products regulated under CITES
 - Production or trade in weapons and munitions
 - Production or trade in alcoholic beverages (excluding beer and wine)
 - Production or trade in tobacco
 - Gambling, casinos and equivalent enterprises
 - Production or trade in radioactive materials. This does not apply to the purchase of medical equipment, quality control (measurement) equipment and any equipment where IFC considers the radioactive source to be trivial and/or adequately shielded
 - Production or trade in unbonded asbestos fibers. This does not apply to the purchase and use of bonded asbestos cement sheeting where the asbestos content is less than 20%
 - Drift net fishing in the marine environment using nets in excess of 2.5 km. in length

2.4 Project Area of Influence

Scoping has been undertaken in an iterative approach to identify the potential AoI for the Ngaruyinka upgrade project, to identify potential interactions between the Project and resources/receptors in the AoI and the impacts that could result from these interactions, and to prioritize these impacts in terms of their likely significance. The ESIA Regulations define the Area of Influence (AoI) as the geographical space directly and indirectly affected by an activity's environmental impacts. Therefore, the AoI can be thought of as the sum of a number of fluctuating factors. Project impacts also change over time, e.g. a project employing hundreds of workers during construction, but only a small number once operational, has a very different social AoI in those two phases.

We use the definition adopted from IFC PS1 *“Assessment and Management of Environmental and Social Risks and Impacts”*, considering *“the area likely to be affected by (i) the project and the client’s activities and facilities that are directly owned, operated or managed (including by contractors) and that are a component of the project; (ii) impacts from unplanned but predictable developments caused by the project that may occur later or at a different location; or (iii) indirect project impacts on biodiversity or on ecosystem services upon which Affected Communities’ livelihoods are dependent”*.

For the Ngaruyinka upgrade project, we conceptualize the Area of Influence (AoI) the geographical zone, which is likely to be directly or indirectly affected by a project, including all potential on-site and off-site permanent and temporary activities during construction of collector roads, drainage ponds and community infrastructure facilities).

2.4.1 Area of Direct Influence (ADI)

The Project's ADI is made up of two components:

- The footprint area, i.e., the area occupied by the Project's infrastructure; and
- The area where direct impacts from the construction and operational activities will be felt.

The footprint includes areas occupied by the road infrastructures, the quarries/borrow pits and the Rights of Way (ROW) to be established. In the construction phase, the footprint also includes ancillary infrastructure such as connecting roads and temporary access roads. For example, the off-site road connecting Ngaruyinka to the tarmac road and linking to the GCK Pilot project will be upgraded and surfaced. Within the footprint area, several activities will be implemented such as soil stripping, vegetation clearing, earth movements, etc., but they will be largely contained to their footprint.

When considering the Project's direct impacts outside of the footprint area, it is useful to separate the biophysical and socioeconomic impacts. Therefore, the Project's ADI is delineated as follows:

Biophysical environment

It is expected that all direct biophysical impacts resulting from Project construction and operation will be limited within a corridor centered in the road alignment, with maximum width of 300 m (150 m to each side of the road center line). This width accounts for the ROW and for a wider construction corridor, which will likely be required to establish temporary accesses, machinery movement, etc.;

Socioeconomic environment

The households crossed by the proposed ROW within and outside Ngaruyinka. Even if employment and economy stimulation may extend to other communities, direct socioeconomic impacts are expected to be felt mostly by the settlements and communities near, the project site. However, a map of community boundaries is not

available for the Project area and therefore the socioeconomic ADI is illustrated using a 2 km wide corridor depicted from the perimeter of the project's site.

Direct impacts are also to be expected in the areas where the auxiliary construction facilities will be located (construction camps, temporary accesses, borrow pits). However, the locations of these areas are not known at the present time, and thus they will not be considered for the definition of the Project ADI.

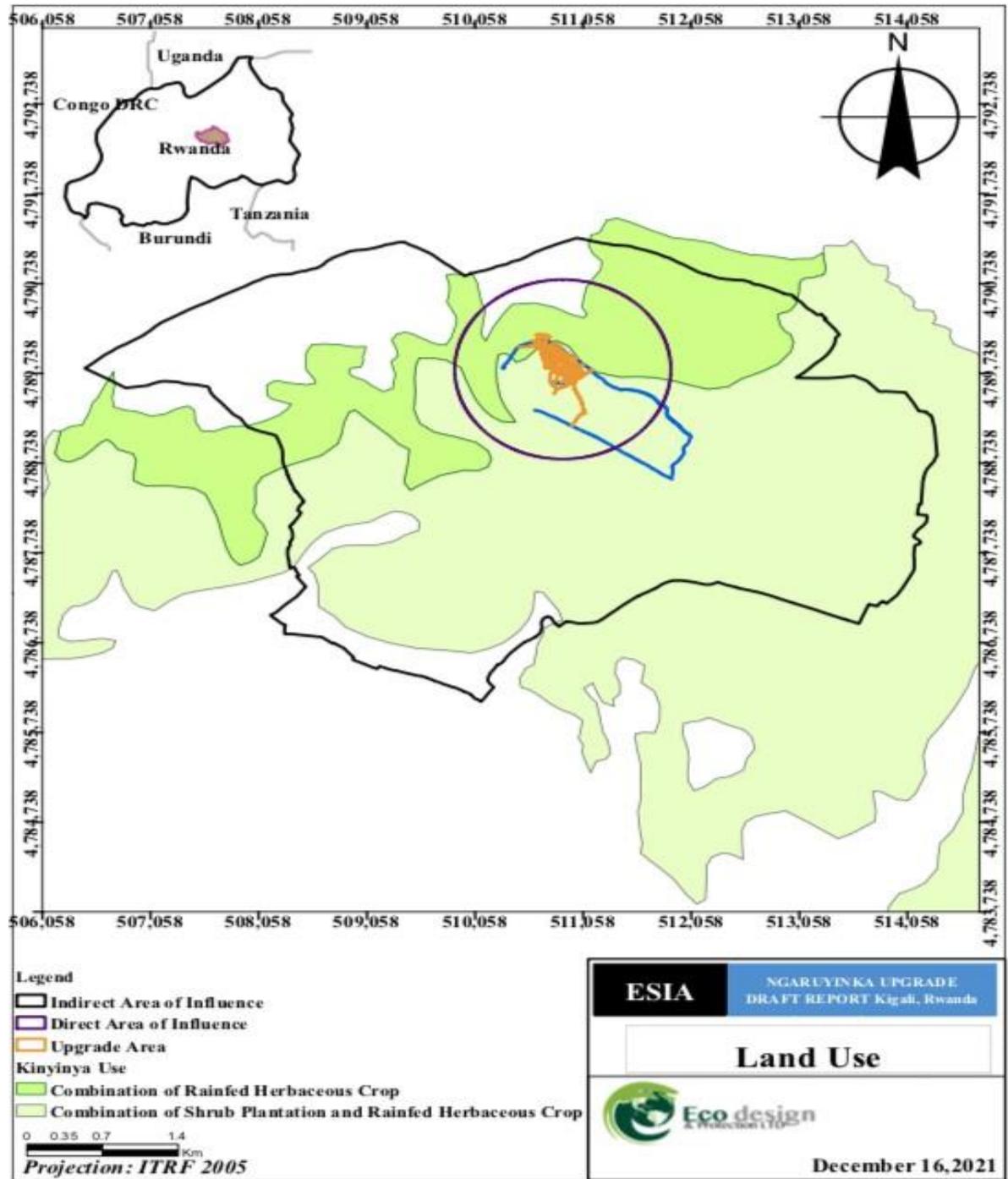


Figure 2-9 Project Direct and Indirect Area of Influence

2.4.2 Area of Indirect Influence (AII)

The Project's AII is the geographic area where indirect impacts are likely to be felt, or in other words, where secondary impacts resulting from direct ones are felt. In terms of the biophysical environment, few or no indirect impacts are expected outside of the ADI. The presence of the project site will increase the ease of access to

these areas, which will likely increase their use. Other socioeconomic indirect impacts will likely be felt, namely associated with creation of job opportunities, mobilization of workforce, development of informal commercial activities, etc. These indirect impacts are likely to be experienced mostly in the areas closer to the project site.

As such, the Project's All is defined as follows:

- **Biophysical environment:** a 2 km wide corridor, centered on the road alignment, social infrastructures depicted from the perimeter of the project's site; which include the immediate water sources and the wetlands
- **Socioeconomic environment:** the boundaries of the Kinyinya sector, as benefits and impacts from Project-induced changes in the ADI are likely to extend to other communities within these territories such as the neighbouring cells in Gasabo districts and even potentially the city of Kigali due to labour sourcing, waste management and construction material sourcing.

A final demarcation will be provided after the Inception Phase for the Detailed Design as there will be more detailed more information on the sourcing of construction material.

2.5 Project institutional arrangements

The Ministry of Environment (the accredited entity) will lead in the overall management, reporting and supervision of the project with GCF. FONERWA is the primary vehicle through which environment and climate change finance is channelled, programmed, disbursed and monitored, and therefore FONERWA will execute the project (executing entity).

The figure 2.10 highlights the institutions involved in the Ngaruyinka upgrade project.

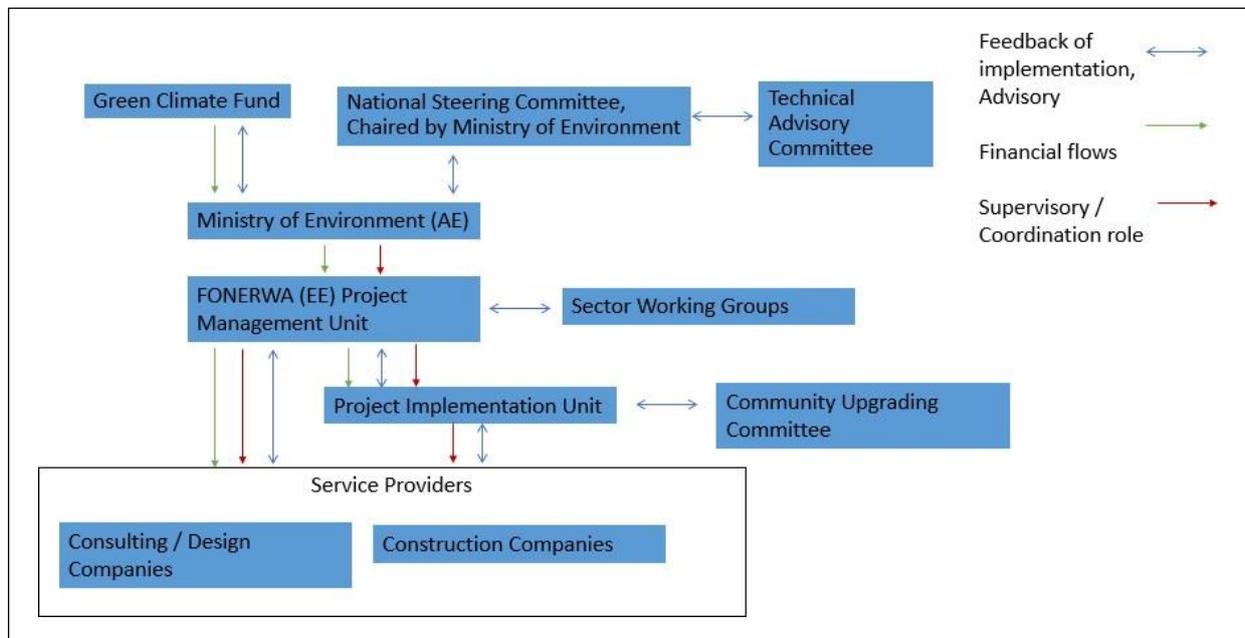


Figure 2-10 Organisation Chart

The following sections explain the project governance arrangements and information on the financial flows and implementation arrangements.

2.5.1 FONERWA, promoter of the Project

The National Fund for Environment – FONERWA is a ground-breaking Environment and climate change Fund, established by the Rwandan Government in 2012. The Fund is the largest in its kind in Africa with the Rwanda Green Fund being its branding name.

The Fund’s purpose is to be the engine of green growth in Rwanda, while serving as a touchstone for Africa and the rest of the world. The strategy of FONERWA is to provide unheralded technical and financial support to the best public and private projects that align with Rwanda’s commitment to a green economy.

The Rwanda Green Fund, FONERWA, has been supported by the German Cooperation through KfW to implement Green City Kigali project. The goal is to develop a sustainable, lively, affordable and inclusive green urban neighbourhood in Kigali. The project results from combined efforts by several institutions supporting green growth in Rwanda including the Ministry of Environment, Ministry of Infrastructure, Rwanda Environment Management Authority, City of Kigali, and the Rwanda Social Security Board among many others. The project will demonstrate the viability of green cities in Rwanda, and relevant for replicability for the development of Green Secondary Cities at the national level. This innovative project will integrate green building and design, efficient and renewable energy, recycling and inclusive living, homegrown solutions and local construction materials.

FONERWA’s responsibilities are summarized below:

- Planning the project activities
- Receiving funds from the Accredited Entity
- Disbursing grant funds to third parties, after due diligence
- Establishing and staffing the Project Management Unit in FONERWA
- Accounting for funds under its disposition, receiving reports from entities to which funds have been disbursed
- Preparing annual workplans and budgets
- Organising oversight and audit (internal, financial, procurement)
- Managing the provision of funding and payment of contractors and consultants engaged under the Project
- Monitor the implementation of all safeguard documents and ensure that the environmental and social risks are avoided or minimized

2.5.2 Steering Committee

The GCF activities will be overseen by a Steering Committee chaired by the Ministry of Environment Permanent Secretary. The Steering Committee will serve as the project coordination and decision-making body and will ensure it delivers its outputs and achieves its outcomes. The Committee will periodically review progress and evaluations, facilitate implementation (ensuring the necessary resources and support are provided in a timely manner) and provide guidance to the PMU. The Steering Committee will reflect the multi-sectoral nature of the project and will include senior-level representatives from GoR and partner organisations.

The Steering Committee will meet every 6 months to review progress and approve work plans, budgets and any major changes in implementation. Members will include the Ministry of Infrastructure, Rwanda Housing Authority, City of Kigali, District Executive of Gasabo, the Director of Infrastructure or One Stop Centre, as well as a civil society member. Proposed role of the project Steering Committee is:

- Coordination of stakeholder involvement:
 - Act as a focal point for all Government of Rwanda “policy owners” in areas covered by the Project
- Planning and budgeting:
 - Receiving and approving Project work plan & budget, Annual work plan and budget and Procurement plans
- Financial management:
 - Approving disbursements from the Project Bank Account to Executing Agencies
 - Managing the internal audit function and fiduciary risk
 - Receipt of external audit reports
- Monitoring & Evaluation:
 - Receiving and quality assuring quarterly budget execution and Project implementation reports
 - Approving reports in the required format for onward transmission to the CGF

2.5.3 Programme Management Unit

FONERWA will establish a Programme Management Unit (PMU) that will be housed within the Fund Management Team of FONERWA. Activities will be implemented using the Ministry of Environment existing management and financial systems. FONERWA will coordinate delivery of the programme outputs.

The project activities and funding will be programmed through the PMU. Urban development projects are inherently complex and require strong project (and especially contract) management skills, requiring sufficient resources to allow for capacity building and high-quality delivery through consultant support to the PMU. Resources have been built into the cost estimates to ensure that the PMU receives the necessary support to carry out fiduciary, safeguards, technical supervision, and monitoring activities. The PMU will provide the Steering Committee with quarterly progress reports. The PMU will close its operations once the final project evaluation is completed, and documentation required by the GCF has been completed and submitted to the Ministry of Environment and Steering Committee. The PMU will be staffed by professionally and technically

qualified staff who hold experience with managing projects in the sector. These staff will be selected and recruited following FONERWA's procedures.

The project PMU will be supplemented by a number of technical experts – providing either full time or part time inputs - to ensure that obligations on MoE (and its implementing entities) set out in the AMA with the Green Climate Fund can be met.

PMU positions / input include:

- Project manager who will be in charge of the overall project coordination including implementation of safeguard aspects
- Finance officer who will be in charge of finance affairs
- Project administrator
- Communication officer who will be responsible for overall public relation including the ESS aspects in various communication channel
- Environmental and Social Management (ESS) Specialist (PMU): Oversees the environmental and social safeguards implementation for the entire project, conducts further screening on all sub-components, ensures all project staff are appropriately trained on environmental and social safeguards implementation, liaises with specific staff to meet these obligations.
- Procurement specialist who will liaise with the ESS Specialist and be responsible for supply chain management and carbon contributions to minimize environmental impact of the project
- Gender & Youth Specialist (PMU): Oversees all gender and youth components of the project, trains staff on gender responsive approaches to community engagement and project development, ensures all staff are trained on survivor-centered approaches and liaises with Human Resources and Administration and the ESS Specialist to train all staff on SEAH.
- Local consultants to support progress, mid-term and end of project evaluation
- International consultant for input in setup of M&E systems, mid-term and end of project evaluation expert

FONERWA will oversee staff working on the assignment, including leads for the different activities and other experts, just as gender specialist or social specialist.

2.5.4 Technical Advisory Committee

A Technical Advisory Committee will advise the Steering Committee and PMU. This committee will include members from WASAC, REG, CoK, RHA, RURA, and the Rwanda TVET Board.

2.5.5 Sector Working Groups

To increase uptake and scale up of the interventions, the PMU will ensure that results are communicated through Sector Working Groups (SWGs). The SWGs provide a forum for dialogue that includes development partners who provide support in the sector as determined by the GoR division of labour. These groups build synergies in policy formulation and implementation. The PMU will regularly report results to the SWGs and provide inputs as a measure for continuous improvement of delivery.

2.5.6 Planning Coordination Meetings

At the District and City of Kigali levels, as established by the Urban Planning Code (UPC), will be held bi-monthly and open to the public. The purpose of these meetings is to:

- coordinate and integrate plans and implementing decisions across development sectors and stakeholders in line with existing plans
- assess building permit and real estate development permit applications under their legal responsibility and prepare the technical decision
- take and monitor development decisions in conformity with the applicable planning documents for land development and urban planning, and considering the harmonisation of all technical aspects and various interests for the benefit of the general public
- initiate the development of an interim development strategy, where no urban planning document exists, while initiating the development of the required urban planning document
- analyze and evaluate feasibility studies and development proposals responding to public tenders.

2.5.7 Community Upgrading Committee

A Community Upgrading Committee has been established at a community level in Ngaruyinka. The committee will play an important role by facilitating information sharing and community participation by working closely with the Ngaruyinka Upgrading project and other local responsible agencies. This committee will help ensure

contributions from landowners and residents and provide information on contracting, construction supervision and maintenance.

2.5.8 Role of REMA- oversight monitoring, inspections and periodic reports

The Rwanda Environmental Authority, as the lead agency responsible for the protection of environment in Rwanda, will play the leading oversight role of monitoring the activities of the project according to the Law establishing REMA and its functions.

REMA will also undertake regular site visits to inspect and verify for themselves the nature and extent of the impacts. REMA will also undertake regular site visits to inspect and verify for themselves the extent to which the mitigation measures proposed in this ESMP are being complied with or vice versa. REMA will then be expected to make viable recommendations based on the findings to the project developer. Furthermore, REMA will prepare periodic environmental consolidated reports on the monitoring progress of the Ngaruyinka upgrading activities.

2.5.9 Contractor's role of daily monitoring routine

The contractor should be undertaking the major role of ensuring the mitigation measures in the ESMP are followed to the details. In actual period of settlement upgrade construction activities, the contractor should be undertaking regular monitoring of all the activities occurring in the project site to ensure compliance with the ESMP.

The contractor will bear all the costs related to monitoring activities during the construction phase.

The Engineer (supervision consultant) will supervise the construction works and ensure that EHS issues are managed as per the ESMP.

The Contractor and Supervision consultant must have a full time Environment and Social Staff in place. The Engineer will provide guidance on reporting process, to whom and frequency of reports. The Engineer will supervise the contractor and ensure the ESMP is implemented on daily basis and monitoring report must be available and shared as per the monitoring frequency.



3 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

This chapter describes policies, laws, regulations and institutional framework relevant to the Ngaruyinka Upgrade project. Both international and national regulations are presented in the sections below.

3.1 National legal and administrative requirements

3.1.1 Environmental and Social Impact assessment framework

REMA has developed the EIA regulations that provide the requirements for an EIA in Rwanda. Under these new regulations, Sub-Article 1 makes it mandatory for all the projects listed under Schedule I to be subjected to a full-scale EIA. The Sub-article further states that:

- No environmental authorization shall be granted by the Authority for any project in Schedule I to these Regulations if no Environmental Impact Assessment has been submitted to the Authority in accordance with the provisions of these Regulations.
- Any project listed under Impact Level III of Schedule I to these Regulations shall require a full Environmental Impact Assessment by the preparation of an Environmental Impact Report, unless the Authority refuses permission.

The Ngaruyinka Upgrade project falls in this Sub-article 1 category and thus must be subject to a full-scale EIA. As per the Project Feasibility Study, the Project will be classified as per categorization B of World Bank guidelines and align with Rwanda EIA requirements. In case the classification results differ, the most stringent one will apply.

3.1.2 Policy framework

3.1.2.1 *Rwanda Environment Policy (2003)*

The policy provides improvement of the population's wellbeing, the judicious utilisation of natural resources and the protection and rational management of ecosystems for sustainable and fair development. It provides for decentralisation of environmental management and also assigns the district or towns the responsibility for the day-to-day management of the environment and the implementation of policies and programmes for the protection of environment at the local level.

This Policy relates to FONERWA's project management, by requiring, through the EIA regulations that for Kigali Green Cityt project an environmental assessment is carried out. The Policy also puts the responsibility for monitoring and E&S performance to the implementers.

3.1.2.2 *Biodiversity Policy (2011)*

The policy's goal is to conserve Rwanda's biological diversity, to sustain the integrity, health and productivity of its ecosystems and ecological processes, whilst providing lasting development benefits to the nation. Moreover, it states that urgent attention is required to ensure that biodiversity is conserved not only within protected areas, but also across the landscape, and that sustainable development is promoted throughout Rwanda.

It is relevant to ensure that design and implementation of the Project in an environmentally sound and sustainable manner to conserve indigenous biodiversity will be a clear compliance to this policy's goal of conserving Rwanda's biological diversity. This policy shall apply to not only to construction at the Project site but

also its surroundings and affiliated areas such as restoration of borrow pits for stabilized soils and mined quarries for construction material.

3.1.2.3 *National Environment and Climate Change Policy (2019)*

This Policy objectives include:

- (1) Greening economic transformation,
- (2) Enhancing functional natural ecosystems and managing biosafety,
- (3) Strengthening meteorological and early warning services,
- (4) Promote climate change adaptation, mitigation and response,
- (5) Improve environmental well-being for Rwandans,
- (6) Strengthen environment and climate change governance, and
- (7) Promote green foreign and domestic direct investment and other capital inflows.

Most relevant to the Project are policy objectives 1, 4 and 7.

3.1.2.4 *National Strategy for Transformation (2017)*

The National Strategy for Transformation has among other outcomes, the “increased access to basic infrastructure (water, sanitation, electricity, ICT, Shelter achieved)”. NST1 shall enable the establishment of a viable infrastructure, which will be capable of addressing its current and future shortcomings and shall contribute to significant growth and economic development of Rwanda, in order to achieve the development objectives that are set out in both policy documents for the benefit of the Rwandan people.

Thus, upgrading of Ngaruyinka project is a vital infrastructure that significantly contribute to economic growth as more activities are created.

3.1.2.5 *The National Land Policy, 2004 (revised in 2019)*

The Policy provides for productive use of land based on suitability of specific land units. It also provides for recognition and safeguarding of land ownership rights, and for the development and maintenance of land registry and documentation centre. The public social infrastructures is expected to cause land acquisition. In such a scenario, the Land Policy applies, requiring the landowners to be duly consulted and compensated for any involuntary land losses.

3.1.2.6 *National Strategy for climate change and low carbon development (2011)*

This National Strategy aims to guide the process of mainstreaming climate resilience and low carbon development into key sectors of the Rwanda economy. The strategy has set a vision for Rwanda to be a developed climate resilient, low carbon economy by 2050.

Its strategic objectives are:

- To achieve Energy Security and a Low Carbon Energy Supply that supports the development of Green Industry and Services
- To achieve Sustainable Land Use and Water Resource Management that results in Food Security, appropriate Urban
- Development and preservation of Biodiversity and Ecosystem Services
- To achieve Social Protection, Improved Health and Disaster Risk Reduction that reduces vulnerability to climate change.

A number of projects of action have been proposed but those relevant to the project are: (i) Sustainable land use management, (ii) low carbon energy grid, (iii) small scale energy access in rural areas, (iv) green industry and private sector development, (v) low carbon urban systems, (vi) sustainable forestry, agroforestry and biomass, (vii) climate data and projections.

3.1.2.7 *Agriculture Policy (2015)*

The Rwandan Government formulated this Policy to contribute to the achievement of food security, integrate agriculture and livestock in a market-oriented economy and to generate increasing income to the producers.

The policy addresses three (3) sub sectors: (i) Agriculture, (ii) Animal resources, and (iii) soil and water management.

The Policy puts emphasis on marshland development for increased food production because soils on hills are degraded by erosion and not sufficient. The policy promotes small- scale irrigation infrastructure development in the country's selected marshlands while preventing Environmental degradation. Some of the Project sub-components could cause impacts on agriculture, soil and water resources.

3.1.2.8 *National Forest Policy (2018)*

The policy defines, medium to long-term intentions for the development and management of the national forest resources. The Policy statement 5 proposes intervention areas such as management and maintenance of forest resources to ensure biodiversity conservation and sustainable provision of ecosystem goods and services and identification and protection of threatened species. Policy statement 7, which concerns trees in cities, on farms, along roads and in many other locations not considered forests. This statement highlights important areas of intervention to focus during the implementation of this policy as; developing and implementing urban forest management plan, mainstreaming trees outside forest practices in forest management planning processes, putting in place mechanisms for incentives to attract private landowners to plant forest trees on their land

The Project could need to design green areas as part of the project design in which trees can be planted as a contribution towards agroforestry outside forests and forest conservation.

3.1.2.9 *National Water Resources Management Policy (2011)*

This Policy was designed to manage and develop the water resources of Rwanda in an integrated and sustainable manner, to secure and provide water of adequate quantity and quality for all social and economic needs of the present and future generations with the full participation of all stakeholders in decisions affecting water resources management. The Policy is based on the principle that water is a finite resource, as well as economic, environmental and social good. The Policy also recognised that water management must be integrated and catchment-based to be efficient.

Water Supply is expected to be an important topic throughout the development of the Project and its future sub-components.

3.1.2.10 *National Sanitation Policy (2016)*

Concepts of significant importance to the policy and relevant to the Project are; Urban storm water management and Faecal sludge management. The policy direction on off-site collective sanitation, storm water management and solid waste management shall be considered in preparation of the Project masterplan and affiliated sub-project designs.

3.1.2.11 *National Urbanisation Policy (2015)*

This policy sets well-coordinated urban settlement and development to positively transform the economy of the country, improve the socio- economic conditions for all, and preserve resources to sustain the life of future generations. It integrates urban planning and management in order to achieve resource-efficient and compact growth. The densification strategy could apply to the design of the Project by optimising urban land use, urban compactness, well-structured functionality and connectivity with-in urban areas with a low ecological footprint by integrating green principles.

3.1.2.12 *National Housing Policy (2015)*

Ensures adequate living conditions, to enable all residents to access housing, and to establish and anchor both objectives within national policies and programs, thereby positively impacting on the needs of a human, including shelter, income, food security, social inclusion, knowledge and personal productivity.

Sets three pillars comprising public benefit, resource-efficient planning, green technology and professionalism, and governance and partnership. Essential towards developing a sustainable Project design.

3.1.2.13 Energy Policy (2015)

This policy ensures that all residents and industries can access energy products and services that are sufficient, reliable, affordable, and sustainable while encouraging and incentivizing more rational, efficient use of energy in public institutions, and amongst industrial and household end-users

The Project may look into benefits and incentives arising from introduction of off-grid renewable energy solutions (e.g. solar power for heating and lighting) and cleaner cooking fuels (such as LPG for cooking) in the design and implementation of the project, as a means of achieving sustainable, affordable, reliable energy for Project activities.

3.1.2.14 City of Kigali Masterplan 2050 (2020)

Introduces a more equitable, flexible and incremental approach to city development, aligned with UNHABITAT principles and supporting the United Nations Sustainable Development Goals. It will guide Kigali city planners in their plans to accommodate a population of 3.8 million residents and provide 1.8 million jobs by 2050.

According to the new City of Kigali Masterplan, the Kinyinya Project Area has 4 zoning regulations:

- R3- Medium density residential - Expansion zone (which is the case for Upgrade)
- R1- Low density residential zone
- R2- Medium density residential - Improvement zone
- R1A- Low density residential densification zone

The City of Kigali Masterplan is binding on the Project development. Possibility for consultations with CoK One Stop Centre for any proposal regarded as exception or changes on the City of Kigali Masterplan.

3.1.3 Legal Framework

The Proposed Project will generate several activities that would have to comply with various national laws and regulations. Some of these laws are discussed below as part of the ESIA process.

3.1.3.1 The Constitution of the Republic of Rwanda, 2003 (Revised in 2015)

The National Constitution entitles everyone the right to a clean and healthy environment. Therefore, everyone has the duty to protect, safeguard and promote the environment, while the state ensures environmental protection. It mentions that there is a law determining modalities for protecting, conserving and promoting environment. Moreover, it prohibits any international agreements permitting transit or dumping of hazardous waste in the country.

3.1.3.2 Organic law, determining the modalities of Environmental Management

This organic law 48/2018 of 13/08/2018 determines the modalities of protecting, conserving and promoting the environment in Rwanda. In the framework of implementation of this organic law, Rwanda Environment Management Authority (REMA) is the public establishment with legal personality and authority to implement the articles of this law.

Based on article 30 of this law, a list of projects that must undergo an environmental impact assessment (EIA) before authorization for their implementation is established by an order of the minister. Environmental impact assessments, environmental audits and strategic environmental assessments must be approved by the REMA or another State organ authorized in writing to do so by the Authority.

The guidelines are designed to ensure that participants in the ESIA process understand their roles and that laws and regulations are interpreted correctly and consistently. Two main principles underlie these general guidelines: first, they comply with the legal and institutional frameworks on environmental protection in Rwanda and, second, they contribute to improvement of quality and efficiency of ESIA process in the country, and as such merge, step by step, with general global trends and practice of conducting ESIA. FONERWA on behalf of MoE understands these regulations and the need for an ESIA for such a project, hence the recruitment of an Environmental expert to perform the ESIA/ ESMP of this project.

3.1.3.3 Law N° 27/2021 Of 10/06/2021 governing land in Rwanda

This law guides modalities of allocating, acquiring, transfer, use and management of land in Rwanda. Under this law and relevant to this study are the definitions given to:

- Land tenure: the system by which land is held, describing the rights, responsibilities and restrictions that are attached to the land holder.
- Expropriation: an act of taking away individuals' land by the State due to public interest in circumstances and procedures provided by law and subject to fair and prior compensation.

The law recognizes equal rights to all to own land, prohibiting any form of discrimination. There are 2 types of land ownership; Freehold title (owns land forever) and lease hold (land leased from state for a period of 20, 49 or 99 years. This is most common land ownership). Article 65 states: “ The land planned for agricultural and livestock use is protected and conserved. Every person has an obligation to use the land planned for agricultural and livestock use in accordance with land use consolidation

3.1.3.4 Law relating to expropriation in the Public interest

Based on the law no 32/2015, relating to expropriation in the public interest, article 3, Only Government shall carry out expropriation and only in the public interest and with prior and just compensation. No person shall hinder the implementation of the project of expropriation on pretext of self- centered justifications. It also informs us that a person to be expropriated shall be informed of the beginning of the process of the land survey and the inventory of the properties thereon. A just compensation shall be reached through agreement between the person to expropriate and the one to be expropriated, the just compensation may be monetary or an alternative land and a building equivalent to the determination of just monetary compensation.

Article 7 of the law states that one of the organs which determine projects of expropriation in the public interest is the Executive Committee at the District level, in case such activities concern one District.

In regard to asset inventory and valuation, article 22 of the law states that Land values and prices for property incorporated on land consistent with the prevailing market rates provided under this Law shall be established by the Institute of Real Property Valuers in Rwanda. The criteria for determining fair compensation stated in article 28 is that without prejudice to other laws, the value of land and property incorporated thereon to be expropriated in the public interest shall be calculated on the basis of their size, nature and location and the prevailing market rates.

Contesting of assessed value can be done seven (7) days after the approval of the valuation report. Any person contesting the assessed value shall, at his/her own expense, engage the services of a valuer or a valuation firm recognized by the Institute of Real Property Valuers in Rwanda to carry out a counter-assessment of the value as implied in article 33.

Article 35 states that fair compensation can be paid in monetary form in the Rwandan currency or in any other form mutually agreed upon by the expropriator and the person to be expropriated. In order for the expropriation to be authorized, the fair compensation must be paid to the expropriated person before he/she relocates.

Regarding the time frame of payment of fair compensation, article 36 states that the approved fair compensation shall be paid within a period not exceeding one hundred and twenty (120) days from the day of its approval by the District or City of Kigali Council or the relevant Ministry. If fair compensation is not paid within the period, expropriation shall become null and void unless otherwise agreed upon between the expropriator and the person to be expropriated. Subsequent to receiving fair compensation, the expropriated person shall have a period not exceeding one hundred and twenty (120) days to relocate. However, the person to be expropriated shall not be allowed to plant crops that require more than one hundred and twenty (120) days of growth before they can be harvested.

Any expropriator that retracts his/her project for expropriation in the public interest after the valuation of the property of the persons to be expropriated or fails to pay fair compensation within the period provided under

Article 36 of this Law shall be bound to pay compensation of five per cent (5%) of fair compensation that had to be paid to the person to be expropriated.

3.1.4 Institutional Framework

For the project to succeed, a number of key implementers shall be involved that include MoE, REMA, FONERWA, MININFRA, MINAGRI, MINALOC, RHA, LODA, Local government and the GCF. The roles and responsibilities of each of these implementers is elaborated hereafter.

3.1.4.1 Ministry of Environment (MoE)

MoE is the accredited entity applying for GCF funding under its National designated authority, Rwanda Environment Management Authority (REMA) and executing entity (FONERWA).

Other than its accreditation, MoE is considered as the Government's arm responsible for establishing norms and practices for rational exploitation and efficient land management, Environment protection, Water Resources and evaluating their implementation. This implies that it shall oversee all aspects regarding environmental monitoring and appropriate natural resources exploited through project activities. To implement the obligations of environmental protection, management and monitoring, MoE has delegated this task to REMA.

3.1.4.2 Rwanda Environmental Management Authority (REMA)

Other than the responsibility of the National designated authority, REMA, is the authorized Government institution to determine modalities of protection, conservation and promotion of the environment in Rwanda, shall review the EIA report, authorize the project to proceed by issuing an EIA certificate and periodically monitor the project activities to ensure mitigation measures are implemented and that it has no adverse impacts on the environment.

In 2008, however, REMA transferred some of its responsibilities concerning the management of the EIA process to the Rwanda Development Board (RDB) while respecting the legal provisions. This was done to facilitate the procedures for establishing businesses, as RDB's work includes the promotion of economic development and investment by the private sector. RDB is undertaking screening, guides developers on assessment procedures, conducts public hearings, reviews EIA reports based on the Terms of Reference (ToR) and takes decisions on approval or disapproval of proposed projects. REMA remains responsible for monitoring implementation of environmental protection measures recommended by EIA studies and the conduct of Environmental Audits.

3.1.4.3 Rwanda Development Board (RDB)

Though REMA is the authorised Government institution to determine modalities of protection, conservation and promotion of the environment in Rwanda, it has since 2009 delegated responsibility to review EIA reports to Rwanda Development Board (RDB). With regard to this study, RDB shall authorise the project to proceed by issuing an EIA certificate and periodically monitor the project activities to ensure mitigation measures are implemented and that it has no adverse impacts on the environment.

3.1.4.4 Ministry of Infrastructure (MININFRA)

Ministry of Infrastructure (MININFRA) is the government authority mandated to ensure sustainable infrastructure development covering transport, energy, water supply and sanitation, housing and human settlement sectors aiming to drive Rwanda's economic growth and enhance quality of life of the citizen. MININFRA prepares policies regarding its aforementioned mandate and oversee the implementation of these policies. Subordinate agencies are tasked to implement its mandate comprising; Rwanda Housing Authority (RHA) to oversee the housing sector, Rwanda Transport Development Authority (RTDA) to oversee the transport sector, Rwanda Energy Group (REG) to oversee electricity generation and supply and WASAC to oversee water supply and sanitation.

The Project shall seek all these services from these delegated agencies mentioned.

3.1.4.5 Ministry of Local Government (MINALOC)

The Ministry of Local Government (MINALOC) ensures the coordination of good governance and high-quality territorial administration programs that promote economic, social and political development throughout the nation. It is responsible for developing, disseminating and coordinating the implementation of policies, legal framework, strategies and sector programs through the formulation of national policies, strategies and

programs in those areas. Under MINALOC is a structure of local governance entities that implement these policies, legal framework and strategies and these entities hierarchically comprise; Provinces, districts, sectors, cells and finally villages.

Projects such as GCK pilot project require the support of MINALOC and its governance entities to mobilise the population in understanding the Project, in the acquisition of land and other assets, construction and operation phase of the Project.

3.1.4.6 Rwanda Housing Authority (RHA)

It is an implementing agency operating under the Ministry of Infrastructure (MININFRA), established in order to organize the construction industry as a whole and by doing so to spur EDPRS.

RHA has been mandated to manage the urban and rural settlement strategy of the Nation, in which most importantly is achieving green settlements with affordable housing. It has already commissioned designs for urban affordable housing and rural IDPs.

RHA is currently engaged in the designs of the RGDCP low carbon affordable housing for peri-urban and rural settlements. It shall also be a strong stakeholder in the implementation of component 1 on low carbon affordable housing and low carbon material industries so as to facilitate their replication in the rest of the country.

3.1.4.7 Local Government / City of Kigali/ Gasabo District

Local government authorities at the project intervention areas are considered under the jurisdiction of Gasabo district and Kinyinya Sector. Local authorities that include; the District Mayor and Executive secretaries for the sectors, sector Agronomists and socio-economic officials, Cell and village leaders and local opinion leaders shall be at the forefront of; identifying affected communities, organizing local farmers into more green job creation, proposing ideas on how the components of the project can be implemented at low carbon footprint and with climate resilience. All these activities shall be done in conjunction with Project coordination.

While the City of Kigali Masterplan is binding, consultations with CoK One Stop Centre for any proposal regarded as exception or changes on the City of Kigali Masterplan are possible.

With regard to the Project, Gasabo district is the local entity responsible for coordination of good governance and administration programs to promote economic, social and political development. With the Project located in Gasabo district, it falls under the jurisdiction of Gasabo district and shall engage with the public in the Project Area of intervention towards the implementation of the Project. Kinyinya sector covers the two cells of Gasharu and Murama and specifically the villages of Agatare, Ngaruyinka, Rusenyi, Gasaharu, Taba and Binunga in the two cells.

Kinyinya sector and Project affected cells are essential in stakeholder engagement towards Project implementation, land and asset acquisition where required by the Project, access to basic services such as water, roads, electricity, health services, education services.

3.1.4.8 Green Climate Fund (GCF)

The GCF, as the potential donor, shall support the project team to ensure that the project follows all GCF safeguard policies that the project is found to trigger before funds are realized for the project.

3.2 International requirements, standards, Guidelines and Treaties/Conventions

3.2.1 WB/IFC/GCF Environmental and Social safeguards

In 2018, the WB has adopted new Environmental and Social framework with 10 Environmental and social standards replacing existing IFC Operational Policies (OP).

The World Bank Environmental and Social Framework sets out the World Bank's commitment to sustainable development, through a Bank Policy and a set of Environmental and Social Standards that are designed to support Borrowers' projects, with the aim of ending extreme poverty and promoting shared prosperity. The

standards are designed to protect environment and society against potential negative effects of projects, plans, programs and policies.

The ten Environmental and Social Standards establish the standards that the Borrower and the project will meet through the project life cycle, as follows:

- ESS1 - Assessment and Management of Environmental and Social Risks and Impacts,
- ESS2 - Labour and Working Conditions,
- ESS3 - Resource Efficiency and Pollution Prevention,
- ESS4 - Community Health and Safety,
- ESS5 - Land Acquisition, Restrictions on Land Use and Involuntary Resettlement,
- ESS6 - Biodiversity Conservation and Sustainable Management of Living Natural Resources,
- ESS7 - Indigenous People,
- ESS8 - Cultural heritage
- ESS9 - Financial Intermediaries, and;
- ESS10 - Stakeholder Engagement and Information Disclosure

The project assessment has revealed the ESSs that are triggered by the GCK Upgrade project. Those ESSs are the following:

ESS1 on Assessment and Management of Environmental and Social Risks and Impacts

The purpose of ESS1 is to ensure that projects funded by the Bank are environmentally feasible and viable, and that decision making is improved through appropriate analysis of actions and their probable environmental impacts. This standard is triggered if the project is likely to cause potential (negative) environmental risks and impacts in its zone of influence.

ESS1 covers:

- Impacts on the physical environment (air, water and land);
- Life environment, health and safety of populations;
- Cultural and physical resources;
- Environmental concerns at the transboundary and world levels.

In the present case, ESS1 is triggered due to the fact that the Project is likely to cause potential negative environmental risks and impacts in its zone of influence.

The environmental assessment will thus have to examine the project's potential negative and positive environmental impacts and recommend any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance.

For all Category A and B projects, during the environmental assessment process, project-affected groups and stakeholders have to be consulted about the project's environmental aspects and their views must be considered. The consultations must be initiated as early as possible. These groups should be consulted shortly after environmental screening, before the terms of reference for the EA are finalized and also once a draft ESIA report is prepared.

Regarding the land tenure conflicts that might happen in the project area, the conflict resolution strategies were taken to ensure that the project progresses smoothly while respecting the rights and needs of local communities which include:

- Engaging with community leaders and residents to facilitate dialogue and mediation
- Working with local authorities to clarify land ownership and usage rights
- Implementing compensation or resettlement programs where necessary
- Ensuring that all conflict resolution processes are transparent, inclusive, and fair.

As recommendation, the Resettlement Action Plan and livelihood restoration plan must be developed to ensure that land tenure conflicts are resolved before any project activity starts. Finally, a monitoring framework of land tenure issues throughout the project lifecycle will be established including setting up grievance mechanisms for affected residents and continuously assessing the effectiveness of the set conflict resolution strategies.

ESS2 on Labour and Working Conditions

ESS2 recognizes the importance of employment creation and income generation in the pursuit of poverty reduction and inclusive economic growth. Borrowers can promote sound worker-management relationships and enhance the development benefits of a project by treating workers in the project fairly and providing safe and healthy working conditions.

ESS3 - Resource Efficiency and Pollution Prevention

ESS3 objectives are to address measures taken to avoid, minimise or reduce project-related pollution, more sustainable use of resources (including energy and water), reduction of greenhouse gas emission.

Its requirements include; (i) resource efficiency in its consumption of energy, water, as well as other resources and material inputs, with a focus on areas that are considered core business activities, (ii) consider alternatives and implement technically and financially feasible and cost-effective options to reduce project-related GreenHouse Gas (GHG) emissions during the design and operation of the project (iii) pollution prevention of either hazardous or non-hazardous waste.

Whereas the project is designed to involve mostly sustainable use of resources and innovations of low carbon emission products, it is worth assessing any proposed activities likely to pollute in order to avoid or minimise them.

ESS4 on Community Health and Safety

ESS4 addresses the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of Borrowers to avoid or minimize such risks and impacts, with particular attention to people who, because of their particular circumstances, may be vulnerable.

This standard is triggered as the transmission lines project may have impact on health and safety of workers and people in the project area.

ESS5 on Land Acquisition, Restrictions on Land Use and Involuntary Resettlement

ESS5 recognizes that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons. Project-related land acquisition¹ or restrictions on land use may cause physical displacement (relocation, loss of residential land or loss of shelter), economic displacement (loss of land, assets or access to assets, leading to loss of income sources or other means of livelihood). The standard is triggered as we noted there will be socio-economic displacement of people farming on the project site.

The objective of this standard is to avoid resettlement, where feasible, or minimize exploring all viable alternative project designs. The policy calls for sustainable development programs, providing sufficient investment resources to enable the persons displaced by the project to share project benefits and to improve their livelihoods. The standards of living should be restored, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.

Measures to ensure that the displaced persons are provided with assistance (such as moving allowances) during relocation. Where necessary to achieve the objectives of the standard, the resettlement plan or resettlement policy framework should also include measures to ensure that displaced persons are offered support after displacement, for a transition period, based on a reasonable estimate of the time likely to be needed to restore their livelihood and standards of living and provided with development assistance in addition to compensation measures such as land preparation, credit facilities, training, or job opportunities.

ESS6 on Biodiversity Conservation and Sustainable Management of Living Natural Resources

ESS6 recognizes the importance of maintaining core ecological functions of habitats, including forests, and the biodiversity they support. Habitat is defined as a terrestrial, freshwater, or marine geo- graphical unit or airway that supports assemblages of living organisms and their interactions with the non-living environment. All habitats support complexities of living organisms and vary in terms of species diversity, abundance and importance.

The standard is triggered by the project considering that the land covered by different trees, crops and natural vegetation will be cleared during construction activities.

ESS10 on Stakeholder Engagement

Stakeholder engagement is an inclusive process conducted throughout the project life cycle. Where properly designed and implemented, it supports the development of strong, constructive and responsive relationships that are important for successful management of a project's environmental and social risks. Stakeholder engagement is most effective when initiated at an early stage of the project development process and is an integral part of early project decisions and the assessment, management and monitoring of the project's environmental and social risks and impacts. If the standard is triggered by the project, the Borrower will continue to engage with key stakeholders and provide sufficient information to stakeholders throughout the life cycle of the project, in a manner appropriate to the nature of their interests and the potential environmental and social

risks and impacts of the project.

3.2.2 GCF Gender Policy

In addition to these E&S safeguards, is a requirement for gender equality under the GCF Gender Policy. There are three compelling reasons for the Fund's mandate on gender sensitivity:

- Women, as well as men significantly contribute to combating climate change. Shifting the paradigm towards low-emission and climate-resilient development pathways, which is the Fund's mandate, requires a large number of individual and collective decisions by women and men. A gender-sensitive approach is therefore part of a paradigm shift;
- Climate change impacts women and men differently, to the detriment of women, and existing gender inequalities are likely to be exacerbated by climate change;
- Gender inequality, exacerbated by climate change, is linked, as are other development areas, to vulnerability and risks. The greater vulnerability of women to climate change stems from gender norms and discrimination that result in the imbalanced division of labour, lower income, and lesser livelihood opportunities; less access and control over land and other productive assets; fewer legal rights; lesser mobility and lesser political and professional representation.

GCF gender policy has four main objectives:

- (a) To ensure that by adopting a gender-sensitive approach, the Fund will achieve greater, more effective, sustainable, and equitable climate change results, outcomes and impacts, in an efficient and comprehensive manner in both its internal and external procedures and activities;
- (b) To build equally women and men's resilience to, and ability to address climate change, and to ensure that women and men will equally contribute to, and benefit from activities supported by the Fund;
- (c) To address and mitigate against assessed potential project/project risks for women and men associated with adaptation and mitigation activities financed by the Fund; and,
- (d) To contribute to reducing the gender gap of climate change-exacerbated social, economic and environmental vulnerabilities.

This policy is anchored on four principles;

- (1) Commitment to gender equality and equity as guided by the UNFCCC, Paris Agreement, ILO;
- (2) Inclusiveness in terms of applicability to all the Fund's activities through consultation and decision-making;
- (3) Accountability for gender and climate change results and impacts;
- (4) Country ownership in terms of alignment with national policies and priorities and inclusive stakeholder participation;
- (5) Competencies throughout the Fund's institutional framework; and
- (6) Equitable resource allocation so that women and men benefit equitably from the Fund's adaptation and mitigation activities.

Along with this ESIA, a gender analysis study was done under the GCF Full Project Proposal, which has richly recommended a Gender Action Plan for each of the components of the project.

3.2.3 Regional and international agreements, treaties and conventions

Rwanda has signed and/or ratified several international agreements and conventions relating to the environment both at regional and global level such as ones below. However, due to the low environmental sensitivity of the project sites no impact associated with these conventions are anticipated as shown below:

- (1) EAC Protocol on Environment and Natural Resources Management, 2006. Article 3 of this Protocol states that "*it is a protocol of general application and shall apply to all activities, matters and areas of management of the environment and natural resources of the Partner States, including environmental impact assessment and environmental audits*";
- (2) East African Transport Strategy and Regional Road Sector Development Program, 2011.
- (3) The EAC Regional Environment Impact Assessment Guidelines for shared ecosystems, 2005;
- (4) The international Convention on Biological diversity and its habitat signed in Rio De Janeiro in Brazil on 5 June 1992, as approved by Presidential Order No 017/01 of 18 March 1995;
- (5) The Cartagena protocol on biodiversity to the Convention on Biological biodiversity signed in Nairobi from May 15, to 26, 2000 and in NEW YORK from June 5, 2000 to June 4, 2001 as authorized to be ratified by Law No 38/2003 of 29 December 2003;

- (6) The United Nations Framework Convention on Climate Change (UNFCCC), signed in Rio De Janeiro in Brazil on 5 June 1992, as approved by Presidential Order No 021/01 of 30 May 1995;
- (7) The Kyoto Protocol to the framework on climate change adopted at Kyoto on March 6, 1998 as authorized to be ratified by Law No 36/2003 of December 2003;
- (8) The Ramsar International Convention of February 2, 1971 on Wetlands of International importance, especially as water flows habitats as authorized to be ratified by Law No 37/2003 of 29 December 2003;
- (9) The Stockholm Convention on Persistent Organic Pollutants, signed in Stockholm on 22 May 2001, as approved by Presidential Order No 78/01 of 8 July 2002;
- (10) The Basel Convention on the Control of Trans boundary Movements of Hazardous wastes and their disposal as adopted at Basel on 22 March 1989, and approved by Presidential Order No 29/01 of 24 August 2003 approving the membership of Rwanda;
- (11) The Montreal International Conventional on Substances that deplete the Ozone layer, signed in London (1990), Copenhagen (1992), Montreal (1997), Beijing (1999), especially in its article 2 of London amendments and Article 3 of Copenhagen, Montreal and Beijing amendments as approved by Presidential Order no 30/01 of 24 August 2003 related to the membership of Rwanda.

The foregoing notwithstanding, the developer and contractor will have a contractual obligation to avoid impacts that may violate above conventions, wherever encountered.

3.2.4 International Environmental and Social Standards

In addition to the above, the following standards will be applied to the Project:

- ILO International Labour Standards. The International Labour Standards are legal instruments that set out basic labour principles and rights at work.
- World Bank Group's General Environmental Health and Safety (EHS) Guidelines
- The WB General EHS Guidelines contain information on environmental, health, and safety issues applicable to the Project as a whole and its sub-components. They are to be applied together with the sector specific EHS guidelines (mentioned below).
- World Bank Group's Industry Sector EHS Guidelines, depending on the specific type of Project component or sub-component, for example EHS Guidelines:
 - ✓ Health Care Facilities (2007),
 - ✓ Telecommunications (2007),
 - ✓ Waste Management Facilities (2007),
 - ✓ Water and Sanitation (2007), and
 - ✓ Electric Power Transmission and Distribution (2007).
- UN Basic Principles and Guidelines on Development-based Evictions and Displacement, namely §§ 42, 49, 52, 54 and 60);
- IFC (2002)⁶ Handbook for Preparing a Resettlement Action Plan and World Bank (2004) Involuntary Resettlement Sourcebook⁷;
- Human Rights Principles outlined in the BMZ Strategy "Human Rights in German Development Policy" and specified in the BMZ "Guidelines on Incorporating Human Rights Standards and Principles, Including Gender, in Programme Proposals for Bilateral German Technical and Financial Cooperation"⁸; and
- Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests (VGGT)⁹.
- Safeguarding against Sexual Exploitation and Abuse and Sexual Harassment (SEAH) through a Code of Conduct that explicitly indicates zero-tolerance for gender-based violence shared with all personnel and training for all employees on the Code of Conduct

⁶ IFC (2002), available at: https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/publications/publications_handbook_rap__wci__1319577659424

⁷ World Bank (2004), available at: <http://documents.worldbank.org/curated/en/206671468782373680/pdf/301180v110PAPE1ettlement0sourcebook.pdf>

⁸ BMZ (2013), available at: <https://www.bmz.de/resource/blob/70448/14b3b6b3fe59eab4d0c05efe266e57b4/guidelines-human-rights-bilateral-cooperation>

⁹ FAO (2012), available at: <http://www.fao.org/docrep/016/i2801e/i2801e.pdf>

3.3 Applicable Environmental Quality Standards

3.3.1 National Standards

Rwanda Standards Board has set various standards for smart domestic and industrial facilities among others to spur sustainable economic and environmental growth. The prevention of pollution at source, the precautionary principle and the prior licensing of commercial and industrial facilities by competent authorities have become key elements of successful policies for preventing, controlling and reducing inputs of hazardous substances, nutrients and other water pollutants from point sources into aquatic ecosystems.

(1) Rwandan Standard RS 110: 2017 Water quality

Tolerance limits of discharged domestic wastewater as given in the table below.

Table 3-1 Physical requirements of discharged domestic wastewater according to RS 110:2017

S/N	Parameter	Requirements (Max.)	Test methods
		Treated waste water	
1.	Temperature variation of treated waste water compared to ambient temperature of water °C	3	Thermometer ^[1]
2.	Color Pt-Co	200	RS ISO 7887

(2) Chemical requirements of discharged domestic wastewater according to RS 110:2017

Table 3-2 Domestic wastewater quality standards

S/N	Parameter	Requirements (Max.)	Test methods
		Treated waste water	
1.	TDS mg/l	1500	ISO 6107-2
2.	TSS mg/l	50	RS ISO 11923
3.	pH	5-9	RS ISO 10523
4.	Nitrates mg/l	20	RS ISO 5663
	Nitrites mg/l	2	ISO 6777
	Total Nitrogen	30	ISO 11905
5.	Total Phosphorus mg/l	5	RS ISO 6878
6.	BOD5 mg/l	50	RS ISO 5815-2
7.	COD mg/l	250	RS ISO 6060
8.	Oil and grease mg/l	10	ISO 9377-2
9.	Chlorine mg/l	2	ISO 7393
10.	Sulphate mg/l	500	ISO 22743
11.	Pesticides mg/l	Not detectable	ASTM D8025-16

(3). Microbiological requirements of discharged domestic wastewater according to RS 110:2017

Table 3-3 Microbiological domestic wastewater quality standards

S/N	Parameter	Requirements	Test methods
		Treated waste water	
1.	Faecal Coliforms fcu /100 ml	<400	ISO 4831

3.3.2 International Standards

World Bank Group (WBG) Environmental, Health and Safety (EHS) Guidelines

The WBG has developed a range of environmental, health and safety (EHS) guidelines. Part of these guidelines include specific standards for ambient air quality and noise.

- WBG Air Quality Guidelines

The WBG use the ambient air quality guidelines proposed by the World Health Organization (WHO). **Error! Reference source not found.**below provides these standards.

Table 3-4 WHO Air Quality Guidelines

Parameter	Averaging Period	Guideline Value ($\mu\text{g}/\text{m}^3$)
Sulfur Dioxide (SO_2)	24 hour	20
	10 minute	500
Nitrogen Dioxide (NO_2)	1 year	40
	1 hour	200
Particulate Matter PM_{10}	1 year	20
	24 hour	50
Particulate Matter $\text{PM}_{2.5}$	1 year	10
	24 hour	25
Ozone	8 hour daily maximum	100

- WBG Noise Guidelines

According to the WBG EHS Guidelines, noise impacts should not exceed the levels presented in **Error! Reference source not found.** or result in a maximum increase in background levels of 3 dB at the nearest receptor location off-site.

Table 3-5 WBG Noise Level Guidelines, One Hour Laeq (dBA)

Receptor	Daytime (07.00 – 22.00)	Night-time (22.00 – 07.00)
Residential, institutional, educational	55	45
Industrial, commercial	70	70

- General WBG EHS Guidelines

In addition to the above, the WBG EHS guidelines also provide extensive guidance on a range of other EHS issues, such as **Occupational Health and Safety, Community Health and Safety**, etc. The mitigation measures that have been adopted for this Project have included all of the relevant WBG EHS guidelines.

3.4 Gap analysis of National and GCF E&S safeguards and recommended gap closure

A summary of a gap analysis between National regulation and performance standards of the GCF E&S safeguards is discussed in the table below. Recommendations on how the project shall address the gaps identified are also included.

Table 3-6 Gap analysis of National and GCF Environmental and social safeguards

Environmental and Social Standards (ESS)	Gap analysis between GCF E& S safeguards and National laws with recommendations on how gaps can be closed
ESS 1: Assessment and management of environmental and social risks and impacts	No gap. National policies and procedures are equivalent to ESS1 requirements.
ESS 2: Labour and Working Conditions	<p>No gap between National laws and regulation and ESS 2.</p> <p>Rwanda has established both standards and processes that are functionally equivalent with the objectives of ESS2. Worker rights and labor standards are well protected under domestic law and specific project requirements and safety expectations are transparent and publicly available.</p> <p>Grievance mechanisms are in place to address complaints raised by workers in case of non-compliance by employers. Right from the local governance structure, through to the National Ombudsman and finally legal system, complaints raised are able to be solved by these existing systems.</p>
ESS 3: Resource Efficiency and Pollution Prevention	<p>No significant gap.</p> <p>The regulatory context of Rwanda is functionally equivalent to ESS 3 in many respects. There are clear laws and processes in place for the relevant Ministries to set clear project by project standards for minimizing pollution and waste, and likewise frameworks for the efficient use of energy and water.</p> <p>Given the nature of proposed interventions for the project project to reduce GHG emissions, the gap in the lack of National thresholds on GHG and current reference to International standards, may not be of significance.</p>
ESS 4: Community Health, Safety, and Security	<p>No gap.</p> <p>EIA process scrutinizes likely impacts on health, safety and security of communities and proposes management plans. Stakeholder consultations are part of the EIA, from which issues are raised by stakeholders and they contribute ideas in finding mitigation measures to likely adverse impacts.</p>
ESS 5: Land Acquisition and Involuntary Resettlement	<p>Gap exists on the following terms:</p> <ul style="list-style-type: none"> • National law only recognizes those who own land or with recognized claims of rights as eligible to full replacement compensation. Deviations of National law from GCF E&S safeguards requirements is that it does not recognize care takers of land that have been on land to be expropriated as eligible for compensation. Payment is normally done against land ownership document, which in such a case the caretaker does not possess. • Livelihood restoration plans in addition to the compensation for displacement are not included in the National law and yet a requirement in the GCF E&S safeguards ESS5. <p>Recommendations of gap closure are:</p> <ul style="list-style-type: none"> • For compensation payment of care takers of land with assets on land they do not own, common practice is that written agreement supervised by District or Sector officials between landowner and caretaker agreeing that compensation payment for assets lost on the land shall be to the land owner who must transfer payment to the caretaker and submit of this transfer in the presence of these District or sector authorities.

	<ul style="list-style-type: none"> • Along with a Restoration Action Plan (RAP) where physical displacement had occurred, a Livelihood restoration plan (LRP) shall be prepared for affected HH.
ESS 6: Biodiversity Conservation and Sustainable	<p>Overall, Rwanda has a robust regulatory system for managing and protecting biodiversity that is well-aligned with ESS 6 objectives and requirements – with a few potential gaps that can readily be managed.</p> <p>Partnership with non-governmental third parties is a key aspect of ESS 6. It highlights the benefits of partnership with conservation organizations and independent experts to help clients meet conservation objectives and manage risks to biodiversity and ecosystem experts.</p> <p>The process will consider relevant threats to biodiversity and ecosystem services, especially focusing on habitat loss, degradation and fragmentation, invasive alien species, overexploitation, hydrological changes, nutrient loading, and pollution. It will also consider the differing values attached to biodiversity and ecosystem services by Affected Communities. The project shall seek to avoid impacts on biodiversity and ecosystem services on natural habitat, critical habitat, legally protected and internationally recognized areas plus avoid introduction of invasive alien species. Refer to the Wetland Zoning Map establish by REMA (see Figure 5.9)</p>
ESS 7: Indigenous people	<p>Not applicable</p> <p>The ESS 7 recognizes that Indigenous Peoples, as social groups with identities that are distinct from mainstream groups in national societies, are often among the most marginalized and vulnerable segments of the population. Government often plays a central role in the management of Indigenous Peoples’ issues, and project should collaborate with the responsible authorities in managing the risks and impacts of their activities.</p> <p>ESS 7 was not triggered under this project on grounds that Rwanda is a country with a single/common culture, tribe and language, with a National constitution that recognises all Rwandans are born and remain equal in rights and freedom (article 16 of Rwandan Constitution, 2015), hence no marginalised groups of people. However, the project site includes a large number of vulnerable communities whose views were heard and used as the basis for setting the project interventions. Special livelihood options will be provided to enhance their well-being and address their vulnerabilities.</p>
ESS 8: Cultural Heritage	<p>No gap.</p> <p>Under the jurisdiction of the Ministry of Sports and Culture, National laws and ministerial orders provide guidance on protection of cultural heritage generally equivalent to ESS 8 requirements. Procedures in National laws are able to guide how issues around identified cultural heritage and chance finds during project implementation can be handled.</p>



4 METHODOLOGICAL FRAMEWORK

The study adopted the following approach: (i) scoping study/ preliminary assessment, (ii) review of relevant policies, regulations and safeguards, (iii) review and analysis of baseline environment data of project intervention sectors, (iv) field surveys at the project sites to fill any gaps on baseline data (v) stakeholder engagement on options proposed for component activities. This was done to gather information and data on various aspects of the project activities.

Site locations, land cover, proposed infrastructures were described fully with clear maps (where necessary) for a comprehensive understanding of the area and project activities and to make the task of planning and monitoring easier during the implementation of the mitigation measures for the identified impacts. The methodology is detailed hereafter.

4.1 Scoping

The scoping study was undertaken by the consultant with an intention of collecting enough and relevant information so as to ensure a comprehensive ESIA based on the project components. This study involved consultation with FONERWA staff, Ngaruyinka committee members, project feasibility design team and a field visit to familiarize the study team with existing features and proposed project components in the Ngaruyinka.

The scoping exercise further entailed the following:

- A preliminary desk review of: MoE funding proposal to GCF, National strategy for climate change and low carbon development, GCF Environmental and social safeguards and the organic law on the environment.
- Field-visit in September 2021 for the identification of the project interventions on site, likely stakeholders who eventually were involved in the stakeholder engagement consultations.
- Establishment of clear boundaries of the study and focus on the relevant issues concerning the study.
- Preliminary findings of the existing environment (physical, biological and socio-economic environment);
- Preliminary predictions of likely positive and adverse impacts.

Furthermore, site locations for all project components and proposed infrastructure were fully described with clear maps for a comprehensive understanding of the area and project activities to make easier the task of preparing a ESMP for the identified impacts.

4.2 Review of Institutional, legislative and Policy Framework

Intense deskwork was undertaken of existing institutional legislation, policies, plans and projects, which are likely to influence different parts of the implementation of the Strengthening climate resilience of urban communities in Kigali Rwanda, its sustainability and ensure enhancement of the environmental resources.

The literature review involved but was not restricted to the following:

- MoE Proposal to GCF for funding project- Detailed Project Description, 2021
- National Strategy for Transformation 1 (NST1) that superseded the Economic Development and Poverty Reduction Strategy II (EDPRS II), 2017-2024
- Gasabo District Development Plan (2013-2018).
- Kigali Masterplan, 2020
- Organic Law N0 48/2018 establishing the modalities of protection, conservation and promotion of the Environment, 2018
- GCF Environmental and Social Safeguards (ESS), 2018
- Expropriation in the Public Interest (Expropriation Law – Law N0 32/2015).
- National Strategy on Climate change and low carbon development, 2011
- National Policy for Water Resources Management, 2011
- Land law N° 27/2021

An institutional framework is also presented, indicating roles and responsibilities of National and international Institutions that will have a stake in implementing this project, approving the ESIA and monitoring adaptation and mitigation measures proposed against anticipated adverse impacts.

4.3 Stakeholder Engagement

Identification and Involvement of stakeholders

Information collected from the preliminary desk review, preliminary scoping consultation with FONERWA and preliminary field-visits to the Ngaruyinka District, guided the consultant in identifying the project stakeholders.

The stakeholders identified were grouped in four (4) categories: The categories were:

- (1) FONERWA and Government officials,
- (2) District and sector local government officials,
- (3) Local inhabitants of Ngaruyinka settlement
- (4) Civil society organisations and private sector organisations.

During the Public consultation, the study applied different participatory methods, namely, interviews, one-to-one discussions with Key informants (KI), focus group discussions (FGD), Informed Consultation and Participation (ICP) and public meetings with stakeholders.

Stakeholders consulted were informed on the proposed project and by using key guiding questionnaires, the consultant was able to guide discussions and obtain relevant information on stakeholder opinions on component options, likely impacts of the project components and suggestions on how these impacts can be mitigated. Stakeholders were asked to raise their concerns on the proposed project. An issue raised by one individual or a group of people was cross-checked by discussing it over with other individuals or groups. It is from these concerns that the likely impacts were determined and summarized in Chapter 6. A Stakeholder engagement Issues report of the field-visit may be referred in appendix 1.

4.4 Baseline data and information

Information on the physical, biological, socio-economic environment of the project intervention area, institutional and legal regimes was collected from a variety of sources namely, project proposal, Integrated Household living conditions surveys of Ngaruyinka, Rwanda 4th Population and housing census (2015), data from district and sectors, stakeholder consultations, District and sector representatives and locals, visual, inspection and expert opinion.

Methods for field data / information collection and analysis

This involved visits to the site earmarked for the project components and activities. Field surveys were done to collect socio-economic data, existing ecosystems, soil types, physical and biological environment of the intervention areas.

- Physical environment

Assessment comprised collection of data and analysis of climate, hydrology, relief, soil features on Kinyinya Hill and Ngaruyinka. The data used for the climate assessment included rainfall records, monthly evaporation and temperature. This information was used to understand the climate of the area and pattern followed to understand major weather and climate related hazards such as floods and drought. Climatic data (rainfall and temperature) was referred from Kigali Meteorological stations.

From this climate information, the effects of climate variability (and in some instances change) were understood, alternative options proposed for each component were analysed against these effects and adaptation or mitigation measures were proposed against any anticipated risks/impacts.

Available meteorological data recorded at stations within the drainage basin and the surrounding area was gathered from the relevant national institutions.

Field visits to the project areas were used to crosscheck information obtained during the desk study and to obtain any additional field information missed.

- Ecological analysis

Assessment was done of flora and fauna for the project intervention area and part of the hinterland. Tools such as field observation combined with GIS mapping were used to determine land cover of these areas of project

intervention. e.g. land cover comprising of green area, cultivated area and surface water. Literature review was used to predict likely fauna commonly observed with corresponding flora determined by the GIS land cover.

Expert observation was applied to understand the existing ecosystem within these areas, to determine likely eco-sensitive areas and predict flora and fauna that could emerge with the introduction of this project.

- Socio-economic baseline analysis

This involved reviewing existing statistical data on the socio-economic baseline of Ngaruyinka and in particular the Sectors of project intervention. Data used to form socio-economic baseline for the study was obtained from:

- Integrated Household living conditions surveys of Ngaruyinka and its sectors (EICV 3) (2010/2011)
- Integrated Household living conditions surveys- Thematic report on Education (EICV 4) (2014/2015)
- Integrated Household living conditions surveys- Thematic report on Environment and Natural resources (EICV 4) (2014/2015)
- EICV (2017). The Fifth Integrated Household Living Conditions Survey, EICV5 (2016/17).
- Gasabo District Gender profile (2016)

This data was compared to information from the field consultations with District sector offices and found mostly to resonate. Any gaps in the data were filled with information collected at the District sector offices to form a final description of the socio-economic baseline of the project intervention areas. Socio-economic data collected covered land use patterns, land occupancy pattern, population demographics, household gender and age patterns, household settlement, education status, occupation patterns, income and expenditure levels, agricultural production, access to social basic services (i.e. schools, health services, water and energy), gender disparities, sex disaggregated data in the project area where available.

Other data included were possibilities of cultural heritage within the settlement, e.g., historical sites, memorial sites, ritual sites, religious sites, graveyards. This data was used in understanding the environmental and social issues faced in Ngaruyinka. It was also used in the alternative analysis of component options, anticipation of positive and adverse impacts likely to be enhanced or caused by project component activities and proposing adaptation or mitigation measures.

4.5 Impacts Assessment

Impacts prediction and analysis involved assessment of the entire project cycle i.e. project planning, construction, operation phases. Impact assessment applied a number of tools and techniques to determine the nature (positive or negative), extent (spatial), occurrence (one-off, intermitted or constant), magnitude, whether reversible or irreversible, direct or indirect, probability of occurrence and significance with and without mitigation. These tools were:

- *Scoping matrix*- Under this section, basing on the proposed project activities, impacts were predicted that might affect or enhance the livelihood in the project areas and drawn against their possibility of occurrence to determine their significance.
- *Impact evaluation Matrix*- Under the Impact evaluation matrix, the analysis was done by tools such as baseline data analysis, field analysis, GIS, Expert observations, applied to test the significance predicted under the scoping matrix. An Impact evaluation matrix in tabular format was drawn, in which actual impacts were rated based on their significance. Only those found to have negative impacts were advanced to the Environmental Social Management Plan where mitigation measures were proposed against each adverse impact.

The Impact evaluation matrix is discussed in **Chapter 7**.



5 PHYSICAL, BIOLOGICAL AND SOCIOECONOMIC BASELINE

The primary objective of the ESIA process is to appraise the potential changes that the proposed Project may have upon the existing natural and human ecosystem and how this can be avoided or mitigated. Thus, it is necessary to first establish an understanding of the existing physical, biological or social environment before any clearing of the site to make way for development.

This baseline relies on the dataset provided within previous studies such as the GCK High-level ESIA, Architectural Competition Brief and the Final Feasibility Study. Additional data was obtained through a site walkover during the recent site visit in September 2021 and further online research. The description of the existing environment thus provides a snapshot of the current overall conditions in the Project Area and the wider district where relevant.

5.1 Physical Environment

5.1.1 Climate

Rwanda lies within the equatorial zone but has mountains and hills that moderate its climate. Kigali has tropical savannah climate (Aw) according to Köppen-Geiger classification. Typically for Aw climate, there is much more rainfall in summer than in winter. There are two rainy seasons from March-May and from September-December¹⁰.

The Kinyinya sector has two major climatic seasons in a year, namely, the dry and rainy seasons. The two major climatic seasons alternate within the course of a year; hence, the sector is experiencing two dry seasons and two rainy seasons per year as described in the Table 5-1. However, it is important to note that duration of the seasons is irregular.

Table 5-1 Average duration of climate seasons in Kinyinya sector

Seasons	Period
Short dry season	December, January and February
Long rainy season	March, April and May
Short dry season	June, July, August and September
Long rainy season	October and November

Figure 5-1 shows the average temperatures and rainfall in Kinyinya. The average annual temperature is 20.6°C, with only very slight monthly deviation during the year of about 1.1°C. With an average of 21.1°C, August is the warmest month. With an average of 19.9°C, June is the coldest month of the year. The average annual rainfall is about 949 mm, with June-July-August being the driest months (only 7 mm in July), while April is by far the wettest month reaching an average of 180 mm.

Figure 5-2 shows the monthly rainfall and Figure 5-3 indicates the overall steady temperature throughout the year in Kinyinya. Rwanda has experienced an average temperature increase of 1.4°C since 1970, higher than the global average.

The main issues on climate change adaptation and drainage for Kinyinya Hill are related to the sloped topography. In urban sloped environments, storm water generally does not have enough time to infiltrate, resulting in high runoff speeds. In turn this leads to erosion and downstream flooding and siltation. When water is unable to infiltrate, groundwater tables are also insufficiently supplemented compared to a location with flat terrain. This in turn results in plant degradation (trees etc.), reduced base flow in downstream rivers and reduced ability to use groundwater as a potable water resource.

¹⁰ World Bank Climate Knowledge Portal (2021) available at: <https://climateknowledgeportal.worldbank.org/country/rwanda/climate-data-historical>

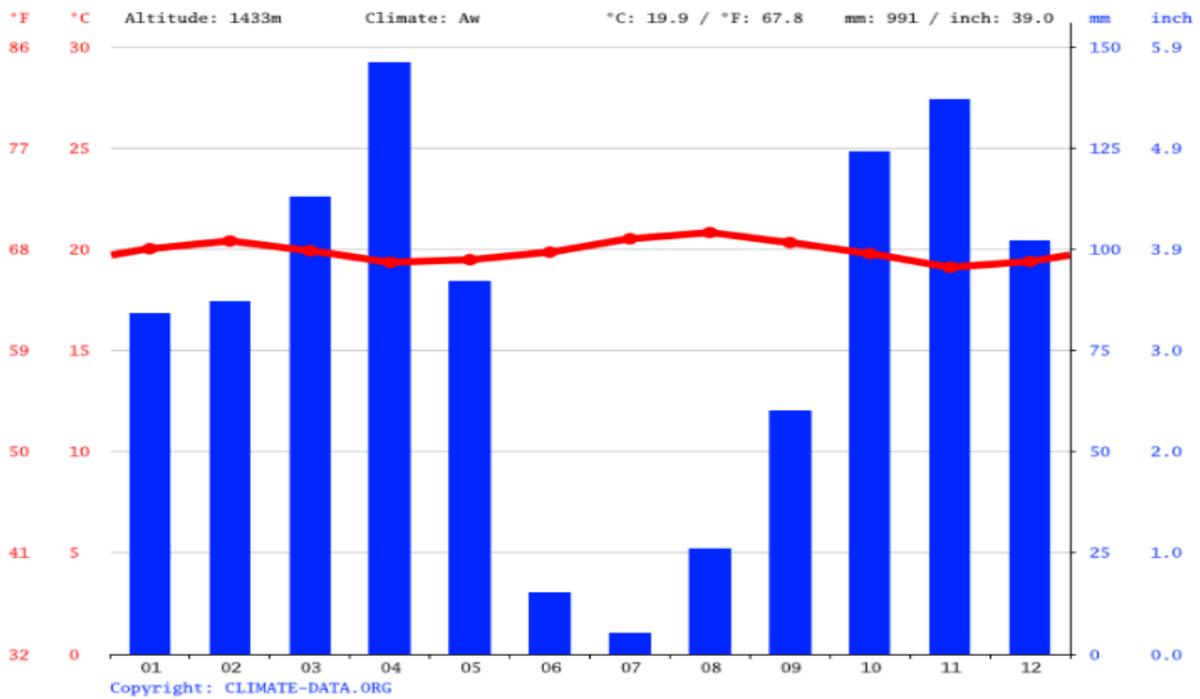
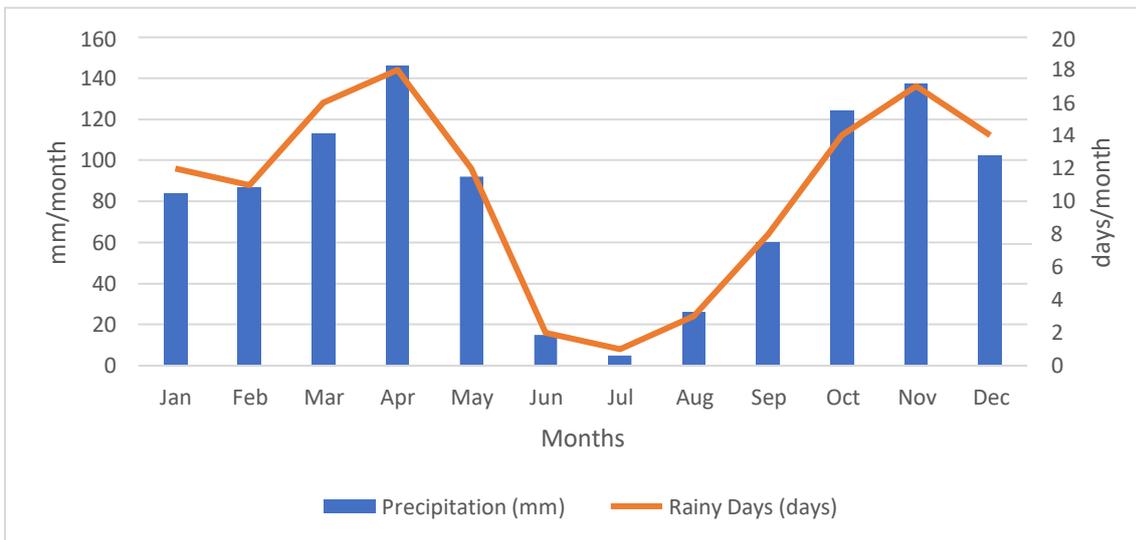


Figure 5-1 Climate graph showing the average weather in Kinyinya by month

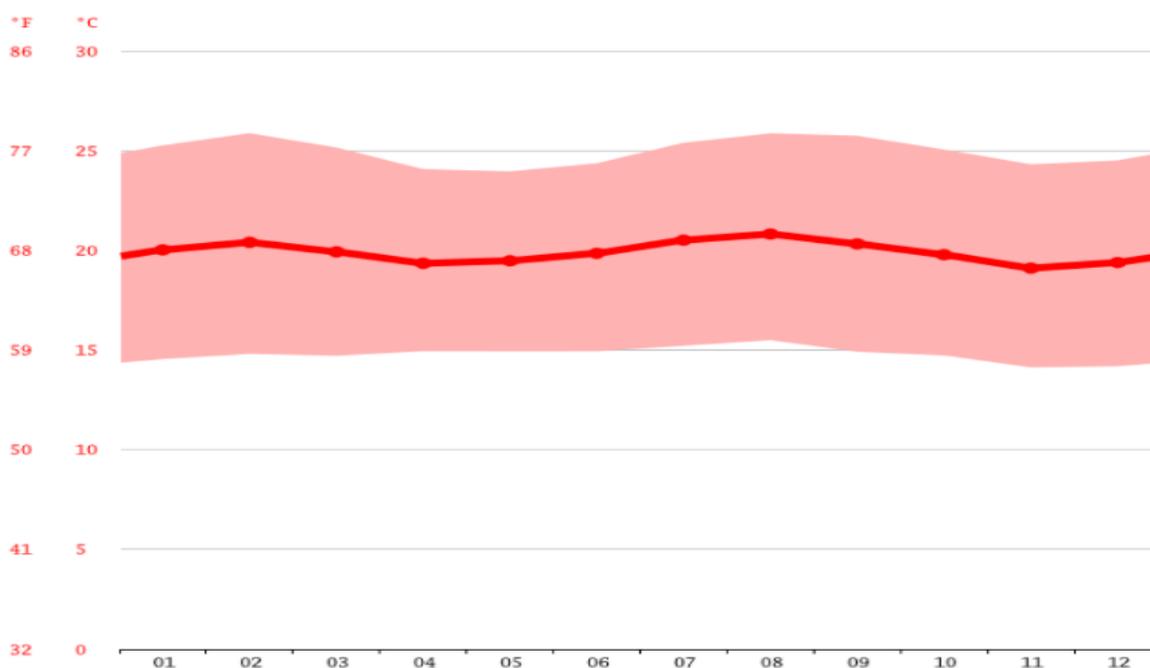
These problems are aggravated by climate change. Climate change will result in increased rainfall intensities and increased periods of drought. This causes increased runoff and lowering groundwater tables. Climate change adaptation and drainage measures should focus on preserving (as much as possible) the exiting runoff situation whilst considering the increased periods of drought and increasing rainfall intensities. In addition, measures should be considered to reduce the heat island effect and minimize the risk of flooding and landslides (which is also a component in the Rwanda Green Building Minimum Compliance System, RHA 2019).



Source: ERM, 202112

Figure 5-2 Average Monthly Rainfall in Kinyinya

11 Climate-data.org (2021), available at: <https://en.climate-data.org/afrika/ruanda/kigali/kinyinya-224166/#climate-graph>
 12 High Level ESIA, ERM, 2021



Source: Climate-Data.Org, 2021¹³

Figure 5-3 Average Monthly Temperature in Kinyinya

Table 5-2 shows some of the historical and future climate trends for Rwanda indicating a rise in temperature. Observed annual mean temperatures showed a statistically significant increase in the last 30 years. For the future, climate model calculations project a moderate rise in temperature for the region. At the end of the century, temperature increase between 1.1 and 5.1 °C compared to the base period from 1971 to 2000 can be considered likely. Along with the rise in temperature, there is a strong extension of hot periods and a significant reduction in cold periods.

A slight decrease in annual precipitation has been observed over the past 30 years. For the future, however, the climate model calculations do not project a clear precipitation trend. At the end of the 21st century, a change in precipitation between -3 and +10% compared to the base period from 1971 to 2000 can be considered probable. Furthermore, a tendency towards somewhat more intensive and significantly more frequent heavy precipitation and longer dry periods is projected.

Table 5-2 Historic and Projected Temperature Data for 2085 for Rwanda¹⁴

Historical Climate Trends	Projected Future Climate Trends ¹⁵
Observations of mean annual temperature shows the average temperature has increased. Temperatures rose by about 1.2°C at Kigali Airport station during 1971-2009.	The very likely range of projected change in annual mean temperature is from +1.1 to +5.1°C by 2085. Confidence in these figures is medium. The change in temperature can be considered to be medium-strong.
Mean annual rainfall has declined by 80 mm from 1961 until 2006 at the Kigali Airport meteorological station. Observations of the extent of the rainy seasons (March-May and September-November) exhibit a shortening trend.	Tendency towards an increase in future precipitation by 2085 during the main rainy season (likely range from -13 to +20%, December to April), whereas for the other months of the year a tendency towards drier conditions is projected (likely range from -30 to +17%).

¹³ Climate-data.org (2021), available at: <https://en.climate-data.org/afrika/ruanda/kigali/kinyinya-224166/#climate-graph>

¹⁴ High Level ESIA, ERM, 2021

¹⁵ Gerics (2016) Climate-Fact-Sheet

With the table above, we understand that future climate scenario should be taken into consideration in designing buildings and planning for construction material and types of equipments that are climate resilient and energy efficient.

5.1.2 Geology, Hydrogeology and Soils

Kinyinya planning area and the surroundings are characterized by the hills with average altitude of 1,504 m - mainly located in the rural zone. The southern, northern and western parts outside of the proposed planning area are dominated by wetlands.

The area around Kinyinya Hill has rainfall patterns, terrain slope, geology, soil, land cover and earthquakes that make localized landslides a potential hazard. The table 5-4 below shows the soil types in the Project Area and their classification. The soil on Kinyinya Hill mostly consists of Cambisols and Alisols, which are moderately deep and more fertile than Ferrasols. On steep slopes the soil is susceptible to erosion. The wetlands mainly consist of clayey soils with low infiltration capacity. There are no existing information and data on groundwater potential in the Kinyinya Hill.

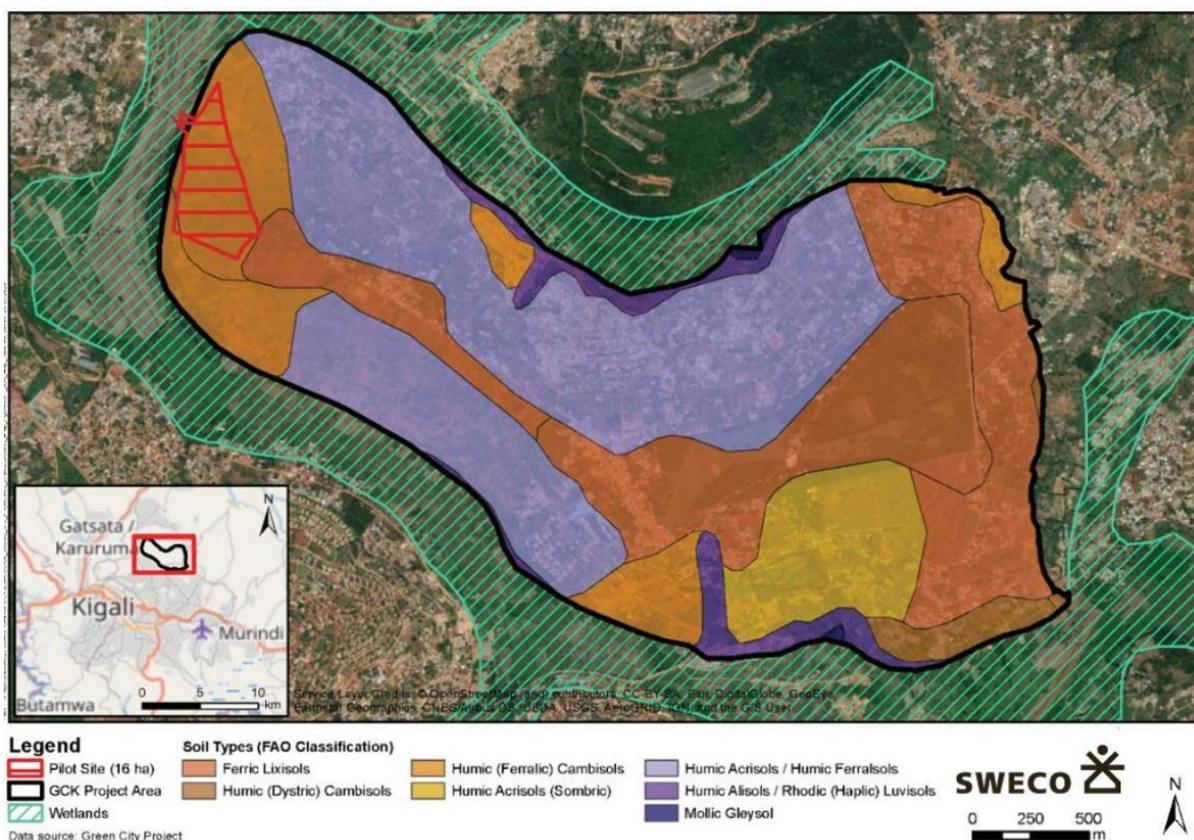


Figure 5-4 Types of Soils on and around project site

5.1.3 Geohazards

According to geological studies¹⁶, the areas most at risk of seismic hazards in Rwanda are located in the Western Province. Between 2002 and 2021, earthquake events struck the Western Province causing deaths and many other damages such as roads. Different earthquakes striking the Western and Northern Provinces are sometimes felt in Gasabo district and Kinyinya sector without causing damage to well-constructed housing infrastructures.

5.1.4 Topography, Landscape and Visuals

The natural setting of Kinyinya Hill is similar to the overall Kigali City as it is characterized by steep slopes of farmlands and residential areas for the city dwellers. Hills, rivers and wetlands dominate the landscape and

¹⁶ USGS (2008), MIDIMAR (2013)

provide easily accessible recreational opportunities. Altogether, rivers, streams, wetlands, forests and steep slopes combined with the existing agricultural areas constitute to 83% of the City's land area. Apart from the numerous environmental benefits, natural landscapes provide scenic views, educational and lot of active and passive recreation opportunities for its residents.

Kinyinya Hill and the surroundings are characterized by a mixture of hilly terrain with an average altitude of 1,504 m and sloping basins and valleys. In terms of land use, data from RPHC 2012/17 for the whole Kinyinya sector suggested that around 91.90% of current use of the area can be described as peri-urban with fragmented urban and rural features. There are residential areas, paved and unpaved roads, public utilities, agricultural and settlement community areas with social housing. The majority of the settlements are concentrated in the surroundings of the hill with considerable distance from the main tarmac road that connects different areas of the hill and surrounding sectors.

The western part of the proposed Project Area is dominated by farmed wetlands that regulate the flow and flooding of Kinyinya Hill. The wetlands are connected to other wetlands around Kigali City. The picture above visualizes the Project Area from a point where general land cover of the Project Area can be seen. The Project Area is present with a variety of crops as well as a few scattered; these will inevitably have to be removed to make way for the construction of the Project and its sub-components.

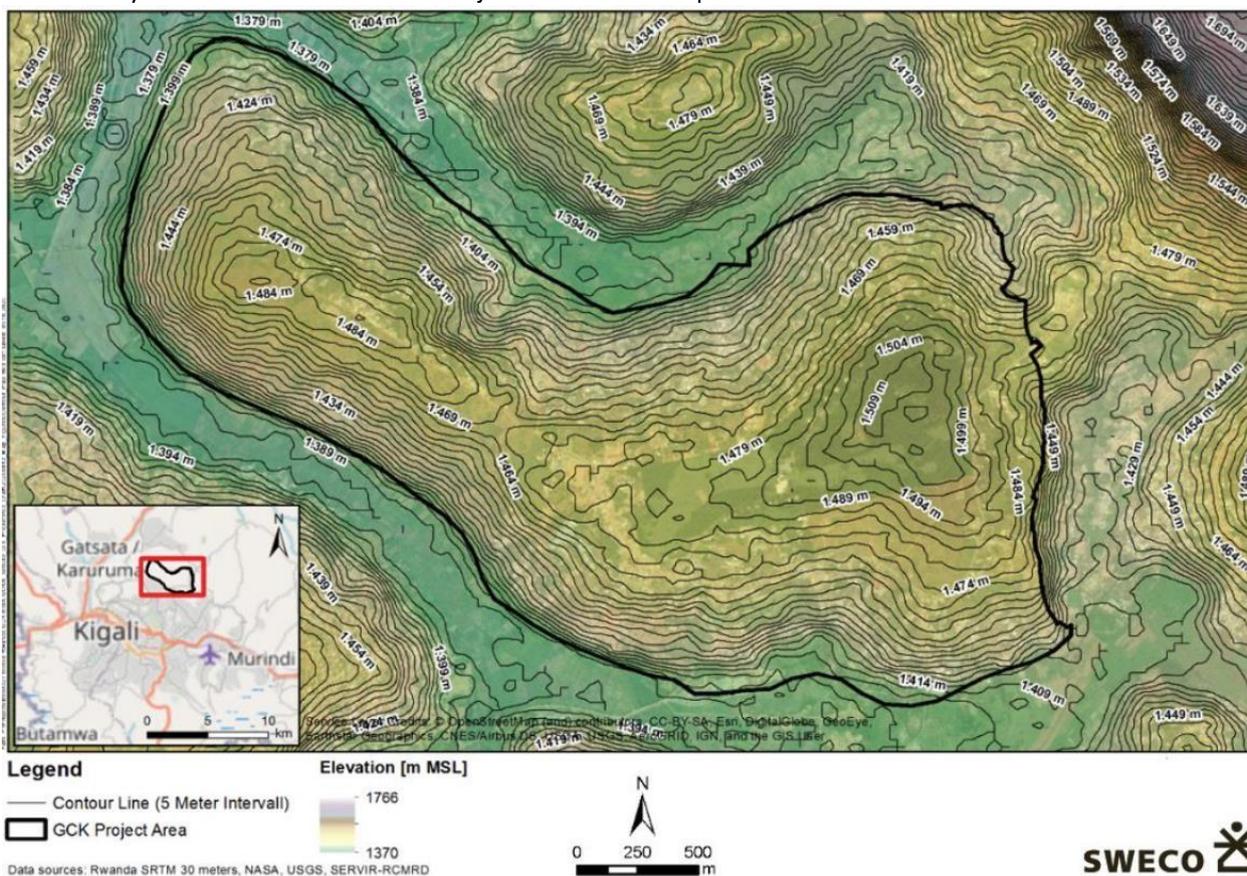


Figure 5-5 Topography of the Project Area

5.1.5 Hydrology

Kigali City underlying hydrology is governed by 25 watersheds within the city limits and is part of the Lake Victoria basin. In central and northern Kigali, the topography is relatively steep and drained by the Nyabugogo River, which is the main watercourse in the northwest quadrant. The Nyabugogo is fed by various smaller streams in

17 National Institute of Statistics of Rwanda (2012) Fourth Population and Housing Census: Provisional results, Rwanda. Available at: <https://microdata.statistics.gov.rw/index.php/catalog/65>

the city (such as the Yanze, Kibumba, Rwazangoro and Ruganwa), and its drainage area covers most of the territory of Kigali City. There are some streams that flow directly into the Nyabarongo River from the city's southern hills. The Nyabarongo River is the main watercourse that borders the western and southern edges of the city limits¹⁸. Wetlands are another of Kigali's key hydrological features, located mainly in the river valleys of the rivers described above; they presently cover about 12.5% of the city's total area. The wetlands are lying between Kinyinya and Kagugu sectors and regulating the flooding from its surroundings. They have important environmental functions, such as storing and releasing water and buffering the impacts of floods.

The Kinyinya sector has an excess of 30 wetlands and small rivers traversing through the valleys. The main unique long river of about 50 km long and 1,000 m wide, is the one that originates from Lake Muhazi and traverses through marshy and boggy valleys before emptying into the Nyabugogo River and thereafter connecting to the Nyabarongo River. Also, Lake Muhazi in the north and part of the east borders of Gasabo district.

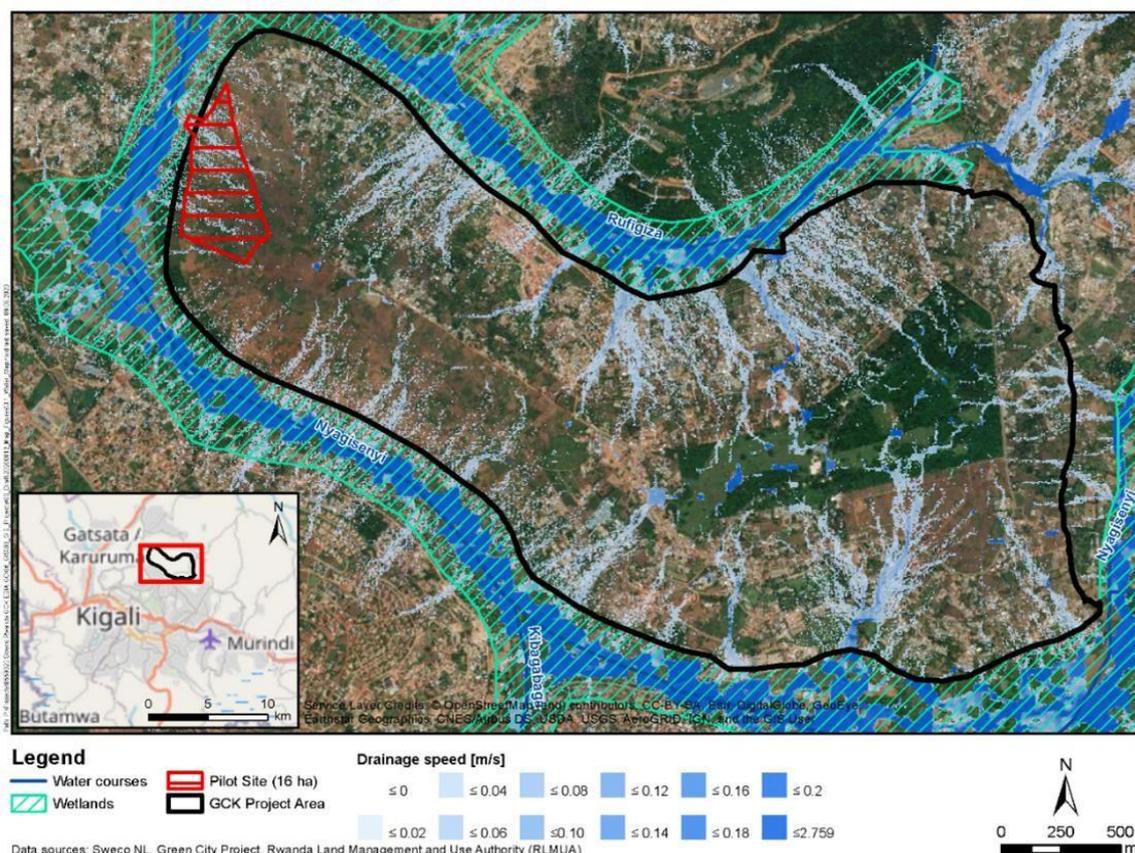


Figure 5-6 Hydrology and drainage around of the Project Area

Narrowing down to the Project Area and the surroundings there are limited river or streams within the settlement except the wetlands that surround it in the north and western parts of the site. The average annual rainfall of Kinyinya hill and the Ngaruyinka is estimated to 949 mm. No soak pits were constructed within the different plots and the infiltration is limited. The wetlands receive all the runoff from a settlement with poor stormwater management infrastructure. The wetlands are connected to the Nyabarongo River and regularly contribute to the river overflow during rainy season.

5.1.6 Air Quality

Inhabitants of Kigali are exposed to enormous levels of PM₁₀ during most of their time outdoors. So PM₁₀ levels are increasing in areas with high rates of traffic due to the exhaust of the vehicles and the consequent dust from the ground, but also due to burning wood for cooking etc. within the residential districts. For the measurements

¹⁸ REMA (2013) CHAPTER 7: WATER AND WETLANDS RESOURCES, available at: <https://www.rema.gov.rw/soe/chap7.pdf>.

in February 2014, daily mean PM10 levels from sunrise till sunset reached 1,013 g m⁻³. And so, air pollution in Kigali has reached an incredible level. Generally, concentrations are far above those recommended by WHO. Particularly, this PM10 concentration in the air suggests that air pollution creates a great risk to the inhabitants' health. The meteorological conditions in Kigali further contribute to this health risk due to an expected higher stability of the urban atmosphere because of an increasing UHI. This results in a lower transportation and dispersion of the polluted air, hence causing accumulation of the airborne pollutions within the small valleys and the residential areas respectively. The increasing rate of urbanization of Kigali is a matter of great note. Although the values of Kinyinya may be lower compared to those of Kigali as a whole due to less traffic, it is important to note the indoor pollution may contribute to the increase of pollution.

5.1.7 Noise

Noise levels were collected from different points within the settlement at different receptors. The data are given in the table below. Background data show that the noise levels are within acceptable limits (55dBA daytime and 45dBA night-time) except around the bus station, around the batching plant and along the main tarmac road where the recorded noise level varies between 52 and 69. The higher level is the one collected around the batching plant. Noise level around the batching plant was collected during the testing. It can be assumed the noise level will increase with the operation of the plant.

The noise levels along the road that exceed the acceptable limit along the road are caused by engines of vehicles and motorcycles. It is important here to highlight that noise emitted by motorcycles are higher than those emitted by most of the cars.

Table 5-3 Noise data collected during day and night-time (dB)

No	Location within the settlement	Daytime (dB)	Night-time (dB)	Geographic coordinates	
1	Market place	54-57	43	-1.913342	30.109374
2	Site proposed for TVET facility	52-53	44-46	-1.910122	30.108271
3	At the main road giving access to the site (0+5m)	65-67	49-50	-1.919010	30.1094460
4	In the South closed to RSSB site	51-53	41-42	-1.916677	30.119024
5	From the center of the settlement (residential houses).	50-52	45-46	-1.916759	30.112852
7	Commercial area closed to the main access road.	59-61	48-49	-1.909461	30.103862
		57-60	46-47	-1.909305	30.103282
		56-57	47-49	-1.908240	30.096658
		58-59	46-47	-1.905458	30.95325

5.1.8 Waste

Solid waste

Gasabo district and Kinyinya sector are facing significant challenges in relation to solid waste management. Waste generation is increasing, while a sizeable portion of the waste is disposed of in improperly located and

inadequately operated dumpsites, resulting in adverse impacts on environment and health. Solid waste composition in Kinyinya sector is consist of food waste, paper, metal and textiles¹⁹. Waste collection services are provided by private operators based on door-to-door collection; each household pays waste collection fees monthly. The companies' workers collect waste from each household with companies' trucks, which transport the waste to Nduba dumpsite, located around 15 km north of Kinyinya Hill. Nduba dumpsite is causing severe E&S problems. The leachate of unsanitary dumpsites bears a potential high risk of soil and groundwater contamination. Lack of proper management causes overflows and harm to surface waters. There are no waste treatment facilities like community composts at Kinyinya Hill, nor small-scale recyclers or scrap collectors. However, plans to improve Nduba dumpsite to a modern landfill to treat solid waste already exist²⁰.

Waste collection is not done regularly. The irregular service is mostly justified by limited capacities of collection companies and poor management system. The company in Kinyinya (Isuku Kinyinya Company Ltd) owns one or two collection trucks to provide services both to household and business entities. The business entities are considered the main customers of the service with higher priority. In Kinyinya sector, generally households are monthly charged with FRW 2,000 (USD 2.10) for low and middle-income households and FRW 5,000 (USD 5.25) for high-income households. The business entities are charged based on the volume of waste daily produced.

A survey²¹ assessing the waste disposal habits of 99 households in Kinyinya, found out that only 13% of the households separate biodegradable and non-biodegradable solid waste. Many households deposited their waste around the house or pile the waste in an improper area, which present threats to inhabitant's health and spread of vermin as well as flies to the surrounding population. As a result, 58.6% of households reported that members of their families had contracted with waste-borne diseases, including skin infection, diarrhea and tuberculosis.

Domestic Wastewater

There is no central sewage system for Kigali City nor for Kinyinya Hill or for the surroundings. Most of the houses in Kinyinya use septic tanks or pit latrines. These act as anaerobic systems that develop in the tanks and which decompose or mineralize the waste discharged into the tanks. The collected sewage water is discharged to 20 m to 10 m in depth soak pits.

Information collected from the Project Area confirmed that current residents in the area are using water from the wetlands for domestic purposes as cleaning and laundry.

5.2 Biological Environment

5.2.1 Flora

The natural flora of Gasabo district and Kinyinya Sector has been depleted and replaced with non-native species (mainly eucalyptus trees). Planting trees is a government strategy and initiative to cope with greenhouse gas effects and are implemented by the populations in the area. The trees are present in buffer zones between the project site and the wetlands and in the wider project area of influence (Deutsche Welle site, Nduba forested area). The natural vegetation type occupying the low plains includes papyrus *Typha latifolia* (umuberanya), *Cyperus latifolius* (urukangaga). *Muhlenbergia capillaris* is the dominating species. Tree species include avocado, lemon, mango, and agave (*Agave braceosa*).

19 Victoire, A. et al. (2020). Solid Waste Management Challenges and Its Impacts on People's Livelihood, Case of Kinyinya in Kigali City. *Journal of Geoscience and Environment Protection*, 8, 82-96. <https://doi.org/10.4236/gep.2020.86007>

20 WASAC, available at: https://www.wasac.rw/fileadmin/user_upload/Nduba_sanitation.pdf

21 Victoire, A. et al. (2020). Solid Waste Management Challenges and Its Impacts on People's Livelihood, Case of Kinyinya in Kigali City. *Journal of Geoscience and Environment Protection*, 8, 82-96. <https://doi.org/10.4236/gep.2020.86007>

The vegetation on the Project Area includes subsistence crops such as sorghum, sweet potatoes, maize, beans, cassava, soya, mango, avocado, lemon and orange trees etc. these are being farmed on small, family-sized plots by local residents. Below is an example of seasonal crops surveyed at the project site.

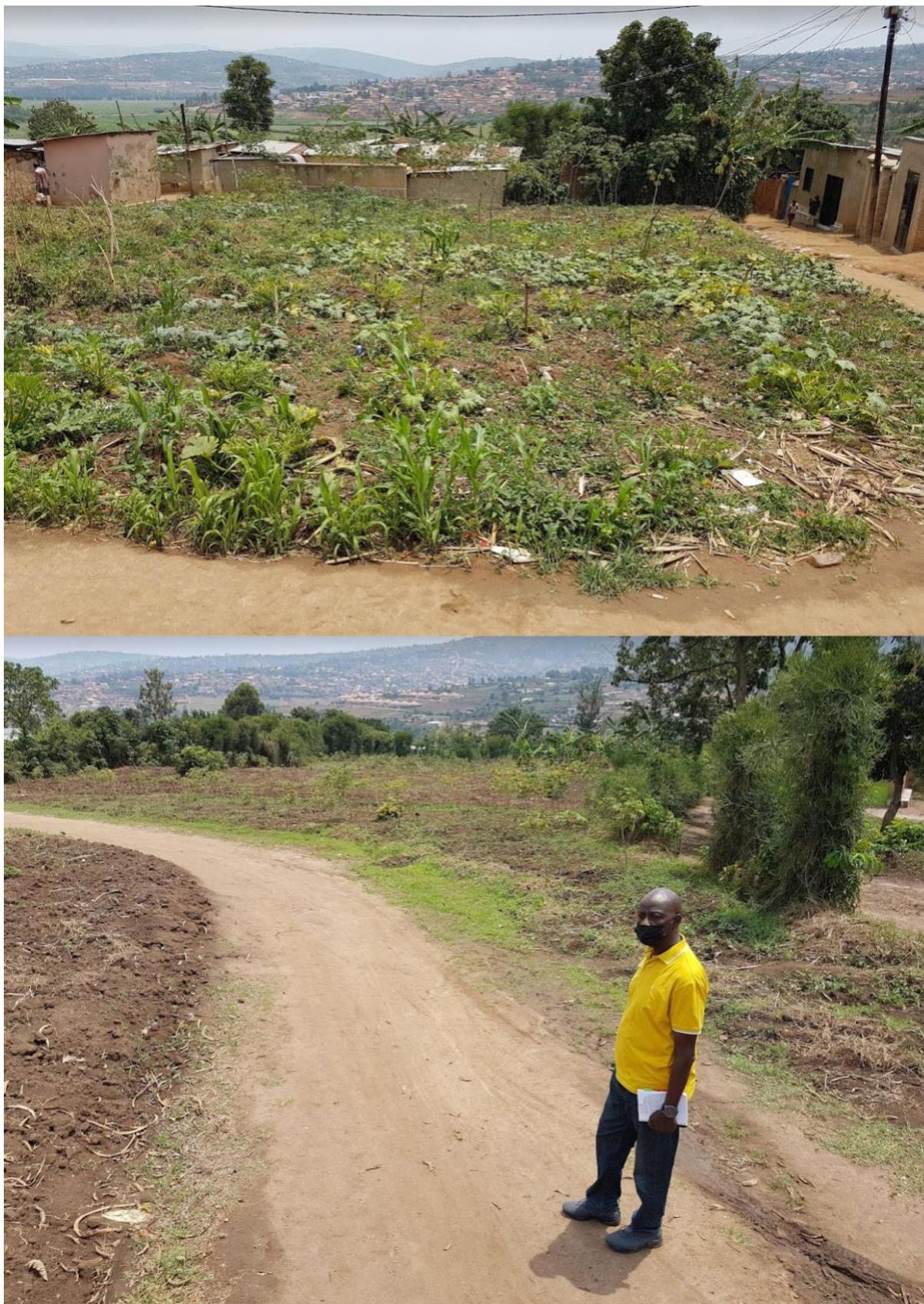


Figure 5-7 Examples of seasonal crops surveyed at the project site



Figure 5-8 Examples of flora on and around the Ngaruyinka upgrade project site²²

5.2.2 Fauna

The fauna of the district is characterized by a large diversity of bird species and small wild animals compatible with the existing vegetation cover in the sector. A biodiversity survey in the Project Area has revealed that there is no area which can be characterised as habitat for wild/protected species. We should however note that in the GCK pilot area of influence, the Deutsche Welle site is home to species of birds that need further detailed survey. No fauna species can be seen on the Project Area except insects, bees and birds that are non-protected and move from agricultural wetlands to different areas of dry land. The birds include Red-billed Firefinch (*Lagonosticta senegala*), Yellow-billed Kite (*Milvus aegyptius*), Pied Crow (*Corvus albus*), Tawny-flanked Prinia

²² Pictures taken by the SWECO ESIA team, September 2021

(*Prinia subflava*), Brimstone Canary (*Crithagra sulphurata*), Dark-capped Bulbul (*Pycnonotus tricolor*), etc. The wetlands surrounding Kinyinya Hill are not part of the Project Area but is habitat to species that provide important ecological functions. Further investigations should be carried out to identify the types of birds that may have habitat around the farmed wetlands.

During the site visit, there was no evidence of wildlife observed within and around the Project Area during field visits.

5.2.3 Invasive Species

No indication of invasive species in the Project Area was recorded after a quick survey was conducted during the site visit to the Project Area. However, according to the High-level ESIA, the following invasive species have been found in wetlands and urban areas of Rwanda: *Eichhornia crassipes* (aquatic plant), *Imperata cylindrical* (grass), *Lantana camara* (shrub), and *Leucaena leucocephala* (tree)²³.

5.2.4 Protected Areas

According to REMA Wetland Master Plan Zoning, wetlands around Kinyinya hill are to be used for sustainable exploitation such as agricultural farming (zoning 3)²⁴, the wetlands in the southern part of the Project Area were marked as a sensitive ecosystem. The wetlands regulate the flow and flooding of the valleys around Kinyinya. The wetlands are connected to the Nyabarongo River which is part of Important Bird and Biodiversity Area (IBA) and Key Biodiversity Area²⁵.

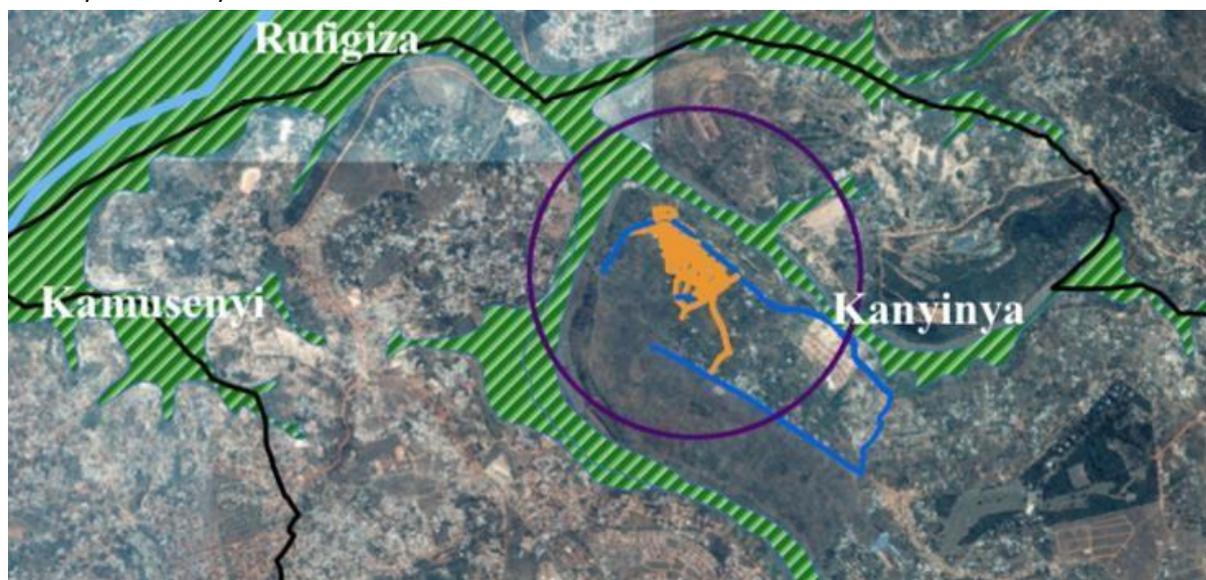


Figure 5-9 Proximity of Ngaruyinka with surrounding wetlands.

5.2.5 Critical Habitats

Critical habitats are areas with high biodiversity value, including (i) habitat of significant importance to Critically Endangered and/or Endangered species; (ii) habitat of significant importance to endemic and/or restricted-range species; (iii) habitat supporting globally significant concentrations of migratory species and/or congregatory species; (iv) highly threatened and/or unique ecosystems; and/or (v) areas associated with key evolutionary processes.

Within a radius of 50 km of the Project Area, currently 35 species on the IUCN red list have been identified. An IUCN Red List of Critically Endangered (CR) and Endangered (EN) species within 50 km of the Project Area Areas used by these species is likely to be classified as critical habitat. Based on desktop review, there is no indication of presence of critical habitat in the Project Area itself²⁶.

23 Global Invasive Species Database. Retrieved from on 22.02.2021, available at:

<http://issg.org/database/species/search.asp?sts=sss&st=sss&fr=1&x=25&y=5&sn=&rn=Rwanda&hci=11&ei=-1&lang=EN>

24 <https://www.arcgis.com/apps/webappviewer/index.html?id=8e1ed433c48b47df98b6d7bda5e8aa3b> 70/192

25 IBAT PS6 & ESS6 Report. Generated under licence 1605-11418 from the Integrated Biodiversity Assessment Tool on 24 September 2020 (GMT). www.ibat-alliance.org

26 IBAT PS6 & ESS6 Report. Generated under licence 1605-11418 from the Integrated Biodiversity Assessment Tool on 24 September 2020 (GMT). www.ibat-alliance.org

5.2.6 Ecosystem Services

Ecosystem services are the benefits that people, including businesses, derive from ecosystems. Ecosystem services are organized into four types: (i) provisioning services, which are the products people obtain from ecosystems; (ii) regulating services, which are the benefits people obtain from the regulation of ecosystem processes; (iii) cultural services, which are the non-material benefits people obtain from ecosystems; and (iv) supporting services, which are the natural processes that maintain the other services. The Mbonwa wetlands is used for brickmaking and small-scale farming activities are implemented in various areas (mostly the south-western part).



Figure 5-10 Current use of the wetlands around Ngaruyinka highlighting farming activities

Rwanda is committed to follow sustainable economic development pathways that maintain their natural capital to secure ecosystem services that are critical for livelihoods and economic development. This imbedded in the new National Environment and Climate Change Policy 2019²⁷. Over the past two decades, the Government of Rwanda has enacted policies and legislation governing land use, to ensure sound land use and environmental protection for sustainable development. The Government of Rwanda has been working with national and international partners to implement forestry and soil conservation programmes that contribute towards meeting the National Strategy for Transformation (NST1) and Vision 2050 goals. As indicated earlier, planting trees to cope with drought, improve the rainfall and maintain the quality of air and soil is a government plan and strategy implemented by decentralized entities. It goes from the government to the provinces and so Kigali City, districts, sectors, cells and villages with participation of Non-Government-Organisations, public and private institutions depending on the mandate and activities.

27 Ministry of Environment, Rwanda (2019), available at: <http://www.fonerwa.org/sites/default/files/Rwanda%20National%20Environment%20and%20Climate%20Change%20Policy%202019.pdf>

5.3 Social Environment

The main purpose of the socio-economic baseline is to place the Ngaruyinka upgrade project within the context of the surrounding human environment on Kinyinya Hill and the entire area of influence. This section of the report describes the social and economic attributes of the project area in order to understand the benchmark of these parameters from which impacts will be measured or observed. Data on socio-economic environment of the project area were collected through a survey that focused on a representative sample of 411 respondents.

5.3.1 Population and demographic facts

The Project is located in the settlement of Ngaruyinka in the Murama cell, Kinyinya sector and Gasabo District. The resident population of the Ngaruyinka study area (as defined by figure 2-1) has been calculated at 1634. This has been calculated through a house-by-house count undertaken by local survey team with assistance from local community leaders and representatives. Average household size is 4-5 persons. The oldest living person in Ngaruyinka is 90 years old.

Gender characteristics of respondents

Sex disaggregated data were collected to know the number of male and female among the respondents. This was done with the aim to get views from both male and female respondents so as to avoid bias in the responses. Both female and male can be affected by the project differently; so, it would be unrealistic to get views from one sex. As such, the table 5-4 shows that 67.6% of respondents are male, whereas 32.4% are female.

Table 5-4 Distribution of respondents per sex

S/N	Project Ngaruyinka upgrade project	
	Sex	Percentage (%)
1	Male	67.6
2	Female	32.4
Total		100

Source: Field survey and Analysis, November 2021

Age structure of respondents

The age structure of the respondents (PAPs) was a necessary part of the research to determine whether the results of the findings are from mature persons who understand the phenomenon under assessment. In light of findings from the figure 5-11 below, the majority of respondents 48% are in the range of 40-60 years. During this age, it is assumed that people are more active and likely to be involved in various activities.

This range is followed by the group age of 30-40, which represents 33%. The group 60-above has 11% is followed by the range of PAPs who have 20-30 representing 8%. These results show that the majority of respondents are mature and active; therefore, they can be reliable.

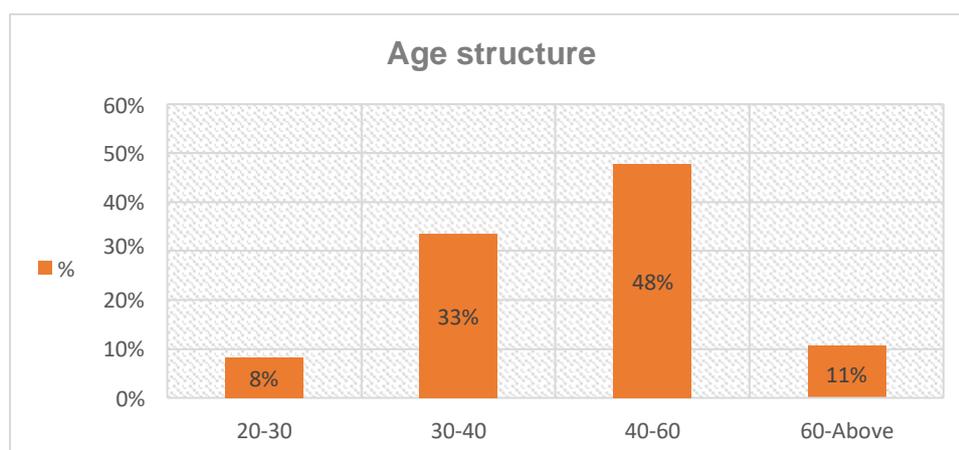


Figure 5-11 Distribution of respondents per age

Source: Field survey and Analysis, November 2021

Level education of respondents

The level of education of the respondents (PAPs) was a necessary part of the survey to determine the education status of PAPs. The level of education among respondents (PAPs) is low as revealed by the data analysis reported in figure 5-12. Among the respondents (PAPs), 38% of PAPs have attended primary school only (elementary level), followed by 31% of respondents attended high school, while 16% of respondents among the PAPs did not attend school and 7% attended VTC. The proportion of PAPs with a graduate level represent 8%, of respondents.

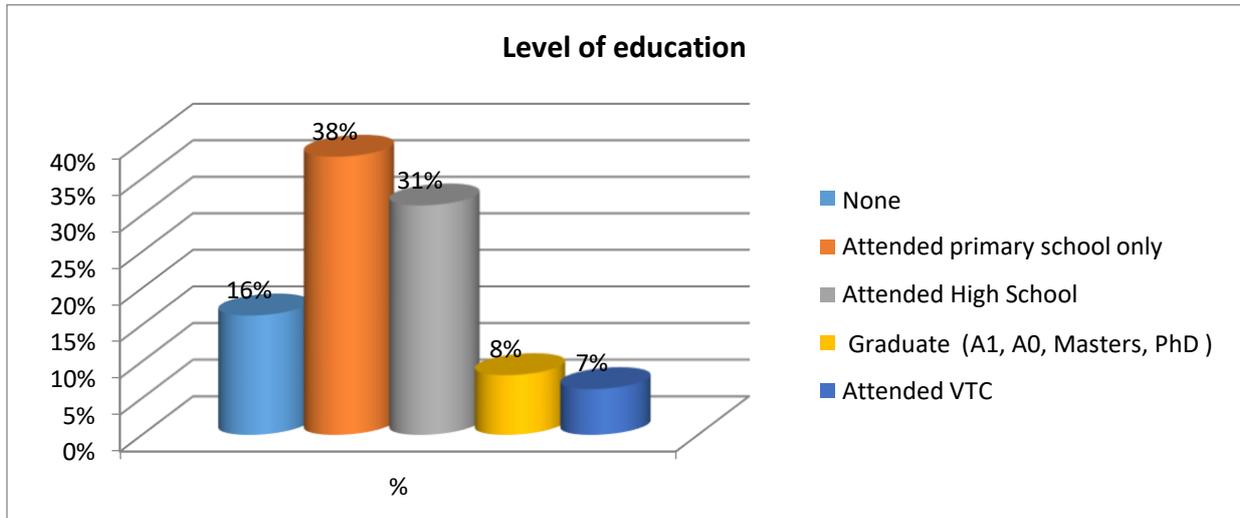


Figure 5-12 Distribution of respondents per level of education

Source: Field survey and Analysis, November 2021

Marital status of respondents

The marital status of the PAP is an important parameter to know the views of different categories of people among the PAPs. Findings in figure 5-13 show the marital status of the respondents. About 78% of respondents are married; followed by single, representing 12%, Widow/er 7%, 2% are separated and 1% divorced.

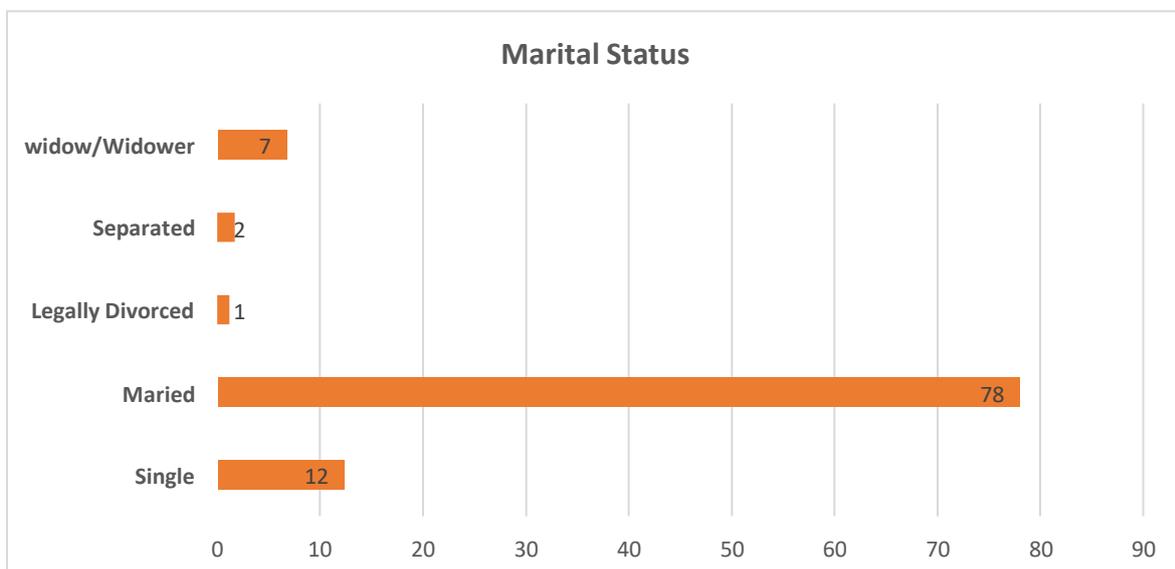


Figure 5-13 Distribution of respondents by marital status

Source: Field survey and Analysis, November 2021

Size of households of respondents

Table 5-5 summarizes the family size of the households' respondents. The Analysis has indicated that the majority of PAPs have a medium size of the household with 50% with a number of persons ranged between 4-7 persons within the household. This is followed by small size of the household with 46% and 4% of the respondents' families' size is large, means that the size of the family is above 7 persons in the household. The average size of the household of respondents (PAPs) in the project area is 4 persons within the household.

Table 5-5 Size of the household of the respondents

S/N	Family size	Number of Household
1	Small (1-3)	46%
2	Medium (4-7)	50%
3	Large (Above 7)	4%
Total		100

Source: Field survey and Analysis, November 2021

5.3.2 Socio-economic profile

Employment status of respondents

With regard to the employment status among surveyed PAPs, about 40% of respondents are students, followed by 19% respondents who are farmers and unemployed with the same proportion (19%). In addition, the table below reveals that 13% of respondents are self-employed and own their own businesses, 5% are civil servants, while 4% of respondents are traders. This can be explained by the fact that, though the project is to be implemented in Kigali city, the specific project area is rural dominated, hence agricultural activities (Maize, Beans, fruits, vegetables) are dominant and combined with small businesses selling the produce in the local commercial activities. Table 5-6 below describes the employment status of members in the PAPs surveyed.

Table 5-6 Employment status among respondents

S/N	Employment status	%
1	Civil Servant	5%
2	Famers	19%
3	Self Employed	13%
4	Students	40%
5	Traders	4%
6	Not Employed	19%
Total		100

Source: Field survey and Analysis, November 2021

Estimated monthly income of respondents

Monthly income was considered as part of the socio-economic indicators during the survey as it provides a picture on the economic status of PAH in the project area. As such, the Figure 5-14 below indicated that the majority of PAHs 70.58% of respondents (PAHs) earn an estimated monthly income of FRW 50000 below, while 9.08% of the respondents (PAHs), earn FRW 200000 and above, 8.9% and the rest of PAHs earn between FRW 50,000 and 200000 on monthly in the project area.

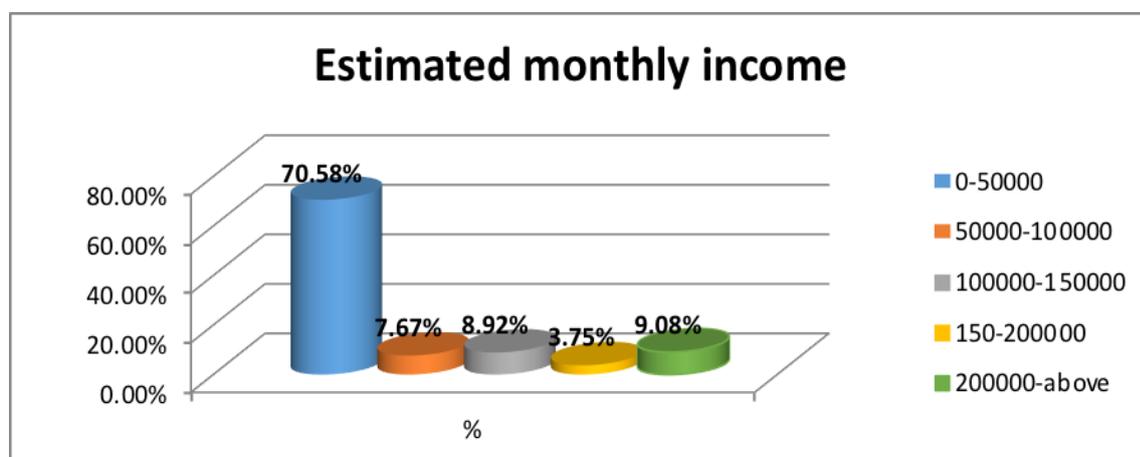


Figure 5-14 Estimated respondents' monthly income (Field survey and Analysis, November 2021)
Vulnerability among respondents

As per social protection policy²⁸, the key vulnerable groups in Rwanda include low income and/or labour-constrained individuals or households such as older people, people with disabilities, female-headed households etc.

Thus, the socio-economic survey and subsequent analysis indicates that there are PAPs who are particularly vulnerable and are at greater risk of further impoverishment because of the implementation of the project. Elderly people, widowhood and divorce hood, people with disabilities (physical and mental), are considered as a vulnerable for this project. Figure 5-15 provides that 1.04% of PAHs are particularly among vulnerable groups including orphans, people living with disability, aged people, and to widow/er and orphans, child head of household, and women head of household.

The identified vulnerable household heads will therefore get special treatment during the resettlement process. The same figure shows that 98.96% of respondents (PAHs), are in normal conditions.

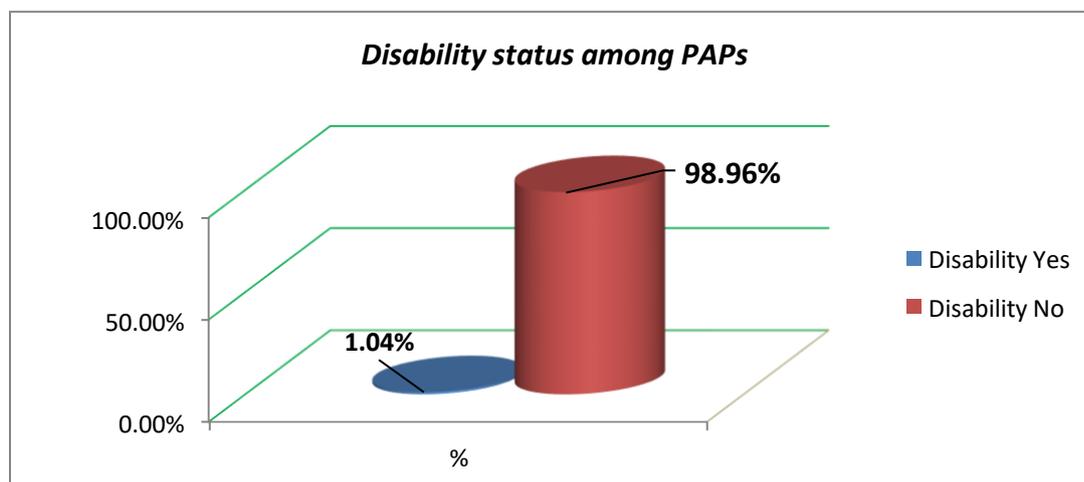
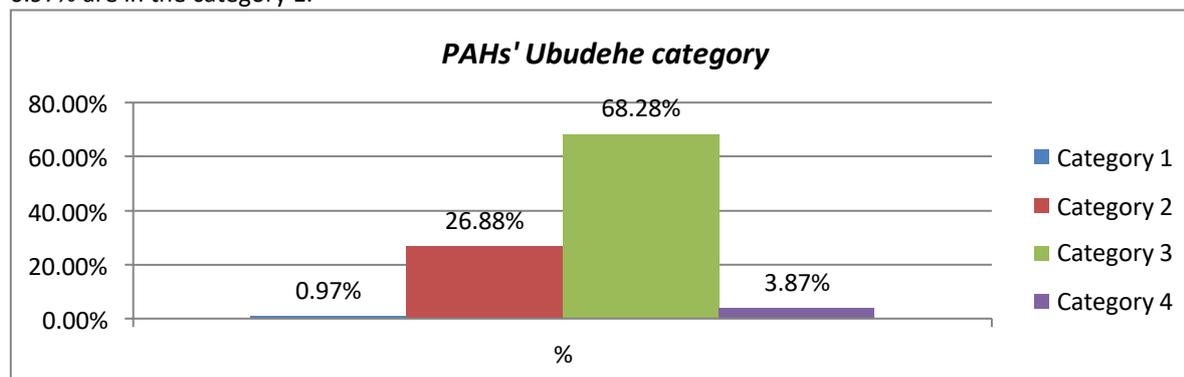


Figure 5-15 Vulnerability among respondents

Source: Field survey and Analysis, November 2021

Ubudehe²⁹ category of Respondents

In a bid to know the level of wealth of PAPs, Ubudehe category of PAP was considered while conducting the socio-economic baseline information. Thus, as indicated in figure 5-16 below, the majority (68.28%) of PAHs in the project area are in category 3, followed by the category 2 with 26.88%, while 3.87% are in category 4 and 0.97% are in the category 1.



²⁸ MINALOC, Social protection Policy, June, 2020

²⁹ Ubudehe: was drawn from ancient Rwandan history and can be rightly described as an indigenous knowledge and grassroots based approach to community development which has been scaled up to conform to the requirements of modern rural administration and grassroots governance.

Category 1: Very poor and vulnerable citizens who are homeless and unable to feed themselves without assistance.

Category 2: Citizens who are able to afford some form of rented or low class owned accommodation, but who are not gainfully employed and can only afford to eat once or twice a day.

Category 3: Citizens who are gainfully employed or are even employers of labour. Within this category are small farmers who have moved beyond subsistence farming, or owners of small and medium scale enterprises.

Category 4: Citizens classified under this category are chief executive officers of big businesses, employees who have full-time employment with organizations, industries or companies, government employees, owners of lockdown shops or markets and owners of commercial transport or trucks

Figure 5-16 Ubudehe category of respondents in the project area

Source: Field survey and Analysis, November 2021

Assets owned by households

During the socio-economic census, assets owned by the project affected household was considered to provide on asset ownership status among the respondents, and related details are provided in table 5-7 below.

Table 5-7 Assets owned by respondent households in the settlement

S/N	Assets	Option	%
1	Bicycle	No	75
		Yes	25
2	Mobile Phone	No	8
		Yes	92
3	Computer	No	67
		Yes	34
4	Radio	No	40
		Yes	60
5	Television set	Yes	63
		No	37
6	Cassette player/ radio cassette	Yes	21.98
		No	78.02
7	Sewing machine	No	97
		Yes	3
8	Motorcycle	No	91
		Yes	9
9	Car/truck	No	85
		Yes	0
10	Refrigerator/ deep Freeze	No	75.50
		Yes	0
11	Foam/mattress	No	0
		Yes	100
12	Gas electric/ stove or cooker	No	100
		Yes	0
13	Furniture suite/wooden	No	0
		Yes	100

Source: Field survey and Analysis, November 2021

5.3.3 Infrastructure and Public Utilities

The principal infrastructures are roads, social infrastructures such as health centres, schools and churches, transport facilities, electricity, water networks, sport centres and environmental infrastructure such as parks and recreational spaces. Access to basic infrastructures such health and school facilities, water and energy infrastructures was taken into consideration in the socio-economic survey. As such, PAHs were asked the time in minute they use to reach the above services.

Access to health services in the project area

In line with the above, from findings in figure 5-17 below it appears that the overage time (in minutes) used to access health centre is 30 minutes, while the overage time to reach the hospital ins 67 minutes.

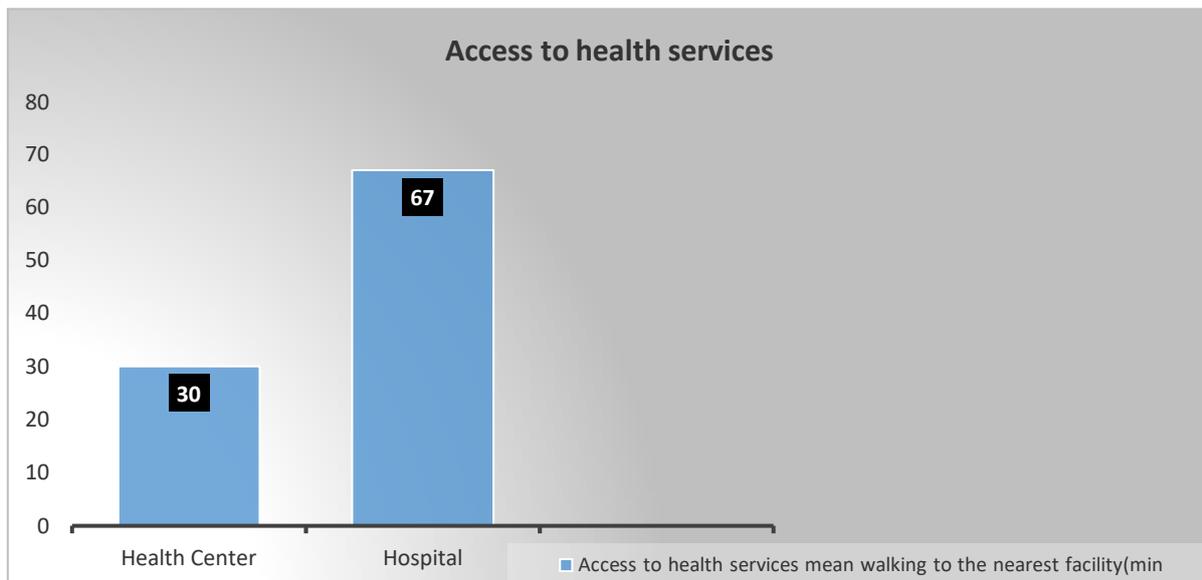


Figure 5-17 Overage minutes used to access to health services in the project area

Source: Field survey and Analysis, November 2021

Overall, the above findings indicate that the mean walking distance to the nearest health centre for the project area (Ngaruyinka) crossing the three districts is 30 minutes.

Access to school services in the project area

This sub section intended to assess the time spent by settlements to reach school facilities. In this regard, findings in figure 5-18 below indicate that the overall time used by residents in Ngaruyinka to reach is less than 30 minutes.

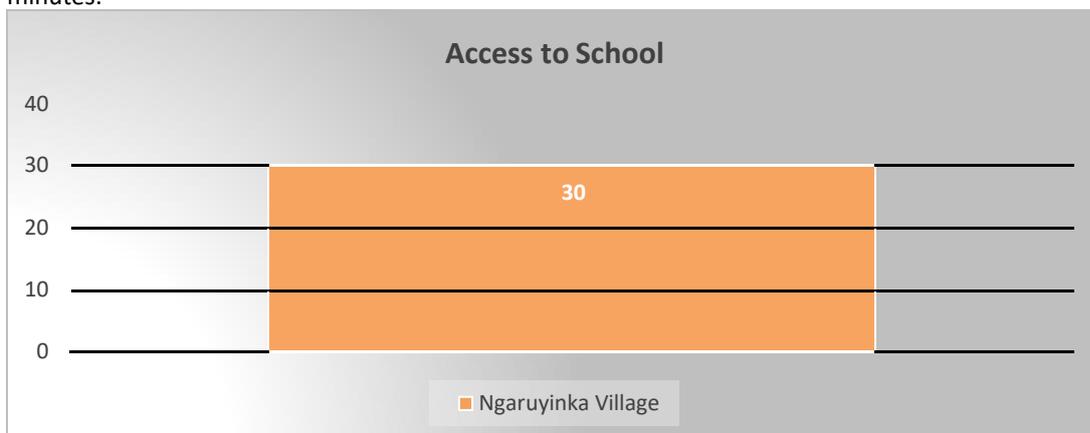


Figure 5-18 Overage time to access the nearest school facilities in the project area

Source: Field survey and Analysis, November 2021

Overall, the above findings reveal that the mean walking distance to the nearest school facility in the project area (Ngaruyinka) is 30 minutes. This implies that their school facilities in the vicinity of the project area that facility access to education services on the PAHs.

Status of Water and sanitation in the project area

The survey results in figure 5-19 below show that 41.60% of the households in Ngaruyinka use an improved drinking water source, 21.13% use water from protected spring, 19.37% use water from public standpipe and 17.90% have water in their premises (compound).

The above survey findings reveal that PAHs in the project area have access to improved water and sanitation services. Improved drinking water sources include protected springs, public standpipes, water piped into dwelling/yard, boreholes, protected wells and rainwater collection, as defined by the World Health Organisation (WHO).

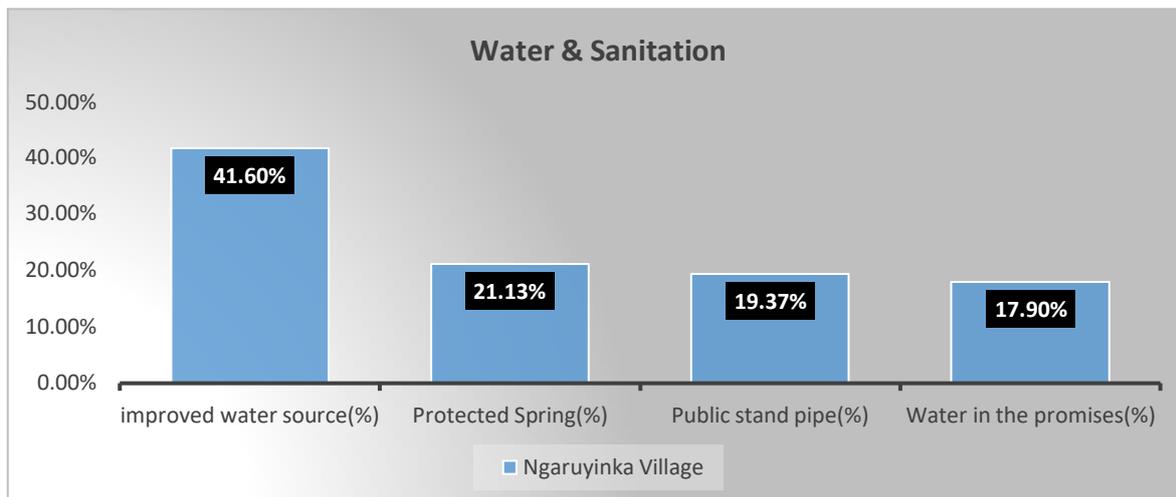


Figure 5-19 Showing the Water and Sanitation in the project area

Source: Field survey and Analysis, November 2021

Source of energy along the project area

The survey went further to find out the most dominant source of energy used by PAHs in the project area. As such, survey findings in figure 5-20 below reveal that the most used source of energy in electricity in Ngaruyinka, whereby 85.25% point out that electricity constitutes their main source of energy, 12.70% use solar 1.20% uses candle and 0.85% use battery.

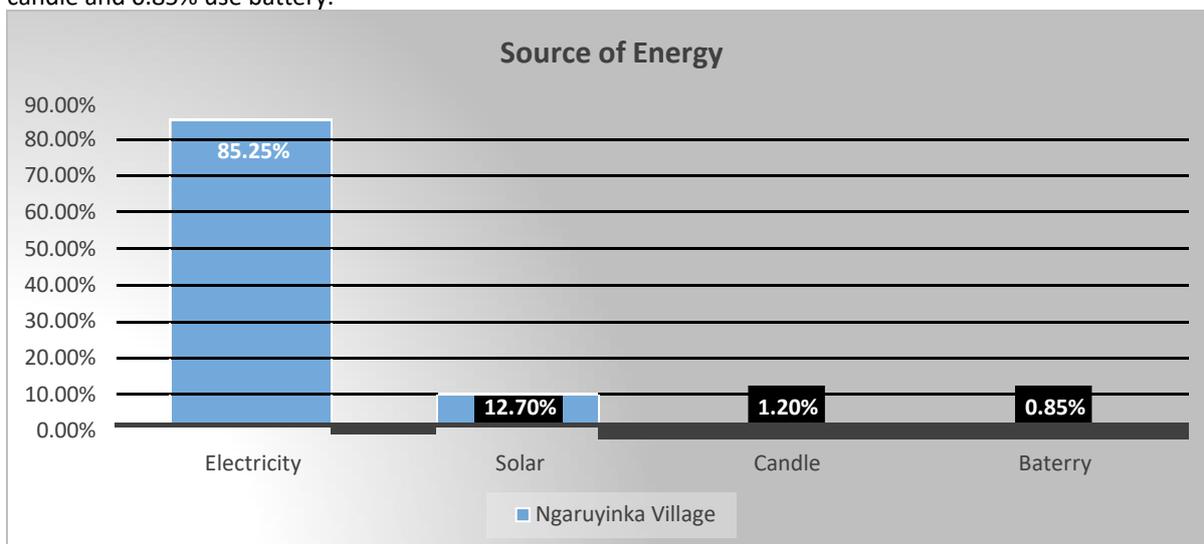


Figure 5-20 Showing the main source of Energy in the project area (Ngaruyinka)

Source: Field survey and Analysis, November 2021

5.3.4 Types of infrastructures

Buildings

Construction is a mix of concrete block, mud and clay brick and steel roofing which have been built by the community themselves or by local specialist builders. Some buildings which lie in stormwater trouble spots show clear signs of erosion around their foundations while others seem less at risk.

Most of the buildings in the settlement are single story homes and/or commercial premises. Some other houses are constructed of mud/clay bricks typically with corrugated steel roofs and steel framed doors and windows. Many buildings have concrete foundations and facing render. There are occasional concrete brick buildings. Many buildings are in a poor state of repair on facades and around foundations, particularly in high erosion risk spots as highlighted (see below).



Figure 5-21 Type of houses in Ngaruyinka

Mobility and transport

Current transport infrastructure is underdeveloped with poor accessibility, reliability and resilience and posing threats to properties through erosion and flooding hazards. Roads are packed clay earth with erosion cracks and channels, and none are consistently wide enough for passing vehicles.



Figure 5-22 Footpaths and main road giving access to the settlement

Adjacent buildings and the slope constrain road widths for roads across the slope, and some roads are very steep (10-20% gradient). There are many footpaths between houses and some up the hill, and erosion channels are present as well as erosion and flooding controls such as sandbags. There are numerous slip hazards especially in wet conditions, and railings and safe stairways are often lacking. Conditions for cycling are very poor and unsafe especially due to uneven surfaces and gradients. Right of way lighting is present on buildings but is not continuous on thoroughfares. Some brick channels exist for open drains, and ditches are common. Elsewhere in Kigali there are paved roads and roads laid with stone.

Water and sanitation infrastructure

Ngaruyinka is connected to the Water and Sanitation Corporation's (WASAC) central water supply, which comes from a water treatment plant that uses surface water. The map below shows the location of the water distribution system in the settlement.

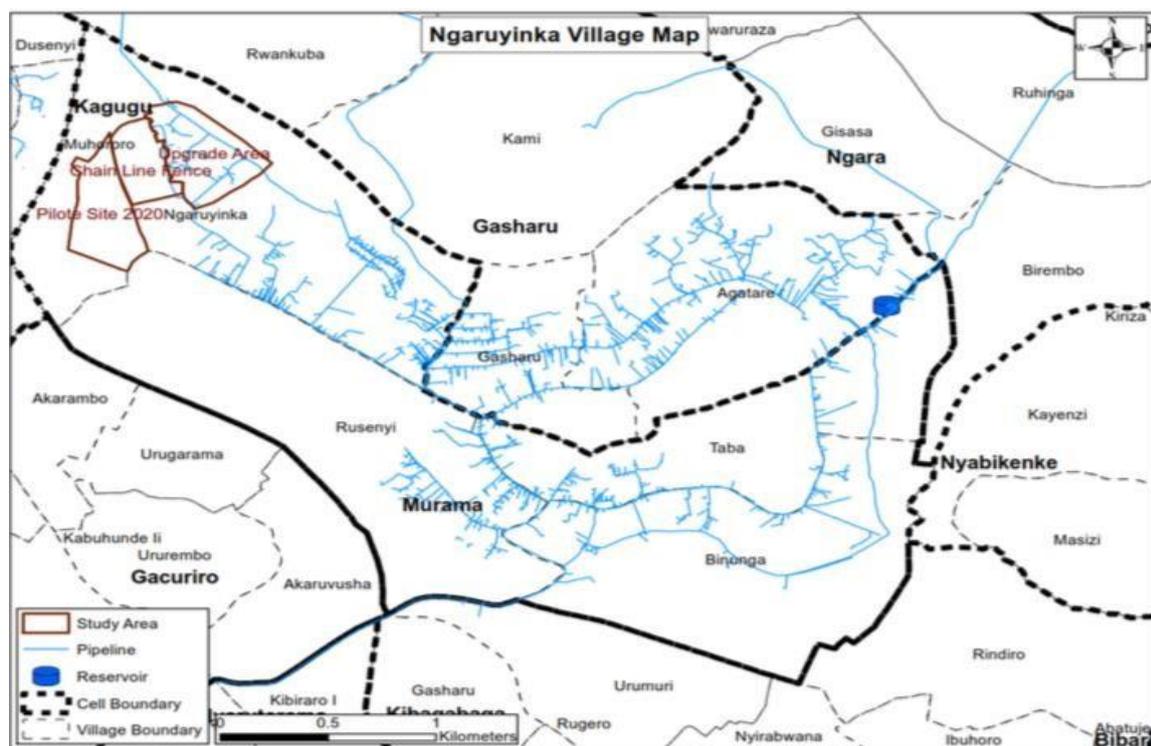


Figure 5-23 Location of the water distribution system in the settlement (WASAC, 2020)

For the households that lack a connection, typically residents purchase water from the community kiosk (estimated at less than 500m for most residents). The kiosk is privately owned, and the tariff is regulated to 20 RWF per 20L jerry can. Demand for water is generally lower during the rainy season since people can use rainwater for some household purposes (typically not for drinking).

In the settlement, there is a need to do intermittent rationing of water in the system (for instance, supply water 3-4 days/week) since the demand in Kigali exceeds the supply. Households often try to store water at home for periods when the supply is shut off. If households run out of water, they may go to other sources, such as local springs, surface water sources, other kiosks, etc. Occasionally water tanker trucks will supply water to the area if there is a longer water shortage. The cost is typically approximately 100 RWF per jerry can, which is too expensive for many residents.

The water quality from the central supply is good when it leaves the water treatment plant, but contamination can occur in the network. Therefore, WASAC recommends boiling the water prior to drinking. WASAC is planning to upgrade and expand the network and to increase the supply for the whole area. WASAC is currently developing a master plan for the area, and this plan includes adding more reservoirs, no need of pumping stations.

Most households in the project area currently use pit latrines, with some considered as improved sanitation facilities. Some of the pit latrines have a slab, while others do not. Although less common, pour-flush latrines, where a small amount of water is used to flush excreta down a short pipe to a pit, are also used in the settlement. The normal practice with pit latrines is to cover them when full and build a new one, but now there is less space to do that.



Figure 5-24 Water infrastructure in Ngaruyinka

Solid waste management

At Kinyinya Hill and Ngaruyinka, solid waste is currently managed by the Isuku Kinyinya Company Ltd, a waste collection company that is operating in the project area. This company started as a women's cooperative in 2009, with the aim of creating jobs³⁰. At Ngaruyinka, waste collection occurs every Wednesday at one location at the top of the hill (outside the bounds of the settlement), and households pay 3,000 RWF per month. There is also sporadic collection along the road at the bottom of the hill of the settlement. These collection points are inconvenient for most residents, and some residents choose to dispose of waste informally, in their latrines, or by burning the waste in the evening (burning waste is not allowed but is done sometimes). Households that have a vegetable garden or fields compost organic waste behind their homes and then use apply it to the soil when it is ready. There are no waste treatment facilities like community composts in the settlement and Kinyinya Hill. There is some informal collection of plastic bottles for recycling. Women from Gisozi collect plastic bottles from the area and resell them to manufacturing companies.

Stormwater management infrastructure

Erosion from storm water is a significant problem in the settlement. This is causing threats to undermine buildings, has potential to cause landslides and intermittently deteriorates roads and paths.

The reason for these problems is mainly due to the sites inherent difficult condition being steep combined with lack of building + storm water planning and the lack of funding, probably also know how regarding sustainable measurements. The existing buildings are placed very dense and with small or no existing gardens mitigating the runoff leading to accumulation of run off at many locations.

There are no existing culverts, pipe system nor planned ditches in the area. In order to cope with the erosion gullies sandbags are placed in the most severe locations and in at least one location a soil stabilising hedge has been planted.

30 <http://imvahonshya.co.rw/isuku-kinyinya-company-ltd-irashimira-perezida-kagame-wayihaye-umusingi/>



Figure 5-25 Poor storm water management infrastructure and erosion gullies sandbags

Energy

The settlement is served in part by electricity from the main city grid. High and medium voltage pylons traverse the settlement and create a no-build zone of 12.5m and 6m (respectively) either side of the centreline. Microwaves, water kettle and other electrical appliances are present in some higher income households, but for preparing food other sources of energy are preferred. For higher income groups LPG tends to have higher usage as compared to lower income households³¹.



Figure 5-26 Energy infrastructure on the project site.

Inefficient cook stoves are used in the settlement. Most cooks are women, and they are often assisted by girls. Cooking often takes place indoors. The health burden of indoor air pollution exposure in Rwanda is one of the largest in the world. Approximately annual 12,500 deaths and 493,000 disability-adjusted life years (DALYs) are attributed to solid fuel use³². Approximately 5.8% of the total burden of disease is caused by solid fuel use. Women and girls are much more likely to be exposed to indoor air pollution.

Health

The District of Gasabo counts on two public hospitals, one private hospital and 18 health centers for a total population of 291,452 inhabitants, this being an estimate of 16,191 inhabitants per health centre whereas the acceptable standard of WHO is 20,000 inhabitants per health centre. The leading causes of morbidity and mortality are the paludism, respiratory diseases, the AIDS, diarrheal diseases and the diseases related to malnutrition. These various causes of morbidity and mortality are mainly related to ignorance, the lack of hygiene and the limited financial resources. Most of settlements from Kinyinya including Ngaruyinka get their health care from Kibagabaga hospital. There is a health center that is located in Murama Cell that is used for non-intensive care or outpatient services.

Education

There are no available school infrastructures available in Ngaruyinka except a nursery school. Boys and girls have to get out of the settlement for their education.



Figure 5-27 The only school infrastructure in the settlement

32 Accenture, 2012. <https://www.cleancookingalliance.org/binary-data/RESOURCE/file/000/000/170-1.pdf>



6 STAKEHOLDER CONSULTATIONS AND PUBLIC INVOLVEMENT

The overall aim of the Stakeholder Engagement Plan developed for the Green Climate Fund proposal is to provide guidelines to identify the actions the Project needs to undertake to ensure that a timely, consistent, comprehensive, coordinated and culturally appropriate approach is taken to consultation and project disclosure. This plan includes the core principles and applicable guidance for stakeholder identification and mapping, engagement, information disclosure, consultation meetings and public participation.

This SEP follows the requirements of the Stakeholder Engagement Framework (SEF33) developed for the GCK planning area, and in line with GCF requirements, and thus defines a technically and culturally appropriate approach to consultation and disclosure. More details are in the Annex 7- Stakeholder Engagement Plan and Summary of Consultations which is a part of the Full proposal to GCF application.

6.1 Stakeholder Engagement during the ESIA process

The consultant began by identifying the stakeholders who could be affected by, or who would influence, project activities. Information collected from the preliminary desk review, preliminary scoping consultation with FONERWA and preliminary field visits to Kigali and in Ngaruyinka, guided the consultant in identifying the project stakeholders.

The stakeholders identified were grouped in three (3) categories and the following were guiding principles along which consultations were held with each category:

- *First category of relevant Government officials comprised of FONERWA, MoE, REMA, RHA and LODA.* Internal consultative meetings were held to understand the project and expectations of the feasibility study mostly with FONERWA, while the other Government officials were official meetings to explain the project objectives and understand what their expectations were and how they see themselves involved in the project's implementation.
- *The Second category consulted was of Local government hierarchy of CoK, Gasabo District and Kinyinya Sectors,* which include Ngaruyinka leadership. They comprised of; Executive secretaries, land bureau officers, socio-economic development officers (SEDO) and agronomists. Our discussions with them reflected on informing them of the project objectives, its components and different interventions in the respective sectors of the District. Opinions on their expectations, likely benefits envisaged, constraints in implementing the project and adverse impacts likely to be caused by the project were obtained from consultations done with these key stakeholders.
- The third category locals of the residents in Ngaruyinka who are either benefiting from the project or affected by it.

6.1.1 Methods applied

During the Stakeholder's engagement, the study applied different participatory methods, namely.

- Interviews,
- one-to-one discussions with Key Informants (KIs),
- Focused group discussions (FGD),
- Informed Consultation and Participation (ICP) and
- Public meetings with stakeholders.

Stakeholders consulted were informed on the proposed project and by using a questionnaire, the consultant was able to guide discussions and obtain relevant information on the likely impacts of the project activities. Stakeholders were asked to raise their concerns on the proposed project. An issue raised by one individual or a group of people was cross-checked by discussing it over with other individuals or groups.

6.1.2 Stakeholder identification and engagement schedule

Public meetings and group discussions with stakeholders were scheduled as summarized in table 6.1.

³³ SEF: Stakeholder Engagement Framework prepared by ERM 2021

Table 6-1 Stakeholder Group Identification

Category	Roles and responsibilities	Interest	Influence Power
Government Agencies: MoE, FONERWA REMA, MININFRA MINALOC MINECOFIN RHA, LODA	Central government and municipal departments and agencies will act as the Lead Project Proponent, monitor for compliance, and issue licenses and permits. MoE will be the Accredited Entity, and FONERWA will be the Executing Entity. Government agencies may also be involved in livelihood improvement programs. Engaging with government ministries, institutions, agencies, authorities, and departments will serve two main purposes: one is to build consensus and ownership, and secondly is to identify the governance framework for socio-economic development and environmental management. Other agencies will be involved in consultations, permits, dissemination, etc...	High	High
Local Authorities: City of Kigali, Gasabo District, Kinyinya Sector, Murama Cell	The local authorities may exert influence and decisions about the results and method to perform the project. They play an important role as intermediaries between the Project and the community and therefore, must be representative of all stakeholder interests.	High	High
Local Communities Ngaruyinka leaders Opinion leaders Heads of Amasibo	Involvement of local communities at earlier stage will help prevent or mitigate early on problems/complaints that may arise and hinder project progress in the next phases. The local authorities may exert influence and decisions about the results and method to perform the project. They play an important role as intermediaries between the Project and the community and therefore, must be representative of all stakeholder interests. In the environmental and social assessment studies, especially RAP and ESIA (Annex 6 of the GCF application), the Government and consultants have analysed project impact and identification of PAPs as well as prepared a consultation plan to communicate to the PAPs about project impacts.	High	High
Informal farmers in the wetlands	There is a substantial number of people who use the targeted wetlands surrounding the project site for their livelihoods. These include small scale farmers. Their formal identification and engagement will be done during the preparation of ESIA's and their views on how the project will impact them and their proposals on mitigation measures will be collected then and further assessed for implementation.	Medium	Low
Special Interest Groups	Residents of the Ngaruyinka community some of whom are small-scale and subsistence farmers, are the primary Project Area special interest group. Youth and women are special interest groups: <ul style="list-style-type: none"> Youth will benefit from and be greatly interested in additional employment opportunities Women, who can potentially be heavily impacted by use of public spaces, culturally do not tend to participate in decision-making, will require special Project measures to ensure their participation and ability to benefit from the Project 	Medium	Low
Non-Governmental Organizations (NGOs)	Non-governmental organizations (NGOs) and community-based organizations (CBOs) can be sources of local knowledge, sounding boards for project design and mitigation, conduits for consulting with sensitive groups, and partners in planning, implementing, and monitoring various project-related programs. The Project will need to actively engage with Project Area, national, and provincial NGOs. In addition, Project Area NGOs will be identified for potential collaboration on livelihood and vulnerable programs.	Medium	Medium
Contractors & Developers	During implementation, project contractors will be encouraged to hire local community members, particularly for semi-skilled and unskilled jobs. This will be anticipated during the planning stage.	Medium	Medium
Women and vulnerable groups	Vulnerable/disadvantaged groups are community members likely to be affected but may have difficulty in engaging with the stakeholder consultation process and thus may not be able to fully express their concerns regarding the proposed Project. Vulnerable groups could be for example: Poor women headed households, people with physical or mental disabilities, small-scale farmers using the wetlands, small-scale traders using roadsides to sell their products among others.	High	Low
Media	The media including, newspapers, magazines, other printed media, televisions, local radio stations, community radios, and social media will be used to communicate about the project activities and progress.	Medium	Medium

	It will also serve as a channel to communicate with stakeholders and a platform where stakeholders can express their concerns.		
International development partners	Development partners are very important in supporting the project and in monitoring project progress and providing learning experience for other countries.	High	High

Table 6-2 Summary of Stakeholder Consultation meetings as part of the ESIA/RAP process

Date	Methods of Engagement	Stakeholder Group	Institution	Purpose of meeting and Key issues raised/ discussed
Sept 13, 2021	Public meeting Informed Consultation and Participation (ICP)	National institution and local government	<ul style="list-style-type: none"> FONERWA Rwandan Housing Association City of Kigali 	<ul style="list-style-type: none"> Discussion about strategic context of the GCK project Roles and responsibilities, institutional set-up Details on Institutional Setup for the Steering Committee, Technical Committee, GCK board and SPV
Sept 14 th -27 th 2021	Meeting	Subject Matter Expert	FONERWA	<ul style="list-style-type: none"> Discussion about strategic context of the GCK project Roles and responsibilities, institutional set-up High-level ESIA should be entirely reused for the SESA. New Community Benefit Company founded. Establishment of a housing purchase & mortgage assistance program. Resettlement Existing social housing (11 ha) People are mostly renting. Value of land will go up due to the development of the Project. Landowner will increase rent -> then not affordable anymore.
Sept 15, 2021	Public meeting Informed Consultation and Participation (ICP)	National ministry	Ministry of Environment	<ul style="list-style-type: none"> History of the site selection Discussion about strategic context of the GCK project Roles and responsibilities, institutional set-up <p>There is no framework for evaluation on the success of the project. However, the assessments of the E&S consultants are a tool to demonstrate the impacts of the Project also comparing it to other green cities around the globe.</p> <p>Building Code for new construction projects (level 3 compliance) changed, to included minimum resource efficiency. This means new properties need to get permit and this will consider resource/water efficiency and waste management. However, the challenge is to implement this new regulation. Currently, around 30% compliance of the code, it needs to be ensured that continuously this regulation will be enforced.</p>

				Private already existing or permitted developments like Cactus Park and Dubai need to change and adapt to requirements at the masterplan to be considered green as part of the overall development. Not only new development is required to fulfil the sustainability principles. Steering committee and technical committee are planned.
Sept 16, 2021	Public meeting Informed Consultation and Participation (ICP)	National institution	FONERWA	<ul style="list-style-type: none"> • Discussion about strategic context of the GCK project • Roles and responsibilities, institutional set-up <p>Unclear responsibilities is a major risk. Responsibilities for O&M, and capacity Collaboration between different shareholder, entities, channels of communication and sharing No framework for evaluation of the success of the project. What are the green criteria? REMA has capacity to do evaluation but legal framework for sustainability is not there yet.</p>
Sept 17, 2021	Public meeting Informed Consultation and Participation (ICP)	National Institution	REMA	<p>Discussion about gender context in the Project area, existing issues and ways to address them. Gender Analysis and Gender Action Plan for the Upgrade Project</p> <ol style="list-style-type: none"> 1. Four focus groups with 20 women in total 2. Two focus groups with men 3. Five interviews with different women to identify daily routine (24h mapping to identify e.g. Hours of unpaid work) 4. Safety walk in the settlement (lightning, road safety, ...)
04th-16th November 2021	Community Meetings Focus Groups	Ngaruyinka Community	ESIA Team SWECO on behalf of FONERWA	<ul style="list-style-type: none"> • ESE Survey • Fixed Assets Valuation data collection • Focus Group discussion: groups of PAPs • Focus Group discussion: Opinion Leaders
January 11, 2022	Public meeting Informed Consultation and Participation (ICP)	National institution and local government	FONERWA ESIA and Technical Team SWECO	Open discussions with relevant stakeholders to collect views and concerns from different institutions to be included in the ESIA and RAP reports to be considered in the project cycle

6.1.3 Meeting procedures

All meetings begun with the Consultant introducing his team to the attendees, where they are coming from and purpose of their visit. Those consulted would also introduce themselves and the stakeholder engagement agenda generally followed this structure:

- *Project introduction*- This included introducing; the Project objectives, Components proposed project interventions and areas of influence.
- *Issues faced* by the stakeholders consulted were then presented.
- *Opinions* on proposed project interventions for each component.
- *Suggestions on their expectations* of the project intervention areas
- *Benefits expected* from the project.
- Risks and adverse impacts from project activities
- Proposed mitigation measures or adaptation measures to the adverse impacts.
- Understanding of the *socio-economic baseline* of the Local Sector of project intervention

6.1.4 Issues raised and measures proposed

Opinions and questions from the stakeholders were recorded and where necessary response given to questions raised. Follow up on those questions that were not answered was also included. Summary of the common issues raised by stakeholders is presented in the table 6-3 below.

Table 6-3 Summary of common issues raised during stakeholder consultation

Issues at hand	Stakeholders	Suggested mitigation measures by stakeholders and Response by consultants
(1) There is need to clarify whether the wetland will be affected by the associated project risks due to infrastructures and constructions as the provision of ecosystem services to the people would be challenged.	FONERWA	The Consultant has considered the wetland as a critical ecosystem and hence, the ongoing E&S assessment takes into consideration all potential risks that could affect the wetland. All stakeholders will be involved in the process and measures will be proposed.
(2) Different interventions in the upgrade may entail potential loss of properties (house, businesses, or land). It is therefore important to critically assess and analyse these impacts to avoid or minimize the displacement and where not possible, ensure an equal compensation is prepared for the PAPs in Ngaruyinka	FONERWA	A Resettlement Action Plan is under preparation and takes into consideration all kind of losses due to this project. Negatively affected people will be compensated based on the valuation and following the national standards and best practices.
(3) Under construction phase, there should be some measures to ensure safety for the workers and others in the surrounding areas	FONERWA	The project phases have a number of negative impacts and measures are proposed to be followed by all actors involved in the project
(4) During construction of the market, how will you minimize the disturbance occurring at the marketplace?	FONERWA	The upgrading of the market area will not impact on the business of people. Measures will be taken to ensure that business continues in Ngaruyinka
(5) Will the rainwater and greywater be treated and be reused for the sake of resources efficiency?	REMA	Greywater will be channelled to the stockpits and stormwater management will be used in recreational ponds to avoid erosion and impacts on surrounding. Reuse of resources is highly recommended following the standards in place
(6) What will be the source of waste composting? Will it be sorted at the household level?	REMA	A composting area is critical to ensure the waste is segregated at the household level and waste transport happens in the appropriate way so that only the biological waste is collected to the composting facility. This requires having a collaboration with villagers onboard
(7) Biogas system from waste at market or other waste treatment as this may matter, how was it designed?	WASAC	Toilets used by vendors and those around the market will be using the biogas. There will be no connection from houses to the facility. TVET would have the responsibility for biogas production and maintenance
(8) It is worth noting that biogas facilities fail after being installed. There are recommendations in a countrywide study that showcase how those failures to be avoided	FONERWA	The design team would be happy to take into consideration those issues. A copy will be made available for the consultant
(9) Does the project consider the centralised sewage system as it is highly recommended for densely settlements such as Ngaruyinka?	REMA	The project considered possible feasible options including the cost for the service users. Centrally connected systems are associated with high cost. The aim is to minimize physical displacement and affected land and meet the GCF funding criteria

6.2 Stakeholder Engagement during project implementation

In order to clearly develop a systematic and effective means of engagement, stakeholders should be identified in relation to the project components to be undertaken and mapped out to understand their interests in these development activities.

Stakeholders identified and mapped for inclusion in engagement activities under the Project meet one or more of the following criteria:

- i. have an interest in the various Project activities.
- ii. would potentially be impacted by or have an influence on the various Project activities (negatively or positively); or
- iii. Could provide commentary on issues and concerns related to the various Project activities.

6.2.1 Engagement Plan by categories

Stakeholders were categorized, based on their various needs, interests, and potential influence on the project as outlined in Table 6-1.

The following Stakeholder Engagement Plan (SEP) outlines the main objectives and types of engagements required with the identified main stakeholders during project implementation.

Table 6-4 Stakeholder Engagement Plan during project implementation

Stakeholder Group	Objective of Engagements	Project Phase	Required Actions	Responsibility
<i>Central Government (Ministries and agencies)</i>	<ul style="list-style-type: none"> Obtain support regarding licensing and permitting processes ; Ensure compliance with set environmental Regulations and Guidelines Conduct quarterly updates to build and maintain a positive and ongoing relationship 	All Phases, i.e. planning, implementation and operation	<ul style="list-style-type: none"> Apply for all required licenses and permits (i.e. RDB, RWFA, RLMUA, REMA) Apply for any requisite extension, renewal or variation of licenses or permits Conduct and submit reports of annual environmental audits to REMA Submit regular monitoring reports to REMA and MoE as scheduled Adhere with to applicable national regulations Consult REMA on any emerging environmental issues that may require their guidance 	FONERWA
<i>Local Government</i>	<ul style="list-style-type: none"> Obtain information, approvals and guidance during the land acquisition process. comply with set Environmental Regulations and Guidelines 	Planning and Construction Phase	<ul style="list-style-type: none"> Apply for all required licenses and permits Apply for any requisite extension, renewal or variation of licenses or permits Submit monthly project monitoring reports to the relevant ministries and agencies as scheduled; Conduct and submit reports of annual environmental audits to REMA of existing projects activities. 	<ul style="list-style-type: none"> FONERWA District Contractors Supervising consultants
<i>Directly Affected Communities/ Project Affected Persons (PAPs)</i>	<ul style="list-style-type: none"> Timely compensation Livelihood restoration Regular meetings to foster understanding of the Projects; Obtain and maintain social licence to operate. 	All phases	<ul style="list-style-type: none"> Achieve consent and sign-off on land ownership transfer agreements Ensure receipt and acknowledgement of compensation monies Conduct quarterly RAP implementation audits where resettlement occurs. In addition to the community meetings during the ESIA and RAP stages, conduct monthly updates to the host communities on existing projects; 	<ul style="list-style-type: none"> FONERWA District Sector
<i>Vulnerable Persons/Groups</i>	<ul style="list-style-type: none"> Special Assistance to ensure these groups are informed via appropriate channels and means of engagement 	All phases	<ul style="list-style-type: none"> Identification of vulnerable groups before and resulting from project activities Integrate special provisions for vulnerable groups into the existing national social protection initiatives as special provision Conduct quarterly meetings to understand how they cope with the project impacts 	<ul style="list-style-type: none"> FONERWA District Sector

<i>National and Local NGOs</i>	<ul style="list-style-type: none"> • Build and maintain a trusted relationship. • Collaborate on relevant activities for the benefit of the communities. 	Construction and Operation Phases	<ul style="list-style-type: none"> • Hold regular conversations with representatives from relevant NGO groups to ensure they are well-informed during the Project's life 	FONERWA
<i>Media, Political Parties/groups, Religious Organisations</i>	<ul style="list-style-type: none"> • Improve public/ civil society/political perceptions about the Project; • Have opportunities for public outreach/ advertisements; • Seek to ensure that stakeholders develop a sound understanding of the Project. • Manage expectations in relation to social and economic benefits. • Understand needs around capacity building and where the Projects may be able to assist. • Understand the details of the development needs of local institutions. 	Construction and Operation Phases	<ul style="list-style-type: none"> • Conduct quarterly dedicated media briefings to provide project updates, details of the Project's social and environmental performance. • Invite the media to important events organised or promoted by Project to show case success project stories. 	FONERWA
<i>Business Persons and Companies</i>	<ul style="list-style-type: none"> • Build and maintain mutually beneficial relationships; • Improve perceptions about the Project; 	Construction and Operation Phases	<ul style="list-style-type: none"> • Conduct bi-annual contractor and supplier briefings on E&S risk management process; • Obtain views and comments from Contractors regarding the process and address these. 	<ul style="list-style-type: none"> • FONERWA • Contractors, • Suppliers and • Supervising consultants
<i>Law Enforcement Agencies</i>	<ul style="list-style-type: none"> • Build and maintain a positive and ongoing relationship with the regular and traffic police. 	All phases	<ul style="list-style-type: none"> • Quarterly meetings to monitor security and safety situations affecting projects 	<ul style="list-style-type: none"> • FONERWA • District

6.2.2 Engagement with communities

Further stakeholder engagement will be undertaken during implementation. A detailed plan to communicate and consult with stakeholders throughout the lifetime of the project will be developed, including field surveys, business round table discussions, workshops, structured interviews and focus group discussions with vulnerable groups and other stakeholders. Stakeholders will be involved in M&E processes to enable the project, through FONERWA, to have downward accountability to the communities and rural institutions in the areas where the project is being implementing – not as beneficiaries, but as actors and leaders in their own development. A Communication Strategy targeting stakeholders at different levels will be developed and progress against project deliverables will be communicated on a regular basis, with the Communication Strategy underpinning a participatory, two-way process of communication with stakeholders.

Local entities will identify, prepare, and/or supervise activities supported by and compatible with the project. Many activities supported by the project will require full engagement with communities, for example, construction of terraces and settlements and community members will be provided with employment opportunities and training. Whilst procurement of project activities will be carried out primarily by central or District Implementation Teams, the communities will be heavily involved in the selection and oversight of activity execution. Further, some activities will be carried out at the local level by community-based organisations and their members, for which community-based procurement procedures will be used. Community-based organisations will also be involved in monitoring and evaluation of project activities, in line with the philosophy of the project to promote participatory M&E and engaging the direct beneficiaries to ensure, for example, that: women have an equal opportunity to benefit from livelihood activities; and opportunities for house purchase are fairly applied.

It is therefore expected that the specialists in the District Implementation Support Team will engage extensively at the community level and the Unit will have a budget to facilitate working in the communities. In order to ensure that there are multiple ways for the communities to engage with the project sector-specific Community Consultation Committee (CCC) is proposed to be established in each sector where the project is being implemented. The CCC will provide a platform for sector and community leaders to engage with farmers and other community members for each site.

Activities would cover

- Planning and M&E of project activities at community level;
- Community discussions, community consultations;
- Mobilising community participation and facilitating communication;
- Output evaluation, lesson learning; and
- An independent point of entry for the grievance process.

The CCC will be chaired by the Sector Executive Secretary and Secretary will be the Sector Governance Officer. Membership will include Community representatives and representatives from CSOs and NGOs, Church Groups; Sector & Cell Representatives from the Woman's Forum; Sector and Cell Representatives for people with disabilities/marginalised groups. Meetings will be every quarter, attended by the District Implementation Support Team. The project will pay facilitation for people attending.

In addition, the District Joint Action Development Forum (JADF) will support and assist local stakeholder engagement with the project. JADFs bring together Central and Local Government institutions, Development Partners, Civil Society and the Private Sector involved in district development and play an important role in implementing the Government's Decentralized Governance and Service Delivery Policy in decentralising budgets, decision making and interventions to the district level.

Moreover, by training and deploying a skilled team of field staff, the project will establish high quality farmer and community engagement from the outset. Where possible, the project will engage with communities through existing cooperatives and community groups and build the capacities of rural communities for community-based decision-making.



7 POTENTIAL IMPACTS AND MITIGATION MEASURES

Identifying the consequences of a project on the environment and socio-economic life of the country in general and populations positively and negatively impacted by the project in particular is a key step in any impact study on the environment, social and economy. The identification of these impacts was done by linking the project activities in the construction phase and operation with components of the receiving environment. This research links takes the form of a grid where each represents an interrelation impact. Thus, we proceeded with the identification of impacts at different stages of the project.

This chapter focused on the identification of foreseeable impacts, direct and indirect components of the project on its environment, both for the human aspect and natural environment. This assessment has been qualitative or quantitative. Whenever possible, we looked for indicators, if not truly quantify the impacts, at least from the objective perspective. The effects of the project were evaluated during both phases of construction and operation.

7.1 Impact evaluation methodology

An impact may be positive or negative. A positive impact generates an improvement of the component of the environment affected by the project, while a negative impact contributes to its deterioration. Impact is evaluated based on the criteria defined below.

7.1.1 Duration of an impact

Impact can be described as temporary or permanent. A temporary impact may be spread over several days, weeks or months, but must be associated with the notion of reversibility. While a permanent impact has a character of irreversibility is observed permanently or long term. The evaluation of the frequency or recurrence of the anticipated impact also contributes to better define the notion of duration.

7.1.2 Extent of impact

The extent of the impact of action refers to environmental or spatial extent of its impact. It may be specific, local or regional. To some extent, it is independent of the limitations of the study areas that have been identified for this project.

A regional scope relates generally to a vast territory with a geographical structure and /or administrative which is defined and perceived by a population, or who may be from natural components of the environment found there (eg: Ecological district which includes large similar physiographic features).

Local scope refers, in turn, to a portion of smaller territory, a particular ecosystem at a given administrative entity or an environmental dimension that is perceptible as part of a regional population.

Finally, a point range corresponds to a well-circumscribed disturbance affecting a small area used or perceived by only a small group of individuals.

7.1.3 Intensity of impact

The intensity of the impact depends on the extent of the changes observed on the component affected by a project activity or disturbances that result. Thus, a low intensity is associated with an impact causing only slight modifications to the target component; do not question its use or features. For the components of biological medium, a low-intensity impact means that only a small proportion of plant or animal populations or their habitats will be affected by the project. Low intensity means that the project does not question the integrity of the populations and does not affect the abundance and distribution of the affected plant and animal species. In terms of the components of the human environment, an impact is considered of low intensity if the disturbance affects only a small proportion of a community or population, or if it reduces only slightly or partially the use or integrity of a component without putting into question the vocation, the use or character of functional and safe living environment.

Impact is said to be of medium intensity when it generates tangible disturbances on the use of a component or characteristics, but not to reduce them completely and irreversibly. For flora and fauna, the intensity is considered moderate if the disturbances affect the average proportion of the workforce or habitat without compromising the integrity of the affected populations. However, the disruption can still result in a reduction in the abundance or a change in the distribution of species affected. Regarding the human environment, disturbance of a component must allocate a significant segment of a population or community to be considered of medium intensity.

Finally, an impact is qualified high intensity when bound to very significant changes in a component. For the biological environment, high intensity is the destruction or alteration of an entire population or a high

proportion of the size of a population or habitat of a species. About the human environment, negative intensity is considered strong in the event that the disturbance affects or limits irreversibly the use of a component by a community or population, or whether its functional and safe use is severely compromised.

7.1.4 Assessment of the significance of the impact

The significance of an impact is the result of an overall assessment, which focuses on the effect of a project activity compared to a component of the receiving environment and based on the criteria defined above. Four major classes are used for this purpose: negligible, minor, moderate or major. Significance is determined by a construction which combines the criteria described in 7.1, this is to say the value of the affected part, the duration of the impact, the extent and intensity of the disturbance that it generates on the environment, all put into perspective by one or specialist (s) in the field. The table below shows the grid for determining the overall significance of an impact.

Table 7-1 Project impacts assessment

Intensity	Extent	Duration	Significance of impact		
			Major	Medium	Minor
Strong	Regional	Permanent	✓		
		Temporary		✓	
	Local	Permanent	✓		
		Temporary		✓	
	Punctual	Permanent		✓	
		Temporary			
Medium	Regional	Permanent	✓		
		Temporary		✓	
	Local	Permanent		✓	
		Temporary			✓
	Punctual	Permanent		✓	
		Temporary			✓
Weak	Regional	Permanent		✓	
		Temporary			✓
	Local	Permanent		✓	
		Temporary			✓
	Punctual	Permanent			✓
		Temporary			✓

Risk assessment is used to relate the impact assessment. Risk evaluation using a stipulated assessment criterion whereby impacts are identified. Risk evaluation was done by using a stipulated assessment criterion whereby impacts are given a rating or weighting and obtaining an overall rating or significance of an impact) and risk management (relating directly to applicable mitigation measures to be implemented to manage a risk of an impact in the best interest of a society; Schogren, 1990). The guideline criteria followed in this study are presented in table below.

Table 7-2 Impact Significance with criteria assessment and ratings

Nature or Status of the Impact: The type of effect the activity would have on the environment		
Status	Description	
Positive:	a benefit to the holistic environment	
Negative:	a cost to the holistic environment	
Neutral:	no cost or benefit	
Duration of the Impact: The lifetime of the impact		
Score	Duration	Description
1	Short term	Less than 2 years
2	Short to medium term	2 – 5 years
3	Medium term	6 – 25 years
4	Long term	26 – 45 years
5	Permanent	46 years or more
Extent or Scale of the Impact: The distance from source that impacts may be experienced		
Score	Extent	Description
1	Site specific	Within the site boundary
2	Local	Affects immediate surrounding areas

Nature or Status of the Impact: The type of effect the activity would have on the environment		
3	Regional	Extends substantially beyond the site boundary
4	National	Affects country
Reversibility of the Impact: To what degree its influence on the relevant environment can be negated		
Score	Reversibility	Description
1	Completely reversible	Reverses with minimal rehabilitation & negligible residual affects
2	Reversible	Requires mitigation and rehabilitation to ensure reversibility
3	Irreversible	Cannot be rehabilitated completely/rehabilitation not viable
Intensity or Magnitude of the Impact: Severity of the negative and magnitude of positive impacts		
Score	Severe/beneficial effect	Description
1	Low	Little effect - negligible disturbance/benefit
2	Low to moderate	Effects observable - environmental impacts reversible with time
3	Moderate	Effects observable - impacts reversible with rehabilitation
4	Moderate to high	Extensive effects - irreversible alteration to the environment
5	High	Extensive permanent effects with irreversible alteration
Score	Severe/beneficial effect	Description
Probability of the Impact: Describes the likelihood of the impact actually occurring		
Score	Rating	Description
1	Unlikely	Less than 15% sure of an impact occurring
2	Possible	Between 15% and 40% sure of an impact occurring
3	Probable	Between 40% and 60% sure that the impact will occur
4	Highly Probable	Between 60% and 85% sure that the impact will occur
5	Definite	Over 85% sure that the impact will occur
The Consequence (C)		= Magnitude/Intensity (M/I) + Extent (E) + Duration (D) + Reversibility (R).
Determination of Significance		
After assessment of an impact in accordance to the criteria described above, the significance of an impact can be determined. The various ratings as indicated above are accorded to these criteria. These ratings are then used to calculate a significance (S) rating and are formulated by adding the sum of ratings given to the extent (E), duration (D), Reversibility (R) and intensity (I) and then multiplying the sum with the probability (P) of an impact as follows: Significance (S) = (E+D+R+I) X P		
Significance rating		
Score out of 100		Significance
1 - 20		
21 - 39		
40 - 60		
61 - 79		
80 - 100		

7.2 Impact evaluation methodology

The proposed Ngaruyinka upgrade project will have several beneficial impacts on socioeconomic and biophysical environment.

However, there will also be some adverse impacts on both socio-economic and biophysical environment of the project area.

Upgrading the main access road, footpaths and the road connecting the settlement to the surroundings will lead to expropriation of land and other assets, trees, common property resources and individually owned assets from the current owners/users. This will also cause disruption of existing environment and social set up and direct economic loss for asset losers and their families in the process. Where there are natural slopes, cut and fill may lead to additional expropriation. In addition, the project may impact the existing environmental and social conditions during its operation i.e. after its full stages of development.

To identify such impacts, attempts have been made to record the perceptions of community about the negative impacts of the project, through roadside interviews and community consultations at few stretches. The major adverse impacts as identified during such discussions include:

- Loss of agricultural, residential and business properties.
- Loss of trees, green areas and other natural resources
- High risk for pedestrians and slow-moving traffic, and
- Increase in pollution.

This section deals with the identified adverse impacts in different phases of the proposed Ngaruyinka upgrade project.

7.2.1. Gender Related Impacts including Gender-Based Violence

The project will target women and youth as beneficiaries thus the influx of opportunities, resources, and support may create an environment in which power differentials lead to gender-related issues, including gender-based violence (GBV). Gender-based violence is any harm or potential harm perpetrated against an individual or group on the basis of gender. Gender-based violence has many expressions, including physical, sexual, psychological and economic, which can be underpinned by legal, social and institutional norms and systems. Examples include but are not limited to: physical assault; sexual violence including sexual exploitation/abuse, forced prostitution and rape; domestic violence; trafficking; early/forced marriage; female genital mutilation; honour killings; property grabbing; and widow disinheritance.

To minimize the potential for gender-related impacts and gender-based violence, the PMU will hire a gender specialist who will be trained in gender-related issues, prevention of SEAH, gender-responsive programming and survivor-centered approaches. Given that specific locations and beneficiaries will be determined during full implementation, each subproject will be screened for the potential for adverse gender-related impacts (including gender-based violence).

The screening of each Gender-related impacts will focus on ensuring that:

- Each sub-component does not discriminate against women or other groups based on gender regarding access to resources, services, or benefits provided by the project;
- the sub-component avoids activities that inadvertently create, exacerbate or perpetuate gender-related inequalities or have adverse impacts on women or girls
- the sub-component minimizes any risks from activities that have adverse impacts on the livelihoods, rights or other situations of women and girls including their ability to use, develop or protect natural resources
- the sub-component takes into account the different roles and positions of women and men in accessing environmental goods and services to recognize gender equality and gender equity in project activities
- the sub-component does not aggravate risks of gender-based violence (including sexual exploitation, abuse or harassment – SEAH)
- The sub-component has processes and oversights in place to ensure persons employed or engagement

7.2. 2. Assessment of Key Potential Labor Risks

Project activities: The subcomponents activities will include the following that will be specified in the project implementation phase:

Component 1: Climate responsive investments to upgrade an informal settlement pilot

- Sub-component 1- Transport and mobility
- Sub-component 2- Stormwater management
- Sub-component 3- Water supply
- Sub-component 4- Sanitation
- Sub-component 5- Energy
- Sub-component 6- Solid waste management
- Sub-component 7- Community buildings

Component 2: Increased capacity for inclusive climate responsive upgrades and enabling environment for climate resilient, low emission investment

- Activity 2.1.1 Institutional capacity development of GoR agencies
- Activity 2.1.2 Blueprinting the GCK and Planning code for GoR
- Activity 2.1.3 Development of recycling value chains
- Activity 2.2.1: Technical support for an enabling environment and mainstreaming green city development standards and approaches into regulatory and planning frameworks
- Activity 2.2.2: Knowledge management system developed on climate responsive regeneration

Key Labor Risks:

During project implementation, the labor risks will be detailed; at present the expected risks include:

- The conduct of work under the construction of different infrastructure and upgrade of some sanitation activities could expose workers to some injuries. Teams will need to be ready for emergencies related to injuries from contact with

equipment or falling objects, slips and falls, overexertion, insect bites, snake bites, general transportation and/or motor vehicle accidents going to and from worksites, and possibly exposure to harmful substances including the inhalation of phytotoxins from ferns

- Although unlikely, child labor or forced labor is an issue especially given the low skills required for the positions. The Rwanda Government prevents such activities and the screening as well as training and management should minimize the chance of this risk. Such practices are noted given the recently reported on child labor abuses in the tea sector
- As the project is targeting women, youth and historically marginalized groups as beneficiaries there are risks of discrimination and gender-based violence on sites, these will be addressed through the training of local teams and sensitization to SEAH
- Possible accidents or emergencies may occur on any of the project activities. ESS4 will provide for emergency management plans that will apply to all worksites and be available to project workers, subcontractors and others involved in the project in case of emergencies. The emergency management plan will also cover the implementation of occupational health and safety requirements

Steps to reduce risks include:

- Select team leaders and train them in first aid and safety.
- Training participants in safety measures, SEAH as well as victim-centered responses to SEAH incidences, and First aid
- Provide first aid kits to teams
- Develop and communicate evacuation plan
- Develop and communicate code of conduct
- Train staff on park rules and regulations
- Always have drinking water boiled (that kills phytotoxins)
- Provide masks to community workers
- Workers will be required to have health insurance
- Training in restoration techniques
- Employer to pay social security contributions for all workers

Screening for Labor and Working Conditions Risks will ensure:

- the fundamental rights of workers, consistent with the International Labor Organization's (ILO) Declaration on the Fundamental Principles and Rights at Work are respected and protected
- written labor management procedures are established in accordance with applicable national laws
- workers are provided with clear and understandable documentation of employment terms and conditions, including their rights under national law to hours of work, wages, overtime, compensation and benefits
- workers are provided regular and timely payment of wages; adequate periods of rest, holiday, sick, maternity, paternity, and family leave; and written notice of termination and severance payments, as required under national laws and the labor management procedures
- decisions relating to any aspect of the employment relationship, including recruitment, hiring and treatment of workers, are made based on the principles of non-discrimination, equal opportunity and fair treatment, and not on the basis of personal characteristics unrelated to inherent job requirements
- appropriate measures are in place to prevent harassment, intimidation, and exploitation, and to protect vulnerable workers, including but not limited to women, children of working age, migrants and persons with disabilities
- workers who participate, or seek to participate, in workers' organizations and collective bargaining, do so without interference, are not discriminated or retaliated against, and are provided with information needed for meaningful negotiation in a timely manner
- forced labor and child labor are not used in connection with the project or program
- occupational health and safety (OHS) measures are applied to establish and maintain a safe and healthy working environment, including supply chain workers

Table 7-3 Potential impacts assessment and mitigation measures

Impact Topic (WB ESS) *	Sources of Potential Impact	Impact Assessment	Impact Significance	Proposed Mitigation and Enhancement Measures
Impacts during Pre-construction phase				
Social impacts				
Common impacts to the project components: Mobility and transport, stormwater, water supply, sanitation and TVET Centre				
Displacement of Existing Land Uses, Property and People (ESS 5)	Permanent and temporary acquisition for development of the Project	Land acquisition and economic resettlement are expected. The project will displace 17 households physically while 394 households will be economically displaced. Among them 32.4% of female will be displaced while 67.6% of males are to be displaced. An estimated amount of 2,072,370,718 Rwf is to be mobilised for the expropriation and all accompanying measures for the PAPs.	The impacts on livelihoods and the potential physical or economic displacement are evaluated as <i>moderate</i> . The design has considered a minimum number of households to be displaced. The displacement cause of the construction activities will be permanent while the displacement cause of the campsite will be temporary.	The resettlement plan addresses detail compensation for land and structures, resettlement of displaced persons (DPs) or Persons Affected by the Project (PAPs), and loss of livelihood opportunities. All DPs identified in the census survey, which encompasses all individuals having formal legal rights to the land lost and occupants, regardless of ownership of the land lost are entitled to compensation, assistance and rehabilitation as provided in the approved Entitlement Matrix of the Resettlement Plan (RP). All DPs will be given notice in sufficient advance and will be requested to vacate premises and dismantle affected structures prior to project implementation. The DPs will be compensated according to the official compensation rates. The acquisition of the land and private properties will be carried out in accordance with Rwanda Expropriation law for public interests, World Bank ESS5, RAP and entitlement framework for the project. Early identification of entitlement for compensation planning of Resettlement and Rehabilitation Action Plan to compensate the losses. The compensation will be paid in accordance with 2015 Rwanda expropriation law and will be decided by competent authorities. All the affected people will be compensated before commencement of Construction works. Restoration of land after road construction must be done.
	Vegetation clearing and crop damages	The vegetation on the Project area includes subsistence crops such as sorghum, sweet potatoes, maize, beans, cassava, soya, mango, avocado, lemon and orange trees etc. and these are being farmed on small, family-sized plots by local residents. With the project implementation, there will be a loss of 34,303sqm covered by crops and 2,164 trees will be cut.	Portions of land and the crops will be affected by the project with the risk of negatively impacting the livelihoods of people living in the settlement. The design of the project has minimized this impact still rated as <i>significant</i> .	The drainage system will be designed and constructed with several outlets so that minimum volume of runoff is directed to the farms so as to reduce water logging or alternatively, they should be directed to water bodies. Only trees planted in the areas to be acquired by the project must be cut. All other trees should not be touched whatever the need. Trees cleared must be replanted elsewhere to improve the green of the settlement and its environment. To effectively ensure proper landscaping in the project area where some vegetations were cut, a Revegetation plan will be developed by the contractor and approved by FONERWA to ameliorate the environmental problems created by loss of plant cover, correct land management practices that adversely affect plant establishment, test different methods under varying conditions, and remain flexible to alter plans based on results at the site or from other sites

Impact Topic (WB ESS) *	Sources of Potential Impact	Impact Assessment	Impact Significance	Proposed Mitigation and Enhancement Measures
		Impacts on agriculturally used areas are one of the most impacts of the planned Ngaruyinka upgrade project.	The displacement will be permanent, but the plan is a fair compensation to allow relocation of the business.	
Impacts during Construction Phase				
Social impacts				
Common impacts to the project components: Mobility and transport, stormwater, water supply, sanitation and TVET Centre				
Labour and Working Conditions (ESS 2)	Occupational Health and Safety.	Construction activities of the proposed settlement infrastructures are associated with risks to workers from small incidents to major accidents. Potential impacts would arise from the workforce and the spontaneous development it will attract. and increased public health risks (including an increase in prevalence of sexually transmitted diseases such as HIV/AIDS). Inappropriate solid waste disposal could lead to contamination of soil, ground water, and streams and the spread of pests and communicable diseases. Inappropriate solid waste disposal could lead to contamination of soil, ground water, and streams and the spread of pests and communicable diseases.	Impact significance is rated as <i>moderate</i> since project activities such as housing/road construction are very common and standardized practices can be used. The impact is <i>temporary</i> .	Consider preparing an OHS Plan and Emergence Preparedness Plan and by the project contractor approved by FONERWA based on the occupational risks and hazards identification Provide H&S Training to the construction workforce (including sub-contractors, temporary workers and drivers) Ensure site premises are provided with appropriate fencing (where applicable) and lighting. Use hazard notices/signs/barriers to prevent access to dangerous areas. Ensure speed limits on site and on transporting routes. Ensure the use of Personal Protective Equipment (PPE) for workers. Maintain high standard in housekeeping on site. Ensure the workforce has access to primary healthcare on site, providing prescriptions and vaccinations. In case more than 35 workers are present on site, ensure that a hospital, medical clinic or a health centre can be reached within a period of 45 minutes. Ensure provision of welfare facilities at the Project site, including shaded welfare areas, bathrooms, and potable water. Provide hygienic, adequate facilities for workers, ensuring toilets and changing rooms be separated to male and female employees. Provide housing conditions in accordance with all applicable health and safety regulations and norms by ensuring the provision of adequate space, supply of water, adequate sewage and

Impact Topic (WB ESS) *	Sources of Potential Impact	Impact Assessment	Impact Significance	Proposed Mitigation and Enhancement Measures
				<p>garbage disposal system, appropriate protection against heat, cold, damp, noise, fire and disease-carrying animals, adequate sanitary and washing facilities, ventilation, cooking and storage facilities and natural and artificial lighting, and in some cases basic medical services.</p> <p>Ensure that the workers camp and construction areas are open only to formal employees.</p> <p>Ensure accident and incident reporting</p>
Worker's influx and management of worker relationships		Working conditions, terms and conditions of employment, as well as potential discrimination, and child labour (underage 16-18 years) poses a risk if not addressed adequately.	<i>Moderate</i> significance due to expected workforce/workers influx, as well as number of contractors and activities taking place simultaneously. The impact is <i>temporary</i>	The project will develop and implement an HR/Labour Policy and a Labour Force Management Plan (or include equivalent mitigation measures in the ESMP) in line with Rwandan law, and where gaps exist, requirements of WB ESS2. Requirements to avoid (gender) discrimination (i.e. hiring process, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, or disciplinary practices, measures to prevent and address harassment, intimidation and/or exploitation).
Hiring temporary and permanent workers for construction and operation of the Project		<p>About 40% of people living in the settlement are students, followed by 19% who are farmers and unemployed with the same proportion (19%). In addition, 13% are self-employed and own their own businesses, 5% are civil servants, while 4% of traders.</p> <p>During the construction period, there will be requirement of labour, both professional and non-professional. This is a positive impact of the project. The magnitude of the project will require a substantial number of employees. Depending on the contractor during construction, it is expected that the project will take up approximately 150 people in construction phase and approximately 30 people in operation phase. Yet at this stage of design, the project has already some people employed. These levels of short-term employment opportunities would increase income and improve the</p>	It is considered to have a moderate positive impact on local economy. The impact is temporary	<p>Exclusion of child and forced labour as per WB definition. Requirement for workers' rights to form and to join worker's organizations of and bargain collectively without interference.</p> <p>Workers' grievance mechanism and means of information, submission of grievances, follow up procedures, responsibilities, etc.</p> <p>Preference for casual labourers should be given to local people. Local officials and local leaderships of the settlement and surroundings should be involved in recruitment process.</p> <p>FONERWA can make it a contractual obligation for the contractor to hire a specific percentage of women. In addition, FONERWA will ensure that Labor and working conditions are properly reviewed and SEAH training will be required of all workers.</p> <p>Finally, FONERWA can make it a contractual obligation for the road contractor not to hire children for</p>

Impact Topic (WB ESS) *	Sources of Potential Impact	Impact Assessment	Impact Significance	Proposed Mitigation and Enhancement Measures
		<p>livelihood of those who benefited from employment.</p> <p>However, there is potential for sexual abuse, exploitation and harassment (SEAH) in the hiring process or while working, forced labor, child labor, and exposure to occupational health and safety risks.</p>		<p>any work to be performed within the campsite or on the construction sites.</p>
Traffic safety (ESS4) and	Traffic and Transport	<p>We noted a very low traffic in the project area and the surroundings. However, with a number of vehicles transporting the construction materials to the site and workers moving to and from the site, there may be impact on the traffic within and in the surroundings of the settlement.</p>	<p>In actual facts, traffic within and around the site is almost inexistent. The impact significance is therefore seen as minor and temporary.</p>	<p>Consider preparing a Traffic Management Plan for the Project.</p> <p>Schedule traffic activities to avoid peak hours on local roads if feasible.</p> <p>Implement the Grievance Mechanism to be used by the community (see Stakeholder Engagement).</p> <p>Ensure that work site boundaries and limits are in accordance with plans agreed upon in advance.</p> <p>All construction activities should be carried out within boundaries.</p> <p>Ensure safe driving by Project personnel (e.g. through training/induction).</p> <p>Organise carpools/buses for worker transportation where possible to avoid additional traffic pressure.</p> <p>Prevent storage of construction materials, equipment and machineries on traffic lanes.</p>
Community H&S (ESS 4)	Improved human health	<p>The Project aims for a clean and healthy environment which contributes to a higher quality of life (e.g. less air pollution due to alternative transportation systems, sufficient public parks for recreation). In addition, the Project components and related activities are deemed to improve living conditions.</p>	<p>Positive impact on the quality of life for the community.</p> <p>The impact is <i>temporary</i> but for long term.</p>	<p>The following enhancement measures are to be applied:</p> <p>Include the security requirements in the Community Health, Safety and Security Plan that will be developed by the contractor and approved by FONERWA based on a risk assessment and ensure that the Voluntary Principles on Human Rights (VPHR) and ESS4 requirements are addressed.</p> <p>Use of state-of-the-art technology and limit the number of machines operated simultaneously.</p> <p>Ensure the use of modern and well-maintained equipment (e.g. use of silencers).</p> <p>Set traffic speed limits. Verify drivers' behaviour with respect to driving speed and safety.</p> <p>Target signage and outreach activities to</p>

Impact Topic (WB ESS) *	Sources of Potential Impact	Impact Assessment	Impact Significance	Proposed Mitigation and Enhancement Measures
	Enhanced Security	Ngaruyinka is an informal settlement with low living standards where security is not guaranteed. We witnessed some incidents through which one of the consultants was assaulted by a drunken villager and during the day. During the construction and operation of the Project facilities, security will be enhanced in the premises of Ngaruyinka Viilage and the houses through distribution of suitable security lights and presence of security guards.	This will lead to improvement in the general security in the surrounding area. <i>Positive</i> impact on the quality of life for the community. The impact is temporary but for long term	
	Presence of construction workers from outside the area	It is planned more than 100 workers will be employed on site during construction. Temporary presence of foreign workers and contractors may lead to social tensions, incidence of diseases such as HIV/AIDS, to increases in crime, prostitution and to pressures on local services (health, leisure, police, etc.).	High likelihood of occurrence mainly during construction, since a large number of workers is needed for the Project development. However, Gasabo District has already a high number of labour forces migrating from other districts for work. This concludes to a <i>minor</i> significance. The impact is <i>temporary</i> .	Propose appropriate trainings, recruitment procedures and policies in the ESMP to manage potential issues. Ensure all contractors implement codes of conduct concerning employment and workforce behaviour (including but not limited to safety rules, zero tolerance for substance abuse, environmental sensitivity of the area, dangers of sexually transmissible diseases and HIV/AIDS, gender equality and sexual harassment, respect for the beliefs and customs of the populations and community relations in general).
	Increased traffic	The Project has the potential to impact on neighbouring communities through changes in noise and air quality due to increased truck traffic during construction of the Project.	Magnitude of the impact is <i>moderate</i> and the impact will be temporary.	Develop measures to mitigate the impacts including speed limits, drivers' training and informing the affected communities. Schedule traffic activities to avoid peak hours on local roads if feasible. Implement the Grievance Mechanism to be used by the community. Ensure safe driving by Project personnel (e.g. through training/induction). Organise carpools/buses for worker transportation where possible to avoid additional traffic pressure. Prevent storage of construction materials, equipment and machineries on traffic lanes. Ensure adequate monitoring and follow up procedures are included in a Traffic

Impact Topic (WB ESS) *	Sources of Potential Impact	Impact Assessment	Impact Significance	Proposed Mitigation and Enhancement Measures
				Management Plan/ESMP to ensure community safety with regard to traffic/road hazards on public roads. Include these measures in the supplier contracts.
	Vulnerable groups	There are vulnerable groups including orphans, people living with disability (1.04%), aged people, and to widow/er and orphans, child head of household, and women head of household in the settlement. The majority (68.28%) in the project area are in category 3 of ubudehe ³⁴ . The project will contribute to the increase in household incomes and improve life conditions while facilitating financial participation in family and community development.	We note this impact will be positive, temporary but of moderate impact to vulnerable groups.	During construction activities, possibility for women and vulnerable community members to gain opportunities (road maintenance) Consider involving vulnerable groups through different project phases with different activities (tree nurseries, cleaning, security, road safety, campaign... etc
Archaeological & Built Heritage (ESS 8)	Excavation works during construction and land conversion	No archaeological sites were identified in the project area. However, it is possible that construction of the Project may result in disturbing archaeological features and the discovery of unknown archaeological finds.	Minor significance, since there is no indication for tangible finds. If the impact occurs, it will be permanent.	A Chance-finds-procedure needs to be prepared for the Project according to ESMF and needs to be shared with the contractors. Ensure all chance finds of cultural heritage (e.g. graves, old ceramic, old building fragments) are reported immediately to the relevant authority. If possible, avoid excavation in the ultimate neighbourhood of a chance find, fence the chance find and await instructions from the competent authority.
	Intangible Cultural Aspects	People living in Ngaruyinka have a typical Rwandan culture as all villages characterised as informal settlements. Cultural identity and way of living can be altered e.g. influx of foreign workers, increased migration and tourism	Social cohesion and blending with existing communities of the settlement and other facilities occupants, as well as workers during construction may pose a minor potential impact for conflicts. If the impact occurs, it will be temporary but for long term.	Stakeholder engagement should take into consideration the cultural heritage aspects as defined in the Project's SEP.
Biophysical impacts				

³⁴ Category 3: Citizens who are gainfully employed or are even employers of labour. Within this category are small farmers who have moved beyond subsistence farming, or owners of small and medium scale enterprises

Impact Topic (WB ESS) *	Sources of Potential Impact	Impact Assessment	Impact Significance	Proposed Mitigation and Enhancement Measures
Resources (ESS 3)	Raw materials and resources required for the construction and operation of the Project.	The construction of the Project components will potentially require substantial quantities of materials for construction. Existing quarry sites could be utilized.	The sustainability of such resources at the extraction sites will be negatively affected, as they are not renewable in the short term. The extraction sites will be moderately affected in several ways including landscape changes, displacement of animals and vegetation, poor visual quality and opening of depressions on the surface leading to several human and animal health impacts. The impact is rated <i>moderate</i> and will be permanent.	The sources of raw materials shall be screened and considered as associated facilities. Careful planning of the exploitation of quarries and borrow pits will allow one exhausted Section of the quarry to be reinstated and rehabilitated, while excavation begins at another section. Rehabilitate quarry sites and other material sites to discourage pouncing which are mosquito breeding grounds. Various types of materials need to be stockpiled separately in order to facilitate effective rehabilitation Re-vegetation of these sites with the previously existing vegetation.
	Energy consumption	The socio-economic survey revealed that the most used source of energy in electricity in Ngaruyinka, whereby 85.25% point out that electricity constitutes their main source of energy, 12.70% use solar 1.20% uses candle and 0.85% use battery. The Project will consume a substantial amount of energy during construction. The Project needs to be designed and planned as energy efficient as possible.	Moderate significance since inefficient energy use is likely to occur without any mitigation measures and energy management in place. The impact will be <i>temporary</i> .	The project to consider the development of an energy management plan, choosing state of the art, energy efficient over inefficient technology and equipment.
Soils (ESS 3)	Spills of oil, fuel and other materials	There was no spills of oils and fuel noted in the settlement. However, with the construction activities, there is a risk of spills of oils, fuel or other materials causing contamination of soils during construction.	Minor due to the construction activities taking place on site. The impact will be <i>temporary</i> .	Surplus excavated soil shall not be stockpiled near wetlands. Surplus soil shall be removed to an approved disposal area. Oil, fuel, lubricant spillage can be avoided with due care during maintenance activities. In some cases, biological dispersants can be used to break up oil particles Install grease traps for surface run-off in market area.

Impact Topic (WB ESS) *	Sources of Potential Impact	Impact Assessment	Impact Significance	Proposed Mitigation and Enhancement Measures
	Soil erosion	As mentioned in the baseline, Kinyinya Hill and the Ngaruyinka are characterized by a mixture of hilly terrain with an average altitude of 1,504 m and sloping basins and valleys. Due to the hilly nature of the Project Area, construction works and daily activities may bring along soil erosion during rainy periods.	Minor due to the construction activities taking place on site. The impact will be <i>temporary</i> .	Attention should be put on the design of the drainage system. To prevent erosion, ditches will be stabilized with bioengineering methods involving vegetation, erosion control blankets or granular materials. Run-off shall be diverted away from erosion susceptible slopes to prevent further site degradation.
	Discharge of site run off during construction (e.g. accidental spills)	During construction activities a substantial amount of hydrocarbons including automotive fuel will be used and stored on site. There is a risk of water pollution from leaks and spills of hydrocarbons, wastewater and other materials, as well as poor management of construction runoff.	The project site is surrounded by wetlands in the north-western fringes. The project will involve upgrade of existing settlement infrastructures with <i>moderate</i> potential to contamination. The impact will be <i>temporary</i> .	Ensure appropriate containment and disposal of construction wastewater, including sanitary water. Ensure appropriate and safe storage of contaminants such as fuels, construction materials and wastes. Provide absorbent and intervention materials in sufficient quantities and at relevant locations for intervention in case of leakages/spills.
Common impacts due to the project components: Mobility and transport, stormwater, water supply, sanitation, energy and community facilities				
Waste (ESS 3)	Waste generated during construction	At Kinyinya Hill and Ngaruyinka, solid waste is currently managed by the Isuku Kinyinya Company Ltd, a waste collection company that is operating in the project area. In a non-cumulative impact context, the Project will generate construction wastes with the amount to be determined and monitored. Where these cannot be re-used or recycled, they will require disposal with the potential for impacts during transport and at the disposal site. Currently final disposal point is Nduba, an unsanitary landfill.	Construction activities will generate a <i>moderate</i> amount of waste that needs to be appropriately managed. The impact will be <i>temporary</i>	Develop and implement a Waste Management Plan by the contractor approved by FONERWA. Collect and segregate wastes and ensure safe storage and in line with legal requirements. Identify waste management facilities and waste management contractors. Ensure disposal through waste contractors licensed for treatment/removal/recycling of each of the waste types. Ensure disposal or landfilling compliant with the WB ESF. Ensure appropriate and safe storage of contaminants such as fuels, construction materials and wastes. Provide absorbent and intervention materials in sufficient quantities and at relevant locations for intervention in case of leakages/spills.
	Hazardous waste	No hazardous wastes were noted in the project area. However, the Hazardous wastes might be generated, by the project, mainly due to excavation and construction activities, which might include hazardous substances.	Due to the activities taking place in the Project Area the impact is evaluated as minor and will be <i>temporary</i>	Minimise the waste production to the extent possible. Document all waste related operations (type of wastes, quantities produced etc.).

Impact Topic (WB ESS) *	Sources of Potential Impact	Impact Assessment	Impact Significance	Proposed Mitigation and Enhancement Measures
				<p>Implement appropriate secondary containment and spill controls for maintenance or refuelling works.</p> <p>Ensure immediate cleaning of any spills and remediation of contaminated areas after construction.</p> <p>Reuse wastewater wherever feasible.</p> <p>Ensure appropriate containment and disposal of construction wastewater, including sanitary water.</p>
Air Quality & Climatic Factors (ESS 3, ESS 4)	Generation of construction dust	Commercial and residential houses of Ngaruyinka are closed to construction areas. Various construction activities will cause dust generation. Dust will have a negative impact on the local communities and will also affect flora, as well as water quality.	<i>Moderate</i> significance, because although the duration of construction activities will be limited, sensitive receptors like the wetlands have been identified within the Project Area. The impact will be <i>temporary</i> .	<p>Ensure watering of transportation roads during dry and windy conditions. Generally, keep roads in good condition.</p> <p>Cover truck loads with canvas to avoid dust blow.</p> <p>Ensure optimal traffic routes. Enforce vehicle speed limits on unpaved roads.</p> <p>Ensure appropriate stockpile management (friable materials) to minimise dust blow.</p> <p>Minimise drop heights for material transfer activities such as unloading of friable materials.</p> <p>Use equipment and vehicles in appropriate technical conditions. Provide emissions control equipment where applicable (e.g. filters).</p> <p>Use low sulphur content fuels, in line with legal provisions in force as well as local availability.</p> <p>Ensure optimal traffic routes to minimise lengths of travel while avoiding settlements if possible.</p> <p>Ensure vehicles and equipment are switched off when not in use. Sensitise drivers.</p> <p>In case of exceeding international thresholds for GHG emissions (100,000 tons of Scope 1 and 2 CO₂e emissions per year), conduct annual monitoring. Develop a monitoring plan with baseline data to compare emission rates during construction and operation.</p>
	Increased road traffic	Increased traffic during construction is source of CO ₂ emissions and also dust generation due to the poor road conditions. Emissions from the trucks have the potential for adverse impacts on local air quality both in the vicinity of the Site.	<i>Minor</i> significance, due to the limited duration of construction activities, so the impact will be <i>temporary</i> .	
	GHG emissions	The Project-related activities during construction causes the release of GHG emissions into the atmosphere.	The effects are long-term and the extent is global.	<p>Low emitting GHG emissions equipment and vehicles to be only used during construction.</p> <p>Monitoring of GHG emissions is proposed</p> <p>Use low emitting vehicles and machines on site</p>

Impact Topic (WB ESS) *	Sources of Potential Impact	Impact Assessment	Impact Significance	Proposed Mitigation and Enhancement Measures
Noise & Vibration (ESS 3, ESS 4)	Noise and vibration generated by movement of construction equipment and vehicles within the settlement.	As per data collected and as per mentioned in the baseline chapter, the settlement character of the study area means that the noise environment is generally quiescent (41-50dB night time and 50-65dB day time), and there are few sources of anthropogenic noise in and around Ngaruyinka. Blasting will not be necessary for the upgrade construction activities. However, noise and vibration during construction poses a potential risk to the health of workers and to sensitive neighbouring receptors such as residential areas.	<i>Moderate</i> significance, because although the duration of construction activities will be limited, sensitive receptors have been identified within the Project Area. The impact will be <i>temporary</i> .	Speed control emissions on site Avoid vehicle movements at night. Locate stationary equipment (such as power generators) as far as possible from nearby receptors (e.g. worker resting areas, populated areas and environmentally sensitive areas). Make sure that noise levels do not exceed 120db in case of equipment or vehicle use. Inform the affected communities about activities and mitigation measures. Use of state-of-the-art technology and limit the number of machines operated simultaneously. Ensure the use of modern and well-maintained equipment (e.g. use of silencers). Set traffic speed limits. Verify drivers' behaviour with respect to driving speed and safety. Plan vehicle routes to avoid settlements where possible. Use protective hearing equipment for workers conducting noisy activities.
ESS4	Traffic and Transport	We noted a very low traffic in the project area and the surroundings. However, with a number of vehicles transporting the construction materials to the site and workers moving to and from the site, there may be impact on the traffic within and in the surroundings of the settlement.	In actual facts, traffic within and around the site is almost inexistent. The impact significance is therefore seen as <i>minor</i> and <i>temporary</i>	Consider preparing a Traffic Management Plan for the Project by the contractor approved by FONERWA. Schedule traffic activities to avoid peak hours on local roads if feasible. Implement the Grievance Mechanism to be used by the community (see Stakeholder Engagement). Ensure that work site boundaries and limits are in accordance with plans agreed upon in advance. All construction activities should be carried out within boundaries. Ensure safe driving by Project personnel (e.g. through training/induction). Organise carpools/buses for worker transportation where possible to avoid additional traffic pressure. Prevent storage of construction materials, equipment and machineries on traffic lanes.

Impact Topic (WB ESS) *	Sources of Potential Impact	Impact Assessment	Impact Significance	Proposed Mitigation and Enhancement Measures
Management of pesticides (ESS3)	Potential use of herbicides during construction for vegetation clearance purpose. Potential use of pesticides for malaria prevention	With the project implementation, there will be a loss of 34,303sqm covered by crops and 2,164 trees will be cut. It is expected that vegetation clearance will be needed for the developed areas. In case herbicides will be applied, this needs to be addressed accordingly. In case the Project activities include prevention of malaria spread, pesticides might have an impact on the surrounding habitats and community health and safety.	<i>Minor</i> significance of the impact is expected. The impact will be <i>temporary</i> but for long term.	The Project will not use any pesticides or pesticide products or formulations proven to cause adverse impacts on human health and environment. These requirements need to be included in the supplier contracts.
Social impacts				
Biodiversity & Nature Conservation (ESS 6)	Temporary and permanent land-take for the Project	Although no indication for critical habitat was identified in the Project Area, land will be occupied permanently and temporarily during construction requiring clearance of existing vegetation and possible removal of habitats and species of nature conservation interest.	The significance is <i>minor</i> due to the urban/agricultural character of the area. The impact will be permanent and <i>temporary</i> .	Boundaries of ROW and operation area, including traffic routes during construction must be strictly kept to avoid impact on the adjacent vegetation; Vegetation must be preserved as much as feasible; and, Lost vegetation must be 'replaced' by triple amount of the same species replanted in the area; and.
	Impacts on Fauna	Removal of habitats	The significance is <i>minor</i> due to the urban/agricultural character of the area. The impact will be <i>temporary</i> .	See above
Archaeological & Built Heritage (ESS 8)	Excavation works during construction and land conversion	No archaeological sites were identified in the project area. However, it is possible that construction of the Project may result in disturbing archaeological features and the discovery of unknown archaeological finds.	<i>Minor</i> significance, since there is no indication for tangible finds. If the impact occurs, it will be permanent.	A Chance-finds-procedure needs to be prepared for the Project according to ESMF and needs to be shared with the contractors. Ensure all chance finds of cultural heritage (e.g. graves, old ceramic, old building fragments) are reported immediately to the relevant authority. If possible, avoid excavation in the ultimate neighbourhood of a chance find, fence the chance find and await instructions from the competent authority.
	Intangible Cultural Aspects	People living in Ngaruyinka have a typical Rwandan culture as all villages characterised as informal settlements. Cultural identity and way of living can be	Social cohesion and blending with existing communities of the settlement and other facilities occupants, as well as workers during construction may pose a <i>minor</i> potential impact for conflicts.	Stakeholder engagement should take into consideration the cultural heritage aspects as defined in the Project's SEP.

Impact Topic (WB ESS) *	Sources of Potential Impact	Impact Assessment	Impact Significance	Proposed Mitigation and Enhancement Measures
		altered e.g. influx of foreign workers, increased migration and tourism	If the impact occurs, it will be temporary and for long term.	
Mobility and transport	Disruption to access to homes and outside the settlement	Access to homes and outside the settlement, which is already limited in the settlement, will be compromised by the roads upgrading activities. Due to upgrading works, the duration of impact is to be considered during the first 6months but for a limited time on different portions of the project area.	Although access to homes and outside the settlement is seen as an impact, it will be <i>moderate</i> as most of the people living in the settlement are pedestrians and the traffic of cars and trucks is very limited. If the impact occurs, it will be permanent.	To maintain access to homes outside the settlement, the contractor will implement traffic management at construction sites to enhance traffic flow and safety and public road safety awareness activities along roadside communities. Proper traffic signs shall be placed at all necessary sites in the construction area to reduce movement congestion and safety problem.
Cumulative Impacts (ESS 1)	The project is adjacent to the site proposed for the GCK pilot project	There will be cumulative impacts related to land conversion, as well as livelihoods, noise and vibrations, emissions during construction etc. The Project components that will be planned and assessed individually will have cumulative effects.	The impact's significance is expected to be <i>moderate</i> , due to the uncertainty of when both projects will be implemented. If the impact occurs, it will be permanent.	See mitigation measures related to noise and vibrations, and emissions.
Climate change impacts	Construction of the above-mentioned infrastructures	There are no available data on emissions, one can assume emission levels are below acceptable levels as there is no traffic within the settlement and no industrial activities in the area and the surroundings. Vehicle emissions containing greenhouse gasses will be generated both during settlement infrastructures upgrade and eventual use. Quantities generated will depend on type, age and number of equipment used during construction. These emissions would have a cumulative negative effect on local air quality global climate change. Embodied carbon (EC) associated with construction of these infrastructures would also to some extent have climate change effects. EC refers to energy consumed and resultant carbonemissions associated with production of	The impact's significance is expected to be <i>moderate</i> , due to the emissions that are expected with the construction activities and extraction of construction materials. If the impact occurs, it will be temporary.	Use of equipment in good mechanical condition: The contractor should ensure all motorized equipment is in good mechanical condition and regularly serviced to reduce emissions they generate. Managing overloading: Optimally loaded trucks hauling construction materials will have lower GHG emissions than over-loaded ones. Tree planting (landscaping) along the roads and within the settlement, which would in part be undertaken for carbon sequestration, as well as beautification.

Impact Topic (WB ESS) *	Sources of Potential Impact	Impact Assessment	Impact Significance	Proposed Mitigation and Enhancement Measures
		materials used in construction of the proposed infrastructures, including extraction and transport of raw materials		
Operation phase				
Social impacts				
1. Transport and mobility				
ESS4	Traffic and Transport	The operation of new internal roads (improved pathways) and off-site road giving access to the surroundings of the settlement will facilitate movements from one point of the settlement to the other, improving the socio-economic relations among the settlement	There were still some relations among the settlements but will be improved with reduced time to move from one point to the other within the settlement. The <i>positive</i> impact significance is rated as <i>moderate</i> . If the impact occurs, it will be temporary and long term.	Design durable pathways and internal roads for socio-economic cohesion among the settlements
2. Water supply				
New water connections and stand pipes	Operation of new water connections and stand pipes	In the settlement, there is a need to do intermittent rationing of water in the system (for instance, supply water 3-4 days/week) since the demand in Kigali exceeds the supply. In addition, some villagers are not connected to WASAC water supply network and purchase water from the settlement kiosk (estimated at less than 500m for most residents). The kiosk is privately owned, and the tariff is regulated to 20 RWF per 20L jerry can. Improved access to portable water will increase and ease access to portable water reducing cost of the water and reducing the time of fetching water.	The New water connections and stand pipes have a moderate <i>positive</i> impact considering the limitations to access that important need. If the impact occurs, it will be temporary and long term.	The new connections to be well maintained to ensure continuous supply of portable water.
3. Sanitation				
Sanitation services	Use of biogas system during operation activities	Most households in the project area currently use pit latrines, with some considered as improved sanitation facilities. Some of the pit latrines have a slab, while others do not. The use of biogas system will avail a cheaper and clean energy that comes	The use of biogas system only at the market place has a <i>moderate</i> impact in terms of improved sanitation system. The impact will be temporary.	Ensure the biogas system is well maintained and well operated to avoid contamination and odour nuisance.

Impact Topic (WB ESS) *	Sources of Potential Impact	Impact Assessment	Impact Significance	Proposed Mitigation and Enhancement Measures
		from innovative technology and reducing the waste to be treated		
	Skills development	As the settlement get to maintain the system, there will be skills development to maintain that infrastructure.	The <i>positive</i> impact is moderate considering that there will only one biogas system in the settlement with a limited energy production. The impact will be temporary and for long term.	Continuous development of related skills in collaboration of the TVET entre to be constructed and operated from the settlement.
	Operation of biogas system	Substrates used for the production of biogas volatile organic compounds produce unpleasant odours. However, anaerobic digestion significantly reduces the concentration of many of these compounds, such that their potential for giving rise to offensive and lingering odours during storage and distribution. Thereafter, the use of appropriate distribution methods can prevent the release of any residual odour.	The production of unpleasant odours can be very disturbing especially for those who live or work in areas closed to the biogas system. The impact is rated <i>moderate</i> to significant considering that it is proposed on the marketplace where a number of residents will be working from. The impact will be temporary.	It is important to minimize the disturbance of the excre- ment during its transfer from the storage tank. Elaboration and enforcement of a maintenance plan for the components, pipelines and sewage network of the facility, to prevent leakage and odours generating substances deposition. Continuous monitoring of methane concentration in the atmosphere with specialised detectors; Flare maintenance in a proper technical condition, to allow burning in any moment the produced excess biogas; Environmental emission monitoring and control - waste management plan elaboration. Public awareness and participation is an important factor for successful project implementation
4. Community Facilities/ TVET				
Education	We noted there are no available school infrastructures in Ngaruyinka except a nursery school. Boys and girls have to get out of the settlement for their education and the mean walking distance to the nearest school facility in the project area (Ngaruyinka) is 30 minutes.	The construction of TVET school within the settlement will increase enrolment in TVET institutions and this is associated with new skills acquired within the settlement. There will be increase in skilled workforce in the country	Moderate positive impact on education and capacity development. The impact will be temporary and long term	The project should develop infrastructure that will increase access to TVET programs, including offering relevant courses as demanded by the industries

Impact Topic (WB ESS) *	Sources of Potential Impact	Impact Assessment	Impact Significance	Proposed Mitigation and Enhancement Measures
	Increased enrolment in TVET institutions			
	Increased capacity for gender friendly and responsive learning environments	As per the education policy, gender will be considered for youth, women and disability	Positive impact on capacity building and gender empowerment. The impact will be temporary.	Develop, implement and monitor a gender action plan
Biophysical impacts				
Common impacts due to the project components: Mobility and transport, sanitation, stormwater, water supply, sanitation, energy and community facilities				
Waste	Waste generated during operation	During operation waste will be generated. Currently, final disposal point is Nduba, an unsanitary landfill.	The magnitude of negative consequences related to E&S issues occurring from insufficient waste management during operation is <i>high</i> . The current waste management situation in Ngaruyinka combined with an unsanitary landfill as endpoint suggests a high likelihood and thus suggests a major significance of the topic. The impact will be temporary.	Develop and implement a Waste Management Plan by the contractor approved by FONERWA. Collect and segregate wastes and ensure safe storage and in line with legal requirements. Identify waste management facilities and waste management contractors. Ensure disposal through waste contractors licensed for treatment/removal/recycling of each of the waste types. Ensure disposal or landfilling compliant with the WB ESF. Ensure appropriate and safe storage of contaminants such as fuels. Provide absorbent and intervention materials in sufficient quantities and at relevant locations for intervention in case of leakages/spills. Minimise the waste production to the extent possible.
Air Quality & Climatic Factors (ESS 3, ESS 4)	GHG emissions	The Project-related activities during operation causes the release of GHG emissions into the atmosphere. However, carbon sinks in form of plants and trees are planned.	The effects are long-term, and the extent is global. Sustainable green infrastructure and design will be used to minimise GHG emissions and improve energy efficiency, which leads to a <i>minor</i> significance of the impact. The impact will be temporary.	Quantifying GHG emissions, in case of exceeding international thresholds for GHG emissions. Annual monitoring is proposed.
Landscape and Visual Component (ESS 3)	Presence of above ground structures during and operation.	Ngaruyinka is an informal settlement with one level tangled houses and poor transport, sanitation and drainage infrastructures. Permanent aboveground structures of proposed infrastructures have a limited	The planned interventions are expected to permanently alter the landscape and current visuals of the Project Area. However, the considered components are not deemed adequate to significantly affect the	Impacts on landscape need to be taken into consideration during detail design of components. Cumulative impacts of all components need to be considered.

Impact Topic (WB ESS) *	Sources of Potential Impact	Impact Assessment	Impact Significance	Proposed Mitigation and Enhancement Measures
		potential to impact on the landscape setting.	landscape, therefore a <i>moderate</i> significance is assigned to the impact. The impact will be permanent.	During construction, effort will be made to reduce visual nuisance and landscape impacts.
Management of pesticides (ESS3)	Potential use of herbicides during operation for vegetation clearance purpose. Potential use of pesticides for malaria prevention	The project area to be affected by the project is in part covered by vegetation, crops and trees as described in the previous sections. It is expected that vegetation clearance will be needed for the developed areas. In case herbicides will be applied, this needs to be addressed accordingly. In case the Project activities include prevention of malaria spread, pesticides might have an impact on the surrounding habitats and community health and safety.	<i>Minor</i> significance of the impact is expected. The impact will be temporary but for long term.	The Project will not use any pesticides or pesticide products or formulations proven to cause adverse impacts on human health and environment. These requirements need to be included in the supplier contracts.
Community H&S (ESS 4)	Improved human health	The Project aims for a clean and healthy environment which contributes to a higher quality of life (e.g. less air pollution due to alternative transportation systems, sufficient public parks for recreation). In addition, the Project components and related activities are deemed to improve living conditions.	<i>Positive</i> impact on the quality of life for the community. The impact will be temporary but for long term..	The following enhancement measures are to be applied: Include the security requirements in the Community Health, Safety and Security Plan based on a risk assessment and ensure that the Voluntary Principles on Human Rights (VPHR) and ESS4 requirements are addressed. Use of state-of-the-art technology and limit the number of machines operated simultaneously. Ensure the use of modern and well-maintained equipment (e.g. use of silencers). Set traffic speed limits. Verify drivers' behaviour with respect to driving speed and safety.
Infrastructure	Improved Infrastructure	Ngaruyinka is characterized by inadequate access to safe water and sanitation, poor quality of housing, overcrowding, and insecure residential status. Project activities will lead to improvement of transport, sewerage, water supply and energy provision. Such services are a prerequisite for the development in the country.	<i>Moderate</i> and <i>positive</i> impact on the quality of life for the community. The impact will be temporary but for long term.	Target signage and outreach activities to improve public awareness of traffic changes and potential hazards for high-risk sections of public roads, including near the site and laydown areas.

Impact Topic (WB ESS) *	Sources of Potential Impact	Impact Assessment	Impact Significance	Proposed Mitigation and Enhancement Measures
Security	Enhanced Security	As earlier described, security in the settlement is that one of informal settlement. The upgrade of Ngaruyinka infrastructures will improve the security in the area with lights and more people living in area with improved livelihoods.	This will lead to improvement in the general security in the surrounding area. <i>Positive</i> and moderate impact on the quality of life for the community. The impact will be temporary.	Security will be enhanced in the premises of Ngaruyinka and the houses through distribution of suitable security lights and presence of security guards.
Biophysical impacts				
1. Transport and Mobility				
Air Quality & Climatic Factors (ESS 3, ESS 4)	Increased road traffic	Increased traffic during operation is source of CO2 emissions and also dust generation due to the poor road conditions. Emissions from the trucks have the potential for adverse impacts on local air quality both in the vicinity of the Site.	<i>Minor</i> significance, due to the limited traffic in the area. The impact will be permanent.	Ensure optimal traffic routes to minimise lengths of travel while avoiding settlements if possible. Ensure vehicles and equipment are switched off when not in use. Sensitise drivers. Quantify greenhouse gas (GHG) emissions.
	GHG emissions	The Project-related activities during operation causes the release of GHG emissions into the atmosphere. However, carbon sinks in form of plants and trees are planned.	The effects are long-term and the extent is global. Sustainable green infrastructure and design will be used to minimise GHG emissions and improve energy efficiency. Which leads to a <i>minor</i> significance of the impact. The impact will be temporary but for long term.	Minimize GHG emissions by planning transport with motorized vehicles, use of bicycles for the working staff transport, use of conveyor belt whenever possible for transporting construction material Annual monitoring is proposed.
	Climate changes	Future climate change characteristics may have potential impacts on the project design and integrity of the road and building structures due to changes in climate conditions.	Climate adaptation and resilience. The paving and concrete used in the building of the project components will reflect heat from the sun, thus modifying the local microclimate. However, the Project will stress the benefits of green infrastructure strategies for adapting to climate change, including inter alia reducing storm water flows, lowering heat stress e.g. by urban planting of trees	Maintaining vegetation and larger flora; Planting of more trees at site during and after the construction phase of the development. Creation and maintenance of a buffer between the project and other land uses to mitigate microclimate modification.
2. Stormwater				
Soils (ESS3)	Reduced and Delayed Storm Water Runoff Volumes	As mentioned in the baseline, erosion from storm water is a significant problem in the settlement.	<i>Significant</i> and <i>positive</i> impact. Although temporary, the impact will be for long term.	Rainwater harvesting, appropriate channel of rainwater and adequate stormwater

Impact Topic (WB ESS) *	Sources of Potential Impact	Impact Assessment	Impact Significance	Proposed Mitigation and Enhancement Measures	
		The new proposed infrastructures will reduce storm water runoff volumes and lowers peak flows by increasing the amount of pervious ground cover (i.e., ground cover that allows rain soak into the soil), green infrastructure techniques increase storm water infiltration rates, thereby reducing the volume of runoff entering the area and surroundings combined and separate sewer systems.		infrastructures will improve stormwater management.	
	Reduced Flooding	Localized	GCK will increase the absorption of rain through various green infrastructure approaches, there is less storm water available to pond in roadways, homes and businesses.	<i>Positive and significant</i> impact. The impact will be temporary but for long term.	Design the ecological areas to favour infiltration and channel runoff to the surrounding wetlands that regulate the flow from Ngaruryinka.
	Reduced Events	Overflow	Using the natural retention and infiltration capabilities of plants and soils, the Project infrastructure will reduce the frequency of overflow events by reducing runoff volumes and by delaying storm water discharges. This benefit may be critical in Ngaruyinka, where there is no central sewage system, only septic tanks were constructed for some houses.	<i>Positive and significant</i> impact. The impact will be temporary but for long term.	
	Enhanced Groundwater Recharge		Green infrastructure technologies can improve the rate at which groundwater aquifers are 'recharged' or replenished. Enhanced groundwater recharge can also boost the supply of drinking water for private and public uses.	<i>Positive</i> impact. This is significant because groundwater provides about 40% of the water needed to maintain normal base flow rates in rivers and streams. The impact will be temporary but for long term.	Retain rainwater through infiltration and soak pits so to recharge groundwater.
	Storm water Pollutant Reductions		Green Infrastructure techniques infiltrate runoff close to its source and help prevent pollutants from being transported to nearby surface waters. Once runoff is infiltrated into soils, plants and microbes can naturally filter and break down many common pollutants found in storm water.	<i>Positive</i> impact	Replant cleared vegetation and trees to filter runoff The proposed ecological areas will regulate the runoff and filter the pollutants.
Hydrology and drainage	Runoff and drainage		The current drainage structures are mainly inadequate and / or in disrepair	The impact will be temporary but <i>positive</i> with long term effect.	Sides of drainage channels shall be planted with grass or stone pitched.

Impact Topic (WB ESS) *	Sources of Potential Impact	Impact Assessment	Impact Significance	Proposed Mitigation and Enhancement Measures
		even absent in some sections. Often the structures cannot accommodate flows associated with flash floods in the rainy seasons. In addition, soil depositions; debris and solid waste have also clogged several drainage structures where routine maintenance activity is inactive. The project will redesign, widen and reconstruct all these structures couple with ecological areas that will regulate the flow, improve storm water management and improve infiltration and replenishment of groundwater.		Drainage systems shall have scour checks.
3. Waste management/ Community composting				
Waste (ESS3)	Community composting operation	Project is considering incorporating community composting. It allows for recovery of nutrients from garden and potentially food waste.	<i>Positive</i> and moderate impact. The impact is temporary.	Ensure appropriate operation of the community composting plant.
	Available compost to apply on landscaping and agriculture farming in the area and the surroundings.	The composting plant will produce compost that will be used to improve the agriculture farming yield and improve landscaping	The impact is <i>positive</i> and moderate as the project will improve the greening in the area and the surroundings. The impact is temporary.	
	Emission of noxious odours during the operation of the composting plant	Failure to maintain the composting plant will lead to significant surges in odour levels.	The composting plant will be operated in a context that avoid impact in the nearest areas of the settlement. The impact is rated <i>moderate</i> . The impact is temporary.	The facility should be located at a site where prevailing winds mostly blow away from nearby residential areas. The plant will be equipped with odour control measures. Maintenance of internal negative pressure and the installation of a biofilter.
4. Energy				
	Use of solar panels, improved cook stoves and energy efficient lightning and appliances	The project aims to introduce renewable energy (solar energy), improved cook stoves and efficient lightning appliances. As mentioned earlier, for 85.25% electricity constitutes the main source of energy, 12.70% use solar 1.20% uses candle and 0.85% use battery.	Although the impact is moderate, it is <i>positive</i> in terms of type of energy use and consumption and could be replicated in other settlements. The impact is temporary.	Ensure maintenance of the solar systems and cook stoves. Ensure supply of energy efficient lightning and appliances to the settlement

Impact Topic (WB ESS) *	Sources of Potential Impact	Impact Assessment	Impact Significance	Proposed Mitigation and Enhancement Measures
		The use of solar panels, improved cook stoves and energy efficient lightning and appliances and this will decrease the amount of energy used by the settlement and reduce pressure on energy supply from the national grid.		
	Operation of solar, improved cook stoves and energy efficient lightning and appliances	Reduced pressure on biomass as a source of fuel in the country. The project will help conserve the vegetation in Rwanda as the country is in direct need of vegetation cover to conserve the agricultural soil.	With the use of solar, improved cook stoves and energy efficient appliances, the pressure on use of biomass will be reduced but with <i>minor</i> impact. The impact is temporary.	Promote the use of solar equipment, improved cook stoves and efficient lightening and appliances. Ensure maintenance is available within the settlement and the TVET operation
5. Community Facilities/ TVET				
Resources (ESS 3)	Use of energy at the TVET.	Use of biogas for cooking at the TVET will reduce the electricity bill and mitigate the indoor pollution noticed within the settlement.	<i>Positive</i> and minor impact. The impact is temporary.	Design appropriately the biogas system and consider training the TVET students to the maintenance of the system for continuous supply of biogas without interruption.
Cumulative Impacts (ESS 1)	Cumulative impacts with the use of the upgraded infrastructures of the settlement and the proximity to the KGC pilot project site.	When the upgrading of the settlement is completed, FONERWA's control over activities occurring in the settlement will be limited. Various impacts that will be induced during operation of the settlement upgraded infrastructures are the establishment of settlements, shops and food stalls within the settlement soon after the construction /upgrading, increase of noise levels and deterioration of air quality from increased emissions as a result of increase in traffic, and use of different machines and equipment. Similarly, improvement in accessibility will increase the need to convert lands into built-up area resulting in the loss of agricultural lands and congestion, deterioration of receiving water quality from oil laden runoff, and increase in road crashes.	The impact's significance is expected to be <i>moderate</i> , due to the uncertainty of when the project will be implemented. The impact is temporary but for long term.	See mitigation measures related to noise and vibrations, and emissions

Impact Topic (WB ESS) *	Sources of Potential Impact	Impact Assessment	Impact Significance	Proposed Mitigation and Enhancement Measures
Climate change impacts		<p>The average annual temperature is 20.6°C, with only very slight monthly deviation during the year of about 1.1°C. With an average of 21.1°C. The average annual rainfall is about 949 mm.</p> <p>Climate changes relate to extreme weather conditions (e.g. storms, extreme precipitations, extreme temperatures), which on their turn may result in severe consequences for the physical environment (e.g. floods, etc) and represent risks for transport, stormwater, community facilities and water supply infrastructures operations. Both temperature and precipitation represent weather stress parameters that can first contribute to initiate and accelerate some damaging effects.</p> <p>Damage to those infrastructures: Heavy rains can put pressure on the constructed stormwater and water supply infrastructures. Higher temperatures can cause pavement to soften and expand. This can create rutting and potholes, particularly in high-traffic areas and can place stress on bridge joints/ structures. With these changes, it could become costly to build and maintain drains and roads. Transport conditions are also highly affected by extreme weather events such as heavy rainfall. Heavy rains may result in flooding, which could disrupt traffic, delay construction activities, and weaken or wash out the soil and culverts that support roads and bridges. Exposure to flooding also shortens the life expectancy of those infrastructures. Landslides and washouts could also occur more frequently, as saturated soils are exposed to more rainwater especially in the hilly areas.</p>	<p>The project proposes to construct green and climate resilient infrastructures that will be adapted of possible climate change events such as floods, drought, erosion and landslides. The impact is therefore rated <i>minor</i>.</p> <p>The impact is temporary and for long term.</p>	<p>Ensure adequate design and maintenance of those road, community facilities, storm water and water supply infrastructures.</p> <p>In the design, minimum and maximum temperatures should be considered should there be a temperature variation between the extremes.</p> <p>Maintenance and repairing activities have to be planned long time in advance to avert any failures.</p> <p>Tree Planting aligns with the NAPA priority project 7 and the national strategy to combat deforestation and arrest erosion due to climate change.</p> <p>Replacement of rusted galvanized steel culverts with durable cement concrete culverts.</p> <p>Design of storm drainage collection system and appropriate retention ponds or ecological areas for floodwater capture.</p>



8 ALTERNATIVES ANALYSIS

This chapter describes the various project alternatives including sites, technology, and No Project Option. The section aimed at examining the various development alternatives provided by the developer in terms of the impacts of each alternative. A comparison of alternatives will help to determine the best method of achieving project objectives while minimizing environmental impacts or, more creatively, indicate the most environmentally friendly or best practicable environmental option. The purpose of the alternatives analysis is to improve decisions on project design, construction, and operation based on feasible alternatives to the proposed project. This analysis may facilitate the consideration of environmental and social criteria at the early stages of development and decision-making based on the differences between real choices. The alternatives analysis should be conducted as early as possible in the process and examine feasible alternatives; alternative project locations and technology, or operational processes; or alternative ways of dealing with environmental and social impacts.

8.1 Proposed alternative

The overall aim of the GCK Ngaruyinka upgrade project is to upgrade infrastructures of an informal settlement and upgrade it to climate responsive and sustainable infrastructures. It will be *a scalable model which through holistic, strategic and innovative urban planning reduces capital costs whilst increasing the climate-responsive return on investment*.

Ngaruyinka upgrade project will enhance quality of life while controlling its carbon footprint in terms of the entire life cycle of the settlement:

- **Circularity:** The efficient use, preservation and replenishment of resources through strategic planning of synergies between urban systems such as energy, waste, water, materials, transportation and biodiversity.
- **Urban livability:** The gradual increase in quality of life for residents through reducing inequalities, supporting strong communities, and increasing access to a cycle of local wealth creation.
- **Ecosystem Services:** The protection, replenishment and sustainable use of the biosphere to sustain human life in a way that contributes to circularity and urban livability.

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Figure 8-1 Layout of all proposed infrastructures

The components proposed for upgrade include:

- Transport and Mobility
- Stormwater Management
- Water Supply
- Sanitation
- Solid Waste Management
- Energy
- Community facilities

The development area for the proposed Upgrade of Ngaruyinka will see some changes to its environmental attributes (physical and biological). Ecologically, there will be loss of habitat and species diversity in the area. While not discounting the value of the ecology that persists in the area, the loss to be incurred will be significant but not major as the species diversity in the area is not very high.

Moreover, the proponent plans not to disturb the wetlands, ecological sensitive area located in the northeastern part of the settlement. Drainage patterns, groundwater, nearest surface water and soil quality may also be affected. From a Socio-Economic perspective the proposed development would contribute to local income generation. In addition, numerous jobs would be created by the development either directly or indirectly as well as community growth and development for the surrounding communities.

8.2 Zero alternative

The No-Project Option is the least preferred from the socio-economic and partly environmental perspective due to the following factors:

- The economic status of Ngaruyinka and the local people would remain unchanged.
- No employment opportunities will be created for local citizens who will work in the project area.
- Development of current poor road, storm water, water supply infrastructures will not be undertaken.
- The local skills would remain under utilized
- No model to be replicated to other informal settlements will be availed
- Discouragement for investors and development partners to upgrade poor infrastructures to this level of green standard and affordable developments.

From the analysis above, it becomes apparent that the No Project alternative is no alternative to the local people, Rwandans, and the Government of Rwanda. This alternative describes a situation where the proposed development fails to be implemented. In case this happens, positive impacts associated with the proposed development will not accrue to the stakeholders including the residents to be, the development consultants, contractors and suppliers of materials. However, from an environmental conservation perspective, this alternative will be beneficial in the sense that any potential negative impacts associated with the project will be avoided. The “No Action Alternative” should not be adopted, as we need to encourage development as long as it is undertaken on a sustainable basis as per the environmental management plan developed in this study report. In addition, adopting the no action alternative will mean that the existing poor environmental and living conditions will continue to prevail within the settlement. This is not viable since the development partner and the Government of Rwanda through Fonerwa as proponent had already committed finances and land to a development project that suits development objectives. If the project is stopped then the trickle-down of financial resources will not be felt in this area. In this respect, the “No project alternative” is not deemed appropriate.

In the no-project scenario, the situation in Ngaruyinka is expected to get worse as it has been happening over the last 20 years. During consultations, information collected is that the environmental situation of the settlement is being degraded with new constructions in the settlement and no improvement or expansion of existing infrastructures.

8.3 Construction of a new or the upgrade Ngaruyinka

The two main alternatives, as addressed in the EIA study, are the upgrade of Ngaruyinka to climate responsive infrastructures with minimum displacement versus constructing new settlement. These two alternatives are assessed from the socio-economic and environmental point of view.

On one hand, it is obvious that on environmental point of view that building a new settlement is the preferred option as the settlement would be constructed with very new climate responsive and environmentally sustainable infrastructures with no limitations on the design and construction cause of existing poor constructed facilities. This component could be then similar to the GCK pilot project but will not be in conformity with Ngaruyinka upgrade project specific objectives which include alignment with GCF investment criteria. If a new Ngaruyinka is constructed, the project will have a huge impact on physical and economic displacement as most of the people living and having business in the settlement will be affected and forced to relocate. This impact will be significant and the project will not address the needs of recipients. Therefore, the sustainability of the project will be compromised with mixed positive and negative results.

On the other hand, if the Ngaruyinka is upgraded to responsive climate infrastructures in a sustainable context, there will be possibility to align the project to GCF criteria as earlier mentioned. In this context, the displacement will be minimised and the project will address the issue related to poor infrastructures currently being used by people living in the settlement.

8.4 Other alternative options

8.4.1 Alternative sites

Ngaruyinka was considered for upgrade as an informal settlement that it is located in Kinyinya Hill selected for the implementation of GCK project. Kinyinya Hill, located in the north-eastern area of Kigali (in Murama Cell, Kinyinya Sector and Gasabo District), has been identified as the subject area for Green City Kigali (GCK). This implies there was possibility to choose another settlement located outside Kinyinya Hill.

With similarity with other settlements located in Kigali and Rwanda secondary cities, the site is characterised by poor infrastructures including internal and external roads, water and sanitation, stormwater, energy and community infrastructures. The aim of the project is to upgrade these infrastructures to climate responsive and sustainable infrastructures, a model that will be replicated to other settlements. Other settlements in Kinyinya Hill would have limited impact given their location and possibility to effectively mitigate impacts.

In case another site is considered, the project design and planning before the stage of implementation would call for cost; already incurred in the proposed development i.e. whatever has been done and paid to date would be counted as a loss to the proponent. In consideration of the above concerns and assessment of the current proposed site, changing the site or relocating the project is not a viable option.

8.4.2 Construction materials

There is a wide range of construction and furnishing materials which can be sourced locally and internationally. In this construction, certified raw materials/equipment and modern technology will be used. Also, electrical appliances that save energy will be given first priority. The concrete walls will be made using locally sourced stones, cement, sand (washed and clean), metal bars and fittings that meet the Rwanda Standards Bureau (RSB) requirements.

8.4.3 Solid waste management alternatives

Throughout construction, the project will produce wastes such as soil, wood chips, metal scraps and paper wrappings among other. Wastes to be generated during operation phase are mainly domestic in nature. The Proponent is expected to observe waste management regulations in place. Priority will be given to reduction of wastes, recycling, and reuse. This will minimize environmental pollution.

A composting plant is considered for the project during the operation phase. As mentioned earlier, community members in Ngaruyinka have expressed strong interest in community composting. A small enterprise will be established to operate and maintain community composting. The composting station will accept garden waste and food waste from some households, including the organic waste collected at the neighbourhood collection points. This operation will allow the recovery of nutrients from organic waste, which is a climate friendly alternative to using chemical fertilisers

8.4.4 Liquid waste management alternatives

There is no centralized system treating the effluent generated from Ngaruyinka. Considering this system is not realistic in the context of the project that avoids displacement, physical conditions of the settlement and the limited budget. In addition, the maintenance cost of this system is not something the people from the settlement could afford.

As per the current situation of the settlement infrastructures, there are unimproved and improved pit latrines and some septic tanks. Greywater is discharged directly to the ground or in soak pits. The project proposes a collective toilet with biogas production to be installed at the market area. The biogas from the latrines will be used for cooking. These systems provide environmental benefits since they reduce the need to use firewood or charcoal for cooking, which causes deforestation in Rwanda.



9 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

An ESMP is a project specific plan which sets out how the requirements, management and mitigation measures, and any other commitments set out in a project's impact assessment report will be implemented, managed and monitored. The ESMP will generally lay out information such as the person responsible for implementing the project commitment, any monitoring requirements and associated standards or thresholds, the timing of monitoring, check methods and corrective actions. In line with the High-level ESMP which lays out a set of actions that need to be implemented during the construction and operations of the Project, some of the actions are for the PIE directly, and others by the construction contractors – in any case the PIE have the overall responsibility to ensure that the High-Level ESIA obligations are implemented as intended a comprehensive list of E&S commitments by key themes that would need to be fulfilled by the Project Implementing Agency and the Project, during the construction and operation activities.

This Environmental and Social Management Plan (ESMP) outlines a plan of action to be instituted by the project to ensure that environmental quality is maintained and improved throughout the life of the project. This project bears the potential for a number of negative impacts on the environment. However, if proper environmental management procedures are in place and adhered to then there would be very minimal negative impact of concern emanating from it. Areas that require significant mitigation measures include water, soil and air pollution, safety and waste management.

The Ngaruyinka project will use a structured approach to environmental and social management to allow the project development process following the 8 ESSs applicable to the project, follow the mitigation hierarchy of avoidance, minimization, mitigation and compensation/offset for negative impacts and enhancement of positive impacts where practically feasible. The proceeding sections describe what needs to be done at each stage of the overall project life cycle of sub-project implementation, monitoring and reporting on progress. In addition to the ESMP section in the ESIA, the contractor will develop site-specific ESMP for each project components. These plans will comprehensively identify all environmental and social risks and propose appropriate mitigation measures. The site-specific ESMPs must be approved by FONERWA before any project activities commence..

9.1 Rationale and key areas for the ESMP

The management policy of this ESMP development is ensuring a clean and safe environment within the site and support environmental management initiatives both within and outside the project through proactive and responsible activities.

The objective is triple:

- (1) Ensure environmental conservation and sustenance to ensure a balanced approach between the development and the ecosystem.
- (2) Ensure and enhance safety within the development both within the construction and operation phases.
- (3) Promoting environmental ethics within concerned parties and users.

These measures should be implemented under the following framework and should cover the following areas:

(i). Land

- Ensuring vegetative cover on unpaved surfaces to maintain the integrity of soil structure within the project area;
- Proper waste management (both solid and liquid) to avoid polluting the soil and unsightly environment.

(ii). Biological Diversity

- Maintaining vegetation and larger flora;
- Planting of more trees at site during and after the construction phase of the development;
- Creation and maintenance of a buffer between the project and other land uses to mitigate microclimate modification.

(iii). Air

Maintaining low dust levels during construction through either surfacing the non- surfaced portion of the road or/ and water spraying regions not paved. This will reduce the amount of dust generated.

- Installation of scrubbers on the exhausts of emitting machinery;

- Erection of screens and buffer fences (noise barriers) to reduce the amount of dust and noise generated during construction reaching neighbouring utilities.
- Use of noise absorbent padding in fixed plant installations.
- Use of ear- muffs by employees to reduce any exposure from noise;
- Retain and continue planting green- belts to create barriers between source and receiver- this strategy is a long-term measure as trees take a long time to be effective in creating noise barriers. Flower bushes and shrubs can be planted around noise emitting utilities.

(iv). Water

Ensure conservation of water in the construction phase through wise and only necessary use as well as recycling where applicable and appropriate.

- Management of any liquid and solid wastes to ensure that they do not contaminate the surface water in the stream and the underground waters;
- Employing water catchments measures such as roof catchments where water harvested this way can be used for cleaning or lawn maintenance purposes;
- Maintaining vegetative cover within the non-paved area so as to reduce direct surface evaporation and enhance stream recharge.

(v). Hazards and soil maintenance

Hazards especially from use of machineries, in and out of the site could be handled in a number of ways.

- Erecting hazards warning signs;
- Using smaller trucks that make narrow turnings;
- Constructing storm water drains to channel flood waters;
- Keep the percentage of area of impervious surface as low as possible to reduce runoff during storm periods.

(vi) Social impacts

Social impacts may be related to the safety of workers during the implementation of the project activities as well as those related to land tenure:

- Ensure the safety of workers and communities by preparing and implementing the Health and Safety Management Plan. The plan will include physical hazards associated with the working at height, and sharp materials, the use of heavy equipment and exposure to dust, noise and hazardous substance that may be present in the demolition waste, construction materials and construction equipment/machinery
- Prepare and implement the Labour management Plan for the Project which will include a Human Resource Procedures in line with national labour law and WB ESS2 on labour working conditions
- Ensure that all the Project Affected Persons (PAPs) before construction activities will be expropriated according to the provision of the law and replacement value in monetary compensation

Table 9-1 ESMP- Responsibility and cost estimations

Topic/ potential impacts	Proposed Mitigation and Enhancement Measures	Implementation period	Responsibility	Estimated cost/ year ³⁵
Impacts during Pre-Construction phase				
Social impacts				
Common impacts to the project components: Mobility and transport, stormwater, water supply, sanitation and TVET Centre				
Displacement of Existing Land Uses, Property and People (ESS 5)	<p>The resettlement plan addresses detail compensation for land and structures, resettlement of displaced persons (DPs) or Persons Affected by the Project (PAPs), and loss of livelihood opportunities.</p> <p>All DPs identified in the census survey, which encompasses all individuals having formal legal rights to the land lost and occupants, regardless of ownership of the land lost are entitled to compensation, assistance and rehabilitation as provided in the approved Entitlement Matrix of the Resettlement Plan (RP).</p> <p>All DPs will be given notice in sufficient advance and will be requested to vacate premises and dismantle affected structures prior to project implementation.</p> <p>The DPs will be compensated according to the official compensation rates.</p> <p>The acquisition of the land and private properties will be carried out in accordance with Rwanda Expropriation law for public interests, World Bank ESS5, RAP and entitlement framework for the project.</p> <p>Early identification of entitlement for compensation planning of Resettlement and Rehabilitation Action Plan to compensate the losses.</p> <p>The compensation will be paid in accordance with 2015 Rwanda expropriation law and will be decided by competent authorities.</p> <p>All the affected people will be compensated before commencement of Construction works.</p> <p>Restoration of land after road construction must be done.</p>	Construction phase	FONERWA Kinyinya Sector Implementation RAP Consultant	2,072,370,717
Vegetation clearing and crop damages	<p>The drainage system will be designed and constructed with several outlets so that minimum volume of runoff is directed to the farms so as to reduce water logging or alternatively, they should be directed to water bodies.</p> <p>Only trees planted in the areas to be acquired by the project must be cut. All other trees should not be touched whatever the need.</p> <p>Trees cleared must be replanted elsewhere to improve the green of the settlement and its environment. A Revegetation Plan describing how the cleared areas will be restored should be developed by the contractor approved by FONERWA before any project activities begin.</p>	“	FONERWA Kinyinya Sector	
Impacts during construction phase				
Common impacts to the project components: Mobility and transport, stormwater, water supply, sanitation and TVET Centre				

³⁵ The amounts were calculated per month using actual costs of services and materials. Good practices were not costed

Topic/ potential impacts	Proposed Mitigation and Enhancement Measures	Implementation period	Responsibility	Estimated cost/ year ³⁵
Occupational Health and Safety.	<p>Consider preparing an OHS Plan based on the occupational risks and hazards identification</p> <p>Provide H&S Training to the construction workforce (including sub-contractors, temporary workers and drivers)</p> <p>Ensure site premises are provided with appropriate fencing (where applicable) and lighting.</p> <p>Use hazard notices/signs/barriers to prevent access to dangerous areas.</p> <p>Ensure speed limits on site and on transporting routes.</p> <p>Ensure the use of Personal Protective Equipment (PPE) for workers.</p> <p>Maintain high standard in housekeeping on site.</p> <p>Ensure the workforce has access to primary healthcare on site, providing prescriptions and vaccinations.</p> <p>In case more than 35 workers are present on site, ensure that a hospital, medical clinic or a health centre can be reached within a period of 45 minutes.</p> <p>Ensure provision of welfare facilities at the Project site, including shaded welfare areas, bathrooms, and potable water.</p> <p>Provide hygienic, adequate facilities for workers, ensuring toilets and changing rooms be separated to male and female employees.</p> <p>Provide housing conditions in accordance with all applicable health and safety regulations and norms by ensuring the provision of adequate space, supply of water, adequate sewage and garbage disposal system, appropriate protection against heat, cold, damp, noise, fire and disease-carrying animals, adequate sanitary and washing facilities, ventilation, cooking and storage facilities and natural and artificial lighting, and in some cases basic medical services.</p> <p>Ensure that the workers camp and construction areas are open only to formal employees.</p> <p>Ensure accident and incident reporting</p>	Construction phase	Contractor FONERWA Kinyinya Sector Supervising consultant	19,000,000
Worker's influxes and management of worker relationships	<p>The project will develop and implement an HR/Labour Policy and a Labour Force Management Plan (or include equivalent mitigation measures in the ESMP) in line with Rwandan law, and where gaps exist, requirements of WB ESS2. Requirements to avoid (gender) discrimination (i.e. hiring process, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, or disciplinary practices, measures to prevent and address harassment, intimidation and/or exploitation).</p> <p>Exclusion of child and forced labour as per WB definition. Requirement for workers' rights to form and to join worker's organizations of and bargain collectively without interference.</p> <p>Workers grievance mechanism and means of information, submission of grievances, follow up procedures, responsibilities, etc.</p> <p>Preference for casual labourers should be given to local people. Local officials and local leaderships of the settlement and surroundings should be involved in recruitment process.</p> <p>FONERWA can make it a contractual obligation for the contractor to hire a specific percentage of women.</p> <p>FONERWA can make it a contractual obligation for the road contractor not to hire children for any work to be performed within the campsite or on the construction sites.</p>	"	Contractor FONERWA Kinyinya Sector Supervising consultant	13,800,000
Labour rights	Consider preparing a Workforce or Labour/HR Management Plan	"	Contractor	
Gender-based violence (including SEAH), or other human rights-based violations or	<p>Provide regular, mandatory training on SEAH for all employees and contractors</p> <p>Incorporate training on cultural sensitivity and the impact of SEAH on different communities</p> <p>Engage with local communities to raise awareness about SEAH and how they can report incidents</p>	Construction phase	Contractor FONERWA	Included in the project investment cost

<p>abuses</p>	<p>Set up multiple, confidential ways for victims and witnesses to report SEAH incidents (e.g., hotlines, suggestion boxes, designated officers). Enforce strict policies on alcohol and drug use on-site Develop and enforce a code of conduct that outlines acceptable behavior and the consequences of violating SEAH policies. Promote gender equality and diversity in hiring and promotion within the project Appoint dedicated site supervisors to monitor behavior and address any issues promptly Ensure that workers have access to and are aware about the Grievance Mechanism where they can reports some SEAH related issues</p>			
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Topic/ potential impacts	Proposed Mitigation and Enhancement Measures	Implementation period	Responsibility	Estimated cost/ year ³⁵
	Ensure that workers have access to and are aware about the Grievance Mechanism	“	FONERWA Kinyinya Sector Supervising consultant	Included in the project investment cost
	Ensure minimum legal labour standards as per ILO regulations (child/forced labour, no discrimination, working hours, minimum wages) are met	“		
Traffic and Transport	Ensure that workers have access to and are aware about the Grievance Mechanism	“		NA
Improved human health	Ensure minimum legal labour standards as per ILO regulations (child/forced labour, no discrimination, working hours, minimum wages) are met	“		NA
Presence of construction workers from outside the area	Propose appropriate trainings, recruitment procedures and policies in the ESMP to manage potential issues. Ensure all contractors implement codes of conduct concerning employment and workforce behaviour (including but not limited to safety rules, zero tolerance for substance abuse, environmental sensitivity of the area, dangers of sexually transmissible diseases and HIV/AIDS, gender equality and sexual harassment, respect for the beliefs and customs of the populations and community relations in general).	“	Contractor FONERWA Kinyinya Sector Supervising consultant	5,700,000
Increased traffic	Develop measures to mitigate the impacts including speed limits, drivers’ training and informing the affected communities. Schedule traffic activities to avoid peak hours on local roads if feasible. Implement the Grievance Mechanism to be used by the community. Ensure safe driving by Project personnel (e.g. through training/induction). Organise carpools/buses for worker transportation where possible to avoid additional traffic pressure. Prevent storage of construction materials, equipment and machineries on traffic lanes. Ensure adequate monitoring and follow up procedures are included in a Traffic Management Plan/ESMP to ensure community safety with regard to traffic/road hazards on public roads. Include these measures in the supplier contracts.	“	Contractor FONERWA Traffic Police	6,900,000
Vulnerable groups	During construction activities, possibility for women and vulnerable community members to gain opportunities (infrastructures maintenance) Consider involving vulnerable groups through different project phases with different activities (tree nurseries, cleaning, security, road safety, campaign... etc Integrate universal design principles to ensure all infrastructure and services are accessible to people with disabilities Install accessible toilets in public places, including features like grab bars, adequate space for wheelchair maneuvering, and accessible sinks.	“	FONERWA Kinyinya Sector	8,200,000
Archaeological & Cultural Heritage	A Chance-finds-procedure needs to be prepared for the Project according to the needs to be shared with the contractors. Ensure all chance finds of cultural heritage (e.g. graves, old ceramic, old building fragments) are reported immediately to the relevant authority. If possible, avoid excavation in the ultimate neighbourhood of a chance find, fence the chance find and await instructions from the competent authority. Stakeholder engagement should take into consideration the cultural heritage aspects as defined in the Project’s SEP.	“	Contractor FONERWA Kinyinya Sector Supervising consultant	6,200,000
		“		
Biophysical impacts				
Resource Efficiency				

Topic/ potential impacts	Proposed Mitigation and Enhancement Measures	Implementation period	Responsibility	Estimated cost/ year ³⁵
Raw materials and resources	<p>The sources of raw materials shall be screened and considered as associated facilities. Careful planning of the exploitation of quarries and borrow pits will allow one exhausted Section of the quarry to be reinstated and rehabilitated, while excavation begins at another section.</p> <p>Rehabilitate quarry sites and other material sites to discourage ponding which are mosquito breeding grounds.</p> <p>Various types of materials need to be stockpiled separately in order to facilitate effective rehabilitation</p> <p>Re-vegetation of these sites with the previously existing vegetation.</p>	“	Contractor FONERWA Kinyinya Sector Supervising consultant	Included in the contractor's contract
Energy consumption	<p>Identify energy sources and needs.</p> <p>Include efficiency aspects in the project development.</p> <p>Consider energy efficiency aspects in the tender documentation for technology and equipment.</p> <p>Monitor the energy consumption of the Project.</p> <p>The project to consider the development of an energy management plan, choosing state of the art, energy efficient over inefficient technology and equipment</p> <p>The project to consider the development of an energy management plan, choosing state of the art, energy efficient over inefficient technology and equipment.</p>	“	Contractor FONERWA Kinyinya Sector Supervising consultant	5,800,000
Solid waste disposal as a result of disposed solar panel after use which can leach into soil and water, causing environmental contamination	Implement strict regulations for the disposal and recycling of solar panels by establishing designated collection areas and partnering with Enviroserve company for the collection and recycling process.	Project Completion phase	FONERWA Kinyinya Sector Supervising consultant	Good practices
Spills of oil, fuel and other materials	<p>Surplus excavated soil shall not be stockpiled near wetlands. Surplus soil shall be removed to an approved disposal area.</p> <p>Oil, fuel, lubricant spillage can be avoided with due care during maintenance activities. In some cases, biological dispersants can be used to break up oil particles</p> <p>Install grease traps for surface run-off in market area.</p>	“	Contractor FONERWA Kinyinya Sector Supervising consultant	Good practices
Soil erosion	<p>Attention should be put on the design of the drainage system.</p> <p>To prevent erosion, ditches will be stabilized with bioengineering methods involving vegetation, erosion control blankets or granular materials.</p> <p>Run-off shall be diverted away from erosion susceptible slopes to prevent further site degradation.</p>	“	Contractor FONERWA Kinyinya Sector Supervising consultant	Considered at the design stage (project investment cost)
Water and Hydrology				
Water use for construction activities	Prioritise the use of rainwater/ stormwater over surface water/groundwater abstraction by using harvesting equipment and systems on site.	“	Contractor/ FONERWA	27,300,000

Drainage: Increased surface runoff	Consider drainage and Stormwater management in the Project planning.	“	FONERWA	Considered (project investment cost)
Increased surface water runoff/ flooding	Ensure to keep the following distances from permanent water course and outside of floodable areas; sensitive urban services and buildings (health centre, school, water supply for populations); any housing;	“	Contractor/FONE RWA	Considered (project investment cost)

Topic/ potential impacts	Proposed Mitigation and Enhancement Measures	Implementation period	Responsibility	Estimated cost/ year ³⁵
Surface Water: Degradation of surface water quality due to leaks and spills of hydrocarbons and other materials or poor management of construction runoff.	Restrict excavation activities during periods of intense rainfall. Use temporary bunding to reduce the risk of sediment, oil or chemical spills to the receiving waters.	“	Contractor/ FONERWA	11,200,000
Surface water/rainfalls: interruption of excavation work due to entering water	Carry out excavation works in cut off ditches to prevent water from entering excavations.	“	Contractor/ FONERWA	Considered (project investment cost)
Discharge of site run off during construction (e.g. accidental spills)	Ensure appropriate containment and disposal of construction wastewater, including sanitary water. Ensure appropriate and safe storage of contaminants such as fuels, construction materials and wastes. Provide absorbent and intervention materials in sufficient quantities and at relevant locations for intervention in case of leakages/spills.	“		16,800,000
Common impacts due to the project components: Mobility and transport, stormwater, water supply, sanitation, energy and community facilities				
Waste and hazardous materials				
Waste management and storage	Develop and implement a contractor Waste Management Plan approved by FONERWA. Collect and segregate wastes and ensure safe storage and in line with legal requirements. Identify waste management facilities and waste management contractors. Ensure disposal through waste contractors licensed for treatment/removal/recycling of each of the waste types. Ensure disposal or landfilling compliant with the WB ESF. Ensure appropriate and safe storage of contaminants such as fuels, construction materials and wastes. Provide absorbent and intervention materials in sufficient quantities and at relevant locations for intervention in case of leakages/spills. Minimise the waste production to the extent possible. Document all waste related operations (type of wastes, quantities produced etc.). Implement appropriate secondary containment and spill controls for maintenance or refuelling works.	“	Contractor REMA FONERWA	18,200,000
Hazardous waste	Ensure immediate cleaning of any spills and remediation of contaminated areas after construction. Reuse wastewater wherever feasible. Ensure appropriate containment and disposal of construction wastewater, including sanitary water.		Contractor REMA FONERWA	19,100,000

Topic/ potential impacts	Proposed Mitigation and Enhancement Measures	Implementation period	Responsibility	Estimated cost/ year ³⁵
Ambient air quality and climate				
Dust emissions (especially in dry conditions)	<p>Ensure watering of transportation roads during dry and windy conditions. Generally, keep roads in good condition.</p> <p>Cover truck loads with canvas to avoid dust blow.</p> <p>Ensure optimal traffic routes. Enforce vehicle speed limits on unpaved roads.</p> <p>Ensure appropriate stockpile management (friable materials) to minimise dust blow.</p> <p>Minimise drop heights for material transfer activities such as unloading of friable materials.</p>	<p>Watering conducted, roads in good conditions</p> <p>Trucks covered</p> <p>Speed limit signs</p> <p>Driver Training Records</p> <p>No extensive dust blow</p>	Contractor FONERWA Kinyinya Sector	Construction cost
Soil contamination due to demolished asbestos	<p>Implement stringent air quality controls and monitoring systems in areas where asbestos is used or handled.</p> <p>Establish designated asbestos disposal sites that are properly managed and monitored to prevent contamination</p> <p>Use secure, impermeable containers for transporting asbestos waste.</p> <p>Provide comprehensive training and protective equipment to workers handling asbestos</p>	Construction phase	Contractor FONERWA	Construction cost
Emissions from equipment and vehicles	<p>Use equipment and vehicles in appropriate technical conditions. Provide emissions control equipment where applicable (e.g. filters).</p> <p>Use low sulphur content fuels, in line with legal provisions in force as well as local availability.</p> <p>Ensure optimal traffic routes to minimise lengths of travel while avoiding settlements if possible.</p> <p>Ensure vehicles and equipment are switched off when not in use. Sensitise drivers.</p> <p>In case of exceeding international thresholds for GHG emissions (100,000 tons of Scope 1 and 2 CO₂e emissions per year), conduct annual monitoring. Develop a monitoring plan with baseline data to compare emission rates during construction and operation.</p>	<p>Technical Specification Sheet</p> <p>Technical Specification Sheet</p> <p>Optimal routes chosen</p> <p>Engines switched off</p> <p>Emissions monitoring plan</p>	Contractor FONERWA Kinyinya Sector	Construction cost
GHG emissions	<p>Low emitting GHG emissions equipment and vehicles to be only used during construction.</p> <p>Monitoring of GHG emissions is proposed</p> <p>Use low emitting vehicles and machines on site</p> <p>Speed control emissions on site</p>	<p>Emissions levels</p> <p>Speed monitoring</p>	Contractor FONERWA Kinyinya Sector	Good practices

Noise & Vibration	<p>Avoid vehicle movements at night.</p> <p>Locate stationary equipment (such as power generators) as far as possible from nearby receptors (e.g. worker resting areas, populated areas and environmentally sensitive areas).</p> <p>Make sure that noise levels do not exceed 120db in case of equipment or vehicle use.</p> <p>Inform the affected communities about activities and mitigation measures.</p> <p>Use of state-of-the-art technology and limit the number of machines operated simultaneously.</p> <p>Ensure the use of modern and well-maintained equipment (e.g. use of silencers).</p> <p>Set traffic speed limits.</p> <p>Verify drivers' behaviour with respect to driving speed and safety.</p> <p>Plan vehicle routes to avoid settlements where possible.</p> <p>Use protective hearing equipment for workers conducting noisy activities.</p>	<p>No work conducted between 10pm and 7 am/</p> <p>Grievance Mechanism</p> <p>Distances between equipment and receptors are kept</p> <p>Attendance List, information notification, etc.</p>	<p>Contractor FONERWA Kinyinya Sector</p>	<p>3,600,000</p>
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Topic/ potential impacts	Proposed Mitigation and Enhancement Measures	Implementation period	Responsibility	Estimated cost/ year ³⁵
		Grievance Mechanism Technical Specification Sheet Speed limit signs Driver Training Records as part of Induction training Safest routes selected, Grievance Mechanism Protective hearing equipment used.		
Traffic and Transport	Consider preparing a Traffic Management Plan for the Project. Schedule traffic activities to avoid peak hours on local roads if feasible. Implement the Grievance Mechanism to be used by the community (see Stakeholder Engagement). Ensure that work site boundaries and limits are in accordance with plans agreed upon in advance. All construction activities should be carried out within boundaries. Ensure safe driving by Project personnel (e.g. through training/induction). Organise carpools/buses for worker transportation where possible to avoid additional traffic pressure. Prevent storage of construction materials, equipment and machineries on traffic lanes.	"	Contractor FONERWA Kinyinya Sector	14,600,000
Management of pesticides use	The Project will not use any pesticides or pesticide products or formulations proven to cause adverse impacts on human health and environment. Develop a Pesticide Control Program including clear guidelines and instructions on the procurement, storage and use of pesticides These requirements need to be included in the supplier contracts.	Pesticide Control Program Procurement register	Contractor FONERWA REMA	4,600,000
Flora and fauna				
Areas of high ecological value: Pollution of wetlands located in the north-western fringes of the settlement	Assess the occurrence of wetlands around the construction site. Avoid these areas where possible through traffic management and site setup. Carry out wetlands assessment to propose further management measures. Ensure to stay out of surrounding wetland areas. Carry out a survey or primary data collection on the presence of flora and fauna species in the Project Area.		Contractor FONERWA	13,000,000 Good practices
	Limit vegetation clearing to areas within the site boundary where it is absolutely necessary. Ensure that the livelihoods of people who are using the wetland are not hampered. Identification of activities that are compatible with the wetland should be done to assist communities who have been using the wetland for some agricultural activities			

Topic/ potential impacts	Proposed Mitigation and Enhancement Measures	Implementation period	Responsibility	Estimated cost/ year ³⁵
Site Clearance- Vegetation removal and habitat disturbance: Disturbance of ecosystems and violation of ecosystem services	Describe the methods of vegetation clearance. Ensure that no chemicals/pesticides are used, burning of vegetation is restricted etc. Do not clear vegetation more than two months in advance of operations			
	Avoid clearing mature trees.			
	Avoid off-road vehicle traffic. Use existing roads.			
	Boundaries of the project site and operation area, including traffic routes during construction must be strictly kept to avoid impact on the adjacent vegetation. Ensure revegetation of cleared areas where possible after construction using native species.	“		
	Avoid clearance of trees and plants to the extent possible. Lost vegetation must be ‘replaced’ by triple amount of the same species replanted in the area Apply offset strategy in case vegetation clearance occurs. Develop the Revegetation Plan to ensure that all cleared vegetation are replanted after the implementation of each subproject.	“		
Mobility and transport	To maintain access to homes outside the settlement, the contractor will implement traffic management at construction sites to enhance traffic flow and safety and public road safety awareness activities along roadside communities. Proper traffic signs shall be placed at all necessary sites in the construction area to reduce movement congestion and safety problem.	“	FONERWA Contractor Supervising consultant	
Cumulative Impacts (ESS 1)	See mitigation measures related to noise and vibrations, and emissions.	“	FONERWA Contractor REMA Kinyinya Sector	Cost considered above
Climate change impacts	Use of equipment in good mechanical condition: The contractor should ensure all motorized equipment is in good mechanical condition and regularly serviced to reduce emissions they generate. Managing overloading: Optimally loaded trucks hauling construction materials will have lower GHG emissions than over-loaded ones. Tree planting (landscaping) along the roads and within the settlement, which would in part be undertaken for carbon sequestration, as well as beautification.	“	FONERWA Contractor REMA	8,900,000
Impacts during operation phase				
Social impacts				
1. Transport and mobility				
Traffic and Transport	Use durable pathways and internal roads for socio-economic cohesion among the settlements	“	FONERWA Kinyinya Sector Village leaders	Good practices
2. Water supply				
New water connections and stand pipes	The new connections to be well maintained to ensure continuous supply of portable water.	“	FONERWA Kinyinya Sector Village leaders	6,500,000

Topic/ potential impacts	Proposed Mitigation and Enhancement Measures	Implementation period	Responsibility	Estimated cost/ year ³⁵
3. Sanitation				
Use of biogas system	Ensure the biogas system is well maintained and well operated to avoid contamination and odour nuisance.	“	FONERWA Kinyinya Sector Village leaders	23,400,000
Skills development	Continuous development of related skills in collaboration of the TVET centre to be constructed and operated from the settlement.	“		
Operation of biogas system	It is important to minimize the disturbance of the excrement during its transfer from the storage tank. Elaboration and enforcement of a maintenance plan for the components, pipelines and sewage network of the facility, to prevent leakage and odours generating substances deposition; Continuous monitoring of methane concentration in the atmosphere with specialised detectors; Flare maintenance in a proper technical condition, to allow burning in any moment the produced excess biogas; Environmental emission monitoring and control - waste management plan elaboration; Public awareness and participation is an important factor for successful project implementation	“		
4. Community Facilities/ TVET				
Education	The project should develop infrastructure that will increase access to TVET programs, including offering relevant courses as demanded by the industries	“	FONERWA TVET Board Village leaders	
Increased women enrolment	Develop, implement and monitor a gender action plan	“		
Biophysical impacts				
Common impacts due to the project components: Mobility and transport, stormwater, water supply, sanitation, energy and community facilities				
Waste generated during operation	Develop and implement a Waste Management Plan. Collect and segregate wastes and ensure safe storage and in line with legal requirements. Identify waste management facilities and waste management contractors. Ensure disposal through waste contractors licensed for treatment/removal/recycling of each of the waste types. Ensure disposal or dumping compliant with the Kigali City Waste Management Plan. Ensure appropriate and safe storage of contaminants such as fuels. Provide absorbent and intervention materials in sufficient quantities and at relevant locations for intervention in case of leakages/spills. Minimise the waste production to the extent possible.	“	FONERWA Kinyinya Sector Village leaders	9,200,000
GHG emissions	Monitor GHG emissions, in case of exceeding international thresholds for GHG emissions. Annual monitoring is proposed.	“	FONERWA Kinyinya Sector Village leaders	6,600,000

Topic/ potential impacts	Proposed Mitigation and Enhancement Measures	Implementation period	Responsibility	Estimated cost/ year ³⁵
Landscape and Visual Impact	Impacts on landscape need to be taken into consideration during detail design of components. Landscaping the different settlement areas to blend in the new infrastructures with the settlement infrastructures Cumulative impacts of all components need to be considered. During operation, effort will be made to reduce visual nuisance and landscape impacts.	“	FONERWA Kinyinya Sector Contractor	22,600,000
Potential use of herbicides	The Project will not use any pesticides or pesticide products or formulations proven to cause adverse impacts on human health and environment. These requirements need to be included in the supplier contracts.	“	FONERWA Kinyinya Sector REMA	9,800,000
Social Impacts				
Improved human health	The following enhancement measures are to be applied: Include the security requirements in the Community Health, Safety and Security Plan based on a risk assessment and ensure that the Voluntary Principles on Human Rights (VPHR) and ESS4 requirements are addressed. Use of state-of-the-art technology and limit the number of machines operated simultaneously. Ensure the use of modern and well-maintained equipment (e.g. use of silencers). Set traffic speed limits. Verify drivers’ behaviour with respect to driving speed and safety.	“	FONERWA Kinyinya Sector	3,800,000
Improved Infrastructure	Target signage and outreach activities to improve public awareness of traffic changes and potential hazards for high-risk sections of public roads, including near the site and laydown areas.	“	FONERWA Kinyinya Sector Village leaders	4,100,000
Security	Security will be enhanced in the premises of Ngaruyinka and the houses through distribution of suitable security lights and presence of security guards.	“	FONERWA Kinyinya Sector Village leaders	3,900,000
Biophysical impacts				
1. Transport and Mobility				
Increased road traffic	Ensure optimal traffic routes to minimise lengths of travel while avoiding settlements if possible. Ensure vehicles and equipment are switched off when not in use. Sensitise drivers. Quantify greenhouse gas (GHG) emissions.	“	FONERWA Gasabo District	
GHG emissions	Low emitting GHG emissions equipment and vehicles to be only used during maintenance of settlement infrastructures. Monitoring of GHG emissions is proposed Use low emitting vehicles and machines on site Speed control emissions on site	“	FONERWA REMA Vehicles Technical Control Service	NA
Climate changes	Maintaining vegetation and larger flora;	“	FONERWA	2,000,000

Topic/ potential impacts	Proposed Mitigation and Enhancement Measures	Implementation period	Responsibility	Estimated cost/ year ³⁵
	Planting of more trees at site during and after the construction phase of the development; Creation and maintenance of a buffer between the project and other land uses to mitigate microclimate modification.		REMA Village leaders through community works	
2. Stormwater				
Reduced and Delayed Storm Water Runoff Volumes	Rainwater harvesting, appropriate channel of rainwater and adequate stormwater infrastructures will improve stormwater management.	“	FONERWA Kinyinya Sector Village leaders	Considered through the project investment cost.
Reduced Localized Flooding and hence Overflow Events	Design the ecological areas to favour infiltration and channel runoff to the surrounding wetlands that regulate the flow from Ngaruryinka.	“		
Enhanced Groundwater Recharge	Retain rainwater through infiltration and soak pits so to recharge groundwater.	“		
Storm water Pollutant Reductions	Replant cleared vegetation and trees to filter runoff The proposed ecological areas will regulate the runoff and filter the pollutants.	“		
Hydrology and drainage	Sides of drainage channels shall be planted with grass or stone pitched. Drainage systems shall have scour checks.	“		
3. Waste management/ Community composting				
Community composting operation	Ensure appropriate operation of the community composting plant.	“	FONERWA Kinyinya Sector Village leaders	7,900,000
Compost application to Landscaping and agriculture	Appropriately apply compost to the farming land and green area to optimise the yield and improve landscape.	“	FONERWA Kinyinya Sector Village leaders	Good practices
Emission of noxious odours	The facility should be located at a site where prevailing winds mostly blow away from nearby residential areas. The plant will be equipped with odour control measures. Maintenance of internal negative pressure and the installation of a biofilter.	“	FONERWA Kinyinya Sector Village leaders	4,200,000
4. Energy				
Use of solar panels, improved cook stoves and energy efficient lightning and appliances	Ensure maintenance of the solar systems and cook stoves. Ensure supply of energy efficient lightning and appliances to the settlement	“	FONERWA Kinyinya Sector Village leaders	
Operation of solar, improved cook stoves	Promote the use of solar equipment, improved cook stoves and efficient lightening and appliances.	“	FONERWA Kinyinya Sector	Good practice and maintenance

Topic/ potential impacts	Proposed Mitigation and Enhancement Measures	Implementation period	Responsibility	Estimated cost/ year ³⁵
and energy efficient lightning and appliances	Ensure maintenance is available within the settlement and the TVET operation		Village leaders	available from the TVET
5. Community Facilities/ TVET				
Use of energy at the TVET	Design appropriately the biogas system and consider training the TVET students to the maintenance of the system for continuous supply of biogas without interruption.	“	FONERWA Kinyinya Sector Village leaders	Project investment cost and good practice
Cumulative impacts with the use of the upgraded infrastructures of the settlement and the proximity to the GCK Pilot project site.	See mitigation measures related to noise and vibrations, and emissions	“	FONERWA Kinyinya Sector REMA	
Climate change impacts	Ensure adequate design and maintenance of those road, community facilities, storm water and water supply infrastructures. In the design, minimum and maximum temperatures should be considered should there be a temperature variation between the extremes. Maintenance and repairing activities have to be planned long time in advance to avert any failures. Tree Planting aligns with the NAPA priority project 7 and the national strategy to combat deforestation and arrest erosion due to climate change. Replacement of rusted galvanized steel culverts with durable cement concrete culverts. Design of storm drainage collection system and appropriate retention ponds or ecological areas for floodwater capture.	“	FONERWA Kinyinya Sector REMA	Included in the project cost through the design of green infrastructures

9.2 Environmental and Social Monitoring Plan

A companion document of the ESMP, the Environmental and Social Monitoring Plan (ESMoP) contain parameters, location, sampling and analysis methods, frequency, and compared to standards or agreed actions that will indicate non-compliances and trigger necessary corrective actions. More specifically, the objectives of the ESMoP are:

- Ensure that impacts do not exceed the established legal standards
- Check the implementation of mitigation measures in the manner described in the ESIA report
- Monitor implementation of the ESMP;
- Provide an early warning of potential environmental damage; and,
- Check whether the proposed mitigation measures have been achieved the intended results, and or/ other environmental impacts occurred;

The monitoring plan will be used for performance monitoring of the project. A monitoring plan defining all parameters to be monitored, with tentative location, project stages for measurements, implementation and institutional responsibility for different environmental components is prepared for all stages of project and presented in the table below

As a guiding principle in designing the ESMoP, ambient monitoring to assess impacts on sensitive receptors like community areas and rivers will be conducted by the Supervision Consultant while point-of-source emissions and discharges are to be monitored by the contractor which is usually part of permit/clearance application and renewals.

Below is the Table 9-2 highlighting the E&S Monitoring Plan

Table 9-2 Environmental and Social Monitoring Plan

Topic/ potential impacts	Proposed Mitigation and Enhancement Measures	Monitoring indicators	Monitoring structures	Frequency
Impacts during pre-construction phase				
Social impacts				
Common impacts to the project components: Mobility and transport, stormwater, water supply, sanitation and TVET Centre				
Displacement of Existing Land Uses, Property and People (ESS 5)	<p>The resettlement plan addresses detail compensation for land and structures, resettlement of displaced persons (DPs) or Persons Affected by the Project (PAPs), and loss of livelihood opportunities.</p> <p>All DPs identified in the census survey, which encompasses all individuals having formal legal rights to the land lost and occupants, regardless of ownership of the land lost are entitled to compensation, assistance and rehabilitation as provided in the approved Entitlement Matrix of the Resettlement Plan (RP).</p> <p>All DPs will be given notice in sufficient advance and will be requested to vacate premises and dismantle affected structures prior to project implementation.</p> <p>The DPs will be compensated according to the official compensation rates.</p> <p>The acquisition of the land and private properties will be carried out in accordance with Rwanda Expropriation law for public interests, World Bank ESS5, RAP and entitlement framework for the project.</p> <p>Early identification of entitlement for compensation planning of Resettlement and Rehabilitation Action Plan to compensate the losses.</p> <p>The compensation will be paid in accordance with 2015 Rwanda expropriation law and will be decided by competent authorities.</p> <p>All the affected people will be compensated before commencement of Construction works</p> <p>Restoration of land after road construction must be done.</p>	RPF and RAP/LACP in place RFP and RAP in place	FONERWA/ Gasabo District RAP Implementation Consultant	Weekly
Vegetation clearing and crop damages	<p>The drainage system will be designed and constructed with several outlets so that minimum volume of runoff is directed to the farms so as to reduce water logging or alternatively, they should be directed to water bodies.</p> <p>Only trees planted in the areas to be acquired by the project must be cut. All other trees should not be touched whatever the need.</p> <p>Trees cleared must be replanted elsewhere to improve the green of the settlement and its environment.</p>	Areas revegetated Number of trees newly replanted	FONERWA/ Gasabo District RAP Implementation Consultant	Weekly
Impacts during construction phase				
Social impacts				
Common impacts to the project components: Mobility and transport, stormwater, water supply, sanitation and TVET Centre				

Topic/ potential impacts	Proposed Mitigation and Enhancement Measures	Monitoring indicators	Monitoring structures	Frequency
Occupational Health and Safety.	<p>Consider preparing an OHS Plan based on the occupational risks and hazards identification</p> <p>Provide H&S Training to the construction workforce (including sub-contractors, temporary workers and drivers)</p> <p>Ensure site premises are provided with appropriate fencing (where applicable) and lighting.</p> <p>Use hazard notices/signs/barriers to prevent access to dangerous areas.</p> <p>Ensure speed limits on site and on transporting routes.</p> <p>Ensure the use of Personal Protective Equipment (PPE) for workers.</p> <p>Maintain high standard in housekeeping on site.</p> <p>Ensure the workforce has access to primary healthcare on site, providing prescriptions and vaccinations.</p> <p>In case more than 35 workers are present on site, ensure that a hospital, medical clinic or a health centre can be reached within a period of 45 minutes.</p> <p>Ensure provision of welfare facilities at the Project site, including shaded welfare areas, bathrooms, and potable water.</p> <p>Provide hygienic, adequate facilities for workers, ensuring toilets and changing rooms be separated to male and female employees.</p> <p>Provide housing conditions in accordance with all applicable health and safety regulations and norms by ensuring the provision of adequate space, supply of water, adequate sewage and garbage disposal system, appropriate protection against heat, cold, damp, noise, fire and disease-carrying animals, adequate sanitary and washing facilities, ventilation, cooking and storage facilities and natural and artificial lighting, and in some cases basic medical services.</p> <p>Ensure that the workers camp and construction areas are open only to formal employees.</p> <p>Ensure accident and incident reporting</p>	<p>OHS Plan in place</p> <p>Number of training performed per period of time</p> <p>H&S planning of construction site done, items installed</p> <p>Speed signs installed (number)</p> <p>Speed limits (km/h)</p> <p>PPE used on-site by workers</p> <p>Good housekeeping on-site</p> <p>Quality of healthcare available on site</p> <p>Medical surveillance records</p> <p>Number of vaccinated vs non-vaccinated</p> <p>Medical centres in the proximity of the site (distance km).</p> <p>Welfare facilities provided at site</p> <p>Access controlled</p> <p>Accident and Incident register</p> <p>Worker's grievance mechanism</p> <p>Appropriate housing conditions for workers</p>	FONERWA/ Project Management Contractor Project Engineer	Weekly
Worker's influxes and management of worker relationships	<p>The project will develop and implement an HR/Labour Policy and a Labour Force Management Plan (or include equivalent mitigation measures in the ESMP) in line with Rwandan law, and where gaps exist, requirements of WB ESS2. Requirements to avoid (gender) discrimination (i.e. hiring process, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, or disciplinary practices, measures to prevent and address harassment, intimidation and/or exploitation).</p> <p>Exclusion of child and forced labour as per WB definition. Requirement for workers' rights to form and to join worker's organizations of and bargain collectively without interference.</p> <p>Workers grievance mechanism and means of information, submission of grievances, follow up procedures, responsibilities, etc.</p>	<p>Labour force management plan on site</p> <p>New workers on site</p> <p>Number of identified child labour</p> <p>Number of women employed versus number of men</p>	FONERWA/ Project Management Contractor Project Engineer	Weekly

Topic/ potential impacts	Proposed Mitigation and Enhancement Measures	Monitoring indicators	Monitoring structures	Frequency
	Preference for casual labourers should be given to local people. Local officials and local leaderships of the settlement and surroundings should be involved in recruitment process. FONERWA can make it a contractual obligation for the contractor to hire a specific percentage of women. FONERWA can make it a contractual obligation for the road contractor not to hire children for any work to be performed within the campsite or on the construction sites.			
Labour rights	Consider preparing a Workforce or Labour/HR Management Plan	Workforce or Labour/HR Management Plan in place	FONERWA/ Project Management Contractor Project Engineer	Weekly
	Ensure that workers have access to and are aware about the Grievance Mechanism	Grievance Mechanism in place and number of grievances recorded		
	Ensure minimum legal labour standards as per ILO regulations (child/forced labour, no discrimination, working hours, minimum wages) are met	Grievance Mechanism Records, Training recorded		
Traffic and Transport	Ensure that workers have access to and are aware about the Grievance Mechanism	"		Weekly
Improved human health	Ensure minimum legal labour standards as per ILO regulations (child/forced labour, no discrimination, working hours, minimum wages) are met	Number of complaints related to discrimination, working hours or minimum wages		Weekly
Presence of construction workers from outside the area.	Propose appropriate trainings, recruitment procedures and policies in the ESMP to manage potential issues. Ensure all contractors implement codes of conduct concerning employment and workforce behaviour (including but not limited to safety rules, zero tolerance for substance abuse, environmental sensitivity of the area, dangers of sexually transmissible diseases and HIV/AIDS, gender equality and sexual harassment, respect for the beliefs and customs of the populations and community relations in general).	Number of trainings Code of conduct on site Grievance Mechanism records	FONERWA/ Project Management Contractor Project Engineer	Monthly
Increased traffic.	Develop measures to mitigate the impacts including speed limits, drivers' training and informing the affected communities. Schedule traffic activities to avoid peak hours on local roads if feasible. Implement the Grievance Mechanism to be used by the community. Ensure safe driving by Project personnel (e.g. through training/induction). Organise carpools/buses for worker transportation where possible to avoid additional traffic pressure.	Traffic Management Plan in place Peak hours on local roads avoided, Grievance Mechanism	FONERWA/ Project Management Contractor Project Engineer	Weekly

Topic/ potential impacts	Proposed Mitigation and Enhancement Measures	Monitoring indicators	Monitoring structures	Frequency
	Prevent storage of construction materials, equipment and machineries on traffic lanes. Ensure adequate monitoring and follow up procedures are included in a Traffic Management Plan/ESMP to ensure community safety with regard to traffic/road hazards on public roads. Include these measures in the supplier contracts.	Marking the borders of works site boundaries and usage of warning signs Driver Training Records as part of Induction training Dedicated storage areas in place		
Vulnerable groups	During construction activities, possibility for women and vulnerable community members to gain opportunities (infrastructures maintenance) Consider involving vulnerable groups through different project phases with different activities (tree nurseries, cleaning, security, road safety, campaign... etc	Number of people employed from each vulnerable group	FONERWA/ Project Management Contractor Project Engineer	Weekly
Archaeological & Cultural Heritage	A Chance-finds-procedure needs to be prepared for the Project according to the needs to be shared with the contractors. Ensure all chance finds of cultural heritage (e.g. graves, old ceramic, old building fragments) are reported immediately to the relevant authority and where possible allow people's access to them during the project implementation . If possible, avoid excavation in the ultimate neighbourhood of a chance find, fence the chance find and await instructions from the competent authority. Stakeholder engagement should take into consideration the cultural heritage aspects as defined in the Project's SEP.	Prepared chance finds procedure Number of chances finds	FONERWA/ Project Management Contractor Project Engineer	Quarterly
Biophysical impacts				
Resource Efficiency				
Raw materials and resources	The sources of raw materials shall be screened and considered as associated facilities. Careful planning of the exploitation of quarries and borrow pits will allow one exhausted Section of the quarry to be reinstated and rehabilitated, while excavation begins at another section. Rehabilitate quarry sites and other material sites to discourage pounding which are mosquito breeding grounds. Various types of materials need to be stockpiled separately in order to facilitate effective rehabilitation Re-vegetation of these sites with the previously existing vegetation.	Areas rehabilitated vs non-rehabilitated (m ²)	FONERWA/ Project Management Contractor Project Engineer	Monthly

Topic/ potential impacts	Proposed Mitigation and Enhancement Measures	Monitoring indicators	Monitoring structures	Frequency
Energy consumption	Identify energy sources and needs. Include efficiency aspects in the project development. Consider energy efficiency aspects in the tender documentation for technology and equipment. Monitor the energy consumption of the Project. The project to consider the development of an energy management plan, choosing state of the art, energy efficient over inefficient technology and equipment The project to consider the development of an energy management plan, choosing state of the art, energy efficient over inefficient technology and equipment.	Energy consumption	FONERWA/ Project Management Contractor Project Engineer	Quarterly
Spills of oil, fuel and other materials	Surplus excavated soil shall not be stockpiled near wetlands. Surplus soil shall be removed to an approved disposal area. Oil, fuel, lubricant spillage can be avoided with due care during maintenance activities. In some cases, biological dispersants can be used to break up oil particles Install grease traps for surface run-off in market area.	Oil or fuel Spills recorded	FONERWA/ Project Management Contractor Project Engineer	Weekly
Soil erosion	Attention should be put on the design of the drainage system. To prevent erosion, ditches will be stabilized with bioengineering methods involving vegetation, erosion control blankets or granular materials. Run-off shall be diverted away from erosion susceptible slopes to prevent further site degradation.	Topsoil stored and re-used Stockpile height limited Reinstatement completed Preventive erosion control measures in place	FONERWA/ Project Management Contractor Project Engineer	Weekly
Water and Hydrology				
Water Use: Impact on availability of water as water supplied to Ngaruyinka is used for construction activities	Prioritise the use of rainwater/ stormwater over surface water/groundwater abstraction by using harvesting equipment and systems on site.	Water harvesting equipment and use Measurement of water discharge at different intervals (daily, weekly)	FONERWA/ Project Management Contractor Project Engineer	Weekly
Drainage: Increased surface runoff	Consider drainage and Stormwater management in the Project planning.	Detailed design		Weekly
Increased surface water runoff/ flooding	Ensure to keep the following distances from permanent water course and outside of floodable areas; sensitive urban services and buildings (health centre, school, water supply for populations); any housing;	Marking the borders of works site boundaries in line with given limits and usage of warning signs		Weekly

Topic/ potential impacts	Proposed Mitigation and Enhancement Measures	Monitoring indicators	Monitoring structures	Frequency
Surface Water: Degradation of surface water quality due to leaks and spills of hydrocarbons and other materials or poor management of construction runoff.	Restrict excavation activities during periods of intense rainfall. Use temporary bunding to reduce the risk of sediment, oil or chemical spills to the receiving waters.	No excavation during intense rainfall		Weekly
Surface water/rainfalls: interruption of excavation work due to entering water	Carry out excavation works in cut off ditches to prevent water from entering excavations.	Water entering excavations		Weekly
Discharge of site runoff during construction (e.g. accidental spills)	Ensure appropriate containment and disposal of construction wastewater, including sanitary water. Ensure appropriate and safe storage of contaminants such as fuels, construction materials and wastes. Provide absorbent and intervention materials in sufficient quantities and at relevant locations for intervention in case of leakages/spills.	Amount of wastewater runoff Amount of fuel and contaminants runoff		Weekly
Common impacts due to the project components: Mobility and transport, stormwater, water supply, sanitation, energy and community facilities				
Waste and hazardous materials				
Waste management and storage	Develop and implement a Waste Management Plan. Collect and segregate wastes and ensure safe storage and in line with legal requirements. Identify waste management facilities and waste management contractors. Ensure disposal through waste contractors licensed for treatment/removal/recycling of each of the waste types. Ensure disposal or landfilling compliant with the WB ESF. Ensure appropriate and safe storage of contaminants such as fuels, construction materials and wastes. Provide absorbent and intervention materials in sufficient quantities and at relevant locations for intervention in case of leakages/spills. Minimise the waste production to the extent possible. Document all waste related operations (type of wastes, quantities produced etc.). Implement appropriate secondary containment and spill controls for maintenance or refuelling works.	Waste Management Plan in place Waste collection areas existent, waste inventories Waste management contracts Waste transfer notes Disposal through licensed contractors Safe storage of hazardous materials, Spill remediation equipment in place. Records of waste production are kept Waste Management Plan Training performed and recorded	FONERWA/ Project Management Contractor Project Engineer	Daily and weekly
Hazardous waste	Ensure immediate cleaning of any spills and remediation of contaminated areas after construction.			Daily and weekly

Topic/ potential impacts	Proposed Mitigation and Enhancement Measures	Monitoring indicators	Monitoring structures	Frequency
	<p>Reuse wastewater wherever feasible.</p> <p>Ensure appropriate containment and disposal of construction wastewater, including sanitary water.</p>	<p>Storage, transport and treatment of waste is documented</p> <p>Waste transfer notes</p> <p>Waste inventories</p>	<p>FONERWA/ Project Management Contractor Project Engineer</p>	
Ambient air quality and climate				
<p>Dust emissions (especially in dry conditions)</p>	<p>Ensure watering of transportation roads during dry and windy conditions. Generally, keep roads in good condition.</p> <p>Cover truck loads with canvas to avoid dust blow.</p> <p>Ensure optimal traffic routes. Enforce vehicle speed limits on unpaved roads.</p> <p>Ensure appropriate stockpile management (friable materials) to minimise dust blow.</p> <p>Minimise drop heights for material transfer activities such as unloading of friable materials.</p> <p>Use equipment and vehicles in appropriate technical conditions. Provide emissions control equipment where applicable (e.g. filters).</p> <p>Use low sulphur content fuels, in line with legal provisions in force as well as local availability.</p> <p>Ensure optimal traffic routes to minimise lengths of travel while avoiding settlements if possible.</p>	<p>Watering conducted, roads in good conditions</p> <p>Trucks covered</p> <p>Speed limit signs</p> <p>Driver Training Records</p> <p>No extensive dust blow</p>	<p>FONERWA/ Project Management Contractor Project Engineer</p>	<p>Daily</p>

Topic/ potential impacts	Proposed Mitigation and Enhancement Measures	Monitoring indicators	Monitoring structures	Frequency
Emissions from equipment and vehicles	Ensure vehicles and equipment are switched off when not in use. Sensitise drivers. In case of exceeding international thresholds for GHG emissions (100,000 tons of Scope 1 and 2 CO2e emissions per year), conduct annual monitoring. Develop a monitoring plan with baseline data to compare emission rates during construction and operation.	Technical Specification Sheet Optimal routes chosen Engines switched off Emission levels	FONERWA/ Project Management Contractor Project Engineer	Monthly
GHG emissions	Low emitting GHG emissions equipment and vehicles to be only used during construction. Monitoring of GHG emissions is proposed Use low emitting vehicles and machines on site Speed control emissions on site	Emission levels	FONERWA/ Project Management Contractor Project Engineer	Quarterly
Noise & Vibration	Avoid vehicle movements at night. Locate stationary equipment (such as power generators) as far as possible from nearby receptors (e.g. worker resting areas, populated areas and environmentally sensitive areas). Make sure that noise levels do not exceed 120db in case of equipment or vehicle use. Inform the affected communities about activities and mitigation measures. Use of state-of-the-art technology and limit the number of machines operated simultaneously. Ensure the use of modern and well-maintained equipment (e.g. use of silencers). Set traffic speed limits. Verify drivers' behaviour with respect to driving speed and safety. Plan vehicle routes to avoid settlements where possible. Use protective hearing equipment for workers conducting noisy activities.	No work conducted between 10pm and 7 am/ Grievance Mechanism Distances between equipment and receptors are kept Attendance List, information notification, etc Grievance Mechanism Noise levels emitted by machines Speed limit signs Driver Training Records as part of Induction training Protective hearing equipment used	FONERWA/ Project Management Contractor Project Engineer	Weekly
Traffic and Transport	Consider preparing a Traffic Management Plan for the Project. Schedule traffic activities to avoid peak hours on local roads if feasible. Implement the Grievance Mechanism to be used by the community (see Stakeholder Engagement).	Traffic Management Plan in place Peak hours on local roads avoided,	FONERWA/ Project Management Contractor	Weekly

Topic/ potential impacts	Proposed Mitigation and Enhancement Measures	Monitoring indicators	Monitoring structures	Frequency
	Ensure that work site boundaries and limits are in accordance with plans agreed upon in advance. All construction activities should be carried out within boundaries. Ensure safe driving by Project personnel (e.g. through training/induction). Organise carpools/buses for worker transportation where possible to avoid additional traffic pressure. Prevent storage of construction materials, equipment and machineries on traffic lanes.	Grievance Mechanism Marking the borders of works site boundaries and usage of warning signs Driver Training Records as part of Induction training Dedicated storage areas in place	Project Engineer	
Management of pesticides use	The Project will not use any pesticides or pesticide products, or formulations proven to cause adverse impacts on human health and environment. These requirements need to be included in the supplier contracts.		FONERWA/ Project Management Contractor Project Engineer	Monthly
Flora and fauna				
Areas of high ecological value: Pollution of wetlands located in the north-western fringes of the settlement	Assess the occurrence of wetlands around the construction site. Avoid these areas where possible through traffic management and site setup.	Areas of ecological value avoided (m2)	FONERWA/ Project Management Contractor Project Engineer	Monthly
	Carry out wetlands assessment to propose further management measures.	Wetland assessment findings		
	Ensure to stay out of surrounding wetland areas.	Pre-construction survey to make sure the project is not encroaching the wetland areas		
	Carry out a survey or primary data collection on the presence of flora and fauna species in the Project Area.	Protected species assessment		
Site Clearance- Vegetation removal and habitat disturbance: Disturbance of ecosystems and violation of ecosystem services	Limit vegetation clearing to areas within the site boundary where it is absolutely necessary.	Vegetation cleared vs non-cleared		Weekly
	Describe the methods of vegetation clearance. Ensure that no chemicals/pesticides are used, burning of vegetation is restricted etc. Do not clear vegetation more than two months in advance of operations	No use of fires or chemicals on site Marking the borders of works site boundaries Usage of warning signs		
	Avoid clearing mature trees.	No mature trees cleared		
	Avoid off-road vehicle traffic. Use existing roads.	No off-road traffic		
	Ensure revegetation of cleared areas where possible after construction using native species.	Revegetation completed (m ²)		
	Avoid clearance of trees and plants to the extent possible.	List of existing vegetation and overview of compensation		

Topic/ potential impacts	Proposed Mitigation and Enhancement Measures	Monitoring indicators	Monitoring structures	Frequency
	Lost vegetation must be 'replaced' by triple amount of the same species replanted in the area Apply offset strategy in case vegetation clearance occurs	means for the respective vegetation to be removed		
Mobility and transport				
Impact on safety	To maintain access to homes outside the settlement, the contractor will implement traffic management at construction sites to enhance traffic flow and safety and public road safety awareness activities along roadside communities. Proper traffic signs shall be placed at all necessary sites in the construction area to reduce movement congestion and safety problem.	Traffic count and vehicles speed recorded vs enforced Percentage of traffic signs at necessary sites	FONERWA/ Project Management Contractor Project Engineer	Monthly
Cumulative Impacts (ESS 1)	See mitigation measures related to noise and vibrations, and emissions. .	Noise, vibration, dust and emissions levels. Water quality parameters	FONERWA/ Project Management Contractor Project Engineer	Cost considered above
Climate change impacts	Use of equipment in good mechanical condition: The contractor should ensure all motorized equipment is in good mechanical condition and regularly serviced to reduce emissions they generate. Managing overloading: Optimally loaded trucks hauling construction materials will have lower GHG emissions than over-loaded ones. Tree planting (landscaping) along the roads and within the settlement, which would in part be undertaken for carbon sequestration, as well as beautification.	Equipment and machines in good conditions vs those in non-acceptable conditions Number of trees along the road and within the settlement newly planted	FONERWA/ Project Management Contractor Project Engineer	Monthly
Impacts during Operation Phase				
Social impacts				
1. Transport and mobility				
Traffic and Transport	Use durable pathways and internal roads for socio-economic cohesion among the settlements	Length of durable pathways and internal roads	FONERWA/ Project Management REMA	Weekly
2. Water supply				
New water connections and stand pipes	The new connections to be well maintained to ensure continuous supply of portable water.	New and well-maintained water connections (nber)	FONERWA/ Project Management REMA	Weekly
3. Sanitation				

Topic/ potential impacts	Proposed Mitigation and Enhancement Measures	Monitoring indicators	Monitoring structures	Frequency
Use of biogas system	Ensure the biogas system is well maintained and well operated to avoid contamination and odour nuisance.	Odour nuisance (cases reported)	FONERWA/ Project Management REMA	Daily and weekly
Skills development	Continuous development of related skills in collaboration of the TVET centre to be constructed and operated from the settlement.	Number of students that have graduated from the TVET Centre		
Operation of biogas system	It is important to minimize the disturbance of the excrement during its transfer from the storage tank. Elaboration and enforcement of a maintenance plan for the components, pipelines and sewage network of the facility, to prevent leakage and odours generating substances deposition; Continuous monitoring of methane concentration in the atmosphere with specialised detectors; Flare maintenance in a proper technical condition, to allow burning in any moment the produced excess biogas; Environmental emission monitoring and control - waste management plan elaboration; Public awareness and participation are an important factor for successful project implementation	Biogas production (volume) per day Number of public awareness campaigns		
4. Community Facilities/ TVET				
Education	The project should develop infrastructure that will increase access to TVET programs, including offering relevant courses as demanded by the industries	Enrolment at the TVET centre	FONERWA/ Project Management REMA	
Increased women enrolment	Develop, implement and monitor a gender action plan	Women enrolment		
Biophysical impacts				
Common impacts due to the project components: Mobility and transport, stormwater, water supply, sanitation, energy and community facilities				
Waste generated during operation	Develop and implement a Waste Management Plan. Collect and segregate wastes and ensure safe storage and in line with legal requirements. Identify waste management facilities and waste management contractors. Ensure disposal through waste contractors licensed for treatment/removal/recycling of each of the waste types. Ensure disposal or dumping compliant with the Kigali City Waste Management Plan. Ensure appropriate and safe storage of contaminants such as fuels. Provide absorbent and intervention materials in sufficient quantities and at relevant locations for intervention in case of leakages/spills. Minimise the waste production to the extent possible.	Amount of wastes collected and segregated Amount of waste disposed off and not	FONERWA/ Project Management REMA	Weekly

Topic/ potential impacts	Proposed Mitigation and Enhancement Measures	Monitoring indicators	Monitoring structures	Frequency
GHG emissions	Monitor GHG emissions, in case of exceeding international thresholds for GHG emissions. Annual monitoring is proposed.	Emission levels	FONERWA/ Project Management	Quarterly
Landscape and Visual Impact	Impacts on landscape need to be taken into consideration during detail design of components. Landscaping the different settlement areas to blend in the new infrastructures with the settlement infrastructures Cumulative impacts of all components need to be considered. During operation, effort will be made to reduce visual nuisance and landscape impacts.	Visual impact from the surroundings (pleasant or bad)	FONERWA/ Project Management REMA	Monthly
Potential use of herbicides	The Project will not use any pesticides or pesticide products or formulations proven to cause adverse impacts on human health and environment. These requirements need to be included in the supplier contracts.	Number of herbicides harmful	FONERWA/ Project Management REMA	Quarterly
Social Impacts				
Improved human health	The following enhancement measures are to be applied: Include the security requirements in the Community Health, Safety and Security Plan based on a risk assessment and ensure that the Voluntary Principles on Human Rights (VPHR) and ESS4 requirements are addressed. Use of state-of-the-art technology and limit the number of machines operated simultaneously. Ensure the use of modern and well-maintained equipment (e.g. use of silencers). Set traffic speed limits. Verify drivers' behaviour with respect to driving speed and safety.	Number of incidents (violation of human rights) Machines and equipment well maintained vs non-well maintained	FONERWA/ Project Management REMA	Monthly
Improved Infrastructure	Target signage and outreach activities to improve public awareness of traffic changes and potential hazards for high-risk sections of public roads, including near the site and laydown areas.	Number of signs and posters at high risk areas	FONERWA/ Project Management REMA	Monthly
Security	Security will be enhanced in the premises of Ngaruyinka and the houses through distribution of suitable security lights and presence of security guards.	Emergency response plan	FONERWA/ Project Management REMA	Daily
Biophysical impacts				
1. Transport and Mobility				
Increased road traffic	Ensure optimal traffic routes to minimise lengths of travel while avoiding settlements if possible. Ensure vehicles and equipment are switched off when not in use. Sensitise drivers.	Optimisation level of traffic routes Emission levels	FONERWA/ Project Management REMA	Weekly

Topic/ potential impacts	Proposed Mitigation and Enhancement Measures	Monitoring indicators	Monitoring structures	Frequency
GHG emissions	Low emitting GHG emissions equipment and vehicles to be only used during maintenance of settlement infrastructures. Monitoring of GHG emissions is proposed Use low emitting vehicles and machines on site Speed control emissions on site	Emission levels Vehicles speed recorded vs enforced	FONERWA/ Project Management REMA	Quarterly
Climate changes	Maintaining vegetation and larger flora; Planting of more trees at site during and after the construction phase of the development; Creation and maintenance of a buffer between the project and other land uses to mitigate microclimate modification.	Areas covered by vegetation (sqm) vs non-covered Number of trees planted Temperature recorded on site	FONERWA/ Project Management REMA	Quarterly
2. Stormwater				
Reduced and Delayed Storm Water Runoff Volumes	Rainwater harvesting, appropriate channel of rainwater and adequate stormwater infrastructures will improve stormwater management.	Rainwater harvested vs total to be harvested	FONERWA/ Project Management REMA	Quarterly
Reduced Localized Flooding and hence Overflow Events	Design the ecological areas to favour infiltration and channel runoff to the surrounding wetlands that regulate the flow from Ngaruryinka.	Flow rate with ecological areas		
Enhanced Groundwater Recharge	Retain rainwater through infiltration and soak pits so to recharge groundwater.	Amount of rainwater retained through infiltration		
Storm water Pollutant Reductions	Replant cleared vegetation and trees to filter runoff The proposed ecological areas will regulate the runoff and filter the pollutants.	Vegetation and trees filtering runoff		
Hydrology and drainage	Sides of drainage channels shall be planted with grass or stone pitched. Drainage systems shall have scour checks.	Grass planted at the drainage channels vs needed areas Maintenance frequency (checks) of the drainage system		
3. Waste management/ Community composting				
Community composting operation	Ensure appropriate operation of the community composting plant.	How often the composting plant is in operation (days/year)	FONERWA/ Project Management REMA Village leaders	Daily
Compost application to Landscaping and agriculture	Appropriately apply compost to the farming land and green area to optimise the yield and improve landscape.	Amount of compost applied to farming land and green area vs the need	FONERWA/ Project Management	Daily

Topic/ potential impacts	Proposed Mitigation and Enhancement Measures	Monitoring indicators	Monitoring structures	Frequency
			REMA	
Emission of noxious odours	The facility should be located at a site where prevailing winds mostly blow away from nearby residential areas. The plant will be equipped with odour control measures. Maintenance of internal negative pressure and the installation of a biofilter.	Quality of smell (odour) around the composting plant Frequency of composting plant maintenance	FONERWA/ Project Management REMA	Weekly
4. Energy				
Use of solar panels, improved cook stoves and energy efficient lightning and appliances	Ensure maintenance of the solar systems and cook stoves. Ensure supply of energy efficient lightning and appliances to the settlement	Maintenance frequency Availability of efficient lightning and appliances to the settlement	FONERWA/ Project Management REMA	Quarterly
Operation of solar, improved cook stoves and energy efficient lightning and appliances	Promote the use of solar equipment, improved cook stoves and efficient lightening and appliances. Ensure maintenance is available within the settlement and the TVET operation	Solar equipment used (nber) Improved cook stoves (nber) Efficient lightning and appliances vs the same non-efficient		Monthly
5. Community Facilities/ TVET				
Use of energy at the TVET.	Design appropriately the biogas system and consider training the TVET students to the maintenance of the system for continuous supply of biogas without interruption.	Energy generated from biogas vs total energy used	FONERWA/ Project Management REMA	Monthly
6. Energy and Community Facilities/ TVET				
Fire hazards	Prepare and implement an emergency response plan			
	Ensure minimum first aid provisions on site. (suitably stocked first-aid kits; a person, respectively an adequate number of first-aid helpers and ensure that staff and workers are informed about first-aid arrangements)	Suitable first aid kits on site Ensure the presence of first aid helpers in all shifts First aid certificates		Daily
Cumulative impacts with the use of the upgraded infrastructures of the settlement and the proximity to the KGC pilot project site.	See mitigation measures related to noise and vibrations, and emissions			Quarterly

Topic/ potential impacts	Proposed Mitigation and Enhancement Measures	Monitoring indicators	Monitoring structures	Frequency
Climate change impacts	<p>Ensure adequate design and maintenance of those road, community facilities, storm water and water supply infrastructures.</p> <p>In the design, minimum and maximum temperatures should be considered should there be a temperature variation between the extremes.</p> <p>Maintenance and repairing activities have to be planned long time in advance to avert any failures.</p> <p>Tree Planting aligns with the NAPA priority project 7 and the national strategy to combat deforestation and arrest erosion due to climate change.</p> <p>Replacement of rusted galvanized steel culverts with durable cement concrete culverts.</p> <p>Design of storm drainage collection system and appropriate retention ponds or ecological areas for floodwater capture.</p>	<p>Infrastructures conditions</p> <p>Number of trees newly planted within the settlement</p> <p>Number on concrete in cement concrete vs rusted galvanized steel</p>		Monthly

9.3 Institutional capacity strengthening

The effective implementation of the ESMP requires that all persons working for the project are aware of the importance of environmental requirements for the project and their roles and responsibilities in the implementation of the ESMP. They should also be aware of the significant actual or potential environmental impacts of their work activities; the benefits of improved performance and the consequence of not complying with environmental requirements

Capacity strengthening proposed for Institutional awareness of the GCF environmental and social and National environmental laws shall concern mainly Ngaruyinka. In addition, it will focus on strengthening capacity of the project team including the Environmental and Social Safeguard in planning, monitoring and implementation of the project Environmental and social safeguard instruments

Capacity strengthening shall be directed to:

- Environmental and social Safeguard Specialist
- Project implementation Unit
- Workers on site and involved communities
- Persons with environmental responsibilities, wetlands maintenance workers, local authorities, people involved in emergency procedures and senior managers.
- District Environment officer
- District Agronomist and land bureau officers.
- Sector Agronomist and land bureau officers.

The training shall focus on:

- GCF Environmental and social safeguards.
- National environmental laws.
- Understanding of environmental requirements of the project
- Records keeping and reporting on the Environmental and Social safeguard instruments
- Environmental monitoring, compliance monitoring and surveillance which is the major tool for implementation of ESMP
- Project compliance with existing national laws and regulations
- Content of ESMP and Responsibilities for implementing ESMP
- Grievance management-Dealing with complaints to maintain good relationship with stakeholders, understanding the needs, traditions and behavior of local communities

Period of training- It shall be done at commencement of the project, Quarter 1, to allow them to understand the Environmental and social requirements of the GCF and National law. It could take 5 weekdays.

Cost of Capacity strengthening- 2,100USD.i.e. two days preparation and five days of training at a cost of 300USD/day.

9.4 Grievance Redress Mechanism (GRM)

The project aims to: (i) embody the principles of zero tolerance of corruption, transparency, social justice community engagement and empowerment, (ii) fairly, ethically and impartially implement all its activities, (iii) ensure that all community members are kept informed about the activities under the project and about opportunities for housing, for training and for “green” jobs, (iv) ensure that all opportunities for investment in low carbon businesses are widely publicised and that all potential investors have an equal opportunity to submit proposals, have them properly and fairly evaluated and receive prompt feedback, (v) ensure that groups from the community who find it difficult to participate in economic activities are given equal access (women and youth);

In the event that, during project implementation, there are perceived issues of unfairness, error or misapplication of the procedures by which the project will be implemented, it is essential that everyone affected has the opportunity to raise their concerns, and have them listened to, investigated and, if found to be correct, there is appropriate redress. In order to achieve this, the project has designed a process for lodging grievances. This sub-section sets out how this mechanism will operate.

A grievance can be made by an individual, a household, or a group/community - anyone can lodge a grievance it is their choice whether to make a formal or informal approach. Grievances may be raised informally or formally.

An informal grievance is one raised verbally, mostly requesting for clarification of facts or process, it can be entered through the Community Coordination Committee members (CCC). A formal grievance is a written complaint raised through the Cell or Sector offices, mostly on issues of misinformation, exclusion from project opportunities, discrimination, inadequate communication or inadequate response to previously raised issues.

Grievances may also address more serious situations including but not limited to money laundering, gender-based violence (including SEAH), or other human rights-based violations or abuses. These complaints may pertain to the implementation of the project, specific workers on the project or the AE/EE directly. Given the scope and scale of the proposed project, the appropriate structure for handling grievances includes the AE GRM which is the umbrella structure as well as GRMs hosted by the EE that are independent of government judicial procedures, provide a survivor-centered process to accommodate serious grievances, facilitate access to the GCF's independent redress mechanism and where appropriate interface seamlessly with the AE GRM/government judicial procedures. For this project, the EE will have a survivor-centered project-level GRM process available to all project staff, participants and beneficiaries that will seamlessly integrate with that system for sharing of grievances as appropriate.

All project staff, participants and beneficiaries will be made aware of the grievance process through public notices in the local language through mechanisms deemed appropriate through consultations with the stakeholders for distributing the information most effectively.

9.4.1 Process of GRM

For Informal grievances: Grievances shall be raised verbally with the CCC during common public meetings held weekly, verbal responses shall be given to the satisfaction of the complainant, should this not be satisfying then the grievance is formalised by putting it into writing and submitted to the cell or sector office. All accepted informal grievance in such meetings shall be referred to the Project Management Unit (PMU) for action, while the formalised grievance shall follow procedure elaborated hereafter. Actions taken by the PIU to redress the accepted informal grievance shall be documented and considered at the Project Steering Committee (PSC) quarterly meetings.

For formal grievances: Grievances shall be raised at cell or sector offices by recording them on grievance forms. Forms shall be consolidated into a report and sent weekly to the District Good Governance unit, which shall keep record of all grievances sent to the District. Grievances shall then be considered by the Executive secretary and his management team and resolutions made to the complainant's satisfaction. Written response to the complainant shall be done via the District Good governance office and circulated through sector and cell offices.

Complaints related to GBV are directed to the Isange One Stop Centers (IOSC). IOSCs are specialized free-of-charge referral centers where GBV survivors can access comprehensive services such as: medical care; psychosocial support; police and legal support, and collection of legal evidence. IOSCs work closely with community police stations, sector, cell and village leaders and hospitals and health centers across the country.

The project safeguards staff will work closely with the woman representative in the GRC to ensure that GBV complaints are well handled and reported through the right channels and refer the victims to them as required by the law. The elected GRC members will receive training from Isange One Stop Centre on how to handle and channel GBV cases and will also participate in the awareness campaigns on GBV, SEA, SH and VAC around the project intervention areas.

Where the settlement cannot be reached at any level of the Grievance Management System, either the complainant or FONERWA/ GCK Project can resort to the judicial system/Court.

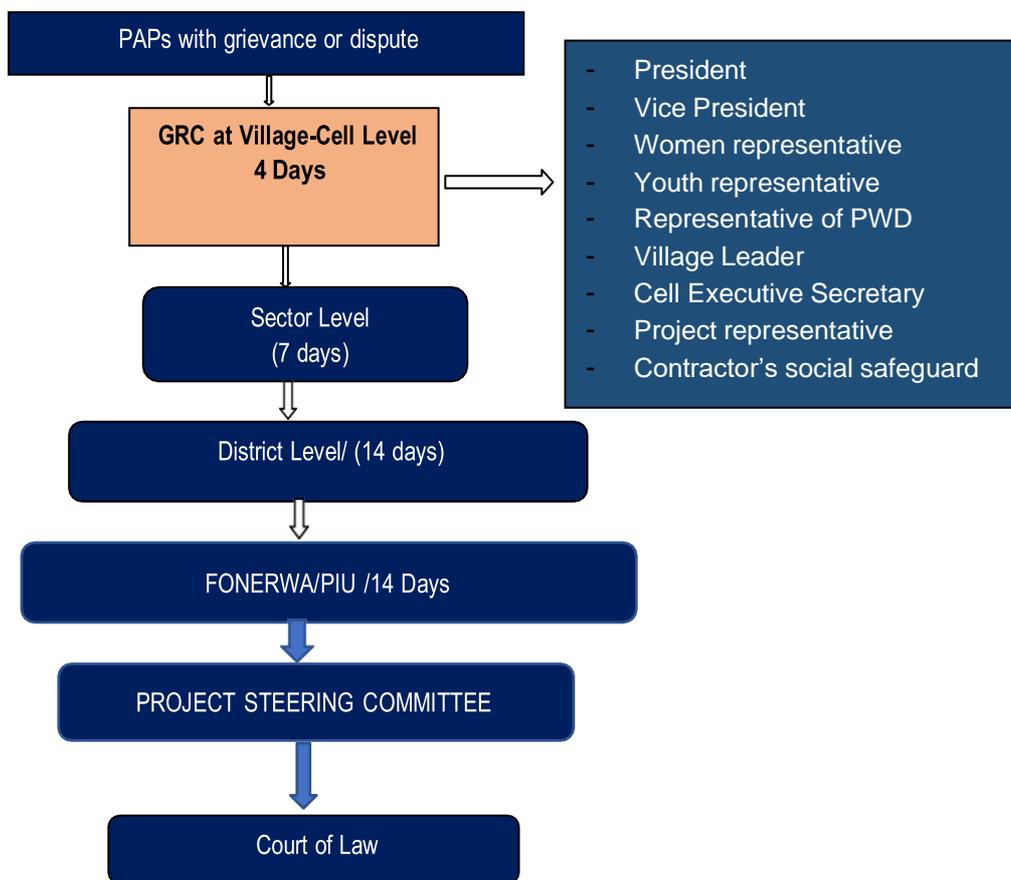


Figure 9-2 Flow chart of the Grievance redress structure



10 CONCLUSION AND RECOMMENDATIONS

The study identified a number of risks and impacts pertaining to the proposed project interventions under each component. The risks/impacts have been assessed and described in detail to gain an adequate understanding of possible environmental and social effects of the project, from planning, construction to operation/implementation, in order to formulate mitigation measures in response to negative aspects which have emerged. The Environmental Social Management Plan (ESMP) provides a way forward for implementation of the identified mitigation measures. The ESMP should be implemented as a prerequisite for a positive Record of Decision (RoD) by the appropriate authorities.

The estimated costs of implementing the mitigation measures are just indicative. Appropriate bills of quantities for each activity should clearly give the actual figures. In any case the consultant has used informed judgment to come up with these figures. The Environmental Social Monitoring Plan provides parameters to be monitored and responsibility of institutions to follow up. The consultant is recommending that FONERWA assigns an Environmental and Social Safeguard officer or consultant to undertake the monitoring of the mitigation measures for the project through its existence. This way the project will achieve sustainable project implementation.

Given the nature and location of the development, the conclusion is that the project objectives bring positive benefits with adverse impacts of a nature and extent that can be avoided, reduced, limited or eliminated by the application of the proposed appropriate mitigation measures.

The reports issued at the end of these missions will be for local authorities, civil society, the central environmental authorities and members of the MMC whom this mission will report to (all recipients actors are members of the commission, but the information must be known at the directorate level and not only to the members of the commission due to the geographical distribution of these institutions).



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APPENDICES

Annex 1: Occupational Health and Safety Plan

Occupational Health and Safety (OHS) covers all personnel working under the project and will be in line with the World Bank EHS guidelines on health and safety. The Occupational Health and Safety program will aim to ensure that the workplace is safe and healthy by addressing the hazards and risks at the workplace; outlining the procedures and responsibilities for preventing, eliminating and minimizing the effects of those hazards and risks; identifying the emergency management plans for the workplace or workplaces; and specifying how consultation, training and information are to be provided to employees at various workplaces.

Some of the risks/hazards associated with workplaces are due to working close to or at sites associated with the various project construction activities. Other risks associated with the project construction phase include risk of increase of vector borne and other different diseases. The following sections will be implemented during the construction phase to address and ensure workers' health and safety.

a. Screening and regular unannounced checking of workers.

As per the procedure for hiring workers, all contractors and labour agencies are required to make all prospective workers undergo medical tests to screen for diseases and sicknesses, prior to selection and employment of any worker. The contractor is also responsible for ensuring that no worker who has a criminal record is employed at the project site. It will be ensured that all workers undergo medical tests to screen diseases at source and at sites in consultation with the designated Health Officer.

b. Minimizing hazards and risks at the workplace

To ensure safety at all work sites, the following will be carried out:

- (i). Installation of signboards and symbols in risky and hazardous areas, to inform workers to be careful. (ii). Construction of barricades around construction sites and deep excavated pits, to cordon off and deter entry of unauthorized personnel and workers into these areas.
- (iii). Providing a safe storage site/area for large equipment such as power tools and chains, to prevent misuse and loss.
- (iv). Proper Housekeeping: Ensuring that materials are all stacked, racked, blocked, interlocked, or otherwise secured to prevent sliding, falling, or collapse.
- (v). Removing all scrap timber, waste material and rubbish from the immediate work area as the work progresses.
- (vi). Where scaffolds are required, ensuring that each scaffold or its components shall be capable of supporting its own weight and at least 4 times the maximum intended load applied or transmitted to it. The rope should be capable of supporting at least 6 times the maximum intended load applied or transmitted to that rope. Pole scaffolds over 20 meters in height shall be designed by a registered professional engineer and shall be constructed and loaded in accordance with that design. Where scaffolds are not provided, safety belts/safety nets shall be provided.
- (vii). Ensure that all ramps or walkways are at least 2 meter wide, having slip resistance threads and not inclined more than a slope of 1m vertical and 3m horizontal.
- (viii). Stacking away all excavated earth at least 2 meters from the pit to avoid material such as loose rocks from falling back into the excavated area and injuring those working inside excavated sites.
- (ix). Constructing support systems, such as bracing to adjoining structures that may be endangered by excavation works nearby.
- (x). Only a trained electrician to construct, install and repair all electrical equipment to prevent risks of electrical shocks and electrocution.
- (xi). Install fire extinguishers and/or other fire-fighting equipment at every work site to prepare for any accidental fire hazards.

c. Provision of Personal Protective Equipment

Risks to the health and safety of workers can be prevented by provision of Personal Protective Equipment (PPEs) to all workers. This will be included in the construction cost for each Contractor. Depending on the

nature of work and the risks involved, contractors must provide without any cost to the workers, the following protective equipment:

- (i). High visibility clothing for all personnel during road works must be mandatory
- (ii). Helmet shall be provided to all workers, or visitors visiting the site, for protection of the head against impact or penetration of falling or flying objects.
- (iii). Safety belt shall be provided to workers working at heights such as roofing, painting, and plastering.
- (iv). Safety boots shall be provided to all workers for protection of feet from impact or penetration of falling objects on feet.
- (v). Ear protecting devices shall be provided to all workers and will be used during the occurrence of extensive noise.
- (vi). Eye and face protection equipment shall be provided to all welders to protect against sparks.
- (vii). Respiratory protection devices shall be provided to all workers during occurrence of fumes, dusts, or toxic gas/vapor.
- (viii). Safety nets shall be provided when workplaces are more than 7.5 m above the ground or other surfaces where the use of ladders, scaffolds, catch platforms, temporary floors or safety belts is impractical.

Annex 2: Chance Find Procedure (CFP)

Chance Finds are 'objects of potential cultural heritage significance recovered during any site work, commonly related to archaeological sites and/or historic sites. Including surface or sub-surface artefacts e.g. stones, bones, pottery, metalwork, iron slag, enclosures etc., individual burials and/or graveyards'. Any developments that involve excavation, movement, or disturbance of soils have the potential to impact archaeological materials, if present. Activities such as road construction, land clearing, and excavation are all examples of activities that may adversely affect archaeological deposits.

The purpose of this document is to address the possibility of archaeological deposits becoming exposed during ground altering activities within the project area and to provide protocols to follow in the case of a chance archaeological find to ensure that archaeological sites are documented and protected as required. The objectives of this 'Chance Find Procedure' are to promote preservation of archaeological/Cultural data while minimizing disruption of construction scheduling. It is recommended that due to the moderate potential of some areas within the project area, all on site personnel and contractors be informed of the CFP and have access to a copy while on site. The scope of application of this

1. Archaeological 'Chance Find' Procedure

If you believe that you may have encountered any archaeological materials, stop work in the area and follow the procedure below. The following 'chance-find' principles will be implemented by the contractor throughout the construction works to account for any undiscovered items identified during construction works:

- (i) Workers will be trained in the location of heritage zones within the construction area and in the identification of potential items of heritage significance.
- (ii) Should any potential items be located, the site supervisor will be immediately contacted, and work will be temporarily stopped in that area.
- (iii) If the site supervisor determines that the item is of potential significance, an officer from the department of Archaeology will be invited to inspect the site and work will be stopped until further notice by the national authorities in charge.
- (iv) Work will not re-commence in this location until agreement has been reached between the Department of Archeology and the Project Developer as to any required mitigation measures, which may include excavation and recovery of the item.
- (v) A precautionary approach will be adopted in the application of these procedures.

2. Detailed Procedural Steps

- If the Director, department of Archaeology receives any information or otherwise has the knowledge of the discovery or existence of an antiquity of which there is no owner, he/she shall, after satisfying him/herself as to the correctness of the information or knowledge, take such steps with the approval of the Government, as he may consider necessary for the custody, preservation and protection of the antiquity in accordance with the National Cultural Heritage Policy, 2015 and Law N^o 28/2016 of 22/7/2016 on the Preservation of Cultural Heritage and Traditional Knowledge.
- Whoever discovers, or finds accidentally, any movable antiquity shall inform forth with the Directorate within seven days of its being discovered or found.
- If, within seven days of his being informed, the Director decides to take over the antiquity for purposes of custody, preservation and protection, the person discovering or finding it shall hand it over to the Director or a person authorized by him in writing.

- Where the Director decides to take over an antiquity, he may pay to the person by whom it is handed over to him such cash reward as may be decided in consultation with the Advisory Committee.
- If any person, who discovers or finds any movable antiquity contravenes the provisions of the Act, he shall be punishable with imprisonment for a term which may extend to five (05) years, or with fine not less than fifteen hundred thousand rupees or with both and the Court convicting such person shall direct that the antiquity in respect of which such contravention has taken place shall stand forfeited to Government.
- The Director or any officer authorized by him with police assistance may, after giving reasonable notice, enter into, inspect and examine any premises, place or area which or the sub-soil of which he may have reason to believe to be, or to contain an antiquity and may cause any site, building, object or any antiquity or the remains of any antiquity in such premises, place or area to be photographed, copied or reproduced by any process suitable for the purpose.
- The owner or occupier of the premises, place or area shall afford all reasonable opportunity and assistance to the Director.
- No photograph, copy of reproduction taken or made shall be sold or offered for sale except by or with the consent of the owner of the object of which the photograph, copy or the reproduction has been taken or made.
- Where substantial damage is caused to any property as a result of the inspection, the Director shall pay to the owner thereof reasonable compensation for the damage in consultation with the Ngaruyinka Advisory Committee as stated in the RAP document.
- If the Director after conducting an inquiry, has reasonable grounds to believe that any land contains any antiquity, he may approach the Government to acquire such land or any part thereof in accordance to Law N° 28/2016 of 22/7/2016 on the Preservation of Cultural Heritage and Traditional Knowledge.

Annex 3: Traffic Management Plan (TMP)

1. Need for Plan

The construction of the Ngaruyinka upgrade infrastructures will take encounter huge vehicular movement carrying large amount of material and machinery is expected. This will interrupt the local traffic and is therefore important to manage the traffic to avoid the nuisance to local residents in terms of noise, dust and inconvenience.

2. The plan

The Objective of Traffic Management Plan (TMP) is to define the requirements that should be implemented to mitigate any potential negative risks to the environment, workers or the community resulting from construction traffic. The TMP will advise and inform site Contractors and external suppliers of equipment and materials of access and entry points along with other key information such tipping areas and wash-out areas. It is intended to compliment and work alongside relevant ESMMP. The TMP will be classed as “live” and therefore be subjected to updates as required.

Contractor, at the time of the execution of the project will prepare a comprehensive TMP in coordination with local traffic police department, emergency services and local administrative department. All these institutions will review and approve the Contractor’s TMP.

The Contractor’s TMP shall include following mitigation measures during its preparation:

- Undertake a road conditions assessment prior to and following the peak construction period, to assess any damage to road infrastructure that can be attributed to Project construction.
- Repair damage as appropriate or enter into a voluntary agreement with the relevant roads authority to reimburse the cost of any repairs required to the public road network as a result of the Project.
- Spoil dumpsites located close to Project site to minimise journey distance and limit movements to site access roads.
- Concrete mixing plant located at Project site limiting traffic movements associated with concrete delivery to site access roads
- Construction of worker accommodation on site to reduce light vehicle movements relating to travel to/ from the site
- Provision of bus/minibus services for personnel living in nearby settlements
- Movements of construction workers will be planned to avoid the busiest roads and times of day when traffic is at its greatest.
- Schedule deliveries and road movements to avoid peak periods
- Road maintenance fund to leave a useful asset for communities after the construction phase.
- Driver training for HGV drivers and refresher course every six months for Project drivers
- Speed restrictions for project traffic travelling through communities (to be agreed with Rwanda Transport Development Authority)
- Run a safety campaign to improve the people’s knowledge of the traffic hazard on their roads, public information and other activities to address the issues.
- Run a pedestrian awareness programme
- Temporary signage

The traffic management plans for the three project reaches are provided below.

3. Other Recommendations

It is important to manage public access routes during construction because it can cause delay to local traffic and create a safety hazard both on and offsite. People working and living near the project site would be

annoyed by the emissions, noise and visual intrusion of queuing vehicles. Some important factors involved in access routes and site traffic are as follows:

3.1 Public Access Routes

The use of public road for site access may be restricted in terms of:

- Vehicle size, width and type of load
- Time limits
- Parking
- Pedestrian conflicts

Contractor should have consultation with the local police or local authority to address these issues and to effectively manage them before the beginning of the construction.

3.2 Site Workers Traffic

Site personnel should not be permitted to park vehicles near the site boundary; this will lead to disruption in material deliveries. Designated parking area with appropriate parking space will be needed for this purpose; any plain area near construction site can be used for this purpose.

3.3 Site Rules

- Access to and from the site must be only via the specified entrance.
- On leaving the site, vehicles must be directed to follow the directions given.
- Drivers must adhere to the site speed limits.
- All material deliveries to site must keep allocated time limits.
- No material or rubbish should be left in the loading-unloading area.
- Develop a map for alternate routes showing material delivery services.
- Assign designated personnel on site to receive deliveries and to direct the vehicles.
- Monitor vehicle movement to reduce the likelihood of queuing or causing congestion in and around the area.
- Project vehicles should have a unanimous badge or logo on windscreen displaying that they belong to the BRT project.

4. Contractor's Obligation

The traffic management plan of the Contractor should be safe enough and widening of any access roads and construction of the detours (as applicable and practical) must be completed before start of project construction activities so that heavy vehicular transportation for construction activities do not hinder the normal course of traffic lanes.

Contractor must ensure that road closures are carried out by a competent person. The Contractor obligation must include the display of traffic signs according to the need to divert the traffic volume and to guide the road users in advance. The traffic sign, traffic light should be placed from any diverting route or road marking.

The Contractor should consider the environmental and social impacts of the traffic during construction. It will be sole responsibility of the Contractor to implement a plan which produces minimum nuisance to the local people and to the environment. Safety of the people should be given due importance. It will be under Contractor obligation to notify the traffic management plan and its later changes to the project developer, emergency services and Traffic Police, and also publish weekly programme in local newspaper.

Annex 4. Template of Project Labor Management Procedure (LMP)

- I. Objectives of LMP:** [Indicate the main objective of LMP]
- II. Legal and other requirements:** [Indicate national policies, laws, international treaties ratified by Rwanda and systems which are applicable to the implementation of the intended Fonerwa project]
- III. Overview of Labor Use:** [This section describes the number of Project Workers. Project Workers will include direct workers, contracted workers and local labor including skilled labor and unskilled labor. The direct workers are workers on the project structure and these will be public servants under employment contracts recruited in accordance with the normal recruitment procedures of contractual staff in public service; considering the minimum age for admission to employment without discrimination of any kind. International migrants will have the rights for competition following the requirements of relevant laws on employment in Rwanda. As regard to the implementation of FONERWA funded projects, skilled workers and unskilled workers shall also be part of the project workers. The total number of workers to be employed on the project, and the different types of workers include the direct workers, contracted workers]
- IV. Assessment of key Potential Labor Risks:** [This section will describe potential labor risks of the project: injuries, noise, electrical shocks, Respiratory Diseases, etc...]
- V. Overview of Labor Legislation (Terms and Conditions & Occupational Health and Safety):** [This section sets out the *key aspects* of national labor legislation with regards to terms and conditions of work, and how national legislation applies to different categories of workers identified]
- VI. Responsible Staff:** [This section identifies the organs and/or staff within the project who will be responsible for engagement and management of project workers in respect to the categories they belong to. The organs/staff who will be responsible for OHS, training of workers, addressing workers' grievance are also identified under this section].
- VII. Policies and Procedures:** [This section sets out information on OHS, reporting and monitoring and other general project policies. Where relevant, it identifies applicable national legislation].
- VIII. Age of Employment:** [This section sets out Process that will be followed to verify the age of project workers in accordance with the Law N° 66/2018 of 30/08/2018 regulating labour in Rwanda]
- IX. Terms and Conditions:** [This section sets out details regarding (i) Specific wages, hours and other provisions that apply to the project (ii) Maximum number of hours that can be worked on the project (iii) Any collective agreements that apply to the project. When relevant, provide a list of agreements and describe key features and provisions]
- X. Grievance Mechanism:** [This section indicates how Grievance Redress Mechanism will be applied especially under the Provisions in law N° 66/2018 of 30/08/2018 regulating labor in Rwanda]

Annex 5: Questionnaire for the socioeconomic survey

A. Identification of PAPs

	Responses	Code
	Enumerator's name	_____
	Supervisor's name	_____
	Name of respondent	_____
	Sex of respondent	/_/_
	Age of Respondent	/_/_/_
	Province	/ / _____
	District	/ / / _____

—
— —

	Sector	/ / / / /
	Cell	/ / / / / / / /
	Village	/ / / / / / / / / / / /
	Household GPS coordinates	— — / : — — — — /

Interviewee: Household head or Household member

B. Household Identification

	Sex of Household head	1	Male	/ /
		2	Female	
	Age of Household head		/ /
	Marital status of household head	1	Single	/ /
		2	Married	

		3	Widow/wodower	
		4	Separated (separated)	
		5	Divorced (legally separated)	
	Does any family member attend churches?	1	Yes	/_/
		2	No	
	Distance from home to church in (minutes)			
	Ubudehe category of household	1	Category 1	/_/
		2	Category 2	
		3	Category 3	
		4	Category 4	
	Time (years) that household has been in this location		Write only in year, if less than 1 year write number of mouths in following question	/_/ _/
	If time is less than year, how many months?			/_/ _/
	How many persons living in this household?			/_/ _/

7											
8											
9											
10											
(5)		(6)			(7)				(8)		

1 = Head of household	1 = None	1 =	1= None
2 = Spouse	2 = Student		= Attended primary school only
3 = Son/daughter	3 = Farmer (Agriculture/Livestock)		= Attended vocational school (Artisanal, CERAI, CFG, Familial)
4 = Father/mother	4 = Self Employed/Crafts		= Completed high school (D4, D5, D6, D7)
5 = Grandparent	5 = Trader		= Graduate (A1, A0, Masters, PhD)
6 = Grandchild, 7=Permanent Employee	6 = Civil servant / 1 Authorities		
8 = Other relation (Specify)	7 = Non-government Organisation		
	8 = Retired		
	9.Real estate revenue		
	10.remittances		
	11.shares/bonds		

D. Household Assets

1	which of the following items are available (in a working condition) for use by your household?	1=Yes 0=No
	<i>Bicycle</i>	/-/
	<i>Mobile phone</i>	/-/
	<i>Radio</i>	/-/
	<i>Television set</i>	/-/
	<i>Cassette player/radio cassette</i>	/-/
	<i>Sewing machine</i>	/-/
	<i>Motorcycle</i>	/-/
	<i>Car/truck</i>	/-/
	<i>Refrigerator/deep freeze</i>	/-/
	<i>Foam mattress</i>	/-/
	<i>Gas/electric stove or cooker</i>	/-/
	<i>Furniture suite (wooden chair)</i>	/-/
	<i>Computer</i>	

D_3 which of the following energy sources (for light and/or for fuel) does your household use? (more than one answer may be given).

Source	Please circle
<i>Electricity (REG)</i>	<i>1.yes/2.no</i>
<i>Generator</i>	<i>1.yes/2.no</i>

<i>Kerosene lantern</i>	<i>1.yes/2.no</i>
<i>Gas lantern</i>	<i>1.yes/2.no</i>
<i>Charcoal</i>	<i>1.yes/2.no</i>
<i>Firewood</i>	<i>1.yes/2.no</i>
<i>Candle</i>	<i>1.yes/2.no</i>
<i>Traditional lamp(agateadowa)</i>	<i>1.yes/2.no</i>
<i>Solar</i>	<i>1.yes/2.no</i>
<i>Biogas</i>	<i>1.yes/2.no</i>
<i>Battery</i>	<i>1.yes/2.no</i>
<i>Others, specify</i>	<i>1.yes/2.no</i>

Which fuel do you mainly use for heating? (Tick one)

1 () fuel wood 2 () gas 3 () natural gas 4 () fuel oil 5 () Other

E: INCOME & EXPENDITURE (MONTHLY)

		2	<i>From another country (specify).....</i>		
E_2	Expenditure				Rw
1	Please indicate the extent of expenditure on the	1	<i>Food (7 days)</i>		/___/
		2	<i>Education (per year) uniform, school fees, transport ...</i>		/___/
	following item in the past year Where do you spent most of your money in the following times?	3	<i>Health (per year), paying medicine, contribution of Mutuel,</i>		/___/
		4	<i>Transport (month)</i>		/___/
		5	<i>Funeral(s) (per year)</i>		/___/
		6	<i>Dowry (per year), ceremonies</i>		/___/
		7	<i>Clothes (per year)</i>		/___/
		8	<i>Hire of labour (per year)</i>		/___/

	9	<i>Agricultural (per year), inputs, materials,</i>		
	10	<i>Other (specify)</i>		/___/

Do You own a property: Yes, No?

If yes, do you own a land document: *Yes or No?*

Type of property to be affected: (House, Forest, farmland, tree with >3meter, other specify)

Do you own a land for farming activities within 1-5km from your house? *Yes, or No*

What Mode of compensation do you prefer:

Compensation in cash

Compensation in value exchange

Do not know

Other

If other specify:

SKETCH AND ADDITIONAL DETAIL OF STRUCTURES

H. CATEGORY AFFECTED

To add:

Water and sanitation access:

What source of water do you use:

Rock water catchment

Protected spring

Public tap

Water tank

Fountain

Water in the premises

Distance from home to water source (in minutes)

Do you have a waste disposal: *Yes, or No?*

If yes, where?

In the farm:

In the bush

In the septic Foss

Public rubbish

D_2	What toilet facilities do you have?	1	<i>no toilet</i>	/___/
		2	<i>outside toilet-VIP (protected pit latrine</i>	
		3	<i>outside toilet -unprotected pit latrine</i>	
		4	<i>flush toilet with septic tank</i>	

Why did you move here? (Tick as much as relevant)

Schooling of children

1 *Look for work*

- 2 () *Start new job*
- 3 () *Inherited land*
- 4 () *Escape disaster*
- 5 () *Escape a family conflict*
- 6 () *Other (specify)*
 - 7 Access to health service:
 - 8 *Distance from home to health service in minutes*
 - 9 Access to education facility:
 - 10 *Distance from home to School in minutes*
 - 11
 - 12 Mode of transport: *(motorcycle, bicycle, vehicle, foot, boat, other)*
 - 13 *In the past 12 months what illness faced in the household: (Communicable disease (flu, COVID-19, or non-communicable disease (Malaria, typhoid fever, Heart disease)*
 - 14 Take a photo of affected property with the household head in the photo.
 - 15 Take a photo of affected property only with no person in the photo.

Annex 6: List of participants in the public consultations

Names	Institution and position	Email address and telephone
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1. Eric Hakizimana	MININFRA Physical Planning Senior Engineer	eric.hakizimana@mininfra.gov.rw 0788748796
2. William Mugabo	MoE	wmugabo@environment.gov.rw
3. Theophile Dusengimana	MoE, ECC Policy Specialist	tdusengimana@environment.gov.rw ; 0788839869
4. Martine Dukuze	REMA	mdukuze@rema.gov.rw ; 0788888311
5. Herman Hakuzimana	REMA	hakuzimana@rema.gov.rw
6. Solange Muhirwa	Chief of Urban Planning City of Kigali	smuhirwa@kigalicity.gov.rw 0783414404
7. Abias Mumuhire	Coordinator Kigali Urban Upgrading Project, City of Kigali	amumuhire@kigalicity.gov.rw 0788825143
8. Jean Marie Vianney KURADUSENGE	Rwanda Housing Authority Informal Settlement Upgrading Specialist	jmv.kuradusenge@rha.gov.rw 0788692379
9. Harouna Nshimiyimana	Rwanda Housing Authority Division Manager Building Regulation	harouna.nshimiyimana@rha.gov.rw 0788588886
10. Alain Sezibera (Replaced by Simeon Ntuye)	RDB	alain.sezibera@rdb.rw
11. Simeon Harerimana	RDB Environment and Social Safeguard Specialist	simeonntuye.harerimana@rdb.rw 0788353048
12. Amos Shyaka Kazora	WASAC Sanitation Department	askazora@wasac.rw ; 07865519063
13. Dominique Murekezi	WASAC	dmurekezi@wasac.rw 0738352692
14. Oreste Niyonsaba	REG/EDCL	oniyonsaba@edcl.reg.rw 0788764026
15. Cyprien Ndayisaba	RTDA	cyprien.ndayisaba@rtda.gov.rw
16. Oreste Niyonsaba	EDCL	oniyonsaba@edcl.reg.rw
17. Pierre Hakorimana	RLMA/ Environment Division	pierrecelestin.hakorimana@rlma.rw
18. Apophia Boramungu	LODA Social Safeguard Specialist	apophia.boramungu@loda.gov.rw 0782537195
19. Florian Mugabo	FONERWA	f.mugabo@fonerwa.org
20. John Ndamage	FONERWA	j.ndamage@fonerwa.org
21. Natasha Ndahiro	FONERWA	n.ndahiro@fonerwa.org
22. Diogene Kagango	RTB	dkagango@rtb.gov.rw
23. Diogene KAGANGO	Rwanda TEVT Board, Production, and Incubation Centres Management	dkagango@rtb.gov.rw 07885976575
24. Solange Uwamahoro	Rwanda TVET Board, Digital technologies	usolange@rtb.gov.rw 078859762
25. Ninette Umurerwa	HAGURUKA Executive Secretary/	executiveshaguruka@gmail.com 0788300834
26. Magali Ntahokaja	Consultant	mntahokaja@yahoo.com
27. Mark Warren	Consultant	mark.warren.ext@sweco-gmbh.de
28. Nathalie Neema	Consultant	nathalie.neema.ext@sweco-gmbh.de
29. Sophie Taintor	Consultant	sophie.taintor@sweco.se
30. Lazare Nzeyimana	Consultant	lazare.nzeyimana@sweco.se
31. Richard Ngendahayo	Consultant	r.ngendahayo@yahoo.com

32. Dr Mugisha Rutebuka	Consultant	mugishar65@gmail.com
33. Jean Pierre Kabagema	Consultant	kabajp14@gmail.com

Annex 7: GCF/IFC Policy Safeguards Standards

GCF Performance Standards

Policy Safeguard	Objectives
PS1: Assessment and management of environmental and social risks and impacts	<p>i) To identify and evaluate environmental and social risks and impacts of the project, (ii) To adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimize and, where residual impacts remain, compensate/offset for risks and impacts to workers, Affected Communities, and the environment, (iii) To promote improved environmental and social performance of clients through the effective use of management systems, (iv) To ensure that grievances from Affected Communities and external communications from other stakeholders are responded to and managed appropriately, (v) To promote and provide means for adequate engagement with Affected Communities throughout the project cycle on issues that could potentially affect them and to ensure that relevant environmental and social information is disclosed and disseminated.</p> <p>Among its requirements are to conduct a process of environmental and social assessment.</p> <p>In this case, the study scope required the consultant to only prepare an environmental and social impact assessment (ESIA) for the proposed project project interventions in Ngaruyinka .</p> <p>As part of the review of environmental and social risks and impacts of a proposed investment, GCF in reference to IFC PS uses a process of environmental and social categorization to reflect the magnitude of risks and impacts.</p> <p>These relevant categories are:</p> <ul style="list-style-type: none"> • <i>Category A projects</i>: activities with potential significant adverse environmental or social risks and/or impacts that are diverse, irreversible, or unprecedented. • <i>Category B projects</i>: activities with potential limited adverse environmental or social risks and/or impacts that are few in number, generally site-specific, largely reversible, and readily addressed through mitigation measures. • <i>Category C projects</i>: activities with minimal or no adverse environmental or social risks and/or impacts. <p>This being a project with components mainly contributing towards environmental conservation and livelihood improvement such as; Affordable low carbon settlements and industries as growth hubs, Climate resilient production of tea and coffee, sustainable forest management and watershed protection, the study assessed the environmental and social risks and impacts of the project, its associated facilities and any possible cumulative impacts and deducted that the project possesses limited adverse impacts which can be avoided or minimised by implementing the proposed mitigation measures and management plan.</p> <p>The project was hence classified as a Category B project.</p>

PS2: Labour and Working conditions

(i) To promote the fair treatment, non-discrimination, and equal opportunity of workers. (ii) To establish, maintain, and improve the worker-management relationship. (iii) To promote compliance with national employment and labour laws. (iv) To protect workers, including vulnerable categories of workers such as children, migrant workers, workers engaged by third parties, and workers in the client's supply chain. (v) To promote safe and healthy working conditions, and the health of workers. (vi) To avoid the use of forced labour.

It applies to workers directly engaged by the client (direct workers), workers engaged through third parties to perform work related to core business processes of the project for a substantial duration (contracted workers), as well as workers engaged by the client's primary suppliers (supply chain workers).

Its requirements cover; (i) working conditions and management of worker relationship, (ii) protecting the work force in particular child labour and forced labour, (iii) Occupational Health and safety ensuring a healthy work environment. These requirements apply to third party contracted workers and supply chain workers.

Since the project components shall involve; the construction of the community facilities (TVET, market, ...) in Ngaruyinka, composting facilities, it was important that this PS 2 is addressed in this study.

PS3: Resource efficiency and pollution prevention

to address measures taken to avoid, minimise or reduce project-related pollution, more sustainable use of resources (including energy and water), reduction of greenhouse gas emission.

Its requirements include (i) resource efficiency in its consumption of energy, water, as well as other resources and material inputs, with a focus on areas that are considered core business activities, (ii) consider alternatives and implement technically and financially feasible and cost-effective options to reduce project-related Green House Gas (GHG) emissions during the design and operation of the project (iii) pollution prevention of either hazardous or non-hazardous waste.

Whereas the project is designed to involve mostly sustainable use of resources and innovations of low carbon emission products, it is worth assessing any proposed activities likely to pollute in order to avoid or minimise them.

PS4: Community health, safety and security

To inform how the project shall; (i) anticipate and avoid adverse impacts on the health and safety of the Affected Community during the project life from both routine and non-routine circumstances and (ii) To ensure that the safeguarding of personnel and property is carried out in accordance with relevant human rights principles and in a manner that avoids or minimizes risks to the Affected Communities.

PS 4 requirements include: (i) infrastructure and equipment design and safety during design, construction, operation and decommissioning of the project, (ii) management of hazardous materials and safety, (iii) assessment of direct impacts on priority ecosystem services that could result in adverse health and safety risks and impacts to Affected Communities, (iv) community exposure to waterborne, water based, water-related, and vector borne diseases, and communicable diseases resulting from project activities. (v) will assess risks posed by its security arrangements to those within and outside the project site. e.g. past experience and conduct of security personnel, not use of force except when used for preventive or defensive purposes and grievance mechanisms of claims from affected communities against security arrangement.

Part of the scope of PS 4 is met in PS1, PS 2 under occupational health and safety requirements and pollution prevention in PS 3.

PS5: Land acquisition and involuntary resettlement

To address how the project shall avoid/ minimize adverse social and economic impacts from land acquisition by; avoiding/ minimising displacement, providing alternative project designs, avoiding forced eviction, providing compensation for loss of assets at replacement cost and ensuring that resettlement activities are implemented with appropriate disclosure of information, consultation, and the informed participation of those affected. It is also required to improve or restore

livelihoods and standards of living, improve living conditions among displaced persons by providing adequate housing and security tenure.

Its scope applies to two types of displacement; (i) Physical displacement and (ii) Economic displacement from land related transactions such as; (a) Land rights acquired through expropriation, (b) Land right acquired through negotiated settlements which could result in expropriation if negotiations failed, (c) Project activities resulting in involuntary resettlement on land use or access to natural resources, (d) Project activities requiring eviction of people occupying land without formal, (e) traditional or recognizable usage rights, (f) Restrictions on access to land or use of resources including communal and natural resources.

PS6: Biodiversity conservation and sustainable management of living natural resources

PS 5 is crucial in guiding the project in acquiring privately owned land for the PAPs settlement and any other land required for project activities. It shall be applied along with the National expropriation law mentioned in sub-chapter 3.1.5 above.

To address measures to protect and conserve biodiversity, maintain benefits from ecosystem services, promote sustainable management of living natural resources and integration of conservation needs and development priorities.

The process will consider relevant threats to biodiversity and ecosystem services, especially focusing on habitat loss, degradation and fragmentation, invasive alien species, overexploitation, hydrological changes, nutrient loading, and pollution. It will also take into account the differing values attached to biodiversity and ecosystem services by Affected Communities. The project shall seek to avoid impacts on biodiversity and ecosystem services on natural habitat, critical habitat, legally protected and internationally recognized areas plus avoid introduction of invasive alien species

PS 7: Indigenous people

Recognizes that Indigenous Peoples, as social groups with identities that are distinct from mainstream groups in national societies, are often among the most marginalized and vulnerable segments of the population. Government often plays a central role in the management of Indigenous Peoples' issues, and project should collaborate with the responsible authorities in managing the risks and impacts of their activities.

PS 7 was not triggered under this project on grounds that Rwanda is a country with a single/common culture, tribe and language, with a National constitution that recognises all Rwandans are born and remain equal in rights and freedom (*article 16 of Rwandan Constitution, 2015*), hence no marginalised groups of people

PS 8: Cultural heritage

Recognizes the importance of cultural heritage for current and future generations. Consistent with the Convention Concerning the Protection of the World Cultural and Natural Heritage, it aims to ensure that clients protect cultural heritage in the course of their project activities.

PS 8 objectives are to ensure protection and preservation of cultural heritage and promote equitable sharing of cultural heritage benefits.

For the purposes of this Performance Standard, cultural heritage refers to; (i) tangible forms of cultural heritage, such as; tangible moveable or immovable objects, property, sites, structures, or groups of structures, having archaeological (prehistoric), paleontological, historical, cultural, artistic, and religious values; (ii) unique natural features or tangible objects that embody cultural values, such as; sacred groves, rocks, lakes, and waterfalls; and (iii) certain instances of intangible forms of culture that are proposed to be used for commercial purposes, such as; cultural knowledge, innovations, and practices of communities embodying traditional lifestyles.

With the project involving construction and expansion of settlements, there is a likelihood that some form of cultural heritage could discovered or chance finds before or during construction or occupation periods. This will require observance of PS 8

Terms of Reference

Approved by RDB on December 1st, 2021

ESIA for the 18 ha Settlement Upgrade at Ngaruyinka (as part of the Green City Kigali Project)

1. Background and Rationale

Rwanda's Green Fund (FONERWA) has secured funding from the German Development Cooperation through KfW Development Bank and the Green Climate Fund's Project Preparatory Facility (PPF), to prepare a feasibility study and to conduct an international design competition and tender process to select an Urban and Architectural Design Consultant (UADC) to undertake urban planning, infrastructure and architectural design services associated with the 'Green City Kigali'. In addition, funding was provided by the Green Climate Fund's Project Preparatory Facility (PPF), to support establishing a special purpose vehicle (SPV) that will serve as the central vehicle for the project's implementation. This SPV is known as the Green City Kigali Company (GCKC).

As part of the planning background, a number of high level environmental and social safeguard frameworks have been developed, including a resettlement policy framework (RPF), an environmental and social management framework (ESMF) and stakeholder engagement framework (SEF). The Resettlement Policy Framework (RPF, 2021) was developed, to a level of detail corresponding to the very early phase in the planning process, prior to the commencement of the development of the overall Masterplan for the Project.

The GCF project investments include public infrastructures such as Upgrade of existing 18 ha Ngaruyinka village (the Project), Social Housing Development and Technical Assistance to support adaptation and /or mitigations to climate Change. The 18 ha Village upgrade as sub-component of the overall Green City Kigali (GCK) Project is considered for financing by GCF, KfW and Government of Rwanda. This project has three components:

1. **Climate responsive investment:** provide the necessary investments to upgrade the infrastructure and community buildings so that residents can withstand current and future climate risks, primarily flooding, landslides and heat stress. It will also support vulnerable households to adopt low emission, climate resilient technologies.
2. **Increased awareness and capacity for inclusive climate responsive upgrades.** Sub-components include Institutional capacity development of GoR agencies, Blueprinting the GCK and Planning code for GoR, Development of recycling value chains, Market facilitation to catalyse increased uptake of low emission, climate resilient approaches and technologies, Policy support for an enabling environment and mainstreaming green city development standards and approaches into regulatory and planning frameworks and Knowledge management system developed on climate responsive regeneration.
3. **The Social Housing.** The Housing Authority Integrated Development Program (IDP) intends to use the GCF financing to provide housing for families whose dwellings or livelihoods have been impacted or exacerbated by climate change.

2. Ngaruyinka Village Components to be upgraded

A number of different technical options have been evaluated against a baseline in order to arrive at recommendations that achieve the vision of the project. Each technical option that has been considered falls into one of the following scenarios:

- Take No Action scenario (TNA) - the perpetuation of the current situation with no GCK densification of the village.
- Business as Usual scenario (BAU) - assumes the adoption of conventional current practices for upgrades assuming the densification of the village in line with GCK. This scenario would meet the requirements set out in the National Upgrading Strategy, but climate risks are not adequately factored into the design. This is considered a realistic baseline for assessing more Climate Responsive (CR) alternatives.
- Climate Responsive (CR) – technologies and practices that potentially achieve more in terms of climate mitigation and adaptation as a return on investment.

The technical options were organized according to conventional sectors as follows:

- Transport and Mobility
- Stormwater Management
- Water Supply
- Sanitation
- Solid Waste Management
- Energy
- Community facilities

Based on the results of the multi-criteria analysis, the following climate responsive options were selected for further development:

Table Error! Main Document Only.: proposed components to be upgraded and activities

Sector	Activities
Transport/mobility	Construction of green rights of way
	Green roads construction methods
Stormwater management	Blue/green stormwater management systems
Water supply	Expansion of stormwater supply (100% connection rate)
	Rainwater harvesting (as supplement to central supply)
	Filters to household water treatment
Sanitation	Biogas system at the market
	Latrine improvements/ Education
Solid waste management	Community composting
	Neighbourhood waste collection point
	Recycling collection stations
Energy	Solar PV
	Improved cook stoves
	Energy efficient lighting and appliances
Community facilities	Establishment of a Technical and Vocational Education and Training (TVET) Centre
	Additional Community Focal Points & Market Squares

IL 3: Projects requiring a full EIA

This category involves projects for which it is evident that there will be significant and adverse environmental impacts whose mitigation measures cannot readily be prescribed, and thus, must undergo through a complete EIA process.

The above definitions notwithstanding, categorisation of project impact levels and extent of EIA studies (with respect to duration and detail of terms of reference) will be determined by REMA/RDB.

If an EIA is not required, the project is exempted from further compliance with the EIA process in which case, REMA (now RDB) issues a certificate to that effect and advises the developer and relevant licensing authority of the exemption. Conversely, if an EIA is required, REMA (now RDB) informs the developer that a full impact study must be undertaken.

However, since 2019, through the MO No 001/2019 of 15/04/2019, the project categorisation has changed to ease the screening and the order through its chapter II and articles 3, 4 and 5 has established a list of projects that must undergo an environmental impact assessment. The three articles are the following:

Article 3: List of works, activities and projects that must undergo a full environmental impact assessment

Article 4: List of works, activities and projects that must undergo a partial environmental impact assessment

Article 5: Works, activities and projects that are not included on the list

Annex 1 of the MO gives a list of 23 types of works, activities and projects that must undergo a full environmental impact assessment. The rehabilitation and construction of school infrastructures falls in the first type of works and activities that must undergo a full environmental impact assessment.

Annex 2 of the MO gives a list of 3 types of works, activities and projects that must undergo a partial environmental impact assessment.

Under annex 1 and 2, the rehabilitation and construction of school facilities fall in the type 1 of projects for which a full EIA or partial EIA must be conducted. This type of project is the following:

Under annex 1:

1o. All buildings classified as residential, commercial, administrative or institutional sports facilities, social, cultural, and assembly and religious buildings, hotels, health facilities, educational buildings, or other publicly accessible facilities fulfilling at least two of the following conditions:

- Having capacity to host more than five hundred (500) people;
- Having a total floor area exceeding one thousand and five hundred square meters (1500 sqm);
- Built in plot size exceeding one thousand square meters (1000 sqm).

Ngaruyinka Village in actual facts is hosting more than 500 people on an area estimated to 18ha (more than 1000sqm) and the total floor area to be covered by the components to be upgraded is more than 1,500sqm.

Therefore, the project falls in the category (Annex 1) for which a full ESIA is required.

3. Land related issues and potential for Involuntary Resettlement

Involuntary resettlement refers both to physical displacement (relocation or loss of shelter) and to economic displacement (loss of assets or access to assets that leads to loss of income sources or other means of livelihood) as a result of project-related land acquisition and/or restrictions on land use.

The consultant will assess how to:

- avoid, and when avoidance is not possible, minimize displacement by exploring alternative project designs;
- anticipate and avoid, or where avoidance is not possible, minimize adverse social and economic impacts from land acquisition or restrictions on land use by (i) providing compensation for loss of assets at replacement cost and (ii) ensuring that resettlement activities are implemented with

appropriate disclosure of information, consultation, and the informed participation of those affected;

- improve, or restore, the livelihoods and standards of living of displaced persons; and
- improve living conditions among physically displaced persons through the provision of adequate housing with security of tenure at RS.

These ToR refer to the preparation of an ESIA as well as the RAP, in order to inform the assessment regarding environmental and social risks and potential impacts as well as possible mitigation options of the planned Project.

The ESIA and RAP reports shall be developed following the guidance as presented in the GCK framework documents, namely the ESMF, the high level ESIA and the Stakeholder Engagement Framework. Moreover, the GCF recommends that the exercise of environmental and social due diligence shall follow good international industry practices (GIIP) and based on established relevant guidance.” Further GCF lists the following as examples:

- (a) IFC Guidance Notes: Performance Standards on Environmental and Social Sustainability;
- (b) World Bank Group Environmental, Health, and Safety Guidelines; and
- (c) Other relevant guidance from international and country institutions pertaining to conduct of environmental and social assessments, stakeholder consultations and free, prior and informed

4. Objectives, Scope and Tasks of the Assignment

The overall objective and scope of the assignment is the development of an ESIA including an ESMP, and a RAP for the 18 ha Village upgrade, based on desk work and on a mission to Rwanda in order to work closely with FONERWA and any other relevant stakeholders, such as REMA, RHA and the City of Kigali.

The ESIA and potential RAP/LRP will be entirely based on the provisions of the ESMF, RPF and WB/IFC guidelines and any other the Applicable Standards.

All documents will be developed in line with the relevant national ESIA regulations including direct engagement with REMA as required.

5. Task 1: Project Description

The ESIA shall comprise a concise and comprehensive (to the extent possible) project description supported by maps, plans, graphs and charts to provide an easy and structured overview. The description shall be based on information on existing project reports and documents and illustrate the geographic layout of all key components. The level of detail of the project description shall be commensurate with potential project effects on the receiving environment. The ESIA shall contain a description of the Project Area of Influence (Aoi), the footprint area and a detailed description of the Project components including associated facilities (e.g. access roads, material sourcing sites, dump sites, deposition sites for excess material) focusing on those aspects that could potentially have an impact on the physical, biological or social environment.

6. Task 2: Scope of work

ESIA

The ESIA team will carry out a scoping exercise and must meet current internationally accepted standards of data collection, reporting and analysis and comply with the applicable environmental and social standards. Further, it must be assessed how national and international requirements can be streamlined throughout the further ESIA process.

The Scoping exercise shall clearly outline the scope of the next iterations of the ESIA to allow a focus on the environmental and social impacts and risks based on their significance. Further it shall scope out any insignificant effects or components by providing a comprehensive rationale.

The Scoping exercise will cover the physical, biological, socioeconomic and cultural environments within the proposed Project scope and identify the key issues relevant to the Project to be considered in the preliminary ESIA

(to the extent possible) and to be comprehensively considered for the next iterations of the ESIA, which will be undertaken in conjunction with the masterplan development and then with the design process for the Village Upgrade Area. The preliminary impact assessment will be complemented by an overall mitigation approach, key mitigation measures and an initial Environmental and Social Management and Monitoring Plan.

During the scoping exercise the ESIA Team shall undertake initial baseline surveys, to be complemented by secondary sources and by analysis of satellite imagery as appropriate, of the physical, biological and socio-economic environment. Baseline description should be inclusive of, but not be limited to:

- Physical environment (hydrographic network, geology, ground topography, climate, air quality, fauna and flora, aquatic environment, ecological system);
- Biological environment (i.e., flora and fauna types and diversity, endangered species, sensitive habitats, ecosystem services etc.);
- Social, economic and cultural environment, including present and projected (i.e., demography, population, land use, planned development activities, infrastructure facilities/community social structures, employment and labor market, sources and distribution of income, cultural/religious sites and properties, vulnerable groups etc., infrastructure and basic social services);

RAP

The consultant will develop the RAP taking into consideration the outlined objective and

principles. The main goal of the RAP is to identify the PAPs, strategies for compensation associated with the identified resettlement impacts (temporary or permanent loss of land, housing, assets or livelihoods), lay out the process and institutional responsibilities for addressing and compensating any negative impacts to ensure that assets and livelihoods of affected persons are improved or at minimum restored to their level before project implementation.

To achieve this goal the following tasks will be completed under these TORs:

- Describe the existing Rwandan legal and policy framework for land acquisition, as well as, reviewing the laws, regulations that apply to reclaiming informally settled public land and involuntary eviction and resettlement.
- Review the World Bank policies related to resettlement in order to ensure that the RAPs/aRAPs are developed in full compliance with these policies and Resettlement Policy Framework (RPF)
- Identify the precise resettlement impacts, as well as additional social risks (if applicable) that will be associated with the implementation of the Village Upgrade
- Prepare socioeconomic inventory/census survey for the PAPs to identify and quantify different categories of different categories of PAPs who would require some form of assistance, compensation, rehabilitation or relocation.
- Prepare an entitlements matrix listing all likely effects as per relevant typologies to be developed on assets and resources.
- Conduct valuation of assets/compensations.
- Prepare standards for compensation and restoration of the social and economic base of the PAPs to replace all types of loss, as appropriate. Provide information on vulnerable groups or persons, for whom special provisions may have to be made. Describe the mechanism by which compensation and any other resettlement assistance to be provided will be estimated and

consulted with PAPs. Develop complete list of affected households/persons and relevant compensations.

- Develop clear executive time plan for the RAP implementation linking the various steps to the various project components and implementation plan, including institutional responsibilities, and monitoring parameters. Develop a timetable and budget.
- Conduct public consultation with PAPs, document the various consultation activities to be
- conducted as part of the RAP and ensure that information has been shared transparently through an active and consultation process.
- Develop communication and consultation plan to be adopted by the project promoter along the various stages of the project cycle.
- Develop a monitoring plan for RAP implementation and completion (specifying roles and responsibilities of the relevant institutions)
- Identify the institutional responsibility for implementation and procedures for the grievance redress, arrangements for monitoring and implementation of the monitoring system. The consultant shall describe the options available to PAPs for grievance redress they may have about the process. The GRM channel will be communicated during the RAP consultation and be disseminated widely in the community (beyond PAPs) through the course of each sub-project.

Deliverable: draft ESIA Report and RAP

7. ESIA Report

The ESIA Team shall develop ESIA Report, comprising at minimum, but may not be limited to the following content:

- Description of the project, size and layout of the project area, as well as associated facilities to the extent already identified; including a description of the project phases and related activities (master plan, site specific design, pre-construction, construction phase and operation period);
- Outline of Project Area of Influence for the different environmental and social receptors
- Brief description of the applicable legal framework and the relevant standards; including gap analysis of national legal frameworks in relation to applicable international standards; to be taken over from the ESMF/high level ESIA
- Description of the physical and biological environment and socio-economic setting; based on available information and on field surveys; including maps and figures as appropriate; please note that social baseline information should be obtained as well from the pre-RAP team;
- Identification of the key environmental and social risks and potential impacts, i.e. aspects/areas that could potentially be impacted by the project, including identification of potentially affected local communities;
- Assessment of the key E&S risks and potential impacts; assessment should cover associated facilities and shall include potential cumulative impacts;
- Mitigation approach and mitigation measures;
- Environmental and Social Management and Monitoring Plan;
- Brief description of the alternatives to be considered in next phases of the ESIA;
- Stakeholder analysis/stakeholder mapping to identify the stakeholder groups who may be affected by and/or may have an interest in/influence on the Project, including initial consultation of local communities and statutory stakeholders for the scoping process;
- Outline of methodology and approach for community engagement to be applied during next iterations and updates of the ESIA, including national legal provisions for public information and disclosure;
- Description of the methodology, the approach and the general timeline for the next iterations of the ESIA, corresponding to the process of technical planning;
- Identification of key information needs for the next iterations of the ESIA, in order to integrate aspects such as energy demand and consumption, nature and quantity of the materials and natural resources (including water) used, etc. and information needed to establish and estimate - by type and quantity - of expected residues and emissions i.e. water, air, and quantities and types of waste produced during the construction and operation phases.

8. Timing of the assignment and estimated input

The assignment is planned to start in early September 2021 and to be completed by end December 2021 the latest. The estimated efforts to complete the assignment are about 150-190 person days.

9. Team composition and required qualifications

The qualifications for the ESIA experts are as follows:

Expert	Key qualifications	Main responsibilities within the assignment
Team Leader, International Social and Environmental Specialist	<ul style="list-style-type: none"> At least a Master's Degree in their relevant field of expertise; At least ten years of project-relevant professional experience in undertaking ESIA; Experience in sustainable design is desirable Working experience in East Africa understanding the social and cultural norms and needs of the beneficiaries; working experience in Rwanda is considered an asset Excellent knowledge of relevant World Bank / IFC standards and codes; Be fluent in English. 	<ul style="list-style-type: none"> Mobilize surveying ESIA, Gender & RAP team Coordinate among the team Revise the Final Reports for quality assurance Reporting for the client
National Social, Environmental and Resettlement Expert	<ul style="list-style-type: none"> At least a Bachelor's Degree in their relevant field of expertise; At least seven years of project-relevant professional experience, showing an understanding of the social and cultural norms and needs of the beneficiaries Experience in sustainable design is desirable Excellent knowledge of relevant World Bank / IFC and national standards and codes Tracked record of experience on involuntary resettlement like Resettlement Policy Framework (RPF) and Resettlement Action Plan (RAP). Be fluent in English 	<ul style="list-style-type: none"> Prepare all survey tools in cooperation with the other team members ie Prepare and Test the surveying tools Review the legal framework that govern the resettlement activities Develop the Final Report and Disseminate the results
Gender Expert	<ul style="list-style-type: none"> At least a Bachelor's Degree in their relevant field of expertise; At least seven years of project-relevant professional experience, showing an understanding of the gender-related and social and cultural 	<ul style="list-style-type: none"> Review Social baseline findings and analysis Gender Analysis Report, including GCF compliant Gender Action Plan according to the GCF application template Summary of the GAP for inclusion in the GCF

	<p>norms and needs of the beneficiaries</p> <ul style="list-style-type: none"> • Excellent knowledge of relevant World Bank / IFC and national standards and codes • Be fluent in English. 	
Stakeholder and community liaison officer and data processing	<ul style="list-style-type: none"> • At least a Bachelor's Degree in relevant field. • A minimum of 2 years of experience in the field of communications. • Working experience in Rwanda and expert knowledge of the Rwandan context. • Be fluent in English and Kinyarwanda 	<ul style="list-style-type: none"> • Planning consultation schedules • Assist socio-economic data collection • Transcription and Summarizing of the qualitative data
Team of field surveyors and quality control supervisors	<ul style="list-style-type: none"> • University graduates • Experience not less than 5 years in • data collection using quantitative and qualitative tools 	<ul style="list-style-type: none"> • Participate in testing the tools • Collect data (qualitative, quantitative and observation sheets) • Supervise data collection process and monitor the quality of data. • Responsible for editing, coding, data entry and re-entry