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Environmental and Social Framework (ESF) Instruments for Volcanoes Community Resilience Project (VCRP)

Draft Environmental and Social Management Framework (ESMF) Report

June, 2023

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LIST OF ACRONYMS

AIDS:	Acquired Immunodeficiency Syndrome
API:	Application Programming Interface
AWF:	African Wildlife Foundation
BAP:	Biodiversity Action Plan
BOD:	Biological Oxygen Demand
CFC:	Chlorofluorocarbon
CBD:	Convention on Biological Diversity
CBHI:	Community Based Health Insurance
CCC:	Community Consultation Committee
CDCs:	Centers for Disease Control and Prevention
CMS:	Convention on the Conservation of Migratory Species of Wild Animals
CO:	Carbon Monoxide
CO2:	Carbon Dioxide
COD:	Chemical Oxygen Demand
CPS:	Country Partnership Strategy
CPF:	Country Partnership Framework
CROM_DSS:	Catchment Restoration Opportunity Mapping Decision Support System
CSOs:	Civil Society Organizations
DASSO:	District Administration Security Support Organ
DBH:	Diameter at Breast Height D
CC:	District Coordination Committee
DIN:	Dissolved Inorganic Nitrogen
DIP:	Dissolved Inorganic Phosphorus
DRC:	Democratic Republic of the Congo
EIA:	Environmental Impact Assessment
ESCP:	Environmental and Social Commitment Plan
ESF:	Environmental and Social Framework
ESIA:	Environmental and Social Impact Assessment
ESMF:	Environmental and Social Management Framework
ESS:	Environmental and Social Standard
ESTCS:	Environmental and Social Technical Clauses
ESCP:	Environmental and Social Commitment Plan
EHSGs:	Environmental, Health, and Safety Guidelines

EWS:	Early Warning System
FEWS:	Flood Early Warning System
FONERWA:	Rwanda Environment Fund
FTP:	File Transfer Protocol
FA:	Food and Agriculture
FAO:	Food and Agriculture Organization
FIDIC:	International Federation of Consulting Engineers
FGDs:	Focus Group Discussion
GAP:	Gender and Anti-GBV Action Plan
GoR:	Government of Rwanda
GFS:	Global Forecasting System
GIS:	Geographic Information System
GHG:	Greenhouse Gas
GBV:	Gender-Based Violence
GGCRS:	Green Growth and Climate Resilience Strategy
GRM:	Grievance Redress Mechanism
GMNP:	Gishwati-Mukura National Park
GMO:	Genetically Modified Organism
GCF:	Green Climate Fund
GESI:	Gender Equality and Social Inclusion
HWC:	Human-Wildlife Conflict
HEC-HMS:	Hydrologic Engineering Center-Hydrologic Modeling System
HH:	Household
HIV:	Human Immunodeficiency Virus
IUCN:	International Union for Conservation of Nature
ICT:	Information Communication Technology
IPs:	Indigenous Peoples
IFRC:	International Federation of Red Cross and Red Crescent Societies
IDA:	International Development Association
IPM:	Integrated Pest Management
LIAP:	Livelihood Improvement Plan
LMP:	Labor Management Procedures
MOE:	Ministry of Environment
MININFRA:	Ministry of Infrastructure

MINALOC: Ministry of Local Government

MCCs: Milk Collection Centers

Meteo-Rwanda: Rwanda Meteorological Agency

MINECOFIN: Ministry of Finances and Economic Planning

MINALOC: Ministry of Local Government

MINEMA: Ministry of Emergency Management

MINAGRI: Ministry of Agriculture

MSF: Médecins sans Frontières

NST1: National Strategy for Transformation

NTU: Nephelometric Turbidity Unit

NBSAP: Rwanda National Biodiversity Strategy and Action Plan

NOx: Nitrogen Oxides

NH3: Ammonia

NBS: Nature-Based Solutions

OHS: Occupational Health and Safety

PAHs: Project Affected Households

PCU: Project Coordination Unit

PIUs: Project Implementation Units

POM: Project Operational Manual

PPE: Personal Protective Equipment

PSC: Project Steering Committee

PMU: Project Management Unit

Pb: Lead

PwDs: Persons with disabilities

RPF: Resettlement Policy Framework

RAPs: Resettlement Action Plan

RSSB: Rwanda Social Security Board

REMA:	Rwanda Environment Management Authority
RWB:	Rwanda Water Resources Board
RDB:	Rwanda Development Board
RFA:	Rwanda Forestry Authority
RHA:	Rwanda Housing Authority
RTDA:	Rwanda Transport Development Agency
REG:	Rwanda Energy Group
RMA:	Rwanda Meteorology Agency
SOP:	Standard Operating Procedures
Sox:	Sulfur Oxides
SPIU:	Single Project Implementing Unit
SEA:	Sexual Exploitation and Abuse
SCD:	Systematic Country Diagnostic
SEP:	Stakeholder Engagement Plan
SHEA:	Sexual Harassment Exploitation and Abuse
SESA:	Strategic Environmental and Social Assessment
TAC:	Technical Advisory Committee
USD:	United States Dollar
UNESCO:	United Nations Educational, Scientific, and Cultural Organization
UNFPA:	United Nations Population Fund
UNFCCC:	United Nations Framework Convention on Climate Change
UNOPS:	United Nations Office for Project Services
VCRP:	Volcanoes Community Resilience Project
VNP:	Volcanoes National Park
WASAC:	Water and Sanitation Corporation
WS:	Wilderness Safaris
WB:	World Bank

WRF model: Weather Research and Forecasting

Zn: Zinc

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EXECUTIVE SUMMARY

The Rwandan Government has adopted a comprehensive approach to combating climate change, ensuring that actions align with their stated objectives. In line with this strategy, the Government has developed the Volcanoes Community Resilience Project (VCRP) to enhance climate resilience, minimize flood risks, and enhance the management of natural resources and tourism assets in Rwanda's Volcanoes and Vunga Corridor Region. The VCRP will be implemented in eight districts located in the volcanoes & Virunga Corridor areas of Rwanda. With a total investment of $494.4 million of which US$ 239 million is committed for financing while the remaining amount is under resource mobilization. The commitment includes US$ 50 million to be financed through the IDA credit, US $150 million from EIB, US$ 9 million from NDF, US$ 12 million from PROGREEN, US$ 10 million from RDB/Wilderness Safaris, and US$ 8 million from RDB/Africa Wildlife Foundation.

The project will be implemented under four components:

1) Flood risk management with two sub-components; 1-a) Flood Risk reduction investments for which the interventions for flood risk reduction and land restoration will take place in the Volcanoes region and the Vunga Corridor (Burera, Musanze, Nyabihu, Rubavu and Ngororero districts) and 1-b Flood Early Warning System (FEWS) and community level flood preparedness.

2) Landscape restoration and catchment management with three sub-components; 2-a) Integrated catchment and landscape restoration that will support restoration of VNP expansion area through assisted regeneration, planting of native species, and removal of exotics. This sub-component will also support Landscape restoration as well as ecological restoration in support of catchment management in the broader VCRP. 2-b) Ecological restoration of priority conservation area that will involve different landscape restoration approaches and play an important role in the management of flood risks, erosion and sediments in the catchments in the longer term. 2-c) Livelihoods development which will support targeted communities to create resilient livelihood assets and to diversify livelihood and income generating activities in Ecological and landscape restoration. Efforts to involve the community, the private sector, and the civil society will be carried out to ensure the sustainability of this investment.

3) Volcanoes National Park expansion and livelihood restoration with two sub-components 3-a) will support the expansion of the Volcanoes National Park (VNP) of an estimated 732.5 hectares. Phase one will entail the relocation of an estimated 510 households to an integrated climate resilient green settlements/Park expansion and model smart Green Village of 50 ha that is approximately two kilometers from the current site; and 3-b) Livelihood diversification and income generation activities intended to support resettled households with livelihood improvement activities where the park will be expanded.

4) Project management, monitoring and evaluation and capacity building to 1) support the Project Coordination Unit (PCU) and the respective Project Implementation Units (PIUs) and 2) build the institutional capacity to sustain the implementation of the project beyond the life of the project.

Considering the actual locations of the project interventions, target area per site and activities per site are not yet confirmed, the VCRP Project was required to develop the Environmental and Social Management Framework (ESMF) to give guidance on the management of environmental and social impacts and risks, provide the institutional arrangements and environmental and social framework instruments to be produced.

ESMF is made as a guide for the initial screening of the proposed project activities for any negative environmental and social risks and impacts, which would require attention prior to project implementation. The framework outlines several strategies in undertaking the exercise. These include:

An outline of a systematic screening process for identifying potential environmental and social risks and impacts and their sources.
A step-by-step procedure for addressing potential environmental and social risks and impacts of the planned project activities.
A typical environmental management plan for mitigating negative externalities during project implementation and operations within environs.
Monitoring system for implementation of mitigation measures.
An outline of recommended capacity-building measures for environmental planning and monitoring of the project activities.

The ESMF was produced in consideration of the national legal, policy and institutional arrangements. The most relevant laws include the constitution of Rwanda as revised in 2015, the Law on Environment of 2018, Land Law of 2021, the Expropriation Law of 2015, forest law of 2013, the Law governing the National Parks of 2023; the National Strategy for Transformation (NST1 2018-2024), which is the 7-year Government Program, Vision 2050, the National Gender Policy of 2021...etc. It is crucial the project aligns to the existing relevant policies and strategies and the most relevant ones being, the Vision 2050, the Green Growth and Climate Resilience Strategy as revised in 2022, the Nationally Determined Contributions (NDC), the National Environmental and Climate Change Policy of 2019, National Agriculture Policy of 2018 and the National Policy for Water Resources Management of 2011. The project will also seek to comply with the international conventions signed or ratified by Rwanda.
The following ESSs could be triggered by the VCRP: ESS1 (Assessment and Management of Environmental and Social Risk and Impacts), ESS2 (Labor and Working Conditions), ESS3 (Resource Efficiency and Pollution Prevention and Management), ESS4 (Community Health and Safety)' ESS5 (Land Acquisition, Restrictions and Land Use and Involuntary Resettlement) ESS6 (Biodiversity Conservation and sustainable of Living Natural Resources), ESS8 (Cultural Heritage) and ESS10 (Stakeholders Engagement and Information Disclosure).
Of the WB 10 ESSs, only 8 could be triggered by the VCRP. The two ESSs which shall not be triggered by the project are ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities and ESS9: Financial Intermediaries.

The WB ESSs, General and Specific EHSGs were referred to for the screening and evaluation of impacts/risks and proposing adequate mitigation measures.

Based on the above considerations, the World Bank has classified the project under a category indicating high-risk based on various factors such as the type and location of activities, sensitivity, scale, nature, potential risks, and the capacity of the implementing entity, as well as the commitment of the Government of Rwanda. The environmental risk rating is substantial, social risk high whereas the overall project risk is High. The environmental impact of the project is largely positive, especially given that activities play a pivotal role in rehabilitating degraded landscapes and conservation of valuable ecosystems through afforestation/reforestation, park expansion and reclamation of forest habitat, and biological and physical soil and water conservation on agricultural lands and other ecologically critical ecosystems. The social risk is rated high given that the proposed project activities will result in adverse social risks and impacts for communities within and around the project footprint. Specifically, planned construction of flood risk reduction infrastructure, landscape restoration and park expansion will lead to land acquisition, restrictions on land use and access to natural resources, thus affecting livelihoods and income sources for those directly affected by the project and the broader community that derive their livelihood from the project area.

To ensure compliance with relevant Environmental and Social Standards (ESSs), all proposed project activities will undergo a thorough assessment. An Environmental and Social Commitment Plan (ESCP) has been developed to outline the measures and actions the project will implement to meet the requirements of ESSs. Furthermore, this project will comply with national laws and regulations that

are in line with the planned implementation activities. It will also adhere to various conventions that Rwanda has already ratified, ensuring alignment with international commitments.
The Project is designed to be environmentally and socially sound to prevent, avoid, mitigate, or compensate for any undesirable adverse consequences. The potential adverse environmental and social risks and impacts associated with the project include:
-Within the component of flood risk management: loss of agricultural, residential and business properties such as land and houses, loss of trees, disruption of protected plants and animal habitats, impact on surface and sub-surface drainage patterns; High sediments in sedimentation traps and impact on water quality; Increased runoff downstream (speed and volume); Construction waste management; Disruption of infrastructure facilities such as water, electricity and communication installations; Impacts associated with materials sourcing areas such as quarries; Air and noise pollution; Visual impact; Impacts on the cultural and religious values; Occupational health and safety risks (HIV, Gender related and GBV issues, SEA, drug abuse, etc.);Drowning and fall hazards.

-Within the component of Ecological and landscape restoration: Reduction of soil fertility parameters in terraced land; gradual soil acidification from fertilizer application; soil Erosion and landslides; risk of introducing invasive species; pests or diseases to the local forest areas and therefore threatening local biodiversity; there is a risk of maladaptation if local conditions and needs are not adequately considered; water logging and salinization; algal blooms and weed proliferation; threats to human health and livestock due to improper handling of treated seeds, fertilizers, and pesticides; loss of biodiversity on the hillsides and valleys; income losses from missed season cultivation due to delays in terracing ;on the ground interventions (agroforestry/ANR) could lead to displacement of informal settlers/land occupants; Employment labor issues including child labor; risk that the vulnerable and women are not adequately included in village forest management activities and related benefit sharing arrangements; loss of agricultural, residential and business properties such as land and houses; loss of trees, garden and crops and other natural resources; disturbance to natural habitat; soil erosion; air and noise pollution; natural resource extraction; disturbance to natural landscape; construction waste management; impacts on the cultural and religious values; Occupational health and safety risks (HIV, GBV, SEA, drug abuse, etc.),employment labor issues.

-Within the component of volcanoes national park expansion investment and livelihood diversification: Loss of agricultural, residential and business properties such as land and houses; Loss of trees, garden and crops and other natural resources; Construction waste management; Impacts associated with materials sourcing areas such as quarries; Air and noise pollution, vibration; Impacts on the cultural and religious values; Occupational health and safety risks (HIV, GBV, SEA, drug abuse, etc.);Increased runoff; Micro-climate modification; Water pollution; Water supply; Security; fire outbreak; impact on existing scenery.

Gender equality and social inclusion considerations
In Rwanda, the National Strategy for Transformation (NST1 2018 -2024) outlines 6 cross-cutting areas that must be mainstreamed in the core mandates of National Sectors and institutions in order to contribute to the achievement of sustainable transformation goals for the country. The cross-cutting areas are outlined under the governance pillar of NST1 as follows:

NST1 is a 7-year government program that gives guidance and direction to all National Sectors with regard to which strategic priority areas they should target to implement in order to achieve sustainable transformation objectives. Other cross-cutting areas in NST1 that fall under the Governance pillar include.

-Within the component of risk and Impact monitoring, Capacity Building and Project Management: no expected potential risk and impact.

The environmental and socio-economic attributes and baseline information of the project area were collected through literature and site visits. The objective was to conduct screening and evaluation of impacts and risks that are associated with implementation of the VCRP project components and sub-components with consideration of the different phases of project implementation, construction and operation.
The project area is located in the Volcano Region and Vunga Corridor River basin, which is situated in the Northern and Western part of the Country. The area spans the districts of Burera, Musanze, Nyabihu, Rubavu, Gakenke, Muhanga, Ngororero and part of Rutsiro Districts and is composed of a small number of permanent rivers, gullies both with defined outlet and endorheic catchments. However, the topography of the region created many intermittent streams which are responsible for most of the floods observed in the area. The communities that live in this region are highly vulnerable to the adverse effects of climate change. The impact of climate change has been evident through the floods, erosion and landslides that occur with increasing frequency and magnitude that pose socio-economic challenges such as landslides, soil erosion, crop losses, infrastructure damage that leads to human injuries and deaths.

This ESMF serves as a guidance to the ESIA and other site-specific environmental Risk Management instruments which will include measures aimed at addressing potential negative impacts, with the goal of preventing, avoiding, and minimizing the consequences of these impacts, which could be severe. Therefore, the potential and environmental and social impacts/risks were identified and classified considering the activities of each component and sub-components. The different instruments to be prepared by each implementing agency were determined.

The VCRP project environmental and social management procedures were set to address environmental and social concerns throughout the identification, preparation, approval, and implementation of site-specific subprojects. The ESMF has detailed the procedures and steps designed to adequately address and manage environmental and social risks and impacts. The ESMF emphasizes the project's planning focus on ensuring that proposed subproject activities are environmentally sustainable, socially acceptable, and align with the "do no harm" principle. This is achieved through the application of best practices and effective mitigation measures, as outlined in this ESMF and the forthcoming ESF instruments that will be prepared once project implementation sites are identified.

The VCRP project utilizes a structured approach to environmental and social management, ensuring compliance with the 8 applicable Environmental and Social Standards (ESSs) and following a mitigation hierarchy that includes avoidance, minimization, mitigation, compensation/offset for negative impacts, and enhancement of positive impacts whenever feasible. The subsequent sections delineate the necessary actions at each stage of the project's life cycle, including sub-projects *(hereafter referred to as an activity falling under the VCRP sub-components*) implementation, monitoring, and progress reporting.

The ESM procedures have indicated the budget for implementing the Environmental and Social Management Framework (ESMF) primarily focusing on the preparation and supervision/monitoring of ESF tool implementation. A capacity building framework was proposed. Effective implementation of the ESMF and the other ESF instruments (SEP, LMP, ESCP, RPF, GAP) will require capacity building for those responsible for implementing sub-projects at the implementing institutions, at district, and at the community levels.

It is a requirement and important to engage the stakeholders through public consultations, key informant interviews and Focus Group Discussions. The ESMF used the consultations to identify the project critical issues and non-important issues and started engaging the stakeholders at the project level. A Stakeholder Engagement Plan was prepared and will be referred to for future engagements, who to engage, when and where.

Additionally, these measures serve as a roadmap for implementing sustainable solutions that will ultimately ensure the sub project's desired benefits are achieved in the long term.

Moreover, it is recognized that successful implementation of the ESMF requires the involvement and participation of local communities in the implementation of suggested mitigation measures. Specifically, the framework recommends:

- Environmental and social awareness and education for the key stakeholders and affected communities.
- Training the local community structures to implement the ESMF and apply the screening process.
- Regularly updating this ESMF to respond to changing local conditions and lessons learned during project implementation.
- Building capacities for developing appropriate information management systems to support the environmental and social management process.
- Providing the necessary resources and equipment for the project implementers to be able to produce the necessary documentation and forms for the implementation of the ESMF.
- Empowering the relevant environmental officers to adequately administer the ESMF.

1. INTRODUCTION

1.1 Background

The Volcanoes Region and the Vunga corridor located in the north-west of Rwanda are characterized by frequent heavy rainfall and floods that result in landslides, soil erosion, crop losses, infrastructure damage, and human injuries and deaths as well as the ecological challenges especially in the VNP.
Heavy rainfall and floods are likely to have significant consequences on the environment, society, food security, and the wider economy. Significant impacts are also expected for the area's water resources, agriculture, and health sectors. Increased temperatures, flooding, and soil erosion puts rural communities at risk, particularly poor and vulnerable groups. The combined effects of climate change and environmental degradation (soil erosion, deforestation, and loss of ecosystem services) present significant obstacles to development.
It is against this background that the Volcanoes Community Resilience Project (VCRP) was initiated. The project is fully aligned with the World Bank Group Country Partnership Framework (CPF) (FY21–FY26) and will contribute to the cross-cutting objective of the CPF which aims to address climate change. The project will strengthen climate resilience, reduce the risks of flooding, and improve the management of natural resources and tourism assets in the Volcanoes and Vunga corridor Region of Rwanda.

Towards the implementation of the VCRP, the implementing entities are considering to develop the environmental and social risk and impact management instruments aiming at sustainable social development; pursuing the project objectives while respecting national laws, policies and regulations; and respecting World Bank principles of sustainable development and Environmental and Social Framework (ESF). The instruments include this ESMF.

This Environmental and Social Management Framework (ESMF) is being prepared to support the environmental and social management and implementation of the Volcanoes Community Resilience Project (VCRP) to be implemented by GoR's various institutions including Rwanda Environment Management Authority (REMA), Rwanda Water Resources Board (RWB), Rwanda Development Board (RDB), and Rwanda Meteorological Agency (Meteo-Rwanda), under coordination of the Ministry of Environment (MoE). In addition to the designated implementing agencies of the VCRP, the Rwanda Forestry Authority (RFA), Rwanda Housing Authority (RHA), and Ministry of Emergency Management (MINEMA) will assume crucial roles as key stakeholders in facilitating the successful implementation of the VCRP.

The estimated VCRP cost is approximately US$ **494.4 million, of which** US$ 239 million is committed for financing while the remaining amount is under resource mobilization. The commitment includes US$ 50 million to be is financed through the IDA credit, US $150 million from EIB, US$ 9 million from NDF, US$ 12 million from PROGREEN, US$ 10 million from RDB/Wilderness Safaris, and US$ 8 million from RDB/Africa Wildlife Foundation.

The project is made of 4 components which are *(for more detail refer to chapter 2*):

1) Flood risk management with two sub-components 1-a) Flood Risk Reduction Investments for which the interventions for flood risk reduction and land restoration will take place in the Volcanoes region and the Vunga Corridor (i.e. in Burera, Musanze, Nyabihu, Rubavu and Ngororero districts) and 1-b Flood Early Warning System and Community Level Flood Preparedness.

2) Landscape Restoration and Catchment Management with three sub-components including; 2-a) Integrated catchment and landscape restorationthat will support restoration of VNP expansion area through assisted regeneration, planting of native species, and removal of exotics (non-native species to be used will be clarified subsequently in the ESIAs and/or ESMPs). This sub-component will also support Landscape restoration as well as ecological restoration in support of catchment management in the broader VCRP; 2-b) Ecological restoration of priority conservation areas that will involve different landscape restoration approaches and play an important role in the management of flood risk, erosion

and sediments in the catchments in the longer term. 2-c) Livelihood development which will support targeted communities to create resilient livelihood assets and to diversify livelihood and income generating activities in Ecological and landscape restoration. Efforts to involve the community, the private sector, and the civil society will be carried out to ensure the sustainability of this investment. targeting communities affected by flood mitigation and adaptation activities, and those supported through catchment management and ecological restoration activities.

3) Volcanoes National Park expansion and livelihood restoration with two sub-components 3-a) integrated climate resilient green settlement/VNP expansion, and a model smart green village will support the expansion of the Volcanoes National Park (VNP) of an estimated 732.5 hectares. Phase one will entail the relocation of 510 physically displaced households to an integrated climate resilient green settlements/Park expansion and model smart Green Village of 50 ha that is approximately two kilometers from the current site; and 3-b) Livelihoods diversification and income generation activities intended to support resettled households with livelihood improvement activities where the park will be expanded.

4) Project Management, Monitoring & Evaluation, and Capacity Building to 1) support the Project Coordination Unit (PCU) and the respective Project Implementation Units (PIUs) and 2) build the institutional capacity to sustain the implementation of the project beyond the life of the project.

The ESMF has been prepared according to the Environmental and Social Framework of the World Bank[2] and its Environmental and Social Standard 1 (ESS1)[3] and has considered the regulations and requirements of Environmental Impact Assessment of Rwanda.[4] The ESMF is an umbrella instrument that includes requirements of other relevant Environmental and Social Standards for the project which are ESS2, ESS3, ESS4, ESS5, ESS6, ESS8, and ESS10.

Other instruments are being prepared for VCRP environmental and social management which will also be mandatory for the project implementation and complements the ESMF including related documents that have direct/indirect relationship to EHS aspects - such as management plan for VNP, etc

i) Resettlement Policy Framework (RPF) to guide the development of site-specific RAPs which will be prepared during project implementation.
ii) Gender and Gender Based Violence Action Plan (GAP) which will summarize the obligations of the project to mitigate impacts related to displacement and climate change that affect more women than men.
iii) Labor Management Plan (LMP) to develop labor and employment procedures to be followed during the implementation of the VCRP.

At this phase ESCP, SEP were prepared. The same for the RAP of the Volcanoes National Park (VNP) Expansion component. ESMF, RPF, LMP and GAP are being prepared for the VCRP components and the ESIA for the construction of the Integrated climate resilient green settlement (green village). ESIAs, ESMPs will be prepared for the sub-components as required. Where there is displacement, RAPs with a comprehensive livelihood Restoration plan (LRP) for the resettled populations will be prepared. It is also considered to assess the Project Technical Assistance activities/managed for EHS aspects.

VCRP will support the strengthening of climate resilience, participatory strategic and spatial planning, enhanced stakeholder engagement in decision making of districts, and improve the quality of life for urban residents and promote economic development through increased access to services such as roads, drainage, and sanitation.

VCRP is aligned with the World Bank's Country Partnership Framework (CPF) (FY21-26), for Rwanda endorsed by the Board of Executive Directors on July 9, 2020. The systematic Country Diagnostic (SCD) of Rwanda completed in June 2019 recognizes environmental sustainability and building resilience to climate change as key priorities and underlines the critical need to strengthen climate resilience through

management of climate change hazards such as floods, adequately manage catchments and restore landscape, and improve the management of natural resources and tourism assets in the Volcanoes Region of Rwanda[1].

The Government of Rwanda and its implementing agencies, REMA, RDB, RWB, MOE and Meteo Rwanda confirm that they will develop VCRP in line with the current ESMF actions and measures here presented and with all measures, plans and protocols described in the RPF, SEP, LMP, GAP, ESCP prepared for the project implementation. It is also agreed that a team of environmental and social specialists will be hired to ensure adequate supervision and monitoring of mitigation measures, that an agreed budget will be allocated to apply the measures described in this ESMF and future ESIAs, that reports will be provided to the World Bank team on any project-related incidents (accidents) or changes in project design that will require the update of this document, during implementation or as required during the supervision of the project.

1.2 Project intervention area

The VCRP will be implemented in the Volcanoes Region and the Vunga corridor located in the north-west of Rwanda. This region spans the districts of Burera, Musanze, Nyabihu, Rubavu districts in Volcanoes region and Gakenke, Muhanga, Ngororero and part of Rutsiro District in the Vunga corridor. More ES information on project area is presented in Section 4.

Volcanoes National Park (VNP) is part of a unique transboundary network of protected areas in Rwanda, Uganda and the Democratic Republic of Congo. The VNP is home to globally endangered Mountain Gorilla, and it is an IUCN Category II National Park as well as a UNESCO Biosphere Reserve. In addition to mountain gorillas (*Gorilla beringei beringei*), VPN is home to golden monkeys (*Cercopithecus mitis kandti*), Spotted Hyena (*Crocuta crocuta*), buffaloes (*Syncerus caffer*), elephants, black-fronted duiker (*Cephalophus niger*), and bushbuck (*Tragelaphus scriptus*). The park also harbours 178 bird species including at least 29 endemics to the Rwenzori Mountains and the Virungas.

The Volcano hydrological network (see Figure 1) is composed of a small number of permanent rivers. However, the topography of the region created many intermittent streams which are responsible for most of the floods observed in the area. Most of these intermittent streams originate in the volcanoes. The Mukungwa River, the largest river in the Volcano watershed, flows from the north to the south through the project area to join the Nyabarongo River.

The Volcano region catchment is within both Congo and Nile basin and runs north to south and in the western part of Rwanda. It has a total surface area estimated to 3631km². Some of gullies like Susa, Rwebeya, Muhe and Cyuve start from the Volcano Mountains and join Mukungwa River which discharges into Nyabarongo river. Furthermore, at the downstream part of the volcano, there are other key sub-catchments with other notable rivers in the watershed like Rubagabaga, Nyamutera, Giciye as tributaries of Mukungwa, and Satinsyi, a tributary of Nyabarongo River. All these catchments are interconnected and influenced by the high volume of water that meet in the Vunga corridor.

There are a number of groundwater sources in the Volcano region that feed three big lakes Burera, Ruhondo and Karango which is the source of Mukungwa river. A significant portion of the catchment is in the north (Burera, Musanze Districts) and west (Nyabihu, Rubavu Districts); with smaller areas in Gakenke, Ngororero and Muhanga Districts) at high altitude, above 2,000m and steep slopes; the highest point being 4,500m.

[1] https://documents1.worldbank.org/curated/en/219651563298568286/pdf/Rwanda-Systematic-Country-Diagnostic.pdf

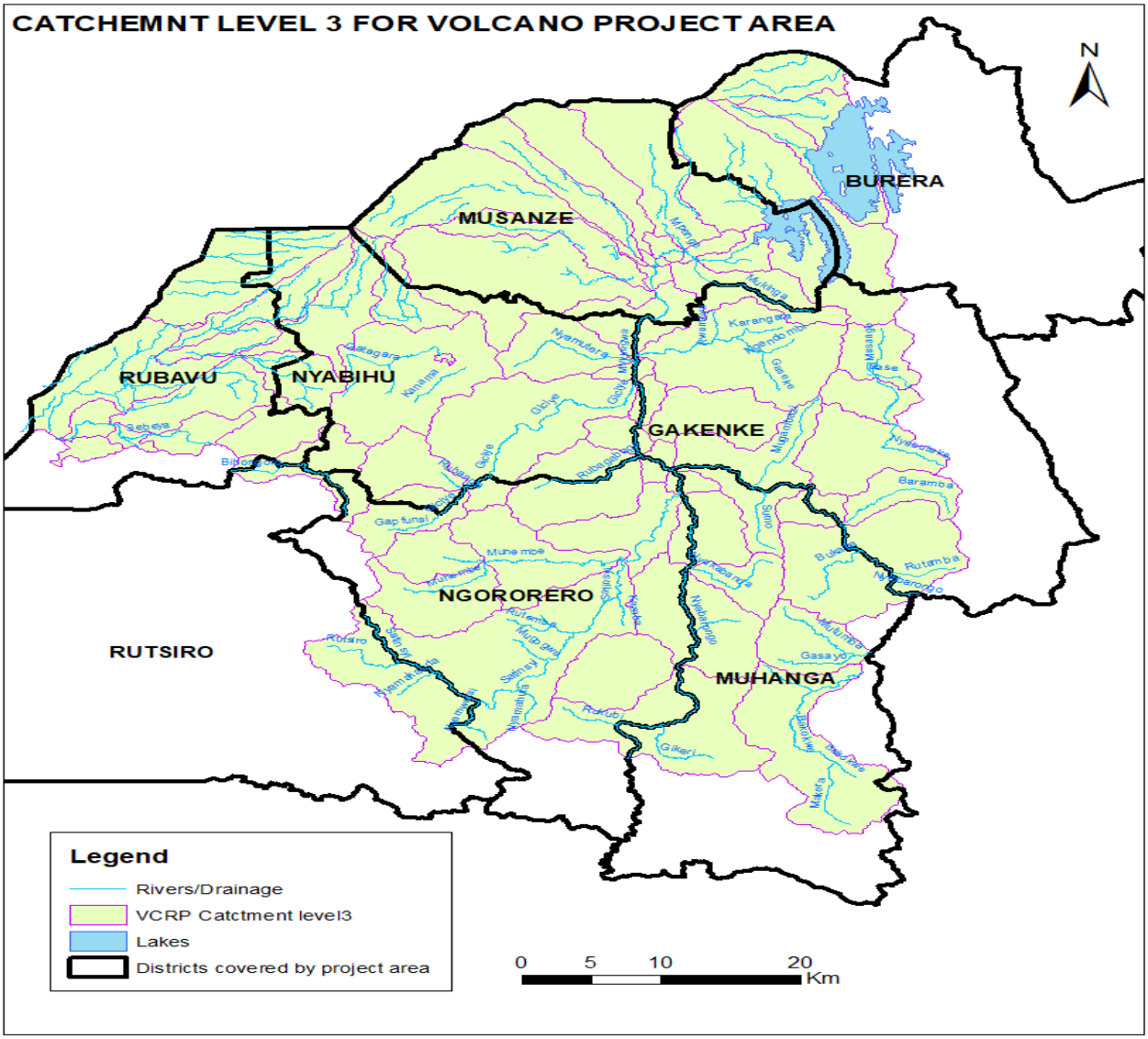


Figure 1: Location of the VCRP intervention area at district level

1.2.1 Project interventions

The VCRP is intended to strengthen climate resilience, reduce the risks of flooding, and improve the management of natural resources and tourism assets in the Volcanoes Region of Rwanda.

The project is to be implemented through the below four components, with more details on budget in section 2.3 (table 9) of this ESMF.

Component 1: Flood risk management

Subcomponent 1a: Flood Risk Reduction Investments

The activities under this sub-component will prevent or mitigate damages through the implementation of flood control measures. The interventions will take place in the Volcanoes region and the Vunga Corridor (i.e. in Burera, Musanze, Nyabihu, Rubavu and Ngororero districts). Interventions will include among others construction of flood control infrastructures in selected hot spots, flood control studies for specific areas, Institutional and capacity development at community and technical level. The interventions will

explore the inclusion of nature-based solutions (NBS) and give greater emphasis to flood detention depending on catchment characteristics.

More detail on this sub-component is elaborated in chapter 2 of the ESMF.

Sub-component 1b: Flood Early Warning System and Community Level Flood Preparedness

Under this sub-component, a Flood Early Warning System (FEWS) for the volcanoes region will be developed and operationalized. Activities will include among others:

- Improving capabilities of detection, monitoring of extreme rainfall and floods, and forecasting of the flood hazards using a Radar system, water level monitoring stations and meteorological and hydrological forecasting systems.
- Improving capacity in analysis of extreme rainfall and floods risks involved in combination with communities' vulnerability and exposure.
- Improving dissemination of timely floods impact based early warnings and activation of emergency response plans.
- More detail on this sub-component is elaborated in chapter 2 of the ESMF.

Component 2: **Landscape Restoration and Catchment Management**

Sub-component 2a: Integrated catchment and landscape restoration

This subcomponent will include targeted restoration of the Volcanoes National Park (VNP) expansion area and ecological restoration for priority conservation areas in the broader VCRP landscape. Restoration of the Volcanoes National Park's expanded area will involve assisted regeneration by planting of native species and removal of exotics (non-native species to be used will be clarified subsequently in the ESIAs and/or ESMPs). The main interventions will be: (1) Development of a restoration plan, (2) Demolition and removal of waste from existing infrastructure, destumping of eucalyptus and other non-native areas seedling production and plantation, planting, and maintenance of native tree species in park expansion zone; fencing the park expansion area, maintenance of the restored area, and development of biodiversity monitoring and evaluation tools and VNP management plan.

In addition to restoration of the VNP expansion area, this sub-component will also support ecological restoration for prioritized areas in the broader VCRP landscape. This will include (i) restoration of remnant forests, (ii) rehabilitation of prioritized wetlands, (iii) restoration of islands and lakeshores on Lake Burera and Ruhondo lakes, (iv) establishment of forests in buffers along rivers, lakes and wetlands, and (v) establishment of forests along road reserves, (v) silvo-pastoralism.

Sub-component 2b: Ecological restoration of priority conservation areas

This sub-component will be implemented in the eight districts of the project implementation area namely Burera, Nyabihu, Rubavu, Gakenke, Muhanga, Ngororero, Musanze, and part of Rutsiro Districts. The interventions under this sub-component will be based on the Catchment Restoration Opportunity Mapping Decision Support System (CROM-DSS) model which is a decision support system to guide restoration activities aimed at addressing erosion risks in Rwanda. The implementation of this sub-component will play an important role in the long-term management of flood risk, soil erosion, and sediment transport in the catchments.

Sub-component 2c: Livelihoods Development

This component will support communities through promotion of climate resilient livelihood and diversification of income generating activities (IGAs) in project intervention areas. This would include communities affected by flood mitigation and adaptation activities, and those supported through catchment management and ecological restoration activities.

More detail on these sub-components is elaborated in chapter 2 of the ESMF.

Component 3: Volcanoes National Park expansion and livelihood restoration

Subcomponent 3a: Integrated climate resilient green settlement/VNP expansion, and a model smart green village

In order to address the challenges related to human-wildlife conflict (HWC) and flooding challenges, the project will support the expansion of the Volcanoes National Park (VNP) of 732.5 hectares. Phase one will entail the relocation of 510 households physically displaced to an integrated climate resilient green settlements/Park expansion and model smart Green Village of 50 ha that is approximately two kilometers from the current site.

Subcomponent 3b: Livelihoods diversification and income generation activities

This sub-component involves livelihood diversification and income generation activities intended to support resettled households with livelihood improvement activities where the park will be expanded. These activities are planned at three levels: individual household level, community level, and host community-resettled community level.

More detail on these sub-components is elaborated in chapter 2 of the ESMF.

Component 4: Project Management, Monitoring & Evaluation, and Capacity Building

The objective of this component is to (1) support the Project Coordination Unit (PCU) and the respective Project Implementation Units (PIUs) in the implementation of the project activities in an efficient and transparent manner, and (2) build the institutional capacity to sustain the implementation of the project beyond the life of the project.

More detail on this component is elaborated in chapter 2 of the ESMF.

Although activities of the VCRP to prevent or mitigate damages through the implementation of flood control measures, improve capabilities of detection, monitoring, and forecasting of the flood hazards, guide restoration activities aimed at addressing erosion risks in Rwanda, address the challenges related to human-wildlife conflict and flooding challenges, resettle 510 households physically displaced from the VNP expansion into a model smart green village, support resettled households with livelihood improvement activities, support the Project Coordination Unit (PCU) and the respective Project Implementation Units (PIUs) in the implementation of the project activities in an efficient and transparent manner, build the institutional capacity to sustain the implementation of the project intend to bring about environmental and climate change mitigation and resilience benefits, they could also impose temporary and/or unforeseen negative impacts.

1.3 Scope and role of the ESMF for the implementation of the VCRP

This ESMF defines the mandatory procedures for assessment and management of environmental and social impacts and risks of all activities planned under VCRP in order to meet the requirements of the national legislation and Environmental and Social Framework of the World Bank and relevant Environmental and Social Standards to all project investments.

Both locations and boundaries of investment sites for flood risk reduction, installation of radar and other existing meteorological tools, implementation, and monitoring of landscape restoration works, the Volcanoes National Park's areas for development and restoration activities, sites to be decontaminated, areas where infrastructures and alien species are to be removed from, areas where ecology is to be restored, islands and lakeshores to be restored, buffers along rivers, lakes, wetlands and road reserves where forests are to be established, have not yet been fully determined, nor have some feasibility studies been carried out. It is therefore not possible at this stage to prepare Environmental and Social and Impact Assessments (ESIAs) and the environmental and social management plans (ESMPs) for the VCRP sub-projects.

The preparation of an Environmental and Social Management Framework (ESMF) has therefore been deemed appropriate in order to inform the designs, define the scope for the preparation of ESIAs for sub-projects in the overall VCRP documents, Stakeholder Engagement Plan (SEP), Labour Management Plan (LMP), Resettlement Action Plans (RAPs) and the Environmental and Social Commitment Plan (ESCP).

These documents are required to guide compliance with the relevant laws of Rwanda and the World Bank Environment and Social Standards (ESS). Assessment and management of EHS related impacts/risks is also required. *(Discussed in more detail in chapter 3.2.1)*

ESS1: Assessment and Management of Environmental and Social Risks and Impacts,

ESS2: Labour and Working Conditions,

ESS3: Resource Efficiency and Pollution Prevention and Management,

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,

ESS8: Cultural Heritage and

ESS10: Stakeholder Engagement and Information Disclosure.

1.3.1 Rationale and Objectives of this ESMF

The objective of the ESMF is also to provide guidance to the implementing agencies in the selection, preparation and implementation of sub-projects in order to avoid or minimize environmental and social risks and negative impacts and enhance environmental and social performance. The ESMF should also provide an environmental and social baseline. The ESMF will at a minimum **have the following specific objectives**:

The ESMF will have the following specific objectives:

- Outline the legal and policy framework for the project (national, international and the World Bank) and conduct a gap analysis between national legislation and the WB's ESF.
- Evaluate the potential environmental and social risks and impacts of the proposed interventions to be financed by the project and make sure that prevention, mitigation and compensation measures are integrated into planning, design and implementation of all project activities to prevent, minimize or mitigate these potential adverse impacts.
- Put in place the mechanism for handling grievances related to environmental and social issues during project implementation.
- Define the protocols to be used in all communication and consultation activities with the stakeholders to achieve project objectives and outcomes.
- Define and clarify the responsibilities and roles of the VCRP implementers at different levels from the National to district level.
- Develop a budget to implement the ESMF requirements;
- Determine the training, capacity building and technical assistance needed to successfully and effectively develop and implement the required environmental and social instruments for investments planned during the VCRP;

- Ensure environmental and social sustainability of the project activities by complying with environmental and social management procedures to meet the World Bank and Rwanda requirements for environmental and social management.

1.3.2 ESMF Preparation Approach and Methodology

The ESMF preparation started in April 2023 in Rwanda with the support of all implementing agencies. It has been prepared in accordance with applicable World Bank Environmental and Social Framework and the 8 ESSs relevant to the project and the Rwanda Environmental Impact Assessment laws, regulations and guidelines.

The study methodology comprised the collection and review of primary and secondary baseline data, identification and stakeholder consultations with key institutional stakeholders and potential project area community members and land users, site visits to some of the eight districts (i.e. Musanze, Burera, Nyabihu, Rubavu, Ngororero, Muhanga, Gakenke and Rutsiro districts), flood hotspots, areas to be ecologically restored as well as report preparation. The study methodology comprised collection and review of primary and secondary baseline data; preliminary identification and appropriate levels of consultation with key stakeholders.

The ESMF preparation team used different methods and techniques with a focus on the potential environmental and social risks and impacts of the planned VCRP activities and recommendation of a management plan for avoiding or minimizing the potential negative impacts.

The ESMF study was conducted on the basis that key project activities in the Volcano region and Vunga corridor will involve:

- Construction of flood control infrastructures in selected hot spots, flood control studies for specific areas, Institutional and capacity development at community and technical level. The interventions will explore the inclusion of nature-based solutions (NBS) and give greater emphasis to flood detention depending on catchment characteristics;
- Improving capabilities of detection, monitoring of extreme rainfall and floods, and forecasting of the flood hazards using a Radar system and other existing meteorological tools and improving dissemination of timely warnings and activation of emergency response plans
- Targeting restoration of the Volcanoes National Park (VNP) expansion area and additional ecological restoration actions for priority conservation area in the broader VCRP landscape
- Supporting communities through promotion of climate resilient livelihood and diversification of income generating activities in project intervention areas.
- Resettlement[2] of 510 households who will be physically displaced who will be settled in a model smart green village.
- Supporting 992 resettled households with livelihood improvement activities, planned at three levels: individual household level, community level, and host community-resettled community level.
- Supporting the Project Coordination Unit (PCU) and the respective Project Implementation Units (PIUs) in the implementation of the project activities in an efficient and transparent manner, and building the institutional capacity to sustain the implementation of the project beyond the life of the project.

The preparation process involved the following steps to ensure the ESMF is practical for use, ethical and accurate:

a) Desktop research;

b) Consultations with all implementing agencies and institutions, communities in the project area and key institutional stakeholders; *(detailed in chapter 7)*

c) Identification and analysis of potential environmental and social impacts and risks the implementation processes will likely trigger and generate; *(detailed in chapter 5)*

d) Development of screening process for negative impacts and risks for potential project sites and project activities; *(detailed in chapter 6)*

[2] Involuntary resettlement refers both to physical displacement (relocation and/or loss of home) and economic displacement (loss of access to resources for income generation or means of livelihood) due to land acquisition. 510 hh shall be physically displaced from the 732.5ha for purposes of Volcanoes National Park (VNP) expansion.

e) Identification of appropriate mitigation measures for the predicted impacts and compilation of a management plan and other instruments for addressing environmental and social impacts and risks during implementation, operation and maintenance of the project activities and; *(detailed in chapter 6.7,6.8,6.9,6.10)*

f) Preparation of an Environmental and Social Management Plan. *(Detailed in chapter 6.10)*

Biophysical and socio-economic baseline information was collected and reviewed through desktop research and through consultations with the communities in the project area, local authorities and project implementing agencies and institutions being key institutional stakeholders. (*refer to chapter 4 for detail*) The sites visits were done to identify potential sub-projects sites in Musanze, Burera, Nyabihu, Ngororero, Rubavu and Gakenke in order to familiarize with the issues on the ground and appreciate the concerns. A wide range of project beneficiaries, affected communities were interviewed in order to identify the main impacts the VCRP is proposed to avoid or minimize. Similar works to avoid/ minimize flood risks such as Muhe catchment management were visited, and to observe and apply good practice from it to prevent similar problems or challenges faced in VCRP project intervention areas. A list of people consulted and related minutes of stakeholder engagements are appended to this ESMF document.

Discussions in meetings with key implementing agencies and other key stakeholders including the World Bank representatives were organized at Classic hotel in Musanze district. Separate and extensive consultations were in addition held with the implementing agencies and institutions. These discussions were insightful in understanding project sub-components activities, the purpose of the VCRP intervention in specific areas, the potential risks/impacts these activities could cause and guided the identification of related enhancement and mitigation measures prescribed in this ESMF. *(Summary of consultations can be referred to in chapter 7).*

1.3.3 Users of the ESMF

This ESMF has been prepared as a manual for all implementers of the VCRP including but not limited to the following:

Table 1: VCR implementing agencies and institutions.

S/No	Implementing agency/ institution	Component
		Component one: Flood Risk Management
	Rwanda Water Board (RWB)	Sub-component 1a: Flood Risk Reduction Investments
	RWB & Meteo-Rwanda	Sub-component 1b: Flood Early Warning System and Community Level Flood Preparedness
		Component 2: Landscape Restoration and Catchment Management
	RWB and REMA	Sub-component 2a: Integrated catchment and landscape restoration
	REMA and RDB	Sub-component 2b: Ecological restoration of priority conservation areas
	REMA, RDB, and RWB	Sub-component 2c: Livelihoods Development
		Component 3: Volcanoes National Park expansion and livelihood restoration

	RDB and REMA	*Sub-component 3a:* Integrated climate resilient green settlement/VNP expansion, and a model smart green village
	RDB, REMA	*Sub-component 3b:* Livelihoods diversification and income generation activities
	MOE	Component 4: Project Management, Monitoring & Evaluation, and Capacity Building

2. Ministries responsible for infrastructure development, local government and environmental protection comprising;
   a. Ministry of Infrastructure (MININFRA)
   b. Ministry of Local Government (MINALOC)
   c. Ministry of Environment (MoE)
3. Development Partners
4. Senior government officials responsible for policy making and development planning.

Administrations of the volcano region and vunga corridor distributed throughout the 8 districts: Burera, Nyabihu, Rubavu, Gakenke, Muhanga, Ngororero, Musanze, and part of Rutsiro

2. PROJECT DESCRIPTION

2.1. Project Development Objective

2.1.1 Overall Objective

The objective of the VCRP is to strengthen climate resilience, reduce the risks of flooding, and improve the management of natural resources and tourism assets in the Volcanoes Region and Vunga corridor of Rwanda.

This project development objective will be measured against the following proposed key indicators:

- Green and gray infrastructure established to adapt and/or mitigate damages resulting from extreme climate events in Volcano region and Vunga corridor; for flood risks reduction (i.e. land area benefiting from reduced risks from floods).
- Area of land restored through ecological and landscape management approaches, soil erosion control, landslides, sediments reduction and biodiversity increase (i.e. Catchment area in hectares restored or rehabilitated).
- Improved and diversified livelihood of the communities in Volcanoes and Vunga corridor (i.e. Catchment area (hectares) restored or rehabilitated).
- Volcanoes national park expansion investments on 732.5 ha for improved economic biodiversity conservation; and
- Institutional capacities strengthened through effective cross institutional coordination.

2.2. Project Components

The proposed VCRP will be implemented through four components. This section also indicates the areas where each specific component is proposed for implementation.

2.2.1 Component 1: Flood risk management

2.2.1.1 Subcomponent 1a: **Flood Risk Reduction Investments**

Activities under this sub-component include the design and construction of various flood control measures/infrastructure that will prevent or mitigate flood damages in the project area; the implementation of various sediment management measures; the development of stormwater master plans for Rubavu and Musanze; the feasibility study, detailed designs, and bidding documents for the flood control measures to be built in the project area; and the capacity building of GoR's team to improve their flood risk management capacity.

The flood risk reduction measures will be developed at various locations spanning the whole project area (i.e. in the Volcanoes region and the Vunga Corridor). These measures will include among others the construction of detention ponds, bank stabilization, dykes, check-dams, and gullies; the rehabilitation or improvement of some drainage structures (culverts, road drainage, etc.); and the improvement or reinforcement of existing gullies and channels. The measures will favor nature-based solutions (NBS) and give greater emphasis to flood detention.

The approach to the application of flood management interventions in the VCRP project area has been to divide the project area in 66 Level 3 hydrologic catchments[3], to apply a set of regional measures to each of the Level 3 catchments in both the Volcanoes region and Vunga corridor region, and to supplement these with specific interventions in selected catchments.

[3] Rwanda is divided in 9 level 1 catchments of the Main rivers in the country. These main rivers have major tributaries that also from 22 level 2 catchments. These major tributaries are further divided into 66 level 3 catchments.

i. The selection of the regional measures is based on best practice in sustainable flood management, tailored to the different conditions between the two regions.
ii. Additional strategic catchment interventions are identified by Rwanda Water Resources Board (RWB) based on specific knowledge of the catchments and experience of the success of the interventions.

Sustainable flood management seeks to address both peak flow rates and total runoff volume. A summary of the interventions is given in the table below. They are listed in the order of priority that they should be applied.

Table 2: Summary of interventions

Flood method Category	Treatment measure
A. Source control.	Interventions as planned in the Catchment Restoration programme.
B. Detention	Detention ponds at 50-year design capacity.
	Interception channels or berms to direct overland flow into the detention ponds.
	Sediment trap storage.
C. Conveyance	Conveyance channels
	Bridge & culvert upgrades, including provisions for road elevation adjustments.
	Construct and upgrade roadside drainage along gullies
	Energy management in conveyance channels
	Rehabilitation and stabilization of unstable channels.
D. Strategic interventions	Dykes constructed to create off-line detention ponds.
	Dredging in sections of the Mukungwa, Satinsyi, Rubagabaga and Giciye rivers.

The approach to setting size and quantities per catchment are outlined below.

A. **Treat at source ("source control")-** This approach seeks to manage storm runoff as close as possible to the point of impact of the rainfall. Emphasis is given to managing land cover, soils and slopes in the VCRP and is therefore adequately covered by the proposed catchment restoration programme planned under sub-component 2.1.
The scale and location of the interventions have been adopted from the current version of the CROM_DSS analysis. Catchment Restoration Opportunity Mapping Decision Support System (CROM-DSS) is a tool that is applied by the RWB to select interventions such as afforestation, reforestation, agroforestry, bench terrace, contour bank terrace, riverside protection (plantation), hedgerows, gully reclamation, water harvesting, no-till and perennial for catchment and landscape restoration.

B. **Detention**- Detain, or retain, storm runoff and sediment as early as possible in the drainage network. In the VCRP emphasis has been given to detention to avoid concerns of downstream flow reduction impacts.
    a. As a subcomponent of detention, storage requirements will be the sediment trapping capacity in areas with high erosion risk (particularly in the Vunga corridor region).

Sediment storage volume is combined with flood detention volume in the same detention facility.

C. **Conveyance of flood flows through the community areas**- With effective application of A & B the requirement for substantial upgrading of existing channels, or the creation of new channels should be largely avoided. However, in some locations it may still be necessary to stabilise, rehabilitate or upgrade the capacity of channels, especially where people have moved into high-risk areas.
D. **Strategic interventions**- These include dredging of main river locations to alleviate severe sediment build-up and construction of dykes to create large off-line detention ponds. Both interventions are targeted at the lower areas of the catchments, though the off-line detention ponds may also be applied in the upper catchment areas at a smaller scale.

Applying priority to the planning of the interventions requires that category A interventions are planned and maximized before category B interventions are considered. Category B interventions are then maximized before category C interventions. This pattern of prioritizing interventions also follows through to category D. In this manner the scale of each lower category is reduced. This approach also has environmental benefits as the transfer of the risk to downstream areas is avoided or reduced.

To implement this approach, the following activities are anticipated under Component 1.1 of this project:

- Construction of detention ponds in upstream locations Construction of sediment traps
- Creation of some new channels, and enhancement and stabilization of existing channels
- Stabilization and enhancement of gully banks and beds
- Interception & diversion of channels or berms mostly towards detention ponds.
- New bulk gullies
- Construction of energy management structures (e.g. check dams)
- Upgrading of road drainage structures (culverts, bridge and side ditches)
- Dredging in selected rivers
- Construction of large off-channel detention ponds with dykes in lower areas
- Propose Nature Based Solutions (NBS) options for all of the above.

2.2.1.2 Sub-component 1b: Flood Early Warning System and Community Level Flood Preparedness

Under this sub-component, a Flood Early Warning System for the volcanoes region will be developed and operationalized. Activities will include among others:

- Improving capabilities of detection and monitoring of extreme rainfall/floods using a C-band Solid state weather Radar system, Automatic Weather and Automatic Water level monitoring stations, and forecasting of the flood hazards using coupled meteorological and hydrological forecasting systems.
- Improving capacity in analysis of extreme rainfall/floods risks involved in combination with communities' vulnerability and exposure.
- Improving communication and dissemination of timely impact-based floods early warnings and activation of emergency response plans.
- Meteorological stations: the project shall involve establishment of 5 Fully Automatic Weather Stations to complement the existing network of 28 meteorological stations in the VCRP area. These are placed in compounds of Local Sector offices for their security, operation and maintenance. The project also plans to acquire a weather radar to cover the volcanoes region and another radar for the south west region of the country.The seating of the two weather RADAR will be determined after technical assessment.. The Radar site shall require support infrastructure like water supply, electricity, fiber optics for internet and road access, if not yet available at the proposed site.

- Hydrological Stations: there were five water level monitoring stations procured and installed under the PPA phase and there are other 15 more water level stations that will be procured and installed during the project implementation phase. Hydrological station sites mostly use solar powered systems.

Meteo-Rwanda is the leading institution on the implementation of that subcomponent. Here below is the description of the Major activities based on the early warning system components which are the risk knowledge; detection, monitoring and forecasting; risk communication and early warning information dissemination and finally, the preparedness and response planning at institution level:

Table 3: Major activities based on the early warning system (EWS) components

FEWS components/Institution	**Meteo Rwanda**	**RWB**	**MINEMA**
Risk Knowledge	Development of rainfall thresholds as well as impact-based forecast over the project area, climate risk assessment in order to inform adaptation measures in the project area	Development of flood risk maps as well as thresholds for floods events	Floods hotspots mapping, floods vulnerability (Physical, Social, Economic) and exposure mapping, mapping of communities affected by floods (Households, offices, manufacturers, schools, etc) Development of combined risk matrices.
Detection, monitoring and Forecasting	Procure and install c-band doppler weather radar, automatic weather stations, lightning detectors. Development of nowcasting products. Enhancing the quality of impact-based rainfall forecast Improving the meteorological and hydrological forecast together with RWB through the implementation of WRFF-Hydro	Procure and install Water level monitoring stations at the identified floods hotspots area. Run hydrological model for floods risk assessments and flood forecast	

	with a very high spatial and temporal resolution forecast. Support the meteorological and hydrological equipment calibration for improved data quality Partners with research institution for capacity building and development of solutions.	Partners with research institution for capacity building and development of solutions	
Risk communication and Early Warning information dissemination	Communicate and disseminate impact-based rainfall forecasts. Disseminate impact-based rainfall early warning information together with RWB and MINEMA. Implement the Common Alert Protocol (CAP) enabled system for rainfall and flood early warning dissemination	Communicate and disseminate impact-based floods forecast Disseminate impact-based flood early warning information together with Meteo Rwanda and MINEMA	Development and operationalization of the SOP for floods early warning together with RWB and Meteo Rwanda. Disseminate impact-based rainfall/flood early warning information together with Meteo Rwanda and RWB with appropriate packaging. Perform community education together with RWB and Meteo Rwanda. Develop and operationalize risk communication plan as well as flood early warning information strategy Procure and install Sirens connected to the

			RWB water level monitoring stations (sirens will be used to warn the community nearby in case of an emergency evacuation)
Preparedness and Response planning			Perform simulations exercise. Procure and installation of response/evacuation equipment Mapping of community's response capabilities. Development of community-based response plans and centralized response plans or response matrix at community and central government level.

During the PPA some activities were conducted to support the implementation of the project, for example the activity for climate modeling, data processing, process automation, web development and application programming interface that would enable data sharing via API and climate risk assessment on the side of Meteo Rwanda.

Under the Flood Early Warning System (FEWS), the project wishes to achieve a very detailed community centered early warning system which is fed by very high resolution and accurate data/information in order to inform the preparedness and response with sufficient lead time.
To link activities under the PPA and what will be done during the project implementation phase, the following are the activities by respective Institutions that are being implemented during the PPA and will continue to be done during the project implementation phase.

Meteo-Rwanda
Meteo-Rwanda, working with RWB and MINEMA, will develop rainfall thresholds leading to flooding, based on the historical rainfall and flood events. The rainfall thresholds will be used as the first stage of early warning. The flood thresholds will be developed using hydrologic and hydraulic models to identify flood extent and magnitude over the Volcano and Vunga Corridor catchments areas.

For this trial, Meteo-Rwanda will use the existing WRF model output with a spatial resolution of 4km twice a day to downscale the Global Forecasting System (GFS) model. The challenge observed in the rainfall monitoring over the area using the weather radar will be solved under the future investment plan where the VCRP will address these data gaps through the acquisition of data collection equipment (radar, weather stations, data processing and storing systems). Meteo- Rwanda will automate the transmission via FTP site of their current forecast data to facilitate the automation of hydrologic simulations and the dissemination of threshold exceedance warnings.

Meteo-Rwanda will lead RWB and MINEMA in the development of impact based early warning. For this trial, the aim will be to identify key infrastructure in the selected catchments and be able to provide warnings geared towards them.

Rwanda Water Resources Board

For the trial FEWS, RWB will use a script to fetch forecast data from the Meteo-Rwanda FTP site and process them into a format usable by the hydrologic models. The script will run twice a day to match the frequency at which forecast data are provided.

For the trial FEWS, RWB will use HEC-HMS hydrologic models of the selected catchments and the rainfall forecast from Meteo-Rwanda to produce forecasts of expected flows. Three of the selected catchments are small enough that they have been combined into one hydrologic model. Therefore, for this trial, two hydrologic models will be running and providing flow forecasts.

The hydrologic models will use as input the following data:

1. Digital elevation model
2. Precipitation data
3. Land use/land cover for soil type information

A script was developed to trigger the run of hydrologic models twice a day. The script adds the processed forecast data to the hydrologic models, runs the models, and processes the results to check for threshold exceedances. If there is an exceedance, the script will send a notification to the MINEMA EWS. Flood threshold exceedance levels forecast will be transmitted to MINEMA's EWS using Email or SMS.

Furthermore, for this component, RWB will be conducting hydrologic modeling and hydraulic modeling to link weather data to flood hazard risks and impacts. To this end, RWB installed water level monitoring stations that use radar to measure the water level in rivers and gullies and send the data to a database in RWB's server. These stations are usually installed in the buffer zone (i.e. government land) of rivers or gullies. The stations require some level construction to install them. The images below show the type monitoring stations RWB plans on installing for the project.

Figure 2: Type monitoring stations RWB plans on installing for the project

Minema

MINEMA will receive threshold exceedance notifications from RWB via Email or SMS. Once notifications have been received from RWB, MINEMA will disseminate the warning information to local officials selected for the trial.

For this trial, MINEMA will undertake the education of selected local officials so that they understand the risk levels being communicated by the FEWS and how they relate to the response action plan developed by MINEMA. MINEMA will also develop detailed plans for various warning levels for the Volcano region and Vunga corridor catchments. These action plans will include:

- Relevant persons who will be receiving alerts messages,
- Key messages to be provided,
- Effective communication channels for a particular area and categories of people.
- Communication tools (Megaphone, etc…)

Again, the trial FEWS, MINEMA will select 4 sectors for which to develop response plans. These plans will be developed with the collaboration of the selected local official. These officials will have the following responsibilities:

- Provide feedback on the warning received.
- Provide information that will help in the development of evacuation plans for the selected sectors.
- Participate in simulation exercises (i.e.: playing roles of Disaster victims, Search and Rescue actors, first aid actors, etc…) to assess response plans.

Target/outcomes:

1. Volcano and vunga corridor Catchments Resident vulnerability and exposure assessment Report.
2. Database of identified focal persons from District to Village level.
3. Established flood response matrix for the volcano catchments.
4. Rainfall and flow thresholds over volcano catchments Report
5. Automated flood forecast as well as the early warning messages.
6. Automated dissemination of flood exceedance levels notifications to MINEMA.
7. Developed communication and dissemination plan for the volcano catchments residents.

2.2.2 Component 2: Landscape Restoration and Catchment Management

2.2.2.1 Sub-component 2a: Integrated catchment and landscape restoration

This subcomponent will include targeted restoration of the Volcanoes National Park (VNP) expansion area and additional ecological restoration actions for priority conservation areas in the broader VCRP landscape outside the VNP.

- The ecological restoration for the park expansion area will cover an estimated 732.5ha which forms part of a much broader and ambitious park expansion plan. An ecological restoration plan has been developed for the VNP expansion area under a previous arrangement between RDB and FONERWA and AWF before the VCRP preparation commenced. A consultant will be hired to develop an Ecological restoration plan for priority sites in the VCRP area of intervention (both VNP expansion and vunga corridor areas) under the PPA, which may take stock of what has been done for the VNP expansion area but will be a new and independently developed ecological restoration plan for the VCRP to reviewed and commissioned by GoR and World Bank.
- The ecological restoration of potential sites in the VCRP landscape (outside the park expansion area). An ecological restoration plan is yet to be developed for the VCRP landscape outside the park expansion area but that will also improve the existing ecological restoration plan for the VNP expansion area.

The key ecological restoration interventions under this sub-component 2b are:

- For the VNP expansion:
  - Ecological Restoration of the Park Expansion area – 732 Ha
  - Fencing of the Park Expansion Area
  - Updating the Volcanoes National Park Management Plan.
- Ecological Restoration of priority sites in the VCRP landscape (Out of Park Area)
  - Wetlands restoration
  - Restoration of lakes and islands buffer zones
  - Roadside protection
  - Protection of remnant forests
  - Silvo pastoralism in Gishwati rangelands
- Ecological restoration in support of catchment management
  - Restoration of riverbanks.
  - Plantation of native species in agro ecosystems, etc.

Under the ecological restoration of the park expansion area(732.5ha), the following interventions are proposed:

- Demolition and removal of waste from existing infrastructure.
- Removal of invasive and exotic species.
- Plantation and maintenance of native tree species of the entire area- 732.5ha.
- Supervision of park expansion restoration activities.
- Updating the existing VNP management plan.

Under the fencing the park expansion area, the following interventions are proposed:

- Feasibility Study and design, EIA, construction works, and supervision of construction works for fencing the park expansion area.

Under the ecological restoration of potential sites in the VCRP landscape (out of the park area), the following interventions are proposed:

- Restoration of Island buffer zones.
- Restoration of Lake buffer zones.
- Restoration of Riverbanks.
- Restoration of Wetland buffer zones.
- Restoration of Wetlands in Gishwati rangelands.
- Restoration of Bihinga wetland.
- Restoration of Kiguhu wetland- Bird watching area.
- Restoration of a wetland in Gakenke District.
- Establishment of demarcation line on Bihinga wetland in Nyabihu.
- Silvo pastoralism in Gishwati rangelands.
- Micro catchment-Including remnant forest.
- Restoration of Road reserves.
- Plantation and maintenance of indigenous species in agroforestry.
- Supervision of ecological restoration activities in the VCRP landscape (outside park expansion area).
- Conducting biodiversity baseline survey in the VCRP landscape.
- Research and knowledge management.

VNP expansion area and its ecological restoration:

This VNP expansion area plan was developed to cater for a growing gorilla population and to expand tourism activities in the area. According to RDB, the primary ecological challenge [for mountain gorilla conservation] is the small size of the park with insufficient interconnected habitat space for mountain gorillas and other wildlife species. This is a critical long-term challenge the park expansion intends to address. An expanded park will improve gorilla habitat and support a 15–20 percent increase in population and a reduction of 50 percent of infant gorilla mortality. This plan is supported by a substantial body of research which has shown the negative impacts of growing gorilla populations on social dynamics and the ecological integrity of the whole ecosystem. This sub-component will seek to create additional habitat for this key species and other biodiversity, whilst also seeking to reduce human-wildlife conflict (HWC) outside the park.

Restoration of the Volcanoes National Park's expanded area involves assisted regeneration involving planting of native species and removal of exotics (non-native species to be used will be clarified subsequently in the ESIAs and/or ESMPs). The main interventions will be: (1) Development of a restoration plan, (2) site decontamination; removal of all infrastructure and alien species, (3) seedling production and plantation, (4) and a 5-year maintenance of the restored area, and (5) biodiversity monitoring and evaluation.

As mentioned earlier, an Ecological restoration plan has been developed for the VNP expansion area and ecological restoration plan is yet to be developed for the VCRP landscape outside the park expansion area but that could also improve this already existing ecological restoration plan for the VNP park expansion area.

Based on the existing ecological restoration plan for VNP expansion area[4], the interventions for the ecological restoration of the VNP expansion area mentioned above are elaborated in more detail as follows:

(i) Decontamination and site rehabilitation-Decontamination and site rehabilitation consist of the removal of plastic and non-degradable waste, the rehabilitation of impermeable built-up areas through the destruction and removal of impermeable and non-decomposable materials, and the decontamination of feral animals that will be abandoned by humans at the site.

[4] Ecological restoration plan for VNP prepared by Vanguard economics and ENTREM Ltd in 2022.

(ii) Removal of exotics and invasive plant species-The removal of exotic and or invasive plant species is a very crucial process to start the ecological restoration of species and forest ecosystem function. Once done, the spontaneous natural regeneration starts to take its course before even implementing afforestation activities.

(iii) Afforestation- Given the rarity of indigenous tree and plant species in the agricultural land-use that will be converted into a vegetation that is homogeneous with the usual park's flora, afforestation activities will be needed in order to supplement the natural regeneration potential of the area once exotic and / or invasive plants are removed.

(iv) Stream care management-The main rivers and gullies in the park expansion area (as shown on the map below) are more concentrated in the eastern and central part of the proposed park restoration area and include: Bikwi in Nyabihu; Nyabitondore, Rungu, Mudakama, Gakingo-Muhongozi, Susa, Nyonirima, Kampanga, Nyagisenyi, Kansoro, igoyi, Rwebeya, Bikereri, Cyuve, and Nkogote in Musanze; Nyabitoshwa, Nyabyungo, Nyaburimbi, Rukangabana, Nyangabantu, Nyarubande, Bahimba, Minoga and Kagere in Burera. All these intermittent and permanent streams are effluents of either bigger rivers (Sebeya, Mukungwa, Mutobo, Kinoni River, Rwebeya) or the three lakes found in this landscape and the associated wetlands (Karago, Burera, and Ruhondo) as shown in the figure 3 below.

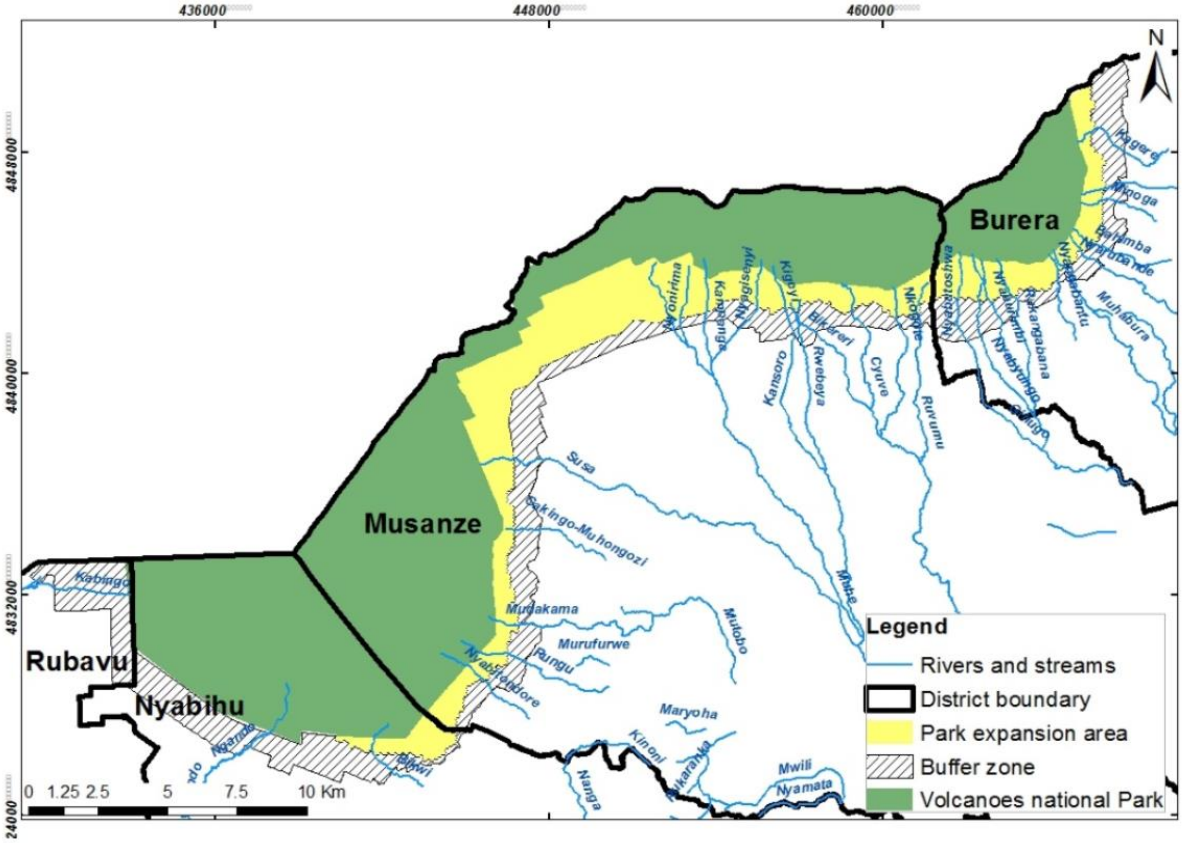


Figure 3: hydrological map of the landscape encompassing the park expansion area

The main problem that these streams face is related to excessive runoff due to the land-uses in the upstream catchment, where the nature of the rocks and the absence of natural vegetation cover to filter water and allow infiltration result in excessive runoff of water and huge amounts of sediments. The protection of streams will be a result of the proposed ecological restoration of the vegetation and the flood mitigation and prevention measures proposed in the section of the present project that covers flood modeling and mitigation.

Ecological restoration scenarios

The following scenarios are to be considered:

- For Wetlands: once exotic plants removed, plastic wastes, non-decomposable and impermeable surfaces removed, the wetlands will be left to regenerate naturally, whenever possible. Some species of trees (such as the Dombeya goetzenii) can easily adapt themselves near valleys, streams, and water-logged soils.
- For Solid land and other topographies/soils: Plant species can interchangeably adapt to various topography and type of soil at solid land, sloppy areas, on the top of the mountains/hills, and in valleys since they were all selected based on their ability colonise/survive naturally in the concerned altitudinal ranges (2150 – 2980 m for the entire area, and 2260 – 2980 meters asl for the ecological priority areas).
- For Consideration of vegetation /canopy cover while removing exotic/invasive plants: the method to use while removing exotic plants will be guided by the existing topography, canopy/vegetation cover and soil type.

Important to note, the VCRP landscape outside the park expansion area shall be informed by an ecological restoration plan yet to be developed.

2.2.2.2 Sub-component 2b: Ecological restoration of priority conservation areas

The landscape restoration will offer benefits through landscape restoration approaches and play an important role in the management of flood risk and sediments in the catchments in the longer term. Some attempt should be made to estimate the magnitude of this to support catchment planning and flood risk management planning through a combination of monitoring and modeling. In addition, the long-term performance of the interventions should be monitored. Efforts to involve the community, private Sectors and civil society will also be carried out to ensure sustainability of the process. The landscape where the VCRP supports has 66 catchments in selected districts and covers approximately an area of 311,000 ha. The RWB through integrated catchment management planning studies has identified preliminary priority areas for land restoration and specific rehabilitation measures that can be supported under the project. Accordingly, about half of the area, 160,000 ha, requires interventions to address severe soil erosion and flooding caused by land degradation and associated factors. The interventions are selected using Catchment Restoration Opportunity Mapping Decision Support System (CROM-DSS), a tool that is widely applied by the RWB. The selected interventions are afforestation, reforestation, agroforestry, bench terrace, contour bank terrace, riverside protection (plantation), hedgerows, gully reclamation, water harvesting, no-till and perennial. The interventions are recommended to address the existing land degradation and the associated problems and sometimes they are combined, and, in some cases, they are recommended for certain areas. The recommended interventions are proven technologies in Rwanda and elsewhere in Africa such as Ethiopia and Kenya. Depending on the level of degradation the recommended interventions in each catchment may vary. The most recommended intervention is contouring bank terracing with an estimated area of 82,683.94ha or covers 52 percent of the intervention area. Hedgerows, water harvesting structures, bench terraces, and agroforestry cover 13, 8, 8 and 7 percent respectively. Reforestation and riverside protection cover more than 3.6 percent of the intervention area. Successful implementation of the interventions will stop significant amounts of soil erosion and can store water in the landscape.

The activities under this approach can be summarized as follow:

- Constructing, maintaining, and upgrading terraces, grassed waterways, and contour banks on hillside lands privately owned by locals in the project intervention areas.
- Establishing multi-purpose native plants along bunds/terraces on hillside lands privately owned by locals in the project intervention areas and along rivers as buffers, streams, and in gullies on state-owned land in the buffer zones as stipulated by the National environment and land laws.
- Rehabilitating gullies, priority wetlands and other fragile ecosystems.
- Implementing agroforestry to support improved agriculture practices and provision of products on hillside lands privately owned by locals in the project intervention areas.
- Afforestation and reforestation measures to meet biodiversity conservation, production and protection needs on hillside lands privately owned by locals and state-owned land on very steep slopes of project intervention areas. This does not include large scale forestry production. These are activities scattered on smaller scale which could not be determined at the time of the ESMF but will be determined later based on CROM-DSS tool and community engagement.
- Supporting climate-smart agricultural practices [1] for crop and livestock production.
- Conservation of water through construction of water harvesting infrastructure, such as rainwater harvesting tanks for schools.
- Operation and maintenance of these activities once established shall be the responsibility of the local communities who benefit from these activities. A community-based approach of implementing these activities is proposed, for the purpose of ownership and continuity during the operation and maintenance of these establishments.

Application of these measures is critically important to (a) reduce flood risks in downstream areas, (b) save soil from erosion and improve agriculture productivity, (c) recharge underground water, (d) protect rivers and streams from erosion, and (e) mitigate risks of sedimentation and eutrophication in lakes and reservoirs.

Monitoring systems and numerical models shall be developed to support the planning, implementation, and monitoring of landscape restoration works. Efforts to involve the community, the private sector, and the civil society will be carried out to ensure the sustainability of this investment. In this regard, the implementation of this sub-component will follow a community-based and participatory approach to ensure smooth implementation and sustainability.

2.2.2.3 Sub-component 2c: Livelihoods Development

This component will support communities through promotion of climate resilient livelihood and diversification of income generating activities in project intervention areas. This would include communities affected by flood mitigation and adaptation activities, and those supported through catchment management and ecological restoration activities. The planning for this sub-component requires further consideration but will be informed by experience gained by VCRP implementing agencies in implementing livelihoods support initiatives through previous projects. Such activities could be mainstreamed by identifying common interest groups, supporting income generating activities and extending financial support through lending schemes. The establishment of “Rural Resource Centers” to facilitate community engagement and capacity building is also envisaged for further consideration.

This component will support targeted communities to create resilient livelihood assets and to diversify livelihood and income generating activities in Integrated catchment and landscape restoration and Landscape restoration. Efforts to involve the community, the private sector, and the civil society will be carried out to ensure the sustainability of this investment.

The Ecological and Landscape Restoration is mostly applied in a degraded landscape where natural resources are becoming inefficient or not sufficient to provide means of livelihoods on a sustainable basis. In such circumstances, affected community members tend to affect the productive landscape such as forests, wetlands, Islands, River banks and buffer zones and lakeshores.

In addition, Ecological and Landscape Restoration bring or provide opportunities for communities to sustain their livelihoods through a) protection of their assets from climate change and weather negative impacts, b) increasing the communities' resilience to climate change by adopting different and appropriate technologies, skill development and awareness, and c) provision of support for different income generating activities (IGA) for selected community members.

Priority will be given to households affected by the restored areas (forests, wetlands, Islands, River banks, buffer zones and lakeshores) with a particular focus on vulnerable groups of poor as Categorized in national ''Social registry system'' which is currently under Development by MINALOC and LODA, women, youth, persons with disabilities and others in order to improve livelihood while addressing the degradation of the catchment. Priority will be given to existing legally organized groups, associations and cooperatives.

Key eligible beneficiaries should include community members whose agricultural land holdings are insufficient to sustain their families/households (this measure considers both plot size and household size) with reference to the national ''Social Registry system''.

All the livelihood activities should consider integrating Gender Equality and Social Inclusion to ensure no one is left behind. Women and girls, youth, Persons with disabilities and other vulnerable groups such as the elderly shall be represented in decision-making structures to ensure they participate and their voice is heard in terms of what their specific concerns are and how they should be addressed.

Key interventions under the livelihood development shall involve:

- Individual support
    - Supply of small livestock to beneficiaries comprising 8000 sheep, 3,200 goats, 3,200 pigs.
    - Supply of 10000 cattle.
- Collective Support
    - 1000ha of tea plantations
    - 1000ha of banana production with climate smart agriculture[5] practices.
    - 4 Irish potato production/ pre-basic seeds production plants.
    - 1800 ha of pyrethrum production
    - 1 Honey collection and processing plant.
    - Water Supply for livestock farmers in Gishwati rangelands and communities for 160.212km length of water supply network.
    - Construction of potable water supply system for 6 sites in VCRP for 60km water supply network.
    -
    - Establishment of 3 Milk Collection Centers (MCCs) in the VCRP landscape and supply and installation of these MCCs.

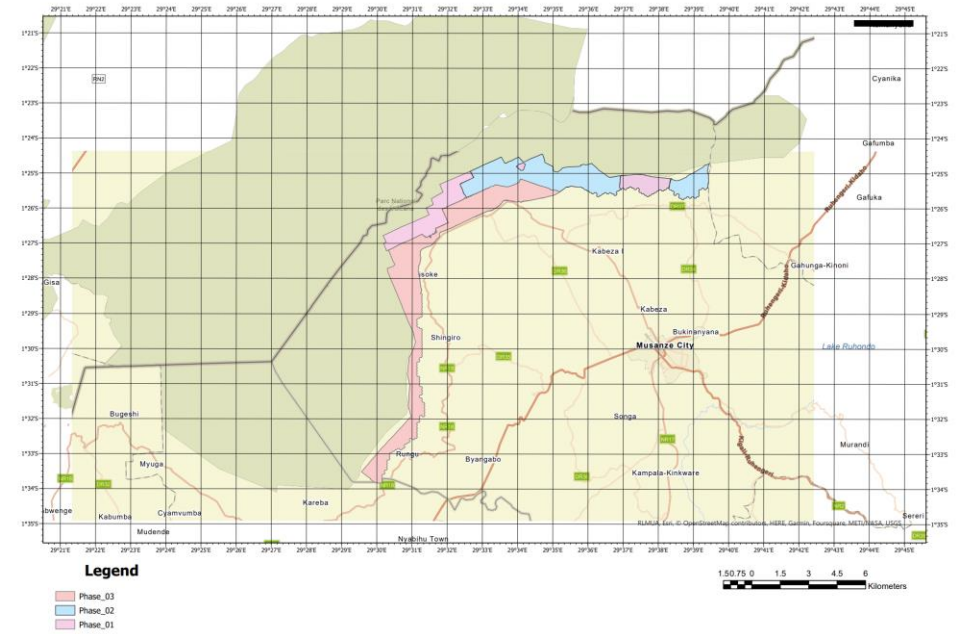
[5] Climate-smart agriculture (CSA) is an integrated approach to managing landscapes—cropland, livestock, forests and fisheries-that address the interlinked challenges of food security and climate change. (Referred from https:// www. worldbank.org)

All the livelihood activities should consider integrating Gender Equality and Social Inclusion to ensure no one is left behind. Women and girls, youth, Persons with disabilities and other vulnerable groups should be represented in decision making structures to ensure they participate, and their voice is heard in terms of what their specific concerns are and how they should be addressed.

2.2.3 Component 3: Volcanoes National Park expansion and livelihood restoration

2.2.3.1 Subcomponent 3a: Integrated climate resilient green settlement/VNP expansion, and a model smart green village

In order to address the challenges related to human-wildlife conflicts, overlaps of human range of neighboring groups and smaller forest areas exclusively used by a single gorilla group, gorilla density-dependent mortality as well as addressing flooding challenges. The expansion will be done into three phases. The first phase of will conducted on 732.5 Ha serving as a pilot. Identification of the first phase was done during the VCRP project design in 2022 and basing on the area with a high gorilla groups concentration and availability of public and private land donated for conservation. A new map was included with improved text of the legend.

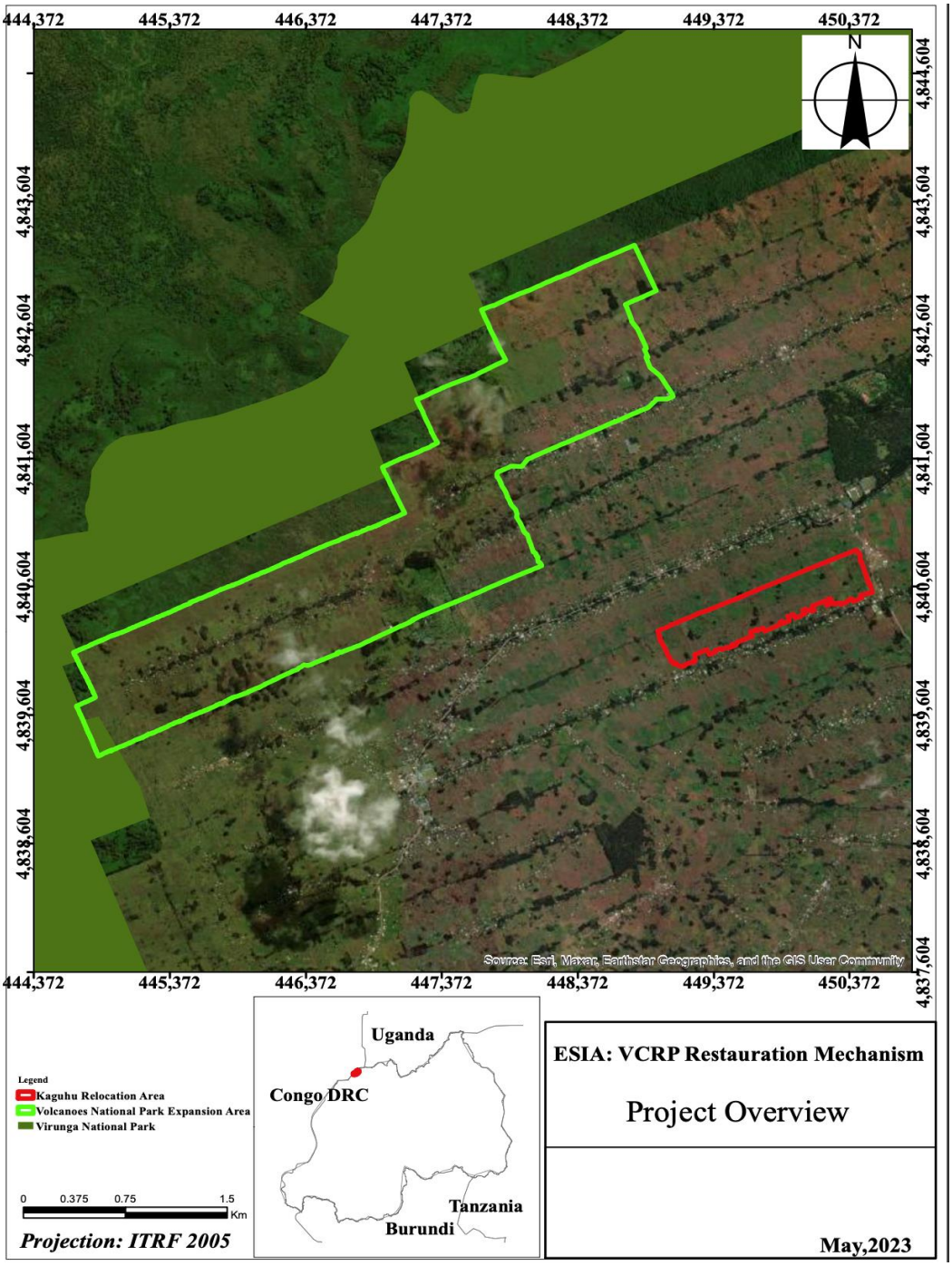


Phases

- Phase 1: 732.5 ha
- Phase 2: 1215.5ha
- Phase 3: 1792 ha

According to RDB, the primary ecological challenge [for mountain gorilla conservation] is the small size of the park with insufficient interconnected habitat space for mountain gorillas and other wildlife species. This is a critical long-term challenge the park expansion intends to address. An expanded park will improve gorilla habitat and support a 15–20 percent increase in population and a reduction of 50 percent of infant gorilla mortality.

Other phases are presented in the figure below. The Park expansion will involve the resettlement of around 510 Households on smart green village of 50ha, of the 992 households that will be affected by the VNP expansion (i.e. both physically and/or economically displaced).



According to the Vulnerable community resettled in green villages report[6], the proposed smart green village zoning plan shall contain as illustrated below:

- Housing blocks and community buildings comprising of:
    - 510 Residential housing – 300 sqm will be allocated to each HH for housing and home garden. A house will be constructed in a 2in1 design to manage space and will incorporate flood management systems.

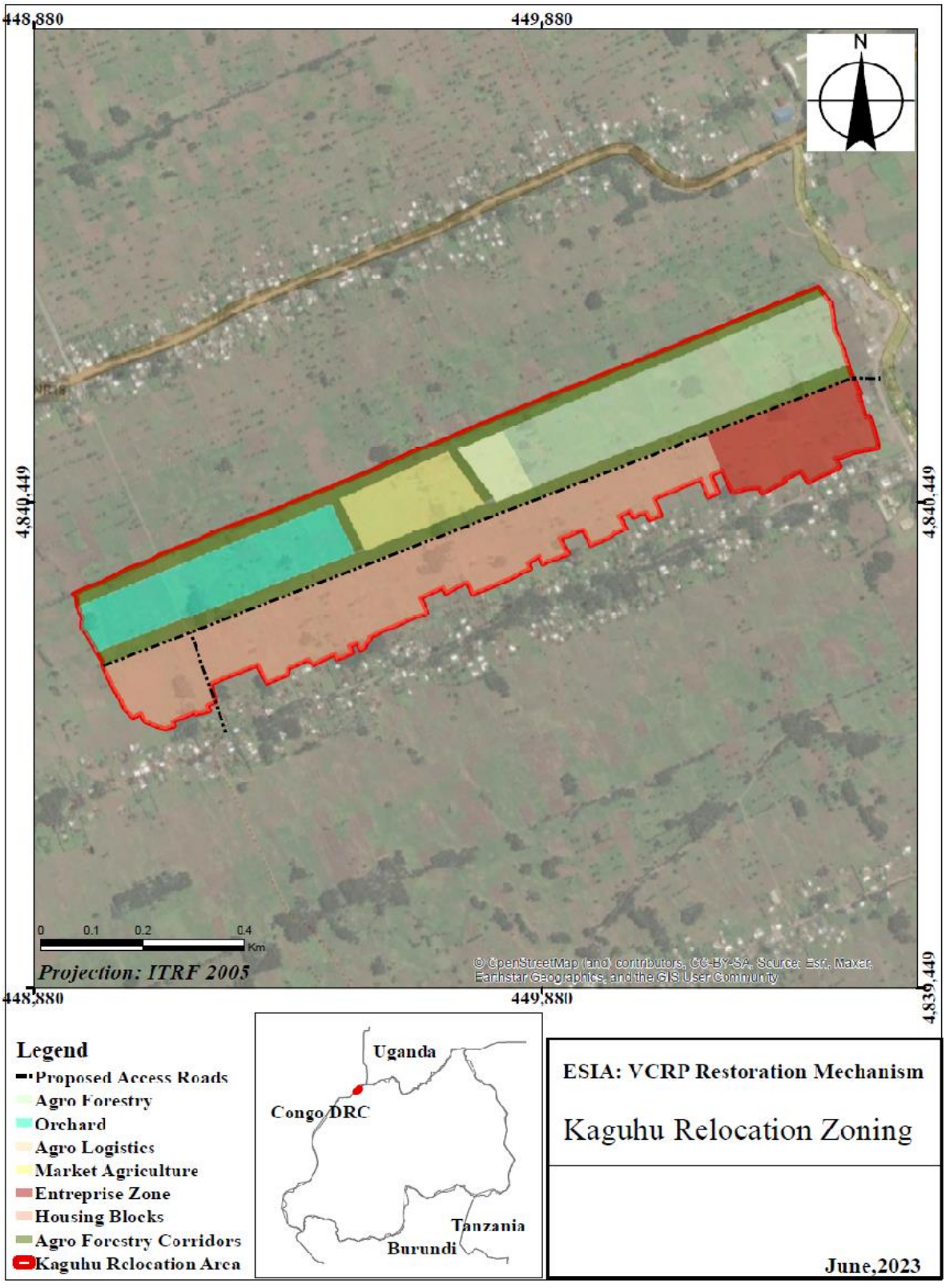
[6] Mass design group, Vanguard economics and Entrem Ltd report for Vulnerable community resettled in green villages, Annex 2C, prepared for FONERWA.

  - Community buildings shall entail; Health Post 200m^2, Nursery 500m^2, Post-Harvest + Mini Market 1000m^2, Multi-purpose Hall 400m^2, Office of local leaders 100m^2, ICT Room (Irembo) 50m^2, Police post 100m^2.
  - Water supply- potable water shall be supplied to each unit by WASAC distribution lines to the site.
  - Wastewater- waterless composting toilets have been selected as the best option for public toilets, grouped every 4 to 8 households. This system is low cost, easy to maintain, provides waste treatment to required minimum standards and can create energy or fertilizer outputs that provide direct and indirect environmental and socio-economic impacts.
  - Electricity supply- it is proposed that power is supplied to each housing unit via the national grid. However, considering the intermittency of power, roof mounted solar PV will be provided for basic lighting for the path from the units to the closest public toilet and street lighting.
  - Solid waste disposal- it was suggested that options for solid waste management in the area will need to be discussed with the district. Many villages in the project areas do not have a waste collection system. The households may use composting systems, but biodegradable and non-biodegradable waste are often mixed up, which defeats the purpose of composting. It was suggested that an appropriate landfill site should be chosen or created with which to deal with non-biodegradable waste. It is likely that waste refuse trucks will be used to collect solid waste stored on site, so good access points will be provided with solid ground surrounding the waste hoarding area.
- Enterprise zone- including tourism reception, bed and breakfast, cultural facilities and guide hubs.
- Market agriculture- involving market-oriented farming of high value livestock such as chicken and dairy farming.
- Agro-logistics- including processing and transport support.
- Orchard- of permanent tree or shrub crops.
- Agro-forestry.
- Agro-forestry corridors
- Proposed access roads networks within the village site.

The design concept of housing blocks and community buildings entails: (i) Green homes with structurally sound seismically safe homes, (ii) Built with locally sourced materials (volcanic rocks, timber and bamboo), with passive ventilation, Climate smart responsive building siting/orientation, (iii) following latest Rwanda Building Code standards.

The village will include green infrastructure: water collection and recycling/reuse in homes and farmland, access to affordable and sustainable electricity such as solar, all housing units provided with clean water supply, zero energy waterless composting toilets with waste revalorization with outputs of solid fertilizer as well as Nitrogen-rich liquid fertilizer, promoting waste to resources and a circular economy approach.

The district, sector, cell, village community and beneficiary households shall be responsible for Operation and maintenance of the smart green village.



Transitioning from low to high value agriculture- the VCRP shall:

- Promote the use of greenhouses by communities to intensify the growing of high value horticulture destined for the Kinigi high-end tourism hotels.

- Promote the diversification into the cultivation of cherry tomatoes, herbs, garlic, ginger and other vegetables that are destined for the high-end tourism market in Kinigi and Kigali.
- Develop a community-based poultry industry that supplies meat and eggs to the high-end tourism market in Kinigi and Kigali.

2.2.3.2 Subcomponent 3b: Livelihoods diversification and income generation activities

The project intends to support 992 households that shall be affected by the VNP expansion, with livelihood improvement activities. These activities are planned at three levels: individual household level, community level, and host community-resettled community level.

Table 4: Package and description

Investments in smart green village	Income Generating Activities (IGAs)
a) Housing blocks comprising 170 housing units with an average 75 square meters per family and plots of 300m2 built in a 2-in-1 housing model by beneficiary families under the supervision of a building engineering firm. b) Green homes: structurally sound seismically safe homes, built with locally sourced materials (e.g., Volcanoes rocks, timber and bamboo), with passive ventilation, climate responsive building siting/orientation, following latest Rwanda Building Code standards such as DRS 484 Adobe Block Specification, Technical Guidelines on Adobe Block Construction in Rwanda. c) Green infrastructure: water collection and recycling/reuse in homes and farmland, access to affordable and sustainable electricity such as solar, all units provided with clean water supply, zero-energy waterless composting toilets with waste revalorization with outputs of solid fertilizer as well as Nitrogen-rich liquid fertilizer, promoting a circular economy approach. d) The village will have a series of public and civic buildings that will offer basic health and education services. These will include a health center and an early childhood center. e) Enterprise zone: comprising tourism reception, bed and breakfast, cultural facilities and guide hub. f) Agriculture Zone - Market oriented farming for high value crops and livestock such horticulture and poultry farming. g) Agro-logistics- An area for agro-processing and transport support. h) Access roads within the smart green village. i) Restorative landscape: Integration of edible landscape in village fabric along streets and pedestrian paths to	• Financial services (15 Facilities) • Community based tourism center (1 facility) • Provision of Agro-logistics Equipment (20 facilities) • Irish potato seed production through green house (2 Greenhouses) • Irish potato seed production on open field (5ha) • Horticulture production through green house (1 Green house) • Horticulture production on open field (10ha) • Poultry farming • Construction of Eco-lodge (1 Eco-lodge) • Establishment of community eco-

maximize food production, provide shade, and sequester carbon. j) Regenerating Ecosystems: use of native plants to support biodiversity and ecological health integrated within the village design with natural corridors connecting with wider ecosystems.	tourism-based center (1 center)

In addition to providing the affected communities land in the new villages, livelihood development could be attained through: (1) increasing the economic value of the existing renewable natural resources (existing forest resources) in the area and improving community members' skills, (2) developing new business lines based on experiences learnt from NGOs' initiatives on training for off-farm employment, (3) improving the partnerships of local tourism lodges formed with local communities feeding into the revenue sharing scheme as well as employment and supply opportunities.

The main activities will take place in Musanze district and specifically in Kinigi sector.

All the livelihood activities should consider integrating Gender Equality and Social Inclusion to ensure no one is left behind. Women and girls, youth, Persons with disabilities and other vulnerable groups should be represented in decision making structures to ensure they participate and their voice is heard in terms of what their specific concerns are and how they should be addressed.

2.2.4 Component 4: Project Management, Monitoring & Evaluation, and Capacity Building

The objective of this component is to (1) support the Project Coordination Unit (PCU) and the respective Project Implementation Units (PIUs) in the implementation of the project activities in an efficient and transparent manner, and (2) build the institutional capacity to sustain the implementation of the project beyond the life of the project. This component will cover technical, environmental and social risk management and fiduciary support for project implementation and project management support (including monitoring, evaluation, and reporting).

The Ministry of Environment shall be responsible for overall project coordination, monitoring, quality assurance and oversight of all VCR project.

2.2.4.1 Project operations and capacity development and project's staffing

Due to the multi-sectoral context of the VCRP different Government Institutions will be continuously involved throughout the VCRP implementation. The Ministry of Environment (MoE) will remain with the responsibility of overall coordination, oversight, monitoring and learning of the project while REMA, RDB, Meteo-Rwanda, RWB will be the Implementing Partners (IPs) of the project.

MoE will coordinate the IPs through a high-level Project Steering Committee (PSC) which will be composed of Permanent Secretaries of MINECOFIN, MININFRA, MINALOC, MINEMA, MINAGRI and MoE; Director Generals of REMA, RWB, and RDB, Meteo Rwanda , RHA, RTDA, , Executive Secretaries of Northern, Western and Southern Provinces, Vice Mayors of in Charge of Economic Affairs of Musanze, Burera, Nyabihu, Rubavu, Rutsiro, Ngororero, Gakenke, and Muhanga Districts, representative of Civil Society, and one representative the Private Sector Federation and other relevant stakeholders.

Overall Project coordination will remain the responsibility of MoE/PCU, given its institutional mandate for policy and coordination, and oversight responsibility on its implementing agencies.

The technical advisory committee (TAC) is in charge of ensuring technical guidance to both the project execution team and the project Steering Committee. The TAC will be engaged in providing technical support on an on-going basis to facilitate effective implementation and mainstreaming of project interventions beyond the life of the project. Thus, the members of the TAC will bring expertise from their respective institutions to make technical contributions to the project implementation.

The TAC will be formed and comprised of department/heads, SPIU-Coordinator, ,and Division Managers of RWB; the SPIU-coordinator and program manager of REMA and RDB; the Director Generals of MoE; the program manager of MoE-SPIU; the director of planning of MoE; Division Managers (Technology and Information Services, and Weather and Climate Services divisions) of Meteo-Rwanda; and Project Coordinators from the same Institutions as PSC members; Directors in charge of district development in the Western, Northern, and Southern Provinces, the Directors of the unit of agriculture and natural resources management of the 8 districts in the project area.. The TAC will provide technical advisory support to project contractors and consultants (through the Implementing Agencies), review implementation progress and handle day-to-day project coordination.

The TAC will be chaired by the Director General in charge of Environment and Climate Change at MoE and will meet on semesterly basis; and anytime if need arises. It will review progress on Project activities, discuss issues and operational aspects of the project along with providing technical advisory support to project contractors and consultants through the implementing agencies. It will also prepare a monitoring and evaluation capacity building plan which will be reported to the PSC.

At districts level there will be decentralized financed HUB/PIUs at the Districts level, staffed with a technical staff and finances officers. They will be responsible for overall project coordination for Component 1a. 2.a ,2.b and 2.c, 3 a and 3b to cater for technical and finances project related activities environmental and social risk management, M&E and facilitation and follow-up on all institutional and capacity building.

Each PIU staff will be supported by other existing District staff members in the domains where needed (Flood management, hydro-meteo, land husbandry, accountant, engineering, livelihood) under the leadership of the District Executive Secretary to manage the implementation of the VCRP.

MoU of collaboration will be concluded between the implementing partners and district to decentralize the project activities.

The main implementing entity within Local Government level will be 8 districts, which will be responsible for delivering the core activities for all components. The activities will be integrated into the Single Action Plan and will be reported on at the District Management Meetings, and District Coordination committee made by technical staff from sectors of intervention, districts chaired by the Executive secretary.

All decision-making committees should have at least 30% representation of women and 30% of youth.

Decentralized 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, and community members will be provided with employment opportunities and training. The communities will be heavily involved in the selection and oversight of activity execution. Community-based organizations 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 Youth, women, persons with disabilities (PwDs) and other vulnerable people have an equal opportunity to benefit from livelihood activities.

It is therefore expected that the specialists in the Project Implementation Unit at hub level will equitably engage extensively at the community level. 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 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. Gender and social inclusion (GESI) shall be considered across all livelihood interventions.

Project Coordination Unit/ Project Implementation Unit (PCU and PIUs)

In order to carry out some of the special activities under the Project, a Project Coordination Unit (PCU) and Project Implementation Unit will be respectively formed in MoE and IPs. The project PCU will be supplemented by a number of technical experts – providing either full time or part time input – to ensure that obligations on MoE (and its implementing partners) are set out in the FA with WB.

MoE PCU which is responsible for overall coordination of VCRP will serve as the primary interlocutor with the World Bank and oversee the Project implementation and management and daily basis. As the coordinating entity, MoE/PCU will be responsible for submitting the approved biannual progress reports to the World Bank; and it is for that purpose different national-level stakeholders will be coordinated and overseen by the PCU.

Under the coordination of MoE through its PCU, the Implementing partners comprised of Project Staff will be at both National and District levels as follows:

National level:

- MoE/PCU.
- RBD/PIU, REMA/PIU, RWB/PIU.

District level:

- HUB I (BURERA/MUSANZE), HUBII: (RUBAVU, NYABIHU, RUTSIRO); HUB III: (NGORORERO, MUHANGA, GAKENKE).

VCRP will be implemented by different government institutions mostly affiliated to the Ministry of Environment. Under this framework, the overall project coordination will remain the responsibility of MoE given its institutional mandate to protect and develop the environment as well as leading conservation efforts in the country. In this regard, at Ministry level, a PCU with different experts will be established to coordinate and oversee all project activities. More specifically, for environmental and social risk management under which the labor and working conditions fall, an Environmental Risk Management Specialist and a Social Risk Management Specialist will be recruited and will have the responsibility to ensure compliance to this ESMF as well as other national and international standards as applicable. Under the coordinating ministry, the implementation arrangement for different sub-components is proposed to be as detailed in table 7.

- From the coordinating ministry to PIUs to the District Hubs, the project will recruit project dedicated staff in different capacities depending on the expertise needed in their respective components/sub-components. Within this team, the Environmental Risk Management Specialist and a Social Risk Management Specialist will oversee the implementation of the ESMF as well as other ESF instruments.
- The project will establish 3 sub-PIUs/District based hubs. There will be 3 hubs in total (Hub I with Musanze and Burera, Hub II with Rubavu, Nyabihu and Rutsiro and Hub III covering Muhanga, Ngorero and Gakenke). The hub will be in a good position to witness firsthand labor-working conditions and supervise compliance and monitor the level of labor influx if any and advice on how to reduce it or appropriately manage its potential impacts. The Environmental and Social Management Specialist from each PIU will coordinate closely with the hub to collect firsthand information and act on it accordingly. The hubs will be reporting to the PIUs while the PIUs report to the PCU.
- In terms of capacity to implement the project implementation in general, the PIUs will build on the already acquired experience from previous and current projects under the same

institutions. We can cite VCRP which was approved under the new ESF and has a Sub-component ***on Evidence-based, sustainable wetland management, flood risk management and greenhouse gas monitoring*** under implementation in REMA. Furthermore, since the effectiveness of the ESF, all the PIUs have participated in several training courses on ESF requirements and have gained much familiarity with the instruments. Nevertheless, they still need more empowerment in this regard alongside the new staff that will be recruited to complete the project staff structure. The PCU will prepare a capacity building to be implemented under component 4 of the project.

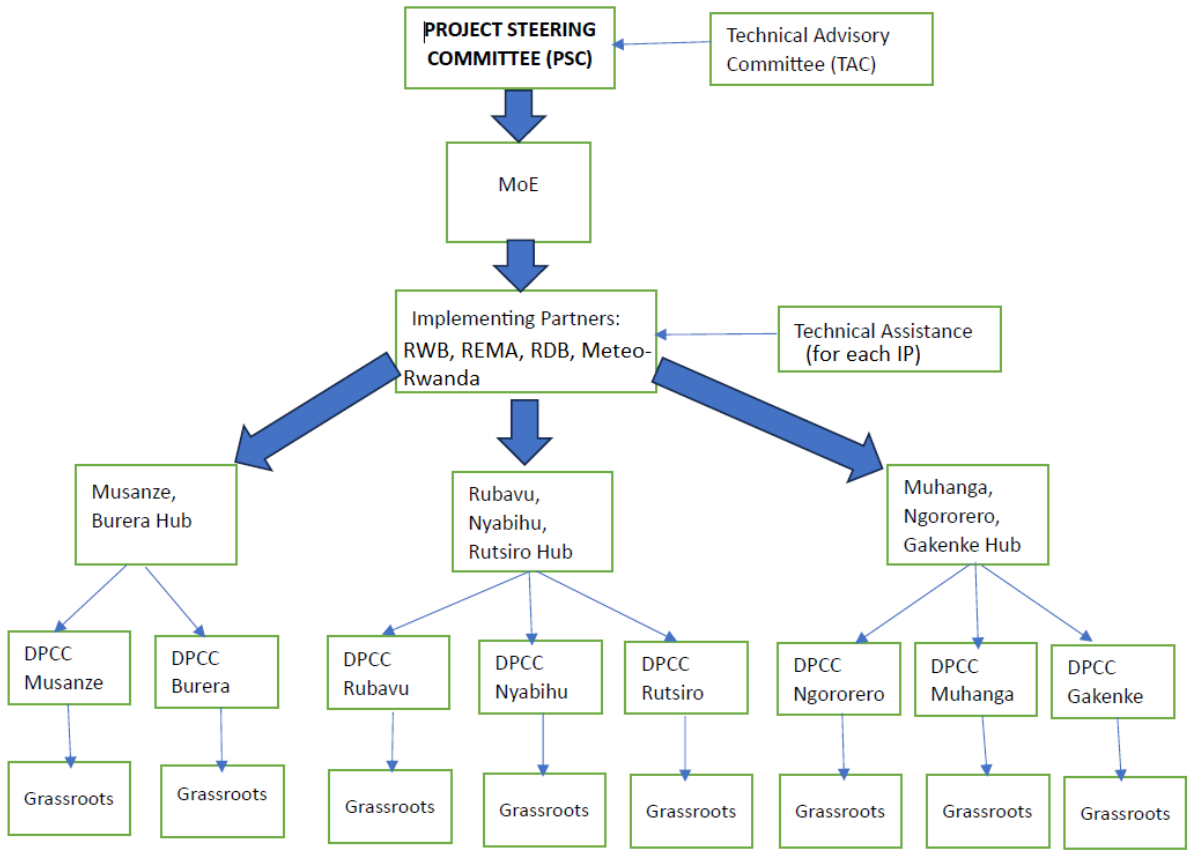


Figure 4: Project Implementation arrangements

At national coordination and implementation level (PCU, PIUs, hubs) the number of direct workers to be recruited is 73 as indicated in the table below.

Table 5: Staffing summary at central and decentralized

Proposed staff to be hired by IPs and MoE for the VCRP

Ministry of Environment (MoE)

PROJECT STAFFING position	**No**
Centralised level	
TA in components management	**1**
Program Manager	1
Project coordinator	2

Gender specialist	1
Finances Specialist	1
Procurement Specialist	1
Social Risk Management Specialist	1
Environmental Risk Management Specialist	1
Community engagement specialist	1
Legal affairs specialist	1
Drivers	2
Ecology Specialist	1
GIS Specialist	1
Human resource Specialist	1
Data Management Specialist	1
Financial Program Manager	1
Planning, Monitoring, Evaluation & Learning Specialist	1
Total (A)	**19**

Rwanda Development Board staff

PROJECT STAFFING position	**No**
Centralised level	
components management TA /short term specialised consultants	**1**
Accountant	1
Procurement specialist	1
M&E specialist	1
Total centralised staffs (B)	4
Decentralised level -hubs	
Driver	1
Program manager	1
Livelihood Specialist	1
Social & Environment safeguard Specialist	1
Total Decentralised level -hubs (C)	**4**
Total (D=B+C)	**8**

Rwanda Water Board (RWB)

PROJECT STAFFING position	**No**
Centralised level	
Component Specific Technical Experts	2
SPIU Coordinator	1
Finacial Program Manager	1
Project Coordinator	1
Monitoring and Evalutation (M&E) Specialist	2
Financial Management Specialist	2

Procurement Specialist	2
Legal Specialist	2
Environmental Safeguard Specialist	**2**
Social Safeguard Specialist	2
Gender Specialist	2
Internal Auditor Specialist	**2**
Logistics	2
Driver	3
Total centralised staffs (E)	26
Decentralized level (hubs)	
Hub Coordinator - Sector Specialist	2
Hub officer	4
Accountant Hub	2
Total Decentralised level -hubs (F)	8
Total (G=E+F)	34

METEO RWANDA

PROJECT STAFFING position	**No**
Centralised level	
Project coordinator	1
Procurement specialist	1
Radar software and data Processing Specialist	1
ESS specialist	1
Driver	1
Financial Management Specialist	1
NWP Specialist	1
Total (H)	**7**

REMA

PROJECT STAFFING position	**No**
Project coordinator	1
Monitoring and Evaluation Specialist	1
Procurement Specialist	1
Financial Management Specialist	1
Environmental Risk Management Specialist	1
Social Risk Management Specialist	1
Ecology Specialist	1
Community Developmeent Specialist	1
Driver	1
Total centralised staffs (I)	9
Decentralised level (hubs)	
District Environmental officer	2

Total Decentralised level -hubs (J)	2
Total (K=I+J)	**11**

SUMMARY OF STAFFS	
Centralised level (L=A+B+E,H+I)	**65**
Decentralised level -hubs (M=C+F+J)	**14**
Total Project staff (N=L+M)	**79**

Ministry of Environment (MoE)

PROJECT STAFFING position	**No**
Program Manager	1
Project coordinator	2
Gender specialist	1
Finances Specialist	1
Procurement Specialist	1
Social Risk Management Specialist	1
Environmental Risk Management Specialist	1
Community engagement specialist	1
Legal affairs specialist	1
Drivers	2
Ecology Specialist	1
GIS Specialist	1
Human resource Specialist	1
Data Management Specialist	1
Financial Program Manager	1
Planning, Monitoring, Evaluation & Learning Specialist	1
Total	**18**

Rwanda Development Board staff

PROJECT STAFFING position	**No**
Accountant	1
Procurement specialist	1
M&E specialist	1
Driver	1
Program manager	1
Livelihood Specialist	1
Social & Environment safeguard Specialist	1
Total	**7**

Rwanda Water Board (RWB)

PROJECT STAFFING position	**No**
components management TA /short term specialized consultants	1
Accountant	1
Procurement specialist	1
M&E specialist	1
Driver	1
Program manager	1
Livelihood Specialist	1
Social & Environment safeguard Specialist	1
Total	**8**

METEO RWANDA

PROJECT STAFFING position	**No**
Project coordinator	1
Procurement specialist	1
Radar software and data Processing Specialist	1
ESS specialist	1
Driver	1
Financial Management Specialist	1
NWP Specialist	1
Total	**7**

REMA

PROJECT STAFFING position	**No**
Project coordinator	1
Monitoring and Evaluation Specialist	1
Procurement Specialist	1
Financial Management Specialist	1
Environmental Risk Management Specialist	1
Social Risk Management Specialist	1
Ecology Specialist	1
Community Developmeent Specialist	1
Driver	1
District Environmental officer	2
Total	**11**

The objective of M&E of this component is to ensure that the project activities are implemented in effective and efficient manner, the emphasis will be on evaluating the overall progress of VCRP Project basing on the project RF and measure where project activities are performed against set targets

Type of assessment/Evaluation

- Baseline (documentary video): set of performance indicators/targets relating to the project outcomes and impacts is a basic requirement.

The MTR will review the overall Project performance across all components and determine if the Project is on the course to meet its development objectives. In addition, the M&E will:

- Identify the necessary mid-course corrections to be taken or areas that may require the Project restructuring if needed.
- End line: Ensure set indicators are completed and lessons learnt are documented and inform the scale up or upgrade of the project interventions.
- undertake environmental and social compliance mid-term and final audit.

This will require a well-structured and functioning GIS/real and Remote sensing-based M&E including data collection related equipment and software and provide training to users (each Annual assessment report of land husbandry infrastructure). This system will be established at Central (MoE).

Knowledge management, sharing and mainstreaming considers the following:

- More emphasis will also be put on the awareness raising, promotion and advocacy of project activities
- documentation and dissemination of information Communicate project results and lessons learned among VCRP stakeholders
- Staff capacity building and development at MoE level
- TA community mobilization, supporting community platform planning, Innovation platform for value chains, Livelihood business modelling, including financial literacy and Monitoring of activities community level, Increase the capacity of grassroots organization and communities to sustain investments
- This will be done through the development of training materials and tools; such as training modules, brochures, posters, banners; etc. The information will also be disseminated through the use of broadcasting programs, documentary films and communication tools with much emphasis on social media such as Twitter, Facebook, YouTube and the Project Website
- Lessons learnt to document the potential project scale up with associated social and economic benefits.

2.2.4.2 Project Implementation and Institutional Arrangements

The project governance arrangements at the national level are designed to build upon the institutional structure of MoE as overall coordinator and Implementing Partners (the Executing Entity) and are supplemented by:

- A Project Steering Committee (PSC) established by MoE, where the Permanent Secretary will be Chair
- A project Technical Advisory Committee (TAC) established by MoE to provide ongoing technical support to project implementation.
- The Project Implementation Units (PIUs) are established in each implementing entity, where the Head of Institution will be responsible for the financial management and overall project implementation at the level of the institution management.
- The Project implementation arrangements take place at three levels: national, district and community level (see figure 4).

Roles and Responsibilities of the Project Steering Committee

Due to the multi-sectoral context of the VCRP different Government Institutions will be continuously involved throughout the VCRP implementation. The MoE will remain with the responsibility of overall coordination, oversight, monitoring and learning of the project while REMA, RDB, Meteo-Rwanda, RWB will be the Implementing Partners of the project.

MoE will coordinate the IPs through a high-level Project Steering Committee (PSC) which will be composed of will be composed of Permanent Secretaries (PS) of MINECOFIN, MININFRA, MINALOC, MINEMA, MINAGRI, and MoE; Heads of Institutions of: REMA, RWB, RDB, Meteo-Rwanda, RHA, and RTDA, Executive Secretaries of Northern, Western, and Southern Provinces; Vice Mayors in Charge of Economic Affairs in Musanze, Burera, Nyabihu, Rubavu, Rutsiro, Ngororero, Muhanga, and Gakenke Districts; one representative from the Civil Society, and one representative the Private Sector Federation..

The PSC will be chaired by the PS of MoE and co-chaired by the World Bank country representative. The PSC will meet every semester.

The PSC will be mainly responsible for the following aspects, on a national basis:

- Policy guidance on all issues relating to the project;
- Provide overall strategic guidance and oversight to the Project, including policy and strategic issues related to urbanization
- Approval of project investments;
- Approval and monitoring of project annual work plans and budgets;
- Resolving implementation bottlenecks and providing positive impetus to facilitate achievement of the project's development objectives (results/outcomes).
- Review and approve annual work plans;
- Provide high-level project oversight and policy coordination, including addressing any intergovernmental issues that may need to be resolved at government level.

The PSC which is expected to meet on a semiannual basis each year and as needed will be chaired by the Permanent Secretary of MoE and will have VCRP Coordinator as Secretary to the Steering Committee. The PSC will also solve project grievances if not solved at community and PIU level.

Roles and responsibilities of the Project Technical Coordination Committee

Overall Project coordination will remain the responsibility of MoE/PCU, given its institutional mandate for policy and coordination, oversight responsibility on its implementing agency.

The technical coordination committee (TAC) is in charge of ensuring technical guidance to both the project execution team and the Project Steering Committee. The TAC will be engaged in providing technical support on an on-going basis to facilitate effective implementation and mainstreaming of project interventions beyond the life of the project. Thus, the members of the TAC will bring expertise from their respective institutions to make technical contributions to the project implementation.

The TACT will be formed and comprised of department/heads, SPIU-Coordinator, ,and Division Managers of RWB; the SPIU-coordinator and program manager of REMA and RDB; the Director Generals of MoE; the program manager of MoE-SPIU; the director of planning of MoE; Division Managers (Technology and Information Services, and Weather and Climate Services divisions) of Meteo-Rwanda; and Project Coordinators from the same Institutions as PSC members; Directors in charge of district development in the Western, Northern, and Southern Provinces, the Directors of the unit of agriculture and natural resources management of the 8 districts in the project area the TAC will provide technical advisory support to project contractors and consultants (through the Implementing Agencies), review implementation progress and handle day-to-day project coordination.

The TAC will be chaired by the Program Manager of MoE-SPIU having VCRP under his/her portfolio of management and will meet on quarterly basis; and anytime if need arises. It will review progress on Project activities, discuss issues and operational aspects of the project along with providing technical advisory support to project contractors and consultants through the implementing agencies. It will also prepare a monitoring and evaluation capacity building plan which will be reported to the PSC.

In details, the TAC will have the following responsibilities:

- To ensure that the VCRP activities are innovatively executed on the basis of comprehensive stakeholder support, contribution and technical guidance to ensure alignment of the VCRP with other sector specific national priorities;
- To provide technical information from partnering institutions they represent and specific member inputs to activity execution in order to facilitate successful implementation of the VCRP.
- To review implementation reports and advise the PSC and project teams (PCU and PIU) on guiding implementation to ensure consistency and achievement of objectives and targets.
- To approve designs and amendments of the Project Implementation manuals and implementation plans, specific Environmental Social management plans. The TAC will contribute to the quality assurance of these plans.
- To inform and support the sector engagement framework through the partnering institutions aimed at ensuring the project activity execution, (monitoring, evaluation and reporting) achieves results and consolidates innovations and lessons from the project and overall knowledge management and transfer informs replication and scale up.
- Ensure that sector specific interventions are effectively and efficiently supported by the responsible partner institution.

Roles and responsibilities of the District Coordination Committee (DCC)

At districts level there will be decentralized financed HUB/ PIUs at the Districts level, staffed with technical staff and finances officers. They will be responsible for overall project coordination for Component 1a. 2.a ,2. b and 2.c, 3 a and 3b to cater for technical and finances project related activities environmental and social risk management, M&E and facilitation and follow-up on all institutional and capacity building.

Each PIU staff will be supported by other existing District staff members in the domains where needed (Flood management, hydro-meteo, land husbandry, accountant, engineering, livelihood) under the leadership of the District Executive Secretary to manage the implementation of the VCRP.

In regard to the grievance mechanism process, the District Coordination Committee will play a key role in handling grievances. In respect of grievances which are upheld, the District informs the Project Management Unit in MoE/IPs about the grievance, decision, and recommended redress so that (i) policy and procedures may be amended (ii) training may be designed and implemented to prevent the same situation recurring in the future.

The District Environmental officers at the 3 district HUBS shall be responsible for training contractors and supervising firms, community consultation committees and overseeing the implementation of the general and specific EHS guidelines for projects under their district Hubs by the contractors. Anticipated EHS guidelines so far for the VCRP different sub-component as mentioned in section 3.2.2 are general EHS guidelines, EHS guidelines on Mammalian livestock production, EHS guidelines on Tourism and hospitality development, EHS Guidelines for Poultry farming. A collaborative MoU of

collaboration will be concluded between the implementing agencies and district to decentralize the project activities.

The main implementing entity within Local Government level will be 8 District, which will be responsible for delivering the core activities for all components. The activities will be integrated into the Single Action Plan and will be reported on at the District Management Meetings, and District Coordination committee made by technical staff from sectors of intervention, districts chaired by the Executive secretary.

Implementation at Community Level

Decentralized 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, and community members will be provided with employment opportunities and training. The communities will be heavily involved in the selection and oversight of activity execution. Community-based organizations 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 youth, women, persons with disabilities (PwDs) and other vulnerable people have an equal opportunity to benefit from livelihood activities.
It is therefore expected that the specialists in the Project Implementation Unit at hub level will equitably engage extensively at the community level. 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 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. Gender and social inclusion (GESI) will be considered across all livelihood interventions.
The CCC shall attend training offered by the district hub environmental officers on general and specific EHS guidelines for projects. They shall also report to the district hubs, sector offices, whichever general or specific EHS aspects they consider violated.

At community level, the Community Coordination Committees will have the following responsibilities:

- To provide an active interface between District management, service providers and the communities
- To facilitate coordination of information of activities (such as surveys, supervising documentation) for monitoring purpose in accordance with procedures put in place by the project;
- To work in collaboration with staff at the district and central levels to ensure that fair and just compensation at replacement cost for assets and disturbance is reached in accordance with the law and WB requirements, and to be involved in conflict and grievances management
- To work with livelihoods-based cooperatives, farmers and tea workers to facilitate meetings and groups.
- To facilitate the channels of information to farmers whenever it is required, say during training, counseling and sensitization meetings.
- To monitor the roll out of community training
- To be involved in monitoring and evaluation of project activities, provide support in areas such as gender responsiveness and to promote the spirit of ownership among the communities.
- To document and report any allegations of bias or misapplication of policy, procedure or law related to the project activities or allegations of corruption.
- Provide general orientations for the catchment management plan and any advice measures to be provided.
- The members of the Community coordination committee will be the primary point of entry for informal grievances.

Project coordination unit/project implementation Unit

In order to carry out some of the special activities under the Project, a project coordination Unity (PCU) and Project Implementation Unit will be respectively formed in MoE and IPs. 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) are set out in the FA with WB.

MoE PCU which is responsible for overall coordination of VCRP will serve as the primary interlocutor with the World Bank and oversee the Project implementation and management and daily basis. As the coordinating entity, MoE/PCU will be responsible for submitting the approved quarterly progress reports to the World Bank; and it is for that purpose different national-level stakeholders will be coordinated and overseen by the PCU.

The PCU and PIUs shall attend regular trainings general and specific EHS guidelines. Anticipated EHS guidelines so far for the VCRP different sub-component as mentioned in section 3.2.2 are general EHS guidelines, EHS guidelines on Mammalian livestock production, EHS guidelines on Tourism and hospitality development,. PIUs shall be responsible for training District Environmental officers at the 3 district HUBS on these EHS guidelines and overseeing that contractors on site are implementing them.

Under the coordination of MoE through its PCU, the Implementing Agencies comprised of Project Staff will be at both National and District levels as follows:

- National level:
- MoE: PCU
- RDB/PIU, REMA/PIU, RWB/PIU;
- At District level:
    - HUB I (BURERA/MUSANZE),
    - HUB II: RUBAVU, NYABIHU, RUTSIRO
    - HUB III; NGORORERO, MUHANGA, GAKENKE.

As day-to-day project implementation, including project reporting, M&E, procurement, supervision of work and implementation and monitoring of Environmental and Social Standards (ESS) instruments, prepared under the project, are to the above-mentioned implementing agencies.

MoE /IPs will have overall responsibility for the execution of Project activities at the national level.

2.2.4.3 Project implementation arrangement

Component and sub-component implementing agencies and lead agencies for the VCRP are presented in the table 7 below.

Table 6: Implementing agencies for the VCRP[7]

Component	Implementing Agencies	Other key stakeholders
Component one: Flood Risk Management		
Sub-component 1a: Flood Reduction Investments	RWB	

[7] For each of the sub-components, the lead agencies will be responsible for the implementation of activities including; construction related activities, ecological restoration, catchment and landscape restoration, livelihood restoration activities. The implementing agencies are key stakeholders who will support technically the implementation of the activities in the sub-components.

Sub-component 1b: Flood Early Warning System and Community Level Flood Preparedness	Meteo-Rwanda	RWB
Component 2: Landscape Restoration and Catchment Management		
Sub-component 2a: Integrated Catchment and Landscape Restoration	RWB	REMA, RFA
Sub-component 2b: Ecological restoration of Priority conservation areas	REMA	RWB, RDB, RFA
Sub-component 2c: Livelihoods Development	REMA,	RWB
Component 3: Volcanoes National Park Expansion and Livelihood Restoration		
Sub-component 3a: Integrated climate resilient green settlement, Volcano National Park Expansion and a model smart green village	RDB	RHA, REMA
Sub-component 3b: Livelihood diversification and income generation activities	RDB,	REMA
Component 4: Project Management, Monitoring and Evaluation, and Capacity Building	MoE	

2.3 VCRP Project Costs and Financing

The estimated cost of the VCRP is approximately US$ 494.4 million of which US$ 50 million will be financed through the IDA credit. Current available commitments amount to US$ 175 million. The costs are broken down by component in the tables below for overall program cost estimates and current commitments respectively:

Table 7: Total VCRP estimated budget

Component	Sub-Component	Value (USD in millions)
1. Flood risk management	1.1. Flood Risk Reduction Investments	260.90
	1.2. Flood Early Warning System and Community Level Flood Preparedness	7.83
2. Landscape Restoration and Catchment Management	2.1. Integrated catchment and landscape restoration	104.24
	2.2. Ecological restoration of priority conservation areas	36.24
	2.3. Livelihood development	18.23

3. Volcanoes National Park expansion and livelihood restoration	3.1. integrated climate resilient green settlement/VNP expansion, and a model smart green village	23.83
	3.2. Livelihoods diversification and income generation activities	3.63
4. Project Management, Monitoring & Evaluation, and Capacity Building	4. Project Management, Monitoring & Evaluation, and Capacity Building	29.80
Contingency (2%)		9.70
Total project cost		**494.40**

Table 8: Project Components as per Current Donors' Commitments / Phase I

Component	**Sub-component**	**Value (USD in Millions)**
1. Flood risk management	1.1. Flood Risk Reduction Investments	93.196
	1.2. Flood Early Warning System and Community Level Flood Preparedness	8.895
2. Landscape Restoration and Catchment Management	2.1. Integrated catchment and landscape restoration	20.804
	2.2. Ecological restoration of priority conservation areas	6
	2.3. Livelihood development	4.184
3. Volcanoes National Park expansion and livelihood restoration	3.1. integrated climate resilient green settlement/VNP expansion, and a model smart green village	23
	3.2. Livelihoods diversification and income generation activities	3.399
4. Project Management, Monitoring & Evaluation, and Capacity Building	4. Project Management, Monitoring & Evaluation, and Capacity Building	15.53

Contingency		0
GENERAL Total		**175**

2.4 Project beneficiaries

The objectives of the VCRP are to enhance climate resilience, mitigate flood risks, and enhance the sustainable management of natural resources and tourism assets in the Volcanoes Region of Rwanda. With such an objective in place, there will be numerous beneficiaries who are as follows:

Component 1: Flood risk management. Around 605,526people will directly benefit from the mitigation of flood-related losses and damage, particularly in areas prone to flooding and landslides. However, since the project will cover the districts of Burera, Musanze, Nyabihu, Rubavu, and Ngororero, residents from these districts, especially those residing in volcanic regions and the Vunga corridor, will also experience significant benefits.

Component 2: Landscape Restoration and Catchment Management

Under this component, 120,500 households will adopt sustainable and climate smart resilient land management practices. The focus will be on enhancing terraces, restoring gullies, prioritizing wetlands, promoting agroforestry, and undertaking afforestation efforts. These initiatives will have a positive impact on the residents of Burera, Nyabihu, Rubavu, Gakenke, Muhanga, Ngororero, Musanze, and a portion of Rutsiro District. The subproject's activities will directly benefit their agricultural income and overall livelihoods.

Component 3: Volcanoes National Park expansion and livelihood restoration

A total of 510 households are set to be impacted by the park expansion and will be relocated to a model green village. Within this village, 3,968 individuals will benefit from livelihood diversification and income-generating activities facilitated by the project. Additionally, 40% of the females residing in the green villages will also benefit from these initiatives. The model green village will be designed with designated spaces for enterprise activities, housing blocks, market agriculture, agro-forestry corridors, and other advantageous components. These features will be carefully integrated into the village layout to ensure significant and tangible benefits for the residents.

Component 4: Project Management, Monitoring & Evaluation, and Capacity Building

This component of the project will provide employment opportunities for individuals in various institutions at both central and decentralized levels. Specifically, institutions such as the Ministry of Environment (MoE), Rwanda Environment Management Authority (REMA), Rwanda Water Board (RWB), Meteo Rwanda, and Rwanda Development Board (RDB) will provide employment benefits to a total of 67 individuals. Out of these, 23 positions will be available at the decentralized level and will include roles such as engineers, accountants, flood control officers, and other VCRP related positions. The importance of gender equity in the implementation of the VCRP has been acknowledged by the project. It recognizes the need to incorporate women and girls, as well as social inclusion, into the livelihood activities to ensure that no one is overlooked or excluded. To achieve this, the project aims to involve women and girls in decision-making processes, enabling them to actively participate and have their voices heard. This approach seeks to address their unique concerns and ensure that appropriate measures are taken to address them effectively. The project recognizes that gender equity

and social inclusion are crucial components for the successful implementation of the VCRP, fostering an inclusive and empowering environment for all individuals involved.

2.5 Project Institution Arrangements

2.5.1 Component 1: Flood risk management

Sub-component 1.a: Flood Risk Reduction Investments

It has been reaffirmed that Rwanda Water Resources Board (RWB) is the institution to implement this subcomponent. The implementation will closely coordinate with districts and communities in the planning, implementation, and monitoring of the subproject. The RWB will need to closely coordinate with REMA to provide relevant technical inputs to REMA during project preparation for REMA to prepare necessary Environmental and Safety (E&S) instruments for appraisal, sub-component implementation, while taking over the implementation responsibility for Subcomponent 1.a including E&S during project implementation. The RWB will also need to closely coordinate with the MoE for the procurement of Project Preparation Advance activities.
Districts will be responsible for the operation and maintenance of small infrastructure (i.e.: conveyance channels, bridges, culverts, etc.) and RWB will be responsible for the operation and maintenance of big infrastructures (detention ponds, dykes, check-dams, etc.).

Sub-component 1.b: Flood Early Warning System and Community Level Flood Preparedness

Rwanda Meteorological Agency will be the lead implementing agency for Subcomponent 1.b. The FEWS Technical Team, including Meteo Rwanda and RWB, was established to work together to implement the FEWS.

Meteo-Rwanda, working with RWB and MINEMA, will develop rainfall thresholds leading to flooding based on the history of rainfall and flood events. Meteo-Rwanda will lead RWB and MINEMA in the development of impact-based early warning. The Ministry of Emergency Management (MINEMA) will offer technical assistance for emergency interventions during incidents that occur within the project's operational zones.

2.5.2 Component 2: Landscape Restoration and Catchment Management

Sub-component 2.a: Integrated catchment and landscape restoration This subcomponent will include targeted restoration of the Volcanoes National Park (VNP) expansion area and additional ecological restoration actions for priority conservation areas in the broader VCRP landscape outside the VNP.

- The ecological restoration for the park expansion area will cover an estimated 732.5ha which forms part of a much broader and ambitious park expansion plan. An ecological restoration plan [RM1] has already been developed for the VNP expansion area.
- The ecological restoration of potential sites in the VCRP landscape (outside the park expansion area). An ecological restoration plan is yet to be developed for the VCRP landscape outside the park expansion area but that will also improve the existing ecological restoration plan for the VNP expansion area.

Sub-component 2.b: Ecological restoration of priority conservation areas

The landscape where the VCRP supports has 66 catchments in selected districts and covers approximately an area of 311,000 ha. The RWB through integrated catchment management planning studies has identified preliminary priority areas for land restoration and specific rehabilitation measures that can be supported under the project. Accordingly, about half of the area, 160,000 ha, requires interventions to address severe soil erosion and flooding caused by land degradation and

associated factors. The interventions are selected using Catchment Restoration Opportunity Mapping Decision Support System (CROM-DSS), a tool that is widely applied by the RWB.

Sub-component 2.c: Livelihoods Development

REMA, the proposed implementing agency for this subcomponent, will consult with the targeted beneficiaries prior to the determination of the livelihood packages and implementation modalities.

Beneficiary individuals and communities will be responsible for operation and maintenance of the livelihood packages.

2.5.3 Component 3: Volcanoes National Park expansion and livelihood restoration

RDB is well-positioned to create an enabling environment for sustainable private-sector investment, which is crucial for the park expansion component that will be implemented in phases. As part of this effort, the RDB has commissioned the preparation of a "Conservation investment blueprint." This will not only focus on the park expansion but also include a livelihood improvement plan for the four districts surrounding the Volcanoes National Park.

To develop the conservation investment blueprint, the RDB will collaborate with REMA and RFA, both of which have experience in implementing business development and livelihood activities. This collaboration will help identify potential activities that can contribute to the overall objectives.
In summary, the RDB's role in creating an enabling environment for private sector investment aligns with the implementation of sub-components 3.a and 3.b.
Beneficiary individuals and communities will be responsible for operation and maintenance of the livelihood packages.

2.5.4 Component 4: Project Management, Monitoring & Evaluation, and Capacity Building

The Ministry of Environment will ensure coordination and oversight of PPA activities implementation. The objective of this component is to support the Project Coordination Unit (PCU) and the respective Project Implementation Units (PIUs) in the implementation of the project activities in an efficient and transparent manner and build the institutional capacity to sustain the implementation of the project beyond the life of the project.

This component will cover technical, procurement, environmental and social risk management and fiduciary support for project implementation, and project management support, including monitoring and evaluation, reporting, and capacity building.

PCU, PIUs, District HUBs, contractors and supervising firms shall be trained in the general EHS and specific EHS guidelines before and during the implementation of their respective sub-component activities. E.g. Specific EHS guidelines on Mammalian livestock production, EHS guidelines on Tourism and hospitality development.

For all VCRP sub-component activities in their respective sectors of project intervention, to ensure that there are multiple ways for the communities to engage with the project at grassroot level, sector-specific Community Consultation Committees (CCC) will provide a platform or link between the project and communities benefitting or affected by project activities. CCC shall support community mobilization for the project, report to the sector and district on activities that are going well, EHS risks or impacts, conflicts and engage in supporting grievance redress.

2.6 Management of change

Management of change objective: To provide flexibility and resources for managing unforeseen changes, challenges, and opportunities that may arise during the implementation of the VCRP.

Rationale for management of change:

1. Dynamic Environment: Recognizing that the project covers a fairly large area, diverse activities ranging from flood risk management, catchment and landscape management, ecological restoration is subject to evolving needs, changing circumstances, and emerging challenges to livelihood restoration, it is essential to have a mechanism to address unforeseen changes effectively.
2. Adaptive Management: The project will adopt an adaptive management approach, which acknowledges the need for flexibility in responding to new information, contextual shifts, and emerging best practices.
3. Risk Mitigation: The management of change will provide a safety net to manage potential risks and uncertainties that may affect the project's progress, outcomes, and stakeholder engagement.
4. Innovation and Scaling: The change allowance can be utilized to seize new opportunities, pilot innovative approaches, and scale up successful change interventions identified during the project implementation.

Utilization of Management of Change: The change allowance will be managed through a transparent and accountable process, adhering to the World Bank's guidelines and procedures. The following key principles will guide its utilization:

1. Change Management Plan: A robust change management plan will be developed, outlining the criteria, processes, and approval mechanisms for utilizing the change allowance.
2. Identified Needs: The change allowance will be allocated based on identified needs and priorities within the project scope. These needs may arise from unforeseen challenges, emerging opportunities, or adjustments required due to changes in the project activities, circumstances on the grounds or even sources of financing, to mention but a few.
3. Stakeholder Consultation: Decisions on utilizing the change allowance will involve consultation with relevant stakeholders, including government counterparts, implementing agencies, and other project partners.
4. Monitoring and Reporting: Transparent monitoring and reporting mechanisms will be established to track the utilization of the change allowance. Regular progress updates and financial reports will be shared with the World Bank and project stakeholders.
5. Alignment with Project Objectives: The utilization of the change allowance will be aligned with the project's objectives, outcomes, and implementation plan to ensure its contribution to the overall project success.
6. A budget shall be drawn up and added to the project budget to absorb shock that might arise as a result of change management.

Approval Process: Any proposed utilization of the change allowance will follow an approval process that includes:

1. Detailed Proposal: A detailed proposal outlining the rationale, objectives, activities, budget, and expected outcomes of the proposed change intervention will be prepared.
2. Review and Evaluation: The proposal will be reviewed and evaluated by the project management team, in consultation with the World Bank, to assess its alignment with project objectives and the availability of funds.
3. Approval: Upon evaluation, the proposed change intervention will be subject to approval by the World Bank, based on its compliance with established guidelines, feasibility, and expected impact on project outcomes.
4. Documentation: All approved change interventions and their respective budgets will be documented and recorded for accountability and transparency purposes.

3. POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

This section summarizes the legal and institutional framework for the project and includes information on the applicable laws and regulations of Rwanda in relation to social and environmental issues, as well as World Bank's Environmental and Social Standards (ESS) and applicable multilateral environmental agreements.

3.1 National Environmental Legislation and Regulatory Framework

Key environmental and other legislation and regulations and their applicability to VCRP activities are summarized in table 10 below.

3.1.1 Legal Framework

Table 9: Legal framework and applicability to VCRP

Law/Regulation	Key provisions	Compliance aspects of the VCRP
Legal Framework		
Legal Framework		
The Constitution of the Republic of Rwanda, 2003 (Revised in 2015)	The Constitution of the Republic of Rwanda ensures the protection and sustainable management of the environment and encourages the rational use of natural resources. Article 22 requires that everyone has the right to live in a clean and healthy environment. Article 53 specifies that everyone has the duty to protect, safeguard and promote the environment. The state ensures the protection of the environment.	The proposed project is complying with the provisions of the Constitution of the Republic of Rwanda. -Through flood risk reduction, Ecological and Landscape Restoration, construction of climate resilient green settlements, the project will be implemented in a context of environmental sustainability, ensuring all environmental risks and impacts are mitigated to ensure a clean environment to the parties supposed to be affected. -The concerned parties will ensure that the VCRP activities are carried out in a conservative manner.
Law on Environment Number 48/2018 of 13/08/2018	The most relevant legislation for this project. The law sets out the general legal framework for environmental protection and management in Rwanda. It also constitutes environment as one of the priority concerns of the Government of Rwanda Article 3: Precautionary principle - Activities considered or suspected to have negative impacts on environment must not be implemented pending results of a scientific assessment ruling out the potentiality of such impacts.	The law will apply to sub-projects involving construction activities that may have negative environmental and social risks and impacts which will need ESIA certification from RDB before any works start.

Law/Regulation	Key provisions	Compliance aspects of the VCRP
Legal Framework		
The Law Determining the Use and Management of Water Resources in Rwanda, 2018	Article 16 specifies that the State establishes mechanisms of coordinating the monitoring of water resources quantity, quality and use of water resources of each catchment. According to article 7 of the law, water resources are used and managed in accordance with the following principles: Integrated management of water resources within catchment, considering the interests of all water users, land and other natural resources and related ecosystems.	The proposed project will involve management of some natural water resources back to their original natural flow paths in order to minimize their current flood effects. This law is relevant in ensuring such activities are done in an acceptable and sustainable way for the water resources. The proposed project may also require water during its different phases. The provisions of this law are relevant in ensuring water resources are sustainably utilized.
Land Law N° 27/2021 of 10/06/2021	This Law determines modalities of acquisition, registration, allocation, possession, transfer, management, and use of land. In Rwanda, land is one of the primary livelihood assets of rural citizens. Article 9 of this law states that a person who acquired land through inheritance, succession, purchase, donation, exchange, land sharing or legal grant by competent authorities, owns it in accordance with one of the following tenure modalities: 1 º emphyteutic lease; 2 º freehold. Article 31 stipulates that state lands in public domain consist of all lands intended to be used by the general public or all the lands reserved for organs of State services and national lands	The land necessary for the project will be acquired with respect to the land law provisions and in accordance with the terms of the concession agreement. All project activities will be carried out in a manner that protects, conserves, and exploits land in a productive way. In compliance with this law, principles applicable to rights recognized over all lands situated on Rwanda's national territory and all rights united or incorporated with land, whether naturally or artificially, must be considered. National lands composed of natural forests, national parks, protected swamps, State public gardens and tourist sites will be considered in public domain as required and as article 31.

Law/Regulation	Key provisions	Compliance aspects of the VCRP
Legal Framework		
	reserved for environmental protection. The lands mentioned in this article include national lands composed of natural forests, national parks, protected swamps, State public gardens and tourist sites.	
Law No. 32/2015 Relating to Expropriation in the Public Interest	Defines expropriation in the public interest as well as fair compensation in terms of value of land and the activities performed thereon given to the person to be expropriated and calculated in consideration of market prices as well as compensation for disturbance due to expropriation'.	The law will apply to sub-projects whose activities will entail land acquisition, involuntary resettlement and compensation. A separate document, RPF, detailing the modalities of resettlement and compensation was developed. RAPs will be prepared for sub-projects associated with land acquisition and involuntary resettlement as required by the WB through the ESS5.
Law no 27/2023 of 18/05/2023 regulating labour in Rwanda	Rwandan labour Law allows hiring fixed term contract workers for tasks of permanent nature. A worker hired for a fixed-term or an unspecified period that lasts more than six (6) consecutive months with the same employer is considered a permanent worker. It stipulates several provisions for employment contracts, Occupational Health and Safety (OHS) and general working conditions.	The law will apply to sub-projects that will entail employment of workers to ensure their health and safety. Any form of sexual harassment will be prohibited. Contractors will conclude an employment contract with workers and paid salary as agreed by two parties. The project will put in place mechanisms and strategies to prevent and / or report any work- related accident or death. Through the ESIAs of individual projects, the developer will ensure that implementation activities of the VCRP are abiding to conducive working conditions.

Law/Regulation	Key provisions	Compliance aspects of the VCRP
Legal Framework		
		Most importantly, a Labour Management Plan (LMP) has been prepared as a guiding document to all labour related activities and parties in the implementation of the VCRP.
Law nº 28/2016 on the preservation of cultural heritage and traditional knowledge	Defines tangible cultural heritage, provides classification criteria, organs in charge of classification and stresses on the preservation of cultural heritage and traditional knowledge.	The project will protect and preserve, avoid encroachment or minimize any potential impact on tangible and non-tangible cultural heritage such as; historical areas, buildings or structures, visual representation, and monuments showing artistic talent.
Forest Law: Law No 47bis/2013 of 28/06/2013 determining the management and utilization of forests in Rwanda.	The law provides modalities of protecting the State forests and isolated trees. The law also stresses planting trees in urban areas and on roadsides, protection and conservation of protected trees.	As part of project preparation, ecological restoration plans shall be developed for the VCRP components, so far an ecological restoration plan exists for the VNP expansion, which will be improved by a more elaborate ecological plan for the entire project intervention area. i.e., both volcanoes and Virunga corridor regions. Furthermore, the project contractors will record the number of trees to be cut and get approval from the districts. Trees cut will be planted, upon completion of civil works, for protection and beautification purposes. The project and sub-projects ESIAs/ESMPs will recommend the tree species to be planted but following ESS, these species will be only native or fruit trees not exotic species.

Law/Regulation	Key provisions	Compliance aspects of the VCRP
Legal Framework		
Ministerial Order No 007/2008 Establishing the List of Protected Animals and Plant Species in Rwanda	It establishes a protected animal and plant species list in Rwanda. The lists of animals that include Mammals, Birds and Reptiles and protected plant species are shown in Appendices I and II of the Order	The order will apply to sub-projects that will entail clearance of natural vegetation or affect any of the listed protected animals and plant species.
Ministerial order N° 001/2019 OF 15/04/2019 establishing the list of projects that must undergo environmental impact assessment, instructions, requirements and procedures to conduct Environmental Impact Assessment	It Establishes the list of Projects that must Undergo Environmental Impact Assessment, Instructions, Requirements and Procedures to Conduct Environmental Impact Assessment	The order will apply to sub-projects mainly involving construction activities that may have negative environmental and social risks and impacts in the preparation of ESIAs according to Rwandan law.
Rwanda building code (RBC), 2019	The purpose of this Code is to establish the minimum requirements to safeguard the public health, safety, and general welfare. This is done through regulating, controlling, and monitoring the design, construction, quality of materials, use and occupancy, location, maintenance, sanitation, lighting and ventilation, energy conservation, and safety including measures to protect life and property from fire and other hazards	The project will control and regulate the design and construction of the civil works, quality of materials, sanitation and safety of contractors' staff and workers. Compliance aspects to be considered for the model smart green village/ components 3.a

Law/Regulation	Key provisions	Compliance aspects of the VCRP
Legal Framework		
	attributed to the built environment, for all buildings and related non-building structures in Rwanda. The code refers to requisite national, regional, and international standards and codes of practice.	
Wetland's Law Prime Minister's order No 006/03 of 30/01/2017	Wetlands (and lakes) are protected by levels of exploitation published in a list of swamp lands, their characteristics and boundaries and determining modalities of their use, development and management. The order prescribes three management levels for specific lakes and wetlands: "Full Protection"; "Use under Specific Conditions" and; "Use without Specific Conditions"	Under this framework, wetlands are to be considered public lands. For the sub-projects, ESIAs will be carried out, which will among others determine the legal management level prescriptions of the wetlands in the project area and that may be affected by sub-project works and mitigation measures will be recommended.
Organic budget law No 12/2013 instituting gender responsive budgeting	It institutes Gender Responsive Budgeting, enforces accountability measures for gender sensitive resource allocation across sectors programmes and projects through gender budget statements, a mandatory annex of the budget framework paper submitted to both chambers of parliament.	As per the project measuring indicators, direct project beneficiaries, (number), percentage female; People benefiting from reduced risks from floods (number, percentage female); people benefiting from improved livelihoods, percentage female; number of Capacity development awareness sessions on GESI with targeted categories (PCU/IPs; Hubs Staff, District teams and the communities within and outside the park (representation of women and girls) are set sub-indicators.
Law No 15 2008 on the prevention and punishment of gender-based violence.	It prevents and punishes gender-based violence crimes in all of its forms.	GBV crimes will be monitored throughout the project's implementation.

Law/Regulation	Key provisions	Compliance aspects of the VCRP
Legal Framework		
Law No 001/2023 of 13/01/2023 governing national parks and nature reserves	The Law provides the modalities for establishment of national park, a nature reserve and their ownership. Article 22 stipulates that a person who intends to start a project in a park, a nature reserve or a buffer zone conducts an environmental assessment study in accordance with relevant laws and submits a report to the authority. Article 18 stipulates that the Authority may request to the Minister, for the modification of boundaries of a national park, a State-owned nature reserve of their buffer zones. Modification of boundaries of a national park, a State-owned nature reserve or their buffer zones complies to the provisions of articles 10 and 11 of this law.	As the boundaries of the VNP are to be changed following the expansion activities, an official request must be sent to the Minister. An ESIA study will be conducted for the planned VNP expansion activities.

3.1.2 Policy Framework

Table 10: Policy Framework and alignment by the VCRP

Policy	Key provisions	Alignment of the VCRP to the policies
Policy Framework		
National Strategy for Transformation (NST1)	The National Strategy for Transformation has among other outcomes, the "increased access to basic infrastructure (water, sanitation, electricity, ICT, Shelter) achieved". It is an amalgamation of the Economic Development and Poverty Reduction Strategy (EDPRS) and 7 Year Government Program. It intends to spur national development towards economic growth, Capacity Development and combating HIV/AIDS and Non-Communicable Diseases, Disability and Social Inclusion, Gender and Family Promotion, Regional Integration and International Positioning, Environment and Climate Change, Disaster Management and improving the well-being of its citizens.	The proposed VCRP aligns to this policy with the establishment of the flood control infrastructures, park expansion, restoration of ecology and landscape and construction of smart and green village infrastructure combined with livelihood development activities. All this constitute a packaged activities for Economic development and poverty reduction.

Policy	Key provisions	Alignment of the VCRP to the policies
National Environment and Climate Change Policy (2019)	This Environment and Climate Change Policy reaffirms commitment to address climate change and the resolve to lessen the potential hardships that climate change may pose to the sustainable development of Rwanda. The proposed project must take recognition of the National Environmental and Climate Change Policy and ensure that improved development and wellbeing of the citizens of Rwanda are considered, while including environmental aspects into the decision-making process. Rwanda to be a nation that has a clean and healthy environment, resilient to climate variability and change that supports a high quality of life for its society.	The project will contribute to offering balanced performances between settlements, flood control, catchment management activities, and enhancement of biodiversity. Policy requires sub-project to consider principles that complement ESF including: Assessment of environmental risks and impacts for development projects; Mitigation and Adaptation; Information dissemination and community awareness raising in the conservation and protection of the environment.
Rwanda National Biodiversity Strategy and Action Plan (NBSAP) (2016-2020)	The NBSAP reflects a framework for conservation, sustainable use and equitable sharing of benefits from biodiversity use and ecosystem services of the country. It also provides a framework for maintaining the necessary environmental conditions to reduce poverty, ensure sustainable development and food security in the country.	ESIAs of sub-projects will provide insights on biodiversity use and ecosystem services, environmental sustainability and restoration of degraded ecosystems. Additionally, flood risk management will enhance overall resilience of project area restoration and conservation.

Policy	Key provisions	Alignment of the VCRP to the policies
National Forest Policy, February 2018	The overall objective is to define, in concise statements, government's medium to long term intentions for the development and management of the national forest resources. Forest resources will be managed to play an integral role in supporting Rwanda's development goals for sustainable, low-carbon and climate resilient to improve livelihoods of present and future generations	The project is aligned to this policy as part of project preparation, ecological restoration plans shall be developed for the VCRP components. An ecological restoration plan exists for the VNP expansion, which will be improved by a more elaborate ecological plan for the entire project intervention area. i.e., both volcanoes and Virunga corridor regions. In addition, the project contractors will record the number of trees to be cut and get approval from the districts
The National Land Policy, June 2019	The objective of the National Land policy is to establish a land tenure system that guarantees occupational security of land for all Rwandans and guides land reform initiatives that will establish good management with reasonable use of land.	As the proposed sub-projects will be utilizing land for the development of structures and infrastructure, park expansion, catchment management, objectives of the National Land Policy must be considered and implemented during the ESIA process.
The National Policy on HIV/AIDS, 2003	The National Policy against HIV and AIDS is an essential tool that provides the government orientations in the fight against the spread of HIV&AIDS, reducing its impact on the Rwandan community and setting up appropriate coordination mechanisms. It is an expression of the GOR's commitment through strategies to reduce risk, impact, and vulnerability on the citizens of the country. This expression of commitment is proof of the GOR's determination to preserve the Rwanda population, resident foreigners, and visitors to Rwanda from HIV/AIDS	The policy will be considered during the ESIAs and mitigation/ management measures will be developed to promote the mentioned objectives of the policy, since the proposed VCRP components and sub-components will involve communities as well as construction activities that will provide potential job opportunities, resulting in an influx of people to the area and promote interactions between people and communities that could contribute to an increase in the spread of HIV&AIDS within the project areas of intervention.

Policy	Key provisions	Alignment of the VCRP to the policies
National Policy for Water Resources Management (2011)	The water resources in Rwanda face growing challenges arising from pressures of rapidly changing demographic patterns, the demands of intensified socio-economic development, degradation resulting from unsustainable and inappropriate land use practices; and the uncertainties created by climate change, among others. At the same time, the water resources are relied upon to meet many conflicting demands and play its full role in facilitating the achievement of the country's 2020 development vision. This policy provides objectives on use and protection of natural environment including water resources such as Rivers, underground water, springs, natural and artificial lakes.	The project will ensure impact on water resources is reduced at maximum with their effective use. Erosion, floods and sediment loads have polluted most of the water resources within the volcano region and Vunga corridor. The project will ensure that floods reduction, landscape and ecological restoration impact positively the water quality for diversified uses.
National Agriculture Policy, 2018	The vision of the National Agricultural Policy is for Rwanda to become "a nation that enjoys food security, nutritional health and sustainable agricultural growth from a productive, green and market-led agricultural sector." The mission is to ensure food and nutrition security, modern agribusiness technologies professionalizing farmers in terms of production, commercialization of the outputs and the creation of a competitive agriculture sector	The project is aligned to this strategy through the following sub-component and activities: Sub-component 2c: Livelihoods Development with supply of small livestock and supply of farm inputs and equipment for Climate Smart Agriculture in the project area Subcomponent 3b: Livelihood diversification and income generation activities with the following activities: Mushroom farming Horticulture- growing berries Horticulture- Tree Tomatoes The sub-component 3a on **Integrated climate resilient green settlements and livelihood improvement considers** Market agriculture- involving market-oriented farming of high value livestock

Policy	Key provisions	Alignment of the VCRP to the policies
		such as chicken and dairy farming. The plan is to transition from low to high value agriculture- the VCRP shall: ● Promote the use of greenhouses by communities to intensify the growing of high value horticulture destined for the Kinigi high-end tourism hotels. ● Promote the diversification into the cultivation of mushrooms, cherry tomatoes, herbs, garlic, ginger and other vegetables that are destined for the high-end tourism market in Kinigi and Kigali. ● Develop a community-based poultry industry that supplies meat and eggs to the high-end tourism market in Kinigi and Kigali.
Strategic Plan for Agricultural Transformation II (SPAT II), 2008	Referring to the Strategic Plan for Agricultural Transformation II, 2008, the performance of the Rwandan economy depends mainly on the production of the primary sector, in which agricultural and livestock production, particularly of food crops, is essential.	The project is aligned to this policy considering the components and the project and the planned activities (smart agriculture activities, livestock production, agroforestry,..etc).
National Policy and Strategy for Water Supply and Sanitation Services (2016)	Access to safe and clean water plays a vital role in social and economic development, poverty reduction and public health. The policy recommends sustainable, equitable, reliable and affordable access to safe drinking water for all Rwandans, as a contribution to improving public health and socio-economic development while its mission is to plan, build and operate water and sanitation services in a sustainable, efficient and equitable manner.	Sub-projects will endeavor that green settlements and model smart green village construction and operation activities will not hinder access to safe water supplies and sanitation as well as waste disposal services. Flood risk reduction and landscape/ecological restoration activities will ensure water resources enhancement and protection

Policy	Key provisions	Alignment of the VCRP to the policies
The Rwanda Tourism Policy, November, 2009	The overall objective of the policy is to promote and increase tourism revenues in a sustainable manner, generate profits for re-investment and job creation. This will be achieved through the development of new distinctive market-led products that will be positioned to promote sustainable tourism. This will result in spatial and socio-economic balance to the distribution of tourism benefits. This includes environmental, social and economic elements for sustainable development.	The VCRP involves the Volcanoes National Park expansion by 732.5ha, partly as a means of enhancing touristic visits to the park, thereby increasing tourism revenues, generating profits and increasing employment opportunities in the tourism sector in a sustainable manner. The project furthermore intends to transform the volcanoes region and beyond to become climate resilient areas through reduction of floods, integrated catchment management, landscape and ecological restoration.
Rwanda Biodiversity Policy, 2011	The policy provides an overarching framework for the conservation, sustainable utilization, access to biodiversity resources and fair equitable sharing of benefits derived from the resources. This fits in the vision of Rwanda to be a prosperous nation, whose people live and work in harmony with the natural environment, and which derives lasting benefits from the conservation and sustainable use of its rich biological diversity.	Expanding the volcanoes regions and beyond, landscape and ecological restoration in an environmentally sound and sustainable manner is part of the framework for the conservation, sustainable utilization, and access to biodiversity resources.
National Housing Policy (2015)	This National Housing Policy outlines the principles pursued by the government when supporting housing development. It focuses on upgrading or replacing the existing informal housing units to achieve the creation of a livable and inclusive built environment. Furthermore, the policy emphasizes on the construction of basic infrastructure on planned sites.	With the sub-component 3.a related to model smart green village as a relocation site for those physically displaced by the VNP expansion, the project will provide basic infrastructure and services (housing, health services, education services, market, roads, drainage, walkways, water and power supply, etc.). This will improve living conditions of displaced households, support domestic investment, as well as investment into touristic activities.

Policy	Key provisions	Alignment of the VCRP to the policies
National Strategy for Transformation 1 (2018)	NST-1 Transformational Governance Pillar stipulates its Priority area 6 as "Increase citizens' participation, engagement and partnerships in Development". Environmental and Social Impact Assessments, biodiversity and ecosystem management, pollution and waste management are stated among the Environment and Climate Change key strategic interventions.	NST1 requires sub-project to consider principles that complement ESF including: Assessment of environmental risks and impacts for development projects.
Green Growth and Climate Resilience Strategy (2011 as revised in 2022)	Vision for Rwanda to be a developed climate-resilient and low-carbon economy by 2050	GGCRS stipulates strategic objectives aligned with the ESF requiring sub-projects to practice sustainable land use and water resource management that results in preservation of biodiversity and ecosystem Services; and social protection, improved health and disaster risk reduction that reduce vulnerability to climate change.
Rwanda Water Resources Board strategic plan (2021-2030)[8]	The Rwanda Water Resources Board (RWB) has the responsibility of securing an adequate and well-managed water supply for sustainable development, while also addressing challenges like soil erosion, flooding, and landslides. To fulfill this mandate, the RWB has developed a Strategic Plan (2021-2030) through an inclusive consultation process. The plan is structured around five strategic objectives, eleven strategic outcomes, and a total of 129 strategic actions.	The project's objectives of flood risk management align directly with the Rwanda Water Resources Board's (RWB) Strategic Plan's objective of reducing the impact caused by flooding and landslide risks. By implementing measures to mitigate flood risks, the project contributes to the RWB's aim of ensuring well-managed water resources and

[8] https://waterportal.rwb.rw/sites/default/files/2022-08/Rwanda_Water_Resources_Board_Strategic_Plan_1.pdf

Policy	Key provisions	Alignment of the VCRP to the policies
	In 2020, Rwanda Water Resources Board (RWB) was created with a large and ambitious mandate to ensure the availability of enough and well managed water resources for sustainable development and to reduce soil erosion and the impact caused by flooding and landslide risks so that Rwanda can reach Vision 2050.	minimizing the adverse effects of flooding. This alignment demonstrates the project's commitment to sustainable water resource management and supports the RWB's strategic priorities of reducing risks associated with flooding while ensuring the availability of sufficient and well-managed water resources for sustainable development.

3.1.3 International Conventions

Rwanda has signed and ratified a number of international conventions and treaties that commit the country to the conservation and protection of biological and environmental resources. The proposed VCRP, particularly with respect to project design and management, will need to consider such conventions. The conventions that are relevant to the implementation of VCRP project include:

Table 11: Summary of International Conventions and Respective Applicability to VCRP

International Treaty / Convention	Stipulations/ Requirements	Relevance to VCRP
Convention on Biological Diversity (CBD, 1992)	The objective of this Protocol is the fair and equitable sharing of the benefits arising from the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding, thereby contributing to the conservation of biological diversity and the sustainable use of its components.	Sub-projects especially construction of physical infrastructures such as ponds for flood reduction, model smart green village houses will require clearing of vegetation and so affect biological diversity.
Convention on the Conservation of Migratory Species of Wild Animals (CMS)	A framework convention which provides a global platform for the conservation and sustainable use of migratory animals and their habitats.	VCRP landscape and ecological restoration activities may temporarily affect migratory bird habitats. It is obvious that the proposed project activities that include land clearing will affect the migratory birds while others such landscape and ecological restoration will increase the population of migratory birds.
The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization	Provides legal framework for effective implementation of fair and equitable sharing of benefits arising out of the utilization of genetic resources. Addresses traditional knowledge associated with genetic resources with provisions on access, benefit-sharing and compliance. It also addresses genetic resources where indigenous and local communities have the established right to grant access to them.	Reintroduction of indigenous/endemic species with landscape and ecological restoration aligns to this protocol.
Paris Agreement to the UNFCCC (2015)	Aims to strengthen global response to climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-	VCRP focuses on sustainability and climate resilience and requires a climate risk assessment to be undertaken in

International Treaty / Convention	Stipulations/ Requirements	Relevance to VCRP
	industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. Also aims to strengthen ability of countries to deal with the impacts of climate change	order to guide detailed sub-project designs in coping with climate-related impacts on livelihoods. The VCRP activities will be aligned with the Rwanda Revised Nationally Determined Contributions (NDC, updated in 2020) as the project will contribute to climate change resilience (adaptation) and Mitigation.
Nationally Determined Contributions (NDC), 2020	As a Party to the United Nations Framework Convention on Climate Change (UNFCCC), the Rwanda seeks to contribute to the ambitious goal of limiting temperature rise to 2^{o}C with efforts to reach 1.5^{o}C agreed under the Paris Agreement. Therefore, Rwanda's enhanced NDC document presents the Government of Rwanda's update of its first Nationally Determined Contributions (NDCs) for mitigation and adaptation for the period to 2030.	
UN Framework Convention on Climate Change (UNFCCC)	Provides a framework for international cooperation to combat climate change by limiting average global temperature increases and the resulting climate change, and coping with its impacts.	With the WB financing of climate resilient project activities, it is in this framework of international cooperation to combat climate change. The Northwestern parts of the country are prone to climate disasters that include floods, soil erosion and landslides.
International Labor Organization (ILO) Conventions	Rwanda has ratified a series of crucial International Labor Organization (ILO) Conventions, including C029 (Forced Labor Convention, 1930), C087 (Freedom of Association and Protection of the Right to Organise Convention, 1948), C100 (Equal	The Volcanoes Community Resilience Project (VCRP) developed by the Rwandan Government aligns with the principles of several International Labor Organization (ILO) Conventions, particularly those pertaining to sustainable development, labour rights, and social welfare. The project's emphasis on enhancing climate

International Treaty / Convention	Stipulations/ Requirements	Relevance to VCRP
	Remuneration Convention, 1951), C105 (Abolition of Forced Labour Convention, 1957), C111 (Discrimination (Employment and Occupation) Convention, 1958), C138 (Minimum Age Convention, 1973), C155 (Occupational Safety and Health Convention, 1981), C182 (Worst Forms of Child Labour Convention, 1999), and C187 (Promotional Framework for Occupational Safety and Health Convention, 2006). These conventions address vital labor-related matters such as eradicating forced labor, safeguarding freedom of association, ensuring equal remuneration, abolishing forced labour practices, combating discrimination, eliminating child labour, promoting workplace safety and health, and establishing preventative safety cultures. Rwanda's ratification of these conventions signifies its commitment to upholding fundamental labor rights and improving working conditions.	resilience, managing natural resources, and promoting sustainable tourism resonates with ILO conventions that emphasize environmental sustainability and the protection of workers' rights in sustainable development initiatives. Additionally, the commitment to community development and resilience aligns with ILO conventions promoting decent work, fair wages, and social protection. The project's inclusive approach, focusing on eight districts, also mirrors the ILO's emphasis on social justice and equity. By integrating these principles, the VCRP demonstrates Rwanda's dedication to both environmental and social progress in line with international labour standards.
Convention concerning the Protection of the World Cultural and Natural Heritage (World Heritage Convention, 1972)	Requires state parties to recognize that the duty of ensuring the identification, protection, conservation, presentation and transmission to future generations of the cultural and natural heritage situated on its territory, belongs primarily to that State.	Will apply to sub-projects that will entail clearance of natural vegetation, earth and engineering works

3.2 International Environmental Legislation and Regulatory Framework

3.2.1. The World Bank Environment and Social Framework

Under its Environmental and Social Framework (ESF), the World Bank introduced ten (10) E&S standards to ensure projects are designed and implemented in a socially and environmentally sustainable way to avoid, reduce or mitigate unanticipated or unforeseen threats in its projects. The Environmental and Social Standards set out the requirements for Borrowers relating to the identification and assessment of environmental and social risks and impacts associated with projects supported by the Bank through Investment Project Financing. The standards will: (a) support Borrowers in achieving good international practice relating to environmental and social sustainability; (b) assist Borrowers in fulfilling their national and international environmental and social obligations; (c) enhance nondiscrimination, transparency, participation, accountability and governance; and (d) enhance the sustainable development outcomes of projects through ongoing stakeholder engagement.

Risk classification

According to the CESRS[9], the World Bank has categorized the VCRP with a "High Risk" rating, based on the ESS1 and expected potential environmental and social impacts and risks. The Environmental risk rating is "substantial", Sexual Exploitation and Abuse/Sexual Harassment (SEA/SH) risk rating is "substantial", while the social risk rating is "high", overall, giving the VCRP a "high risk classification.

The proposed project is expected to result in significant social benefits and positive environmental impacts. Some negative environmental risks and impacts anticipated for this project are minor and of temporary nature during the construction/rehabilitation of small-scale public-work interventions including dust, noise, waste generation, disruption to traffic and movement, health and safety; and would be reduced and mitigated first by using the Project ES instruments (ESMF, LMP, RFP, etc.) and developing subproject ES instruments (eg. ESIAs, ESMPS, RAPs, etc.)

Some others are associated with high risk as they are to be implemented in conservation and sensitive areas, for instance the Volcanoes National Park and shall involve land acquisition and involuntary resettlement for VNP expansion, which is a social risk rated high. The project was therefore assigned within a high-risk category.

The following ESSs could be triggered by the VCRP: ESS1 (Assessment and Management of Environmental and Social Risk and Impacts), ESS2 (Labor and Working Conditions), ESS3 (Resource Efficiency and Pollution Prevention and Management), ESS4 (Community Health and Safety)' ESS5 (Land Acquisition, Restrictions and Land Use and Involuntary Resettlement) ESS6 (Biodiversity Conservation and sustainable of Living Natural Resources), ESS8 (Cultural Heritage) and ESS10 (Stakeholders Management and Information disclosure).

Of the WB 10 ESSs, only 8 could be triggered by the VCRP. The two ESSs which shall not be triggered by the project are ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities and ESS9: Financial Intermediaries.

The following text provides a summary but see full ESSs for complete details through the link below: https://www.worldbank.org/en/projects-operations/environmental-and-socialframework/brief/environmental-and-social-framework-resources

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

[9] Concept Environmental and Social Review Summary, October 2023 by the World Bank on the VCRP.

viable, and that decision making is improved through appropriate analysis of actions and their probable environmental impacts. ESS1 obliges the Borrower to carry out an environmental and social assessment of the project to assess the environmental and social risks and impacts of the project throughout the project life cycle.

The environmental and social assessment will be an adequate, accurate, and objective evaluation and presentation of the risks and impacts, prepared by qualified and experienced persons. The environmental and social assessment will be based on current information, including an accurate description and delineation of the project and any associated aspects, and environmental and social baseline data at an appropriate level of detail sufficient to inform characterization and identification of risks and impacts and mitigation measures. The assessment will evaluate the project's potential environmental and social risks and impacts; examine project alternatives; identify ways of improving project selection, siting, planning, design, and implementation to apply the mitigation hierarchy for adverse environmental and social impacts and seek opportunities to enhance the positive impacts of the project. The environmental and social assessment will include stakeholder engagement as an integral part of the assessment, in accordance with ESS10.

In the present case, ESS1 is triggered because the Project is likely to cause potential negative environmental risks and impacts in the project area.

ESS2 on Labor 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.

ESS2 sets out that a child over the minimum age and under the age of 18 will not be employed or engaged in connection with the project in a manner that is likely to be hazardous or interfere with the child's education or be harmful to the child's health or physical, mental, spiritual, moral, or social development.

This ESS obliges the Borrower to provide appropriate measures of protection and assistance to address the vulnerabilities of project workers, including specific groups of workers, such as women, people with disabilities, migrant workers, and children (of working age in accordance with this ESS). Decisions relating to the employment or treatment of project workers will not be made based on personal characteristics unrelated to inherent job requirements.

In this context, a LMP was prepared. The LMP will help in determining the resources necessary to address project labor issues to meet the objectives and requirements of the World Bank Environmental and Social Standards (ESSs) on Labor and Working Conditions (ESS2), the National Labor Laws of the republic of Rwanda, as well as Occupational Health, safety and Working Condition policies.

The developer will adhere to measures relating to occupational health and safety applied to the project as set out by the ESS2. The OHS measure will consider the General EHSGs and, as appropriate, the industry specific EHSGs and other GIIP. The industry specific EHSGs are the agribusiness/food production with crop production, forestry, and infrastructure with tourism and hospitality development, water and sanitation and waste management. The OHS measures applying to the project will be set out in the legal agreement and the ESCP.

ESS3 - Resource Efficiency and Pollution Prevention

ESS3 recognizes that economic activity and urbanization often generate pollution to air, water, and land, and consume finite resources that may threaten people, ecosystem services and the environment at the local, regional, and global levels. Its objectives are to address measures taken to avoid, minimize or reduce project-related pollution, more sustainable use of resources (including energy and water), and 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 minimize 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 circumstances, may be vulnerable.

This standard is triggered as the Volcanoes Community Resilient project activities may have impact on health and safety of workers and people in the project area. As related to the project activities, ESS4 requires the borrower to:

- Take measures to avoid or minimize transmission of communicable diseases that may be associated with the influx of temporary or permanent project labor.
- Avoid or minimize the potential for community exposure to hazardous materials and substances that may be released by the project.
- Identify and implement measures to address emergency events.
- Where appropriate and feasible, the Borrower will identify the project's potential risks and impacts on ecosystem services that may be exacerbated by climate change. Adverse impacts will be avoided, and if they are unavoidable, the Borrower will implement appropriate mitigation measures.
- Design, construct, operate, and decommission the structural elements of the project in accordance with national legal requirements and the EHSGs, taking into consideration safety risks to third parties and affected communities.

A Gender and Anti-Gender Based Violence Action Plan (GAP) is concurrently being developed and will guide the process of avoiding, mitigating and addressing GBV/SEA risks, in correspondence to recommendations from the ESMF and specific ESIAs that will be developed during project implementation.

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 Volcanoes Community Resilience Project activities as the aim is to construct a model green village, restore landscape and the ecology of conservations area and priority areas.

The environmental and social assessment as set out in ESS1 will consider direct, indirect, and cumulative project-related impacts on habitats and the biodiversity they support. This assessment will consider threats to biodiversity, for example habitat loss, degradation and fragmentation, invasive alien species, overexploitation, hydrological changes, nutrient loading, pollution as well as projected climate change impacts. It will determine the significance of biodiversity or habitats based on their vulnerability and irreplaceability at a global, regional, or national level and will also consider the differing values attached to biodiversity and habitats by project-affected parties and other interested parties.

ESS6 considers also primary production and harvesting of living natural resources. The first is cultivation or rearing of plants or animals, including annual and perennial crop farming, animal husbandry (including livestock), aquaculture, plantation forestry, etc., and the second harvesting of fish and all other types of aquatic and terrestrial organisms and timber, covering productive activities that include extraction of these resources from natural and modified ecosystems and habitats.

The developer will avoid adverse impacts on biodiversity and habitats. When avoidance of adverse impacts is not possible, the developer will implement measures to minimize adverse impacts and restore biodiversity in accordance with the mitigation hierarchy provided in ESS1 and with the requirements of this ESS.**BMP Concepts**

A Biodiversity Management Plan (BMP) will be developed to provide assurance that measures to manage risks to biodiversity are implemented and maintained throughout the project lifecycle. The NDF funding for development of a biodiversity monitoring framework and master plan with the University of Rwanda's Center of Excellence in Biodiversity and Natural Resource Management (CoEB) will contribute to developing a solid BMP.

A key concept of the BMP is that measures to be presented must adhere to the mitigation hierarchy as defined in ESS1/ESS6, e.g., To adopt a mitigation hierarchy approach to*:*

a) Anticipate and avoid risks and impacts.
b) Where avoidance is not possible, minimize or reduce risks and impacts to acceptable levels.
c) Once risks and impacts have been minimized or reduced, mitigate; and
d) Where significant residual impacts remain, compensate for, or offset them, were technically and financially feasible*.*

General guidance for VCRP BMP includes:

- Consideration of ecosystem-based adaptation and nature-based solution approaches
- Consider ecological needs of the sites in developing the designs.
- For species selection for the VNP expansion area restoration, consider other criteria including:
  - variety of ecosystem services provided by the species (such as potential uses by the wildlife for feeding and habitat, soil formation and stabilization, etc.),
  - growth rate of different species and their canopy covers,
  - diversification based on species, life forms and phytosociological communities,
  - etc.
- Provide detailed information on plant species proposed to be used in following interventions:
  - Wetlands restoration
  - Restoration of lakes and islands buffer zones
  - Restoration of riverbanks
  - Roadside protection
  - Protection of remnant forests
  - Silvopastoralism in Gishwati rangelands
  - Plantation of native species in agro-ecosystems

- Consider using a maximum of native species, depending on their ecological adaptability, the ecosystem goods and services expected, as well as their specific role in the objectives targeted at each location. Non-native species to be used will be clarified subsequently in the ESIAs and/or ESMPs.

Specific elements of the BMP and recommendations for the VCRP Project are found in the table 13 below:

Table 12: BMP processes

Elements of a BMP	Description	Recommendations for the VCRP Project
Purpose and scope	**T**he overall objective of the BMP is to identify the mitigation and monitoring measures for biodiversity in compliance with relevant legislations and standards; and proceed to the identification/delineation of critical habitat and natural habitat that could be affected by the project activities. The BMP must cover the three main phases of the project, including: • Planning/sitting phase: by providing a biodiversity baseline before project works begin; • Implementation phase: by monitoring biodiversity on any critical impacts that may occur in order to timely introduce corrective measures; and • Operational phase: by monitoring biodiversity to assess recovery, and medium to long term impacts after completion of the works.	• Recommended to comply with the World Bank's Environmental and Social Standards (ESS), and in particular ESS 6. • The three phases are well defined in VCRP, and the planning/sitting phase is ongoing.
Roles and Responsibilities	The BMP identifies the main roles and responsibilities of the different stakeholders involved in all three phases of the project. Key roles that need to be defined in the BMP include: • the role of the **lender** responsible for receiving and reviewing BMP implementation reports from the implementing institution), • the **proponent** that will assume overall responsibility for implementing the BMP), and • the **construction contractor** responsible for complying with all relevant legislations and adhere to all mitigation measures as specified in the BMP.	**F**or this project, the lender is the World Bank, the proponent is the MoE and/or REMA. The construction contractor's team must have sufficient, adequate and competent skills and resources available to fulfill the BMP requirements.

Elements of a BMP	Description	Recommendations for the VCRP Project
Mitigation measures and management controls	This section presents the mitigation measures and management methods that the BMP aims to implement, to limit as far as possible negative impacts to biodiversity during construction and operation activities. The costs of implementing the mitigation measures and management controls must be estimated for each phase. **See in annex 8, the recommended matrix on mitigation measures and management methods**	ESIA and ESMF provide this information.
Monitoring activities	• Define tools to provide information about changes induced by the project on biodiversity, and seek corrective actions that can reduce the impacts to acceptable levels, at each phase of the project. • Develop a monitoring program with information on: - monitoring objectives, - monitoring methods, - location of monitoring points/areas, - monitoring frequency in the three phases of the projects, and - monitoring costs. **See in annex 8, the recommended matrix**	

ESS8 on cultural heritage

ESS8 recognizes that cultural heritage provides continuity in tangible and intangible forms between the past, present and future. People identify with cultural heritage as a reflection and expression of their constantly evolving values, beliefs, knowledge, and traditions. The standard is triggered as the cultural heritage could be affected through assets but also the culture of people living in the area of influence for whom the livelihoods depend on exploitation of the volcanoes region and vunga corridor.

The environmental and social assessment, as set out in ESS1, will consider direct, indirect, and cumulative project-specific risks and impacts on cultural heritage. Through the environmental and social assessment, the Borrower will determine the potential risks and impacts of the proposed activities of the project on cultural heritage.

The Borrower will avoid impacts on cultural heritage. When avoidance of impacts is not possible, the Borrower will identify and implement measures to address impacts on cultural heritage in accordance with the mitigation hierarchy. A chance finds procedure is a project-specific procedure which will be followed if previously unknown cultural heritage is encountered during project activities.

ESS10 on Stakeholder Engagement and information disclosure

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.

The standard is triggered by the project. The Borrower will continue to engage with 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 of the project.

A stakeholder Engagement Plan (SEP) for the VCRP is concurrently being developed to guide the project's stakeholder engagement and information disclosure process.

Table 13: The World Bank Environmental and Social Standards (ESSs)

World Bank ESS	Objectives	Borrower Requirements	Applicability to VCRP
ESS1 - Assessment and Management of Environmental and Social Risks and Impacts	Identify, evaluate and manage the environment and social risks and impacts of the project in a manner consistent with the ESS1; Adopt a mitigation hierarchy approach to: avoid, minimize (reduce), mitigate and compensate(offset) Utilize national environmental and social institutions, systems, laws, regulations and procedures in the assessment, development and implementation of projects, whenever appropriate.	Types of Environmental and Social risks and impacts that should be considered in the environmental and social assessment. Use and strengthening of the Borrower's environmental and social framework for the assessment, development and implementation of World Bank financed projects as appropriate.	Environmental and Social risks and Impacts have been preliminarily identified based on field visits, consultations with primary stakeholders including communities and implementing agencies (REMA, RWB, Meteo-Rwanda, and MoE). Project ES instruments (ESMF, LMP, RPF, etc.) and that subproject specific ES instruments will be prepared as required in ESMF, RPF etc.
ESS2: Labor and Working Conditions	Promote safety and health at work; Promote the fair treatment, non-discrimination and equal opportunity of project workers; Protect project workers, including vulnerable workers such as women, persons with disabilities, children (of working age, in accordance with this ESS) and migrant workers, contracted workers, community workers and primary supply workers, as appropriate; Prevent the use of all forms of forced labor and child labor; Support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law; Provide project workers with accessible means to raise workplace concerns.	Prepare and adopt labor management procedures with provisions on: Treatment of direct, contracted, community, and primary supply workers, and government civil servants; Terms and conditions of work, nondiscrimination and equal opportunity and workers organizations: Child labor and forced labor; Requirements on Occupational Health and Safety, in keeping with the World Bank Group's Environmental, Health, and Safety Guidelines (EHSG).	The project will involve direct workers, community workers and civil servants. For the community workers, a separate Labor Management Procedures (LMP) has been prepared that will provide measures to address the terms and conditions of labor-intensive activities, nondiscrimination and equal opportunity for short-term employment for vulnerable households in all targeted districts, restrictions on child and forced labor, and occupational health and safety requirements. The civil servants would be governed by the civil service code, which forbids child and forced labor; the LMP may include OHS measures in case they are not in the civil servants' existing contracts. The LMP will also include measures to ensure GBV/SEA risks are addressed. The country already has its national laws and regulations related to

World Bank ESS	Objectives	Borrower Requirements	Applicability to VCRP
			labor. However, following project effectiveness, the Grievance Redress Mechanism (GRM) for workers will be established in the LMP to ensure that the working conditions comply with these laws and regulations and WB Standards.
ESS3: Resource Efficiency and Pollution Prevention and Management	Promoting sustainable use of resources, including energy, water and raw materials; Avoiding or minimizing adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities; Avoiding or minimizing project-related emissions of short and long-lived climate pollutants; Avoiding or minimizing generation of hazardous and non-hazardous waste	Provide an estimate of gross greenhouse gas emissions resulting from project (unless minor), where technically and financially feasible; Management of wastes, chemical and hazardous materials, and contains provisions to address historical pollution; Make reference to national law and good international industry practice and World Bank Groups' EHSGs.	Significant and site-specific pollution from public work activities and the use of water and other natural resources are anticipated with the construction of flood management structures and the green village facilities. The Environmental and Social Impact Assessment (ESIA) will include risk assessment and the site-specific ESMP. It will include measures for energy and water efficiency techniques/best practices to be implemented- The ESIA will evaluate the resource utilization. Also, the proposed activities are expected to cause the potential increase in the use of chemical fertilizers, pesticides to increase agriculture production, for instance under Income generating activities of horticulture. In this case, the ESMF will define institutional responsibilities and guide Integrated Pest Management (IPM) and preparation of management plans at the local level.
ESS4: Community Health and Safety	Anticipate and avoid adverse impacts on the health and safety of project-affected communities during the project life cycle	Implement requirements for community health and safety regarding infrastructure, and climate change, and applying the	ESS4 is relevant as the proposed activities can pose community health and safety risks and impacts during the proposed labor-

World Bank ESS	Objectives	Borrower Requirements	Applicability to VCRP
	from both routine and non-routine circumstances; Avoid or minimize community exposure to project-related traffic and road safety risks, diseases and hazardous materials; Have in place effective measures to address emergency events; Ensure that the safeguarding of personnel and property is carried out in a manner that avoids or minimizes risks to the project-affected communities.	concept of universal access, where technically and financially feasible. Implement requirements for traffic and road safety, including road safety assessments and monitoring. Address risks arising from impacts on provisioning and regulating ecosystem services. Measures to avoid or minimize the risk of water-related, communicable, and noncommunicable diseases. Implement requirements to assess risks associated with security personnel, and review and report unlawful and abusive acts to relevant authorities.	intensive activities. The ESMF includes identification of necessary measures to improve community health and safety and the ESMP for each site will include health and safety measures, including measures to address GBV/SEA risks.
ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Avoid involuntary resettlement or, when unavoidable, minimize involuntary resettlement by exploring project design alternatives.; Avoid forced eviction; Mitigate unavoidable adverse social and economic impacts from land acquisition or restrictions on land use; Improve living conditions of poor or vulnerable persons who are physically displaced, through provision of adequate housing, access to services and facilities, and security of tenure; Conceive and execute resettlement activities as sustainable development programs, providing sufficient investment resources to enable displaced persons to benefit directly from the project, as the nature of the project may warrant; Ensure that resettlement	Ensure that acquisition of land and assets happens only after payment of compensation and resettlement has occurred. Implement community engagement and consultation, disclosure of information and put in place a grievance mechanism.	A separate RPF has been prepared to address ESS5. Land will be required for the project activities in the different project components 1, 2 and 3. For instance, related to component 3 with the expansion of VNP, the project targets 732.5 ha of park expansion in the first phase of implementation. The Park expansion will involve the resettlement of around 510 physically displaced Households on smart green village of 50ha, that will be affected by the VNP expansion. The sub-component 3b on Livelihood diversification and income generation activities will support the affected households.

World Bank ESS	Objectives	Borrower Requirements	Applicability to VCRP
	activities are planned and implemented with appropriate disclosure.		
ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Protect and conserve biodiversity and habitats; Apply the mitigation hierarchy and the precautionary approach in the design and implementation of projects that could have an impact on biodiversity; Promote the sustainable management of living natural resources; Support livelihoods of local communities, and inclusive economic development, through the adoption of practices that integrate conservation needs and development priorities.	-Implement requirements for projects affecting areas that are legally protected, designated for protection or regionally/ internationally recognized to be of high biodiversity value. -Implement requirements for sustainable management of natural resources, avoiding or minimizing impact on biodiversity in areas of project intervention.	-With the planned activities related to construction of different infrastructures to reduce the floods and relocate affected houses from the VPN expanded area, the vegetation will be cleared. This vegetation clearing will affect biodiversity in the targeted project areas. The ESMF has proposed mitigation measures to minimize impact on biodiversity in the project area.
ESS8: Cultural Heritage	Protect cultural heritage from the adverse impacts of project activities and support its Preservation; Address cultural heritage as an integral aspect of sustainable development; Promote meaningful consultation with stakeholders regarding cultural heritage; Promote the equitable sharing of benefits from the use of cultural heritage.	Put in place a chance-find procedure. Ensure people continue access to culturally important sites, as well as the need for confidentiality when revealing information about cultural heritage assets that would compromise or jeopardize their safety or integrity. Put in place a mechanism for fair and equitable sharing of benefits from commercial use of cultural resources. Establish provisions for archaeological sites and material, built heritage, natural features with cultural significance, and moveable cultural heritage.	The ESMF includes a chance find procedure (see annex 10), which needs to be included in the community agreement documents for labor-intensive community-based works and be included in the ESMPs. In addition, ESIA process (es) will prescribe measures so that subproject activities preserve ancient cultural and/or archaeological site(s), protected, and religious structures/shrines of local importance.
ESS10: Stakeholder Engagement and Information Disclosure	Establish a systematic approach to stakeholder engagement that will help Borrowers identify stakeholders and build	Preparation and implementation of a Stakeholder Engagement Plan (SEP). The SEP involves early identification of	The project includes diverse groups of stakeholders (government agencies, rural inhabitants, farmers, rural communities,

World Bank ESS	Objectives	Borrower Requirements	Applicability to VCRP
	and maintain a constructive relationship with them, in particular project-affected parties; Assess the level of stakeholder interest and support for the project and to enable stakeholders' views to be taken into account in project design and environmental and social performance; Ensure that appropriate project information on environmental and social risks and impacts is disclosed to stakeholders in a timely, understandable, accessible and appropriate manner and format; Provide project-affected parties with accessible and inclusive means to raise issues and grievances and allow Borrowers to respond to and manage such grievances.	stakeholders, both project-affected parties and other interested parties, and clarification on how effective engagement takes place. Stakeholder engagement to be conducted in a manner proportionate to the nature, scale, risks and impacts of the project, and appropriate to stakeholders' interests. Specifies what is required for information disclosure and to achieve meaningful consultation.	NGOs, etc). A SEP has been prepared for the project to guide it on how it will interact with the stakeholders during planning, construction and operation. Affected stakeholders will have GRM mechanisms of how grievances shall be resolved in an efficient and sustainable manner.

3.2.2. The World Bank General and Specific EHS Guidelines

3.2.2.1 General EHS guidelines

The Environmental, Health and Safety (EHS) Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice. The EHS Guidelines contain the performance levels and measures that are normally acceptable to the World Bank, and measures that are generally considered to be achievable in new projects at reasonable costs by existing technology. This information supports actions aimed at avoiding, minimizing and controlling EHS impacts during the Planning, construction, operation, and decommissioning phases of a project.

When host country (for this case Rwanda) regulations differ from the levels and measures presented in the EHS Guidelines, projects will be expected to achieve whichever is more stringent. If less stringent levels or measures are appropriate in the view of specific project circumstances, a full and detailed justification for any proposed alternatives is required. General EHS Guidelines exist which contain information on cross-cutting environmental, health, and safety issues potentially applicable to this Project.

The general EHS guidelines are as follows:

❑ **Environment**

- Atmospheric emissions and ambient air quality
- Energy savings
- Wastewater and water quality
- Water conservation
- Hazardous materials management
- Waste management
- Noise
- Contaminated land

❑ **Health and Safety at work**

- Facility design and operation
- Communication and training
- Physical risks
- Chemical risks
- Biological risks
- Radiological risks
- Personal protective equipment
- Hazardous environments
- Follow-up

❑ **Community Health and Safety**

- Water quality and availability
- Structural safety of project infrastructures
- Fire safety
- Traffic safety
- Transport of hazardous materials
- Disease prevention
- Emergency preparedness and response

❑ **Construction and decommissioning**

- Environment
- Occupational health and safety
- Community Health and safety

3.2.2.2 Specific EHS guidelines

In addition to the General EHS Guidelines, sector-specific guidelines have also been developed. Sector specific guidelines deemed applicable to the Project will be considered in the ESIA process. The Guidelines of relevance to the VCRP are the following:

- Agribusiness/ food production with Annual Crop Production, mammalian livestock production, poultry farming.
- Forestry with Forest Harvesting Operations
- Infrastructure with Tourism and Hospitality Development, Waste Management facilities and Water and Sanitation

Table 14: WB Environmental, Health and Safety (EHS) Guidelines Industry sector guidelines 2016

Sub-components	Activities	Relevant EHS sector guidelines
Subcomponent 1a: Flood Risk Reduction Investments	Construction of detention ponds, new channels, stabilization of gulley banks, upgrading culverts, etc.	General EHS guidelines.
Sub-component 2a: Integrated catchment and landscape restoration	Construction of terraces, rehabilitation of gullies, priority wetlands and fragile ecosystems, Afforestation and reforestation, climate smart agriculture practices, conservation water harvesting.	General EHS guidelines.
Sub-component 2b: Ecological restoration of priority conservation areas	Removal of invasive and exotic species and then planting of native species as part of the ecological restoration of the park expansion	General EHS guidelines.
Sub-component 2c: Livelihoods Development	▪ Supply of small livestock to beneficiaries.	▪ General EHS guidelines. ▪ EHS guidelines on Mammalian livestock production.
Subcomponent 3a: Integrated climate resilient green settlement/VNP expansion, and a model smart green village	▪ Construction works for buildings, roads, etc.	▪ General EHS guidelines.
Subcomponent 3b: Livelihoods diversification and	▪ Bed and breakfast facilities. ▪ Tourism reception and services.	▪ General EHS guidelines. ▪ EHS guidelines on Tourism and hospitality development.

income generation activities		▪ EHS guidelines on Mammalian livestock production. ▪ EHS Guidelines for Poultry Production.

4. ENVIRONMENTAL AND SOCIAL BASELINE IN THE VOLCANOES REGION AND VUNGA CORRIDOR

4.1 Introduction

The VCRP will be implemented in the Volcanoes Region and the Vunga corridor located in the north-west of Rwanda. This region spans the districts of Burera, Musanze, Nyabihu, Rubavu districts in Volcanoes region and Gakenke, Muhanga, Ngororero and part of Rutsiro District in the Vunga corridor.

The baseline assessment methodology comprised: collection and review of primary and secondary baseline data sources. The team prepared baseline assessment methodology including questions for Focus Group Discussion (FGDs) and public consultations conducted in 5 districts (out of 8 districts) stakeholders in the remaining 3 districts were informed of the project through their district vice mayors in charge of economic affairs, relevant sector offices and through existing local government communication channels. These districts were selected upon criteria of districts vulnerability to floods and erosion, project sites considered for landscape and ecological restoration, project site for VNP expansion and resettlement to the model smart green village.

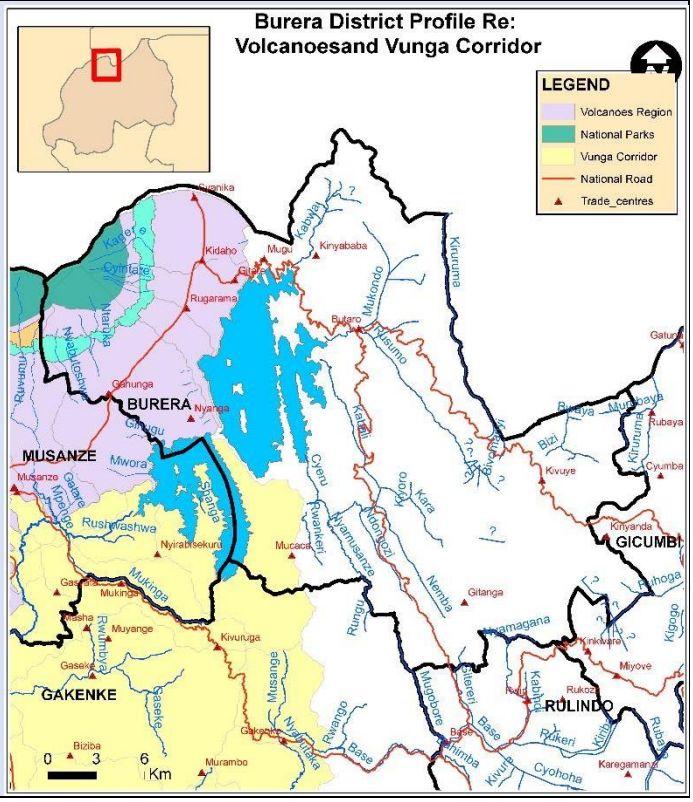
The assessment targeted flood-affected people, potentially project affected people, district and sector officials and Civil society Organisations (CSOs) in the project affected areas for this assessment. Both male and female were interviewed during the assessment. The targeted districts were Burera, Musanze, Nyabihu, Ngororero and Muhanga. Total of 25 Focus Group Discussions (FGDs) and public consultations were conducted. 195 men and 55 women participated in public consultations while 22 men and 3 women attended FGD sessions.

4.2 Environmental and socio-economic baseline of the VCRP area

The tables below detail the environmental and socio-economic attributes of the 8 districts that are covered by the project area. The environmental and socio-economic status of the area will influence the implementation of the project and so its sustainability. Important to note is that the potential presence of physical or intangible cultural heritage, will be determined at the sub-project stage.

BURERA DISTRICT

ENVIRONMENTAL, SOCIAL AND GEO-PHYSICAL BASELINE INFORMATION OF THE PROJECT AND DIRECT INFLUENCE AREA. BASED ON LITERATURE REVIEW. VCRP,		
DISTRICT	**BURERA**	
Total area of the district:	645 km^2	
Proposed interventions	To be determined	
Project areas:	To be confirmed	
Component	Components 1and 2	
Estimated budget allocation	To be confirmed	
Distance from Kigali	2hrs	
PHYSICAL CHARACTERISTICS OF THE PROJECT AREA		
ESTIMATED GEOGRAPHICAL LOCATION OF EXPECTED WORKS		

LOCATION:	Burera district is located in the volcanic region in the Northern part of Rwanda.
Hydrological and national road infrastructure map of Burera in the context of the Volcanoes region and the Vunga corridor region.	

CLIMATE	The annual precipitation of the Burera district which is a mountainous region varies from 1200mm to 1500mm.
TOPOGRAPHY.	Burera is a mountainous rural district with a topography ranging between 1728 m to 4098 m of altitude above sea level
HYDROLOGY	The district of Burera has an important hydrographic network composed of lakes Burera (55 km^2) and Ruhondo (28 km^2), marsh of which the Rugezi (6735 hectares), several rivers such as river Rugezi, river Cyeru, river Kabaya, river Kabwa and many non-made-up sources.
Geology and soils	The District of Burera lies on the highly productive soil belonging to Rwanda 's agro bio-ecological zone of the highlands of Buberuka and the high earth of Lavas. Minerals found in Burera District include coltan, tin, and wolfram all of which are exported. Quarries contain stones; sand which are mined for construction purposes and clay for pottery.
Climate & other Natural Hazards	In Burera district, 9 of its 17 sectors are included in VCRP. Those sectors have been facing different environmental issues/disasters at different periods. Among them, we can mainly list the following: Flooding, erosion and landslides. In volcanoes area of Burera District there 11 gullies which are responsible to the flooding due to lack of appropriate drainage system; Gullies with no outlets which end up

	spreading water in crop fields and in the area with housing, but also some rivers overflowing their banks, lakes that overflow their shores, and wetlands which are inundated with water. The soil erosion status as per IUCN report,2022, all sectors concerned in VCRP have some risks on soil erosion. The annex 11 presents the risks per sector. As results, Rusarabuye sector has a high risk of erosion with 77% of its land while Kinoni and Cyanika sectors have a low risk for erosion with 21% of their land. About existing erosion control practices in Burera district, only 21% of land at risk is protected by forests (4,316 hectares), contour bank terraces (1,766 hectares), and bench terraces (850 hectares). Considering the sectors concerned in VCRP, the highest protected sectors are Bugarama with 55% of its land at risk protected, followed by Cyanika where 49% of the total land at risk is protected (432 hectares) and Kagogo with 29% of land protected. The least protected sectors are Rusarabuye (13% protected) and Rugengabari. In the case of landslides, their onset is sudden, but these events are predictable. Most of the time, these landslides are small in terms of surface affected, although they are many, scattered all over the sectors. Massive landslides can take place, although it is not as frequent as expected. In this case, landslides can affect several land plots and disrupt the commercial activities of the areas, because the roads get blocked (Rapid risk and capacities assessment and livelihoods profiling in Nyabihu, Musanze and Burera districts affected by floods and landslides (January 2012) - Rwanda | ReliefWeb).
ENVIRONMENTAL CHARACTERISTICS	
Forest Cover	Forests in Burera District cover 12,019 ha, about 20% of total district land area, of which forest plantations are 10,224 ha (96% of the total district forest areas) and Natural Forest are 1,777 ha (14% of the total district forest areas).)[10].
Land Use	Agriculture is the main activity of the district although it is still subsistence farming. The land available for agriculture is 34,735ha which is the sum of marshlands for agriculture and upland for agriculture[11].
Environmental conditions	The district is endowed with natural resources such as forests, minerals, and marshlands as well as rivers distributed across the district.
Main habitats	Modified Habitats: Natural habitats:
Biodiversity	The natural vegetation of Burara District has progressively changed leaving behind crops and man- made forests which are mainly dominated by Eucalyptus. The district borders the VNP, and other natural habitats include Burera and Ruhondo Lakes and Rugezi Wetland. The wetland is characterized by its vast swampy areas and

[10] Rwanda Forest Cover Mapping, November 2019

[11] Minagri (2019). Atlas of Rwanda. Agriculture Land Boundaries.

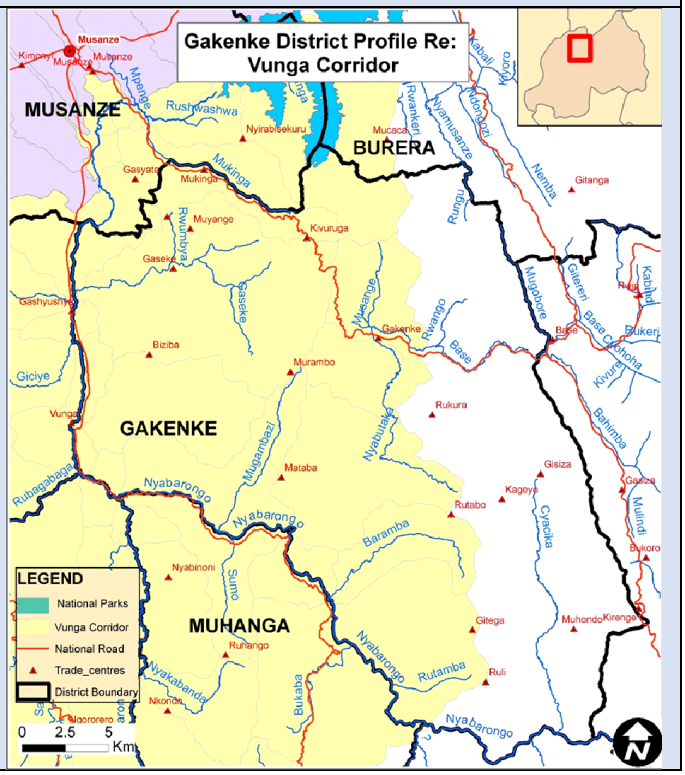
	waterlogged grasslands. The vegetation in Rugezi Wetland is dominated by papyrus (*Cyperus papyrus*), which grows in dense stands along the shores of Lake Burera and in the swampy areas. In addition to papyrus, the wetland supports other plant species, including sedges, reeds, and grasses. The wetland vegetation provides habitat and food for a wide range of animal species, including several bird species including Grauer's swamp warbler (*Bradypterus graueri*), grey crowned crane (*Balearica regulorum*), and papyrus yellow warbler (*Calamonastides gracilirostris*). The wetland also supports several mammal species such as the spotted-necked otter and marsh mongoose. Rugezi Wetland is an important area for biodiversity conservation in Rwanda and has been designated as a Ramsar site, which is an international treaty that recognizes wetlands of international importance. The wetland provides important ecosystem services such as water purification, erosion control, and climate regulation, making it a valuable resource for local communities and the wider region.	
	ENDEMIC	
	Endangered species	Grey crowned crane (*Balearica regulorum)*
	Critical Endangered species	NA
	Vulnerable	Grauer's swamp warbler (*Bradypterus graueri),* papyrus yellow warbler (*Calamonastides gracilirostris)*
	Migratory species	NA
	Congregational species	NA
	Rare or species of cultural value	Spotted-necked otter
Waste management	No rubbish collection service in Burera district which pushes households to throw their rubbish in bushes of fields.	
	Waste disposal sites	
SOCIO ECONOMIC CHARACTERISTICS		
Population of district (National Institute of Statistics of Rwanda (NISR); The Fifth Rwanda Population and Housing Census, Main Indicators Report, February 2023)	Total population: 387,729 population with a male population of 184,782 and 202,947 female population. Number of households: **91,786** households of which 25.4% are female headed. **The m**ean size of the household is 4.2. (Source: RPHC5)	
Economic status of the district	**Employment status: 51.3% l**abor force participation rate and **42.1%** e**mployment-to-population ratio. (Source: Rwanda Labor Force Survey, 2021)**	

	Agriculture status: 85.1% of the households practice agriculture **of which 78.3% are in crop farming; 64.5% in livestock husbandry; 55.3% in horticulture; 0.3% in apiculture. (Source: RPHC5)**
Villages names to be benefited	Not yet available
Villages to be affected	Not yet available
Beneficiaries expected number	Not yet available
Potential affected people	To be confirmed
Project areas	To be determined
COMMUNITY ASSESTS that can be affected by the subproject works	The following will be determined during the ESIA: Church School Market area Dump sites
Organizations important of the project area to consider for consultations	The following will be determined during the ESIA: Community Association of the Village NGO – wetlands for ever Farmers organizations
PUBLIC SERVICES AND ECONOMIC ACTIVITIES	
Water Resources	Due to regular precipitation in Burera district and its important hydrographic network, Burera doesn't face challenges of water availability for its agriculture sector due to the water reserves it can have each year.
Water Supply	The findings of RPHC5 show that 80.8% of households have access to improved drinking water whereby the main source of drinking water is public tap out of the compound for 44.3%
Energy	RPHC5 states that households with access to electricity are equivalent to 52.7% of which 45.7% use grid electricity in Burera district whereas 93.4% use firewood for cooking.
Roads and Transportation	No updated information on the quality of roads
Housing	In Burera district, 83.9% of households reside in planned rural settlement. Regarding household tenure, 90.4% own their private households. 87.9% of housing units of Burera district are covered by iron sheets whereas 11.9% of the main material of the roof is local tiles while the main material of the wall is sun-dried bricks for 62.8% of the houses and 28.3% are made of from wood with mud without cement
Solid Waste and Sanitation	RPHC5 indicates that 45.9% of households in Burera district dispose waste in the household's fields or bush; 49.2% use household compost

	dumping; 2.4% of households use public compost dumping; 0.6% burn wastes; and 0.3% dispose waste through waste collection companies.
Fire service	To be located
Prevalence of medical insurance	The findings of RPHC5 show that f**or both sex, 99.1% have medical insurance** coverage, **of which 95.7% are covered by Mutuelle**; **3.5% by RSSB; 0.1% private; and 0.7% by employer.**
Health Clinic	To be located
PHOTOS OF PROJECT AREA	
Typical gully in Burera district.	

GAKENKE DISTRICT

ENVIRONMENTAL, SOCIAL AND GEO-PHYSICAL BASELINE INFORMATION OF THE PROJECT AND DIRECT INFLUENCE AREA. BASED ON FIELD VISITS AND LITERATURE REVIEW. RWANDA, VCRP May 2023		
DISTRICT	GAKENKE	
Total area of the district:	704.06 Km^2	
Proposed interventions	To be determined	
Project areas:	To be determined	

Component	Components 1 and 2	
Estimated budget allocation	To be confirmed	
Distance from Kigali	1 hr	
PHYSICAL CHARACTERISTICS OF THE PROJECT AREA[12]		
ESTIMATED GEOGRAPHICAL LOCATION OF EXPECTED WORKS		
LOCATION:		
Hydrological and national road network map of Gakenke district in the context of the Volcanoes region and the Vunga corridor region.		

GAKENKE DISTRICT

CLIMATE	The climate in Gakenke district is generally the type of humid climate with the average annual temperature varying between 16^0 C and 29^0 C. The humid wind comes from East to West. The rainfalls are relatively abundant with a scale between 1100 and 1500 mm per year.
TOPOGRAPHY.	Gakenke district is characterized in general by high-inclined hills separated by rivers and marshlands. The relief seems to comprise two distinctive regions with the high altitude, one region with mountains attaining at least 2648m (Mont Kabuye) and another region characterized by low inclined hills of about 1700m of altitude. Marshlands occupy an area representing 361 Hectares.

[12] Gakenke District Development Strategy 2018-2024

HYDROLOGY	The District of Gakenke is endowed with reserves that could provide enough water for both consumption and agricultural purposes. The main rivers flowing in Gakenke district are Cyacika, Bahimba, Isumo, Busanane, Kiyebe, Sanzare, Gaseke, Kinoni, Nyamuhanga, Base, and Mugobore. The District of Gakenke enjoys parts of Ruhondo Lac on the side of Kamubuga and Kivuruga Sectors. Alongside Gakenke district, two main rivers go along which are Mukungwa River at the western side of the district, and Nyabarongo River at its South. The last two rivers pour their water in Akagera River, tributary of the Nile River.
Geology and soils	The soil has experienced high level of deterioration which can be observed by the presence of eragrostis, a dominant grass which is an evident sign of deteriorated soil. On hillsides of the Gakenke district, the soil is of granite origin whereas in marshlands and valley, the soil is clay
Climate & other Natural Hazards	In Gakenke district, 16 of its 19 sectors are included in VCRP. Those sectors have been facing different environmental issues/disasters at different periods. Among them, we can mainly list the following: Erosion and landslides. Gakenke district experiences heavy landslide in its different sectors. The soil erosion status as per IUCN report,2022, all sectors concerned in VCRP have some risks on soil erosion. The annex 11 presents the risks per sector. Kamubuga sector is highly vulnerable to erosion with 90% of its land while Rusasa has a less risk of erosion with 22% of its total land. About existing erosion control practices in Gakenke district, only 27% of land at risk is protected by forests (9,651 hectares), contour bank terraces or progressive terraces with ditches (1,768 hectares), and bench terraces (2,246 hectares). Considering the sectors in VCRP, the highest protected sectors are Kivuruga with 43% of its land at risk protected, Janja with 43% of its land at risk protected, and Kamubuga where 37% of the total land at risk is protected (1,137 hectares). The least protected sectors are Mataba (only 19% protected), Karambo (19%) and Mugunga, Nemba and Rusasa (22% protected).
ENVIRONMENTAL CHARACTERISTICS (Source: Gakenke DDS 2018-2024)	
Forest Cover	Forests in Gakenke District cover 17,824 ha, about 25% of total district land area of which forest plantations are 17,780 ha (99.7% of the total district forest areas)[13]
Land Use	Agriculture constitutes the main economic activity of the district with the land available for agriculture which is 42,269ha[14]
Environmental conditions	The district is endowed with natural resources such as forests, minerals, and marshlands as well as rivers distributed across the district

[13] Rwanda Forest Cover Mapping, November 2019

[14] Minagri (2019), Atlas of Rwanda, Agriculture Land Boundaries

Main habitats	Modified Habitats: None Natural habitats: To be established	
Biodiversity	Gakenke District is rich in forest cover, but mostly dominated by forest plantations of eucalyptus, pinus and alnus species. Wildlife diversity is low in Gakenke District. Some birds can be sighted however, such as eagles, sparrow hawks, ravens.	
	ENDEMIC	NA
	Endangered species	NA
	Critical Endangered species	NA
	Vulnerable	NA
	Migratory species	NA
	Congregational species	NA
	Rare or species of cultural value	NA
Waste management	Limited presence of waste collection companies as per RPHC5. Only 0.2% evacuate their waste through waste collection companies.	
	Waste disposal sites	
SOCIO ECONOMIC CHARACTERISTICS		
Population of district (National Institute of Statistics of Rwanda (NISR); The Fifth Rwanda Population and Housing Census, Main Indicators Report, February 2023)	Total population: **365,292** population with a male population of **172,600** and **192,692** female population. **Number of households: 93,609** households of which **27.4%** are female headed. **The mean size of the household is 3.9. (Source: RPHC5)**	
Economic status of the district	Employment status: 46.9% labor force participation rate and 37.4% employment-to-population ratio. (Source: Rwanda Labor Force Survey, 2021) Agriculture status: 92.7% of the households practice agriculture of which 89% are in crop farming; 80.7% in livestock husbandry; 68.8% in horticulture; 1% in apiculture. (Source: RPHC5)	
Villages names to be benefited	Not yet available	
Villages to be affected	Not yet available	
Beneficiaries expected number	Not yet available	
Potential affected people	If this information is known from the RPF please include	

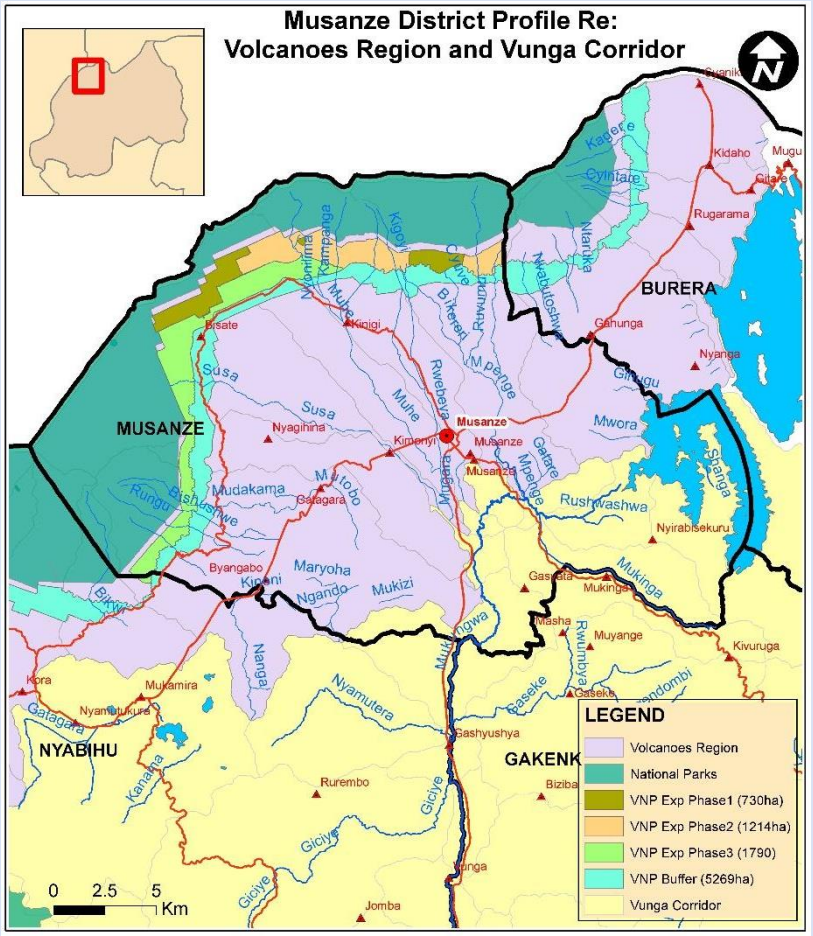
COMMUNITY ASSESTS that can be affected by the subproject works	The following will be determined during the ESIA: Church School Market area Dump sites	Bust stops are found in many areas of the project areas
Organizations important of the project area to consider for consultations	The following will be determined during the ESIA: Community Association of the Village NGO – wetlands for ever Farmers organizations	
PUBLIC SERVICES AND ECONOMIC ACTIVITIES		
Water Resources	The district faces challenges related to access to clean water though it has different rivers.	
Water Supply	76.5% of households have access to improved sources of drinking water as per the RPHC5[15] with 42.2% getting their water from protected spring/well. The EICV5 reports that the mean time to improved water source is 10.6mins.	
Energy	49.7% of households use electricity of which 26.6% use grid electricity as per the RPHC5 whereas 96.6% of households use firewood for cooking.	
Roads and Transportation	Roads are of low quality as stated in the Gakenke DDS 2018-2024.The EICV5 indicates that 80.6% are between 0-19mins walking distance to the main road while 16.9% are located between 20-59 minutes. The public transport is regularly used by 29.4% while 45.6 use it sometimes and 13.1%.	
Housing	The findings of the RPHC5 show that 62.8% of houses are covered by iron sheets whereas 37% are covered by local tiles. The majority of the houses (91%) have walls made from sun-dried bricks. In addition, the EICV5 reports that 99.6% of homes were single house dwelling in 2018. In the district, 85.5% of households reside in planned rural settlements. Regarding household tenure, 91.7% own their private households.	
Solid Waste and Sanitation	RPHC5 indicates that 57% of households in Gakenke district dispose waste by household compost dumping; 38.9% dump in the household's fields or bush; 2.5% of households use public compost dumping; 0.4% burn wastes; and 0.2% dispose waste through waste collection companies.	
Fire service	To be located	

[15] National Institute of Statistics of Rwanda (NISR); The Fifth Rwanda Population and Housing Census, Main Indicators Report, February 2023

Prevalence of medical insurance	The findings of RPHC5 show that for both sex, 99.7% have medical insurance coverage, of which 95.9% are covered by Mutuelle; 3.3% by RSSB; 0.1% private; and 0.7% by employer.
Health Clinic	To be located
PHOTOS OF PROJECT AREA	
Typical flora and topography in Gakenke district	

MUSANZE DISTRICT

ENVIRONMENTAL, SOCIAL AND GEO-PHYSICAL BASELINE INFORMATION OF THE PROJECT AND DIRECT INFLUENCE AREA. VCRP, May 2023		
DISTRICT	MUSANZE	
Territory:	530.2 Km^2	
Proposed interventions	To be determined	
Project areas:	To be determined	
Component 1	To be confirmed	
Component 2	To be confirmed	
Component 3	Kinigi Sector	

Estimated budget allocation	To be finalized	
Distance from Kigali	1 hr 30min	
PHYSICAL CHARACTERISTICS OF THE PROJECT AREA		
ESTIMATED GEOGRAPHICAL LOCATION OF EXPECTED WORKS		
LOCATION:	Located on the Lava Soil of the Virunga Massive	
Hydrological and national road and trade center networks map of Musanze district in the context of the Volcanoes region and the Vunga corridor region.		

CLIMATE	Temperature average is 17.5°C. Rainfall averages at 1,200 mm/year
TOPOGRAPHY	City at foothills of Ibirunga (Volcanic mountains) with altitude range 1,750 to 1,834 m.a.s.l. Volcanic area with moderate slopes and volcanic ash soils with lava-predominant stones and another part that comprises steep hills with active erosion.
HYDROLOGY	Two main watercourses in the city: Mpenge and Kigombe springs. Numerous torrents, including Cyuve, Kansoro, Mudakama, Muhe, Rwebeya, Rungu and Susa. Torrents carry highly variable flow when it rains high the volcanoes 20 km away the city limits. Torrents impacts include severe soil erosion, crop losses and sedimentation. Mukungwa River that drains Lake Ruhondo flows close to the city into River Nyabarongo.

Geology and soils	Volcanic ash soils with lava-predominant stones and porous rocks. Soil erosion and soil nutrient loss are major problems. Rich volcanic soils ideal for agriculture, especially irlish potato; Rwanda popular potato variety "Kinigi", named after the Kinigi area of Musanze.
Climate & other Natural Hazards	In Musanze district, all sectors are concerned in VCRP. Those sectors have been facing different environmental issues/disasters at different periods. Among them, we can mainly list the following: Flooding, erosion and landslides. In volcanoes area of Musanze District there 8 gullies which are responsible to the flooding due to lack of appropriate drainage system; Gullies with no outlets which end up spreading water in crop fields and in the area with housing, but also some rivers overflowing their banks, lakes that overflow their shores, and wetlands which are inundated with water. The soil erosion status as per IUCN report,2022, all sectors concerned in VCRP have some risks on soil erosion. The annex 11 presents the risks per sector. Gashaki sector is highly risk to erosion with 94% of its total land while Muko sector has a very low risk for erosion with 2% of its total land. About existing erosion control practices in Musanze district, only 26% of land at risk is protected by forests (2084 hectares), contour bank terraces or progressive terraces with ditches (341 hectares), and bench terraces (2560 hectares). Although still low, the highest protected sectors are Muko with 49% of its land at risk protected (24 hectares), followed by Gashaki where 38% of the total land at risk is protected (464 hectares) and Musanze with 35% of land protected. The least protected sectors are Rwaza with only 11% protected, Muhoza (13% protected), Gacaca (19%) and Shingiro (20% protected). In the case of landslides, their onset is sudden, but these events are predictable. Most of the time, these landslides are small in terms of surface affected, although they are many, scattered all over the sectors. Massive landslides can take place, although it is not as frequent as expected. In this case, landslides can affect several land plots and disrupt the commercial activities of the areas, because the roads get blocked (Rapid risk and capacities assessment and livelihoods profiling in Nyabihu, Musanze and Burera districts affected by floods and landslides (January 2012) - Rwanda | ReliefWeb).
ENVIRONMENTAL CHARACTERISTICIS	
Forest Cover	Forests in Musanze District cover 18,091 ha, about 28% of total district land area of which 9,963 ha are natural forests (about 55% of the total district forest), and 8,099 ha are forest plantations (about 44.7% of the total district forest cover)[16].
Land Use	The mean size of land cultivated per household is 0.45ha which is below the national average 0.59 ha. The land available for agriculture in Musanze is 26,745 ha[17].

[16] Ministry of Environment (2019). Rwanda Forest Cover Map, November 2019

[17] Minagri (2019), Atlas of Rwanda. Agriculture Land Boundaries

Environmental conditions	Project area includes rural areas with important habitats for birds. Musanze is home to the Volcanoes National Park which covers 60km^2 and Lake Ruhondo with a total area of 28km^2	
Main habitats	Modified Habitats: None Natural habitats: Musanze has natural habitats made of natural forests and wetlands Critical habitat: IBAT (Integrated Biodiversity Assessment Tool) proximity report generated on 2 Feb 2020 indicated Mukungwa River Catchment is a Key Biodiversity Area found within 2.0 km (radius/buffer) of the area of interest (city Center).	
Biodiversity	Biodiversity in Musanze District is under threat from the huge proportion of the population working in agriculture. They have stripped away much of the natural vegetation to grow food crops such as potatoes and sorghum or cash crops such as pyrethrum. Forests cover an area of about 11,616 ha in Musanze, broken down as follows: Bamboo forests: 2,517 ha; degraded natural forest: 2,223 ha; Eucalyptus Forest plantation: 1,626 ha; and mountain humid forest: 5,250 ha. State and district forests comprise 24 and 2 per cent of all forests in the district, respectively, while private forests comprise 74 per cent. The 33 ha Buhanga relict forest has an important level of biodiversity and cultural significance. It is host to 83 bird species, three of which are endemic to the Albertine Rift. It is also a stopover for the *African pitta*, a migratory bird species. There are 189 plant species of which 38 are known medicinal and 13 mammal species. Some of the fauna in the area are the porcupine, jackal, wildcat, mongoose, and hyrax.	
	ENDEMIC	Ruwenzori double-collared sunbird (*Cinnyris stuhlmanni*), Garden Warbler (*Sylvia borin*) and *Lesser Spotted Eagle*. In addition, mountain gorillas (Gorilla beringei beringei) are only found in the Volcanoes National Park.
	Endangered species	Biodiversity in Musanze district is under threat, especially from agricultural practices. The district is home to the endangered mountain gorillas (*Gorilla beringei beringei*). The Mountain Gorilla is protected with the Volcanoes National Park.
	Critical Endangered species	No critically endangered species
	Vulnerable	Not available
	Migratory species	Numerous birds to be confirmed in the ESIA
	Congregational species	Not available
	Rare or species of cultural value	Not available

Waste management	No primary waste collection service for more than 50% of the city	
	Waste disposal sites	The dump site is located about 5 km away from the city centre. Location: not available
SOCIO ECONOMIC CHARACTERISTICS		
Population of district (National Institute of Statistics of Rwanda (NISR); The Fifth Rwanda Population and Housing Census, Main Indicators Report, February 2023)	Total population: 476,522 populations with **a male population of 227,340and 249,182 female population.** Number of households: **119,387** households of which **27.7**% are female headed. The mean size of the household is 3.9. (Source: RPHC5)	
Economic status of the district	Employment status 61.5% labor force participation rate and 47.9% employment-to-population ratio. (Source: Rwanda Labor Force Survey, 2021) Agriculture status: 66.3% of the households practice agriculture of which 59.4% are in crop farming; 44.4% in livestock husbandry; 43.6% in horticulture; 0.2% in apiculture. (Source: RPHC5)	
Villages names to be benefited	Not yet available	
Villages to be affected	Not yet available	
Expected number of the beneficiaries	Not yet available	
Potential affected people	Not yet known	
COMMUNITY ASSESTS that can be affected by the subproject works	The following will be determined during the ESIA: Church School Market area Dump sites	Bus stops are found in many areas of the project areas
Important Organizations of the project area to consider for consultations	The following will be determined during the ESIA: Community Association of the Village NGO – wetlands for ever Farmers organizations	
PUBLIC SERVICES AND ECONOMIC ACTIVITIES		
Water Resources	Musanze like many urban areas in Rwanda is challenged in provision of water for domestic, agricultural and industrial uses.	

Water Supply	90.8% of households have access to improved source of drinking water as per the RPHC5[18]. Public standpipes and protected springs were used by 60.0% and 23.3% respectively while 4.6 % still used unimproved drinking water. It took 7.5 min to get to an improved drinking water source in 2013/2024 while 24% of households took 0-4 min to an improved drinking water source, 43.9% took 5-14 min, 11.8% took 15-29min and 1.8% from 30-59 min.
Energy	62.9% of households have access to electricity of which 58.7% use grid electricity as per the RPHC5. All households used charcoal or firewood for cooking with firewood standing at 73.9% and charcoal at 21%.
Roads and Transportation	It took 31.2% of the district population up to 19 min to walk to the nearest bus stop in 2016.
Housing	84.7% of homes are roofed by iron sheets while 15.1% are roofed by local tiles. 54.3% of houses have walls built with sun-dried bricks whereas 24.6% of houses have walls built from wood with mud without cement. In the district, 76.4% of households reside in planned rural settlements. Regarding household tenure, 77.1% own their private households.
Solid Waste and Sanitation	138,630 kg/day solid waste is expected from the city this year. No primary waste collection service for more than 52.3% of residents. RPHC5 indicates that 49.3% of households in Musanze district dispose waste by household compost dumping; 33.6% dump in the household's fields or bush; 9.3% dispose waste through waste collection companies; 5.7% of households use public compost dumping; and 0.4% burn wastes.
Fire service	The closest fire station will be located during the preparation of the ESIA.
Prevalence of medical insurance	The findings of RPHC5 show that 98.2% of the male and 98.3% of females, have medical insurance coverage, of which 90.5% are covered by Mutuelle; 6% by RSSB; 0.6% private; and 2.7% by employer.
Health Clinic	

[18] **National Institute of Statistics of Rwanda (NISR); The Fifth Rwanda Population and Housing Census, Main Indicators Report, February 2023**

PHOTOS PROJECT AREA	
	**Flood control infrastructure in Musanze**

NGORORERO DISTRICT

ENVIRONMENTAL, SOCIAL AND GEO-PHYSICAL BASELINE INFORMATION OF THE PROJECT AND DIRECT INFLUENCE AREA. BASED ON LITERATURE REVIEW. VCRP, May 2023		
DISTRICT	NGORORERO	
Total area of the district:	679 km^2	
Proposed interventions	To be determined	
Project areas:	To be determined	
Component	Components 1 and 2	
Estimated budget allocation	To be confirmed	
Distance from Kigali	2hrs	
PHYSICAL CHARACTERISTICS OF THE PROJECT AREA		
ESTIMATED GEOGRAPHICAL LOCATION OF EXPECTED WORKS		
LOCATION:		

Hydrological and national road network map of Ngororero district in the context of the Volcanoes region and the Vunga corridor region.	

CLIMATE	The Climate of the region is more of the tropical type with 4 seasons (short rainy season of October-December; short dry season from January-February; long rainy season of March-June and long dry season of July-September. Rainfall is regular with a rainfall of 1527.7mm per year although irregularities are recorded sometimes with weakness or excess in rainfall.
TOPOGRAPHY.	The district has a relief characterized by high mountains with very steep slopes that flow into valleys. The altitude varies between 1,460 m and 2,883 m above sea level. The average annual temperature is 18°C which varies with the altitude. The average altitude is at 1,500 meters.
HYDROLOGY	The main rivers in the district are Nyabarongo, Rubagabaga, Mukungwa, Satinsyi, Muhembe, Kibirira, Rukubi, Kintiti, Nyampiri, Mugunda, Giciye, Rucanzogera, Nyantanga and Gasumo.
Geology and soils	To be established
Climate & other Natural Hazards	In Ngororero district, 12 of its 13 sectors are concerned in VCRP. The district has been facing frequent landslides. The high steep slopes combined with land over-exploitation due to intense agriculture activities result in soil degradation. The soil erosion status as per IUCN report,2022, all sectors concerned in VCRP have some risks on soil erosion. The annex 11 presents the risks per sector. The erosion risk is high in all sectors with the percentage above 70. Muhororo sector has a very high risk of erosion with 96% of its total land while the Matyazo sector has the risk of erosion of 71% of its total land.

	About existing erosion control practices in Ngororero district, only 20% of land at risk is protected by forests (8440 hectares), contour bank terraces or progressive terraces with ditches (87 hectares), and bench terraces (3226 hectares). The highest protected sectors are Sovu with 32% of its land at risk protected, followed by Kabaya where 28% of the total land at risk is protected and Bwira with 24% of land protected. The least protected sectors are Ngororero with only 13% protected, Matyazo (only 14% protected), Gatumba (15%) and Hindiro (16% protected).	
ENVIRONMENTAL CHARACTERISTICS		
Forest Cover	Forests in Ngororero District cover 14,793 ha, about 22% of total district land area of which 14,556 ha are forest plantations and 207 ha are natural forests (part of Gishwati-Mukura National Park) located in Ndaro sector[19].	
Land Use	The land is mainly exploited for growing crops and animal raising. The land available for agriculture is 43,761 ha[20] which includes marshlands for agriculture and upland for agriculture.	
Environmental conditions	The district is endowed with fauna essentially composed of different species of eagles, ravens, owls, pigeons, sparrows, and crowned cranes. The vegetation is mostly dominated by eucalyptus.	
Main habitats	Modified Habitats: To be established Natural habitats: The main remarkable natural habitats are Gishwati and Mukura natural forests which were adopted as national parks.	
Biodiversity	Ngororero District has a relief characterized by high mountains with very steep slopes that flow into valleys. The higher peaks are found in Gishwati-Mukura National Park along the Congo-Nile Divide. The most remarkable forest is Gishwati-Mukura National Park. Other vegetation is mostly dominated by eucalyptuses and cypress plantations. The fauna is essentially composed of birds of different species found in the Gishwati-Mukura National Park.	
	ENDEMIC	NA
	Endangered species	***Martial Eagle (Polemaetus bellicosus) Grey Crowned Crane (Balearica regulorum) Shelley's Crimsonwing (Cryptospiza shelleyi)***
	Critical Endangered species	***Hooded Vulture (Necrosyrtes monachus), White-backed Vulture(Gyps africanus), White-headed Vulture (Trigonoceps occipitalis)***

[19] Rwanda Forest Cover Mapping, November 2019

[20] MINAGRI(2019), Atlas of Rwanda – Agriculture Land Boundaries

	Vulnerable	***African Cherry (Prunus Africana), L'Hoest's Monkey (Allochrocebus lhoesti), African Golden Cat(Caracal aurata)***
	Migratory species	NA
	Congregational species	NA
	Rare or species of cultural value	NA
	Waste disposal sites	
SOCIO ECONOMIC CHARACTERISTICS		
Population of district (National Institute of Statistics of Rwanda (NISR); The Fifth Rwanda Population and Housing Census, Main Indicators Report, February 2023)	Total population: 367,955 population with a male population of **171,065 and 196,890 female** population (Source: RPHC5) Number of households: **92,623** households of which **32.1**% are female headed. The mean size of the household is 4. (Source: RPHC5)	
Economic status of the district	Employment status: 52.9% labor force participation rate and 40.6% employment-to-population ratio. (Source: Rwanda Labor Force Survey, 2021) Agriculture status: 88.6% of the households practice agriculture of which 82.1% are in crop farming; 73% in livestock husbandry; 55% in horticulture; 0.6% in apiculture. (Source: RPHC5)	
Villages names to be benefited	To be confirmed	
Villages to be affected	To be confirmed	
Beneficiaries expected number	To be confirmed	
Potential affected people	To be confirmed	
COMMUNITY ASSESTS that can be affected by the subproject works	The following will be determined during the ESIA: Church School Market area Dump sites	
Organizations important of the project area to	The following will be determined during the ESIA: Community Association of the Village NGO – wetlands for ever	

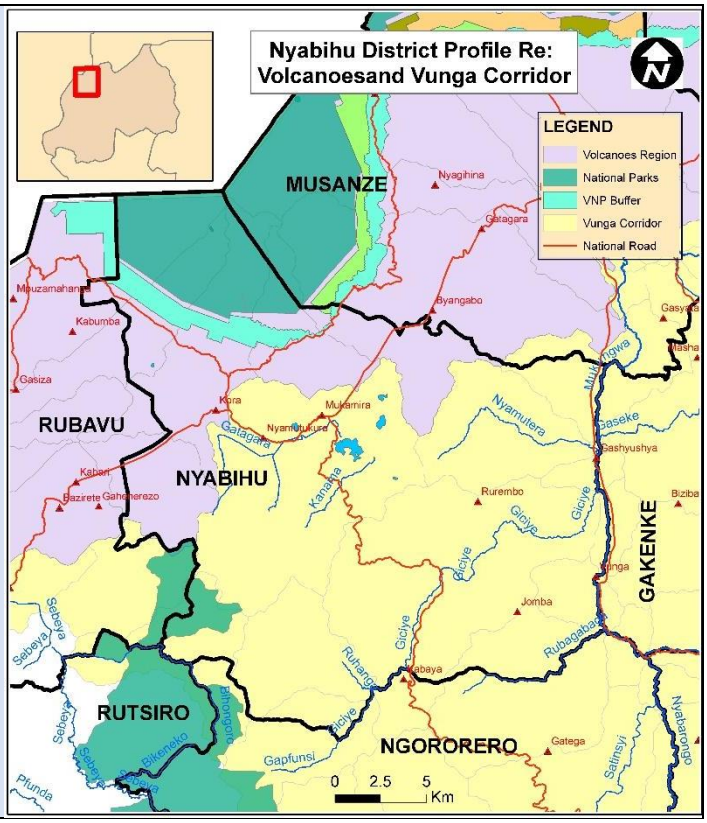
consider for consultations	Farmers organizations
PUBLIC SERVICES AND ECONOMIC ACTIVITIES	
Water Resources	Ngororero district has different rivers that allow practicing agriculture in swamps throughout the year even during dry seasons. In addition, it offers an opportunity for energy generation through hydropower plants.
Water Supply	68.6% of households in Ngororero district have access to improved drinking water. The main source of drinking was is a protected spring/well for 43.7% whereas 25.4% access their drinking water through unprotected spring/well. The remaining 20.1% access their drinking water via public tap out of the compound.
Energy	As per the RPHC5 findings, only 40.5% of households have access to electricity of which 27.4% use grid electricity. 94.9% of the households in Ngororero use firewood for cooking
Roads and Transportation	The Ngororero DDS 2018-2024 specifies that the district lacked adequate infrastructure such as feeder roads and good roads in urban areas.
Housing	The RPHC5 states that 77.4% of housing units have a roof made from local tiles while the rest 22.3% have a roof made from iron sheets. The main material of the wall is sun-dried bricks for 96% of households. In the district, 60.4% of households reside in planned rural settlements. Regarding household tenure, 86.9% own their private households.
Solid Waste and Sanitation	RPHC5 indicates that 51.2% of households in Ngororero district dump wastes in the household's fields or bush; 45% dispose waste by household compost dumping; 2.4% of households use public compost dumping; 0.3% dispose waste through waste collection companies; and 0.2% burn wastes.
Fire service	To be located
Prevalence of medical insurance	The findings of RPHC5 show that for both sex, 98.6% have medical insurance coverage, of which 96.4% are covered by Mutuelle; 3% by RSSB; 0.1% private; and 0.5% by employer.
Health Clinic	To be located
PHOTOS OF PROJECT AREA	

Flood and river sedimentation in Ngororero district	

NYABIHU DISTRICT

ENVIRONMENTAL, SOCIAL AND GEO-PHYSICAL BASELINE INFORMATION OF THE PROJECT AND DIRECT INFLUENCE AREA. BASED ON LITERATURE REVIEW. VCRP, May 2023		
DISTRICT	NYABIHU	
Total area of the district:	531.1km^2	
Proposed interventions	To be determined	
Project areas:	To be determined	
Component	Components 1 and 2	
Estimated budget allocation	To be confirmed	
Distance from Kigali	2hr30	
PHYSICAL CHARACTERISTICS OF THE PROJECT AREA[21]		
ESTIMATED GEOGRAPHICAL LOCATION OF EXPECTED WORKS		
LOCATION:		

[21] Nyabihu District Development Strategy 2018-2024

Hydrological and national road network map of Nyabihu in the context of the Volcanoes region and the Vunga corridor region.	

CLIMATE	Precipitation is almost uniformly over every month and close to 1400 mm per year. It has a temperate climate with an average temperature of 150 C favourable for the growth of the agro-pastoral products throughout the year with less risk of development of bacteria and diseases.
TOPOGRAPHY.	The relief of Nyabihu District is characterized by 90% rugged mountains with a slope of more than 55% creating a high risk of erosion hence the need for the establishment of effective mechanisms for control and prevention of erosion and other harms associated with climate change is very high.
HYDROLOGY	Despite heavy precipitations, the area suffers from the lack of water sources given a poor hydrographical network. The flow of water comes from ephemeral streams of torrential nature, such as the Susa and its tributary streams. The very strong slope upstream explains the fact that they are torrential. The volcano sloping flanks have an average slope of more than 60 %, over 2 200 m. When it rains, the water is raced down the flanks at high speed towards the piedmont, hauling everything in its way: animals, people, lava blocks, etc. The water from the numerous torrents racing down the slopes causes a lot of damages (flooding, sanding and sapping of banks). The water bodies are supposedly numerous and the water is abundant, but those bodies are approximately at a depth of 100 m6 . This is due to the fact that those water

	bodies are located in old depression of the basement (synclines and pockmarks) covered by lava.
Geology and soils	The characteristic of the soil in Nyabihu district is sandy and clay, laterite, and volcanic. During the dry season soil is quite dusty although during the rainy season they filter the water rather than holding it. Because they don't contain any clay, they are not compact at all. The lava is so altered that it has resulted in black soil, salty, rich in humus and very fertile but with high porosity. In some places, the lava is intact and presents itself in various sizes, from pebbles to blocks of 100 kg and even more. The bedrock can sometimes be found at a depth of less than one meter. Nyabihu has different minerals including Colombo Tantalic, Cassetelite, Wolfram, and Uranium.
Climate & other Natural Hazards	In Nyabihu district, all sectors are concerned in VCRP. Those sectors have been facing different environmental issues/disasters at different periods. Among them, we can mainly list the following: Flooding, erosion and landslides. In volcanoes area of Musanze District there 2 gullies which are responsible to the flooding due to lack of appropriate drainage system; Gullies with no outlets which end up spreading water in crop fields and in the area with housing. The soil erosion status as per IUCN report,2022, all sectors concerned in VCRP have some risks on soil erosion. The annex 11 presents the risks per sector. Rurembo sector has a high risk to erosion with 78% of its total land with Kabatwa sector has a low risk to erosion with 29% of its total land. About existing erosion control practices in Nyabihu district, only 30% of land at risk is protected by forests (3362 hectares), contour bank terraces or progressive terraces with ditches (226 hectares), and bench terraces (5342 hectares). The highest protected sectors are Rambura with 48% of its land at risk protected, followed by Kabatwa where 36% of the total land at risk is protected and Muringa with 35% of land protected. The least protected sectors are Rugera with only 13% protected, Rurembo (only 14% protected), Shyira (22%) and Jomba (23% protected). In the case of landslides, their onset is sudden, but these events are predictable. Most of the time, these landslides are small in terms of surface affected, although there are many, scattered all over the sectors. Massive landslides can take place, although it is not as frequent as expected. In this case, landslides can affect several land plots and disrupt the commercial activities of the areas, because the roads get blocked (Rapid risk and capacities assessment and livelihoods profiling in Nyabihu, Musanze and Burera districts affected by floods and landslides (January 2012) - Rwanda | ReliefWeb).

ENVIRONMENTAL CHARACTERISTICS		
Forest Cover	Forests in Nyabihu District cover 15,001 ha, about 28% of total district land area of which 10,471 ha are forest plantations and 4,473 ha are natural forests (about 2,865 ha of Volcanoes National Park located in Kabatwa, 1,278 ha in Jenda and 330 ha in Bigogwe sectors)[22].	
Land Use	Land is mainly exploited for growing crops and animal raising. The land available for agriculture is 26,172 ha[23]	
Environmental conditions	The district is endowed with natural resources such as forests, minerals, and marshlands as well as rivers distributed across the district	
Main habitats	Modified Habitats: None Natural habitats: To be confirmed	
Biodiversity	In terms of fauna and flora, the newly established Gishwati-Mukura National Park is located in the southwestern part of Nyabihu District. In the North-Western part, the district borders Volcano National Park. In addition to the biodiversity of these two parks, Nyabihu District has various small forest plantations, scattered across the district, and mostly privately owned. The Eucalyptus species dominate the forests plantations, followed by Pinus spp. and Alnus spp. The wildlife diversity of Nyabihu District is mainly hosted in the natural GMNP and VNP as described above, and other ecosystems including water bodies and forest plantations present in the district.	
	ENDEMIC	NA
	Endangered species	***Martial Eagle (Polemaetus bellicosus) Grey Crowned Crane (Balearica regulorum), Shelley's Crimsonwing (Cryptospiza shelleyi)***
	Critical Endangered species	***Hooded Vulture (Necrosyrtes monachus), White-backed Vulture (Gyps africanus), White-headed Vulture (Trigonoceps occipitalis)***
	Vulnerable	***African Cherry (Prunus Africana), L'Hoest's Monkey(Allochrocebus lhoesti), African Golden Cat(Caracal aurata)***

[22] Rwanda Forest Cover Mapping, November 2019

[23] MINAGRI(2019), Atlas of Rwanda – Agriculture Land Boundaries

	Migratory species	NA
	Congregational species	NA
	Rare or species of cultural value	NA
Waste management	At the district level, the common mode of waste disposal is household compost dumping which accounts for 51.7% followed by throwing waste in the household's fields or bushes standing at 39.5%. Source: RPHC5	
	Waste disposal sites	
SOCIO ECONOMIC CHARACTERISTICS		
Population of district (National Institute of Statistics of Rwanda (NISR); The Fifth Rwanda Population and Housing Census, Main Indicators Report, February 2023)	Total population: 319,047 population with **a male population of 150,072 and 168,975 female** population (Source: RPHC5) Number of households: **76,391** households of which **30.9**% are female headed. The mean size of the household is 4.2. (Source: RPHC5)	
Economic status of the district	Employment status: 57.3% labor force participation rate and **42.8**% employment-to-population ratio. (Source: Rwanda Labor Force Survey, 2021) Agriculture status: 73.5% of the households practice agriculture of which **64.3**% are in crop farming; **51.9**% in livestock husbandry; **39.1**% in horticulture; **0.3**% in apiculture. (Source: RPHC5)	
Villages names to be benefited	Not yet available	
Villages to be affected	Not yet available	
Beneficiaries expected number	Not yet available	
Potential affected people	To be confirmed	
COMMUNITY ASSESTS that can be affected by the subproject works	The following will be determined during the ESIA: Church School Market area Dump sites	
Organizations important of the project area to consider for consultations	The following will be determined during the ESIA: Community Association of the Village NGO – wetlands for ever Farmers organizations	
PUBLIC SERVICES AND ECONOMIC ACTIVITIES		
Water Resources	Nyabihu District suffers from the lack of water sources given a poor hydrographic network.	

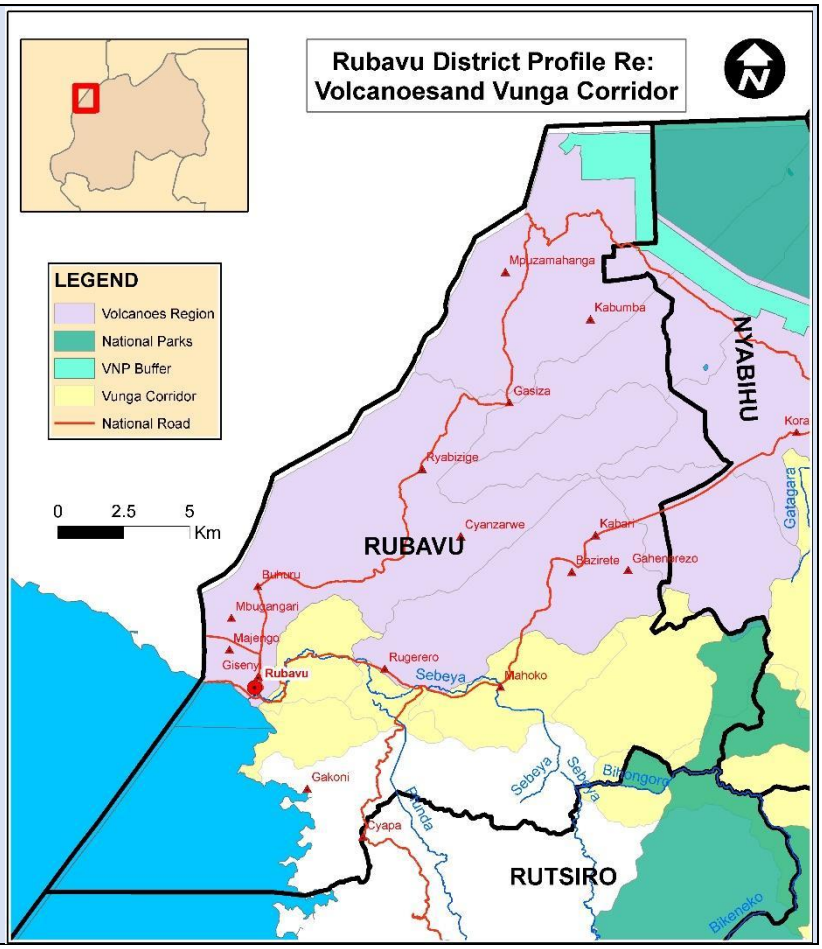
Water Supply	77.9% of households in Nyabihu district have access to improved sources of drinking water as per the RPHC5[24] with 31.9% getting their water from protected spring/well and 30.1% getting their drinking water from public tap out of the compound.
Energy	The RPHC5 states that 47% of Nyabihu residents possess electricity and 85.6% use firewood for cooking while 13.6% use charcoal.
Roads and Transportation	The Nyabihu DDS highlights that district roads are in poor conditions due to different reasons including damages caused by heavy rainfalls and water flows from Volcanoes National Park which damage roads and bridges. Access to public transport is still a challenge as only a few people (26.9%) live between 0-19mins walking distance from the nearest public transport while 42.3% live in 60-119 minutes walking distance to the public transport stage (EICV5).
Housing	The findings of the RPHC5 show that 54.2% of houses are covered by iron sheets and 45.5% with local tiles. Regarding the main material of the wall, 83.3% of houses are made of walls from sun-dried bricks. 93.3% were single house dwelling as reported by the EICV5. In the district, 61.8% of households reside in planned rural settlements. Regarding household tenure, 79.1% own their private households.
Fire service	To be located
Prevalence of medical insurance	The findings of RPHC5 show that for both sex, 98.5% have medical insurance coverage, of which 94.6% are covered by Mutuelle; 3.6% by RSSB; 0.1% private; and 1.4% by employer.
Health Clinic	To be located
PHOTO OF PROJECT AREA	

[24] National Institute of Statistics of Rwanda (NISR); The Fifth Rwanda Population and Housing Census, Main Indicators Report, February 2023

Typical topography in Nyabihu district	

RUBAVU DISTRICT

ENVIRONMENTAL, SOCIAL AND GEO-PHYSICAL BASELINE INFORMATION OF THE PROJECT AND DIRECT INFLUENCE AREA. BASED ON FIELD VISITS AND LITERATURE REVIEW. RWANDA, VCRP, May 2023		
DISTRICT	Rubavu	
Total area:	388.3 Km^2	
Proposed interventions	To be determined	
Project areas:	To be determined	
Component	Components 1 and 2	
Estimated budget allocation	To be confirmed	
Distance from Kigali	3 hours	
PHYSICAL CHARACTERISTICS OF THE PROJECT AREA		
ESTIMATED GEOGRAPHICAL LOCATION OF EXPECTED WORKS		
LOCATION:	Located on the Lava Soil of the Virunga Massive in the footsteps of the active volcano Mount Nyiragongo	

Hydrological and national road network map of Rubavu in the context of the Volcanoes region and the Vunga corridor region.	

CLIMATE	Temperature range is 15-25°C. Rainfall averages at 1,200 mm/year
TOPOGRAPHY.	Plain and mountainous topography with altitude range 1500 to 1700 m.a.s.l. on the Lake Kivu.
HYDROLOGY	Rubavu is drained into Lake Kivu mainly by the Sebeya River and its tributary River Pfunda. Sebeya often burst its banks with heavy rains causing severe destruction including taking lives and livestock, destroying property, infrastructure, and crops as well as landslides.
Geology and soils	Rich but shallow volcanic soils formed from the decomposition of lava. This contrasts with the southeastern side where soils are mainly sandy clays, which are deep and often acidic. In the southeast, erosion is high and this leaches nutrients out of the soil. The Sebeya River catchment has steep slopes and the soils are easily leached and eroded during the high intensity rains. 47.9% of the soils are protected from soil erosion through terracing, agroforestry, and other interventions.
Climate & other Natural Hazards	In Rubavu district, all sectors are concerned in VCRP. Sebeya river often burst its banks with heavy rains causing severe flooding, erosion and landslides. The soil erosion status as per IUCN report,2022, all sectors concerned in VCRP have some risks on soil erosion. The annex 11 presents the risks per sector. Bugeshi sector has a high risk of erosion with 86% of

	its total land while the Rubavu sector has a low risk of erosion with 12% of its total land. About existing erosion control practices in Rubavu district, only 18% of land at risk is protected by forests (898 hectares) and bench terraces (1379 hectares). The highest protected sectors are Mudende with 36% of its land at risk protected, followed by Bugeshi where 27% of the total land at risk is protected, Gisenyi Sector where 25% is protected and Busasamana with 23% of land protected. The least protected sectors are Rubavu with only 3% protected, Nyamyumba (only 5% protected), Rugerero (8%) and Kanzenze (9% protected).
ENVIRONMENTAL CHARACTERISTICS	
Forest Cover	Forests in Rubavu District cover 6,258 ha, about 18% of total district land area of which 5,451 ha are forest plantations and 804 ha are natural forests, remnant Gishwati forest reserve located in Nyakiriba sector (468 ha), Kanzenze (211 ha), and Kanama sector (118 ha). Gishwati forest reserve is shared with three other districts – Nyabihu, Ngororero and Rutsiro.
Land Use	The total area for agriculture in Rubavu is equivalent to 22,372 ha[25]. For urban area of Rubavu city is 5,000 ha and Rwanda Housing Authority has planned to develop 505.6 ha. Agriculture or open land, covers 83.3% of the total district land cover. 41% of the urban area of Rubavu is residential and 30% agriculture.
Environmental conditions	Project area includes rural areas with important habitats for birds.
Main habitats	Modified Habitats: None Natural habitats: none in the urban area Critical habitat: is there any? Integrated Biodiversity Assessment Tool (IBAT) report generated on 2 Feb 2020 did not indicate any Key Biodiversity Areas within 2.0 km (radius/buffer) of the area of interest (city centre).
Biodiversity	Rubavu District is endowed with a natural forest of Gishwati which it shares with three other districts (Nyabihu, Ngororero and Rutsiro). Forest coverage in the district has, however, been decreasing in the last 2 decades and currently stands at 42%. The forest contains several bird species that are a huge potential for the district's tourism sector. Rubavu Districts borders Lake Kivu, which hosts at least 43 fish species. Some of the most notable fish species found in Lake Kivu include the *Haplochromis, Limnothrissa*, and *Stolothrissa* species. The lake is also home to other aquatic species, including invertebrates, crustaceans, and mollusks. Lake Kivu's shores are also rich in plant life, with a variety of aquatic and wetland plant species found in the lake's marshy areas. The lake's vegetation provides important habitat for a variety of bird species, including the African fish eagle, the pied kingfisher, and the malachite kingfisher, etc.

[25] Minagri(2019). Atlas of Rwanda. Agriculture Land Boundaries.

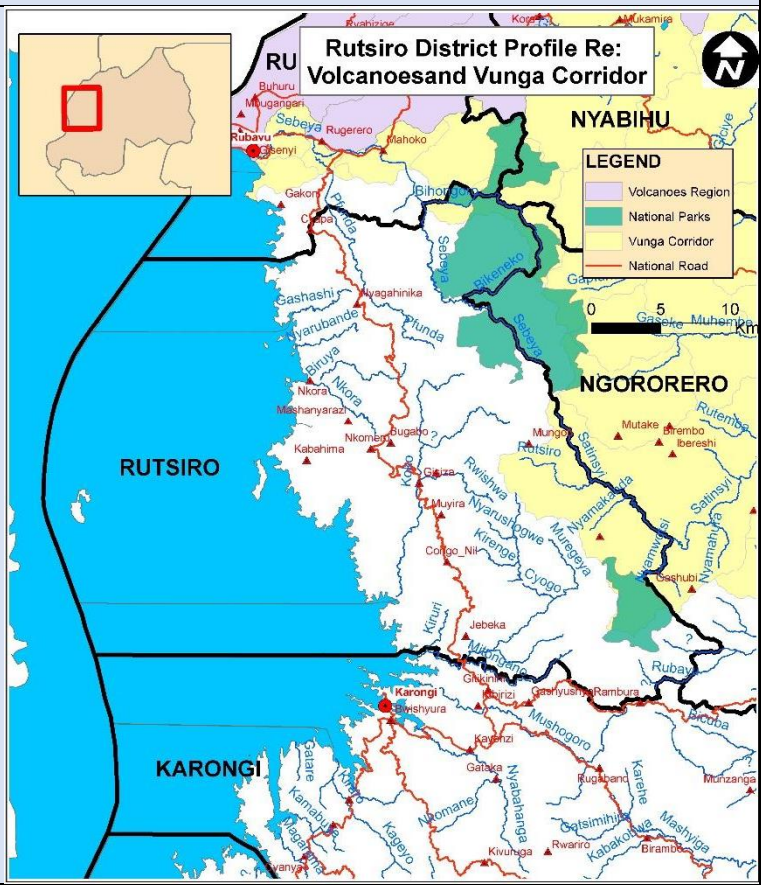
	Rubavu District, along with the neighboring districts of Nyabihu, Ngororero, and Rutsiro, comprises parts of Gishwati Forest, which is part of Gishwati-Mukura National Park (GMNP). The park is characterized by its dense forests and bamboo stands. The park is home to a variety of plant and animal species, including several primate species such as chimpanzees, golden monkeys, and colobus monkeys. The park is also home to various bird species, including the Albertine Rift endemic species. GMNP plays a critical role in conserving the biodiversity of the region and is an important conservation area in Rwanda. The Vegetation includes a variety of plant species including bamboo (*Yushania alpina*), *Symphonia globulifera, Myrianthus holstii, Macaranga Capensis, Polyscias fulva, Entandrophragma excelsum*, etc. The forest also hosts various mammals, including chimpanzees, monkeys, serval, genet, African civet, side-striped jackal, Ruwenzorisun squirrel, etc. Birds include also a wide diversity including Sunbirds, Turacos, Handsome francolin, Martial Eagle, Grey-crowned crane, etc	
	ENDEMIC	NA
	Endangered species	***Martial Eagle (Polemaetus bellicosus) Grey Crowned Crane (Balearica regulorum), Shelley's Crimsonwing (Cryptospiza shelleyi)***
	Critical Endangered species	***Hooded Vulture (Necrosyrtes monachus), White-backed Vulture (Gyps africanus), White-headed Vulture (Trigonoceps occipitalis)***
	Vulnerable	***African Cherry (Prunus Africana), L'Hoest's Monkey(Allochrocebus lhoesti), African Golden Cat(Caracal aurata)***
	Migratory species	NA
	Congregational species	NA
	Rare or species of cultural value	NA
Waste management	No primary waste collection service for more than 50% of city	
	Waste disposal sites	Not available
SOCIO ECONOMIC CHARACTERISTICS		
Population of district (National Institute of Statistics of Rwanda (NISR); The Fifth	Total population 546,683 with **a male population of 267,299 and 279,384 female population**.	

Rwanda Population and Housing Census, Main Indicators Report, February 2023)	Number of households: **124,080** households of which **28.2**% are female headed. The mean size of the household is 4.3. (Source: RPHC5)	
Economic status of the district	Employment status: 57.6% labor force participation rate and 45.7% employment-to-population ratio. (Source: Rwanda Labor Force Survey, 2021) Agriculture status: 45.9% of the households practice agriculture of which 34% are in crop farming; 29.9% in livestock husbandry; 29.8% in horticulture; 0.1% in apiculture. (Source: RPHC5)	
Villages names to be benefited	Not yet available	
Villages to be affected	Not yet available	
Beneficiaries expected number	Not yet available	
Potential affected people	If this information is known from the RPF please include	
COMMUNITY ASSESTS that can be affected by the subproject works	The following will be determined during the ESIA: Church School Market area Dump sites	Bust stops are found in many areas of the project areas
Organizations important of the project area to consider for consultations	The following will be determined during the ESIA: Community Association of the Village NGO – wetlands for ever Farmers organizations	
PUBLIC SERVICES AND ECONOMIC ACTIVITIES		
Water Resources	Rubavu especially as a frontier city is challenged in provision of water for domestic, agricultural and industrial uses.	
Water Supply	93.5% of households have access to improved source of drinking water as per the RPHC5 findings.	
Energy	71.4% of households have access to electricity of which 67.8% use grid electricity as per the findings of the RPHC5. The report further states that 56.3% of households use firewood for cooking and 38.8% use charcoal.	
Roads and Transportation	21.2% of took 19min to the nearest transport stage in 2016 while 33.3% took between 20-59min. Water transport on Lake Kivu is being improved with new terminals and ships and will connect the city of Rubavu with those of Rusizi and Karongi. Gisenyi Airport, together with Goma Airport, serves nearby towns including Goma in the DRC.	

Housing	77.7% of the households in Rubavu are roofed by iron sheets while 21.9% are roofed by local tiles. The walls are made from sun-dried bricks for 77.2% of the houses and 11.5% from wood with mud without cement. In the district, 70.7% of households reside in planned rural settlements. Regarding household tenure, 67.2% own their private households.
Solid Waste and Sanitation	246,707 kg/day solid waste expected from city this year. RPHC5 indicates that 47.1% of households in Rubavu district dump wastes in the household's fields or bush; 30.1% dispose waste by household compost dumping; 11.2% dispose waste through waste collection companies; 8.1% of households use public compost dumping; and 1.1% burn wastes.
Fire service	To be located
Prevalence of medical insurance	The findings of RPHC5 show that for both sex, 95.6% have medical insurance coverage, of which 93.3% are covered by Mutuelle; 4.1% by RSSB; 0.4% private; and 1.9% by employer.
Health Clinics	To be located
PHOTO OF PROJECT AREA	
Type of roads and housing infrastructures in Rubavu district	

RUTSIRO DISTRICT

ENVIRONMENTAL, SOCIAL AND GEO-PHYSICAL BASELINE INFORMATION OF THE PROJECT AND DIRECT INFLUENCE AREA. VCRP May 2023		
DISTRICT	RUTSIRO	
Territory:	1,157.3 km²	
Proposed interventions	To be determined	
Project areas:	To be determined	

Component	Components 1 and 2	
Estimated budget allocation	To be confirmed	
Distance from Kigali	4 hours	
PHYSICAL CHARACTERISTICS OF THE PROJECT AREA		
ESTIMATED GEOGRAPHICAL LOCATION OF EXPECTED WORKS		
LOCATION:	Rutsiro district is located at the heart of the Mount Crete Congo-Nile and Lake Kivu coastal areas.	
Hydrological and national road network map of Rutsiro in the context of the Volcanoes region and the Vunga corridor region.		

CLIMATE	Tropical climate is characterized by a succession of rainy seasons & droughts. The temperature range is 20^0-24°C. Rainfall increases gradually as we approach the mountains chain of the Congo-Nile covered by the Gishwati forest.
TOPOGRAPHY.	The relief of Rutsiro District is characterized by a chain of mountains and plateaus with an average altitude of 2,000 m and 1,600 m. The relief of the district is further characterized by the Congo Nile Mountains hosting Gishwati natural forest.
HYDROLOGY	Rutsiro has significant water reservoirs dominated by Lake Kivu in the west and several other rivers some head to the Congo basin and others flow to the Nile basin. The most important of these rivers which flow to the Congo basin are Muregeya, Koko, Nyangore, Gashashi Kimbili, Nyamwenda,

	Bihongora, Bikeneko, and Sebeya. The rivers that flow to the Nile basin include, Satinskyi, Nyamwotsi, and Kiguhu. The water resource in Rutsiro is threatened by the high erosion risks due to high and steep slopes with arable lands, high mining activities also causes sedimentation into rivers.
Geology and soils	Rutsiro soils are basaltic, generally permeable, and rich in iron. It is an acid soil pH with an average content of clay group karyokinesis. In some places along Lake Kivu, there are sometimes derived soils phyllodes, clay, hard, containing quartz crystals and semi-strongly leached quartz which are very susceptible to erosion and therefore less fertile.
Climate & other Natural Hazards	In Rutsiro district, 6 of its 13 sectors are concerned in VCRP. Rutsiro district is highly exposed to heavy rains that cause high erosion and landslides. The soil erosion status as per IUCN report,2022, all sectors concerned in VCRP have some risks on soil erosion. The annex 11 presents the risks per sector. Manihira sector has a very high risk of erosion with 93% of its total land while Nyabirasi sector has a risk to erosion of 64% of its total land. About existing erosion control practices in Rutsiro district, only 27% of land at risk is protected by forests (7503 hectares), Contour bank terraces (4077 hectares) and bench terraces (1,398 hectares). Considering VCRP sectors, the highest protected are Murunda with 58% of its land at risk protected, followed by Manihira with 33% of land protected. The least protected sector and Nyabirasi (19% protected).
ENVIRONMENTAL CHARACTERISTICIS	
Forest Cover	Forests in Rutsiro District cover 20,041 ha, about 30% of total district land area of which 16,359 ha are forest plantations and 3,682.5 ha are natural forests of Mukura-Gishwati National Park mainly located in Mukura sector (1616.5ha), and Rusebeya sector (403.5ha) for Mukura natural forest, and Nyabirasi (832ha), Kigeyo (346.2ha), and Ruhango (321.1ha) for Gishwati natural forest.
Land Use	Land use in Rutsiro is dominated by the agriculture and mining sectors. The land available for agriculture is equivalent to 33,341ha[26]
Environmental conditions	The district is characterized by a chain of mountains and rivers spread throughout the district. Due to its topography, the district is exposed to persistent floods which negatively affect the socio-economic conditions of the district.
Main habitats	Modified Habitats: to be established Natural habitats: to be established Critical habitat: to be established
Biodiversity	The two main floral and faunal habitats found in Rutsiro District are Gishwati-Mukura National Park located in the North-East, and Lake

[26] Minagri (2019), Atlas of Rwanda, Agriculture Land Boundaries

	Kivu located in the West. As is the case with other districts, Rutsiro also comprises various privately owned Eucalyptus plantations found in various parts of the district. Also, important to note the relief of Rutsiro District which is characterized by a chain of mountains dominated by a series of parallel ridges and valleys that run in a north-south direction, further characterized by the Congo Nile Mountains. The ridges are steep and are separated by narrow valleys and river systems.	
	ENDEMIC	NA
	Endangered species	***Martial Eagle (Polemaetus bellicosus) Grey Crowned Crane (Balearica regulorum), Shelley's Crimsonwing (Cryptospiza shelleyi)***
	Critical Endangered species	***Hooded Vulture (Necrosyrtes monachus), White-backed Vulture (Gyps africanus), White-headed Vulture (Trigonoceps occipitalis)***
	Vulnerable	***African Cherry (Prunus Africana), L'Hoest's Monkey (Allochrocebus lhoesti), African Golden Cat(Caracal aurata)***
	Migratory species	NA
	Congregational species	NA
	Rare or species of cultural value	NA
SOCIO ECONOMIC CHARACTERISTICS		
Population of district (National Institute of Statistics of Rwanda (NISR); The Fifth Rwanda Population and Housing Census, Main Indicators Report, February 2023)	Total population: 369,180 population with **a male population of 176,498 and 192,682 female** population Number of households: **86,802** households of which **28.7**% are female headed. The mean size of the household is 4.2. (Source: RPHC5)	
Economic status of the district	Employment status: 56.7% labor force participation rate and 47.4% employment-to-population ratio. (Source: Rwanda Labor Force Survey, 2021) Agriculture status: 84.1% of the households practice agriculture of which 77.2% are in crop farming; 63% in livestock husbandry; 47.7% in horticulture; 0.4% in apiculture. (Source: RPHC5)	

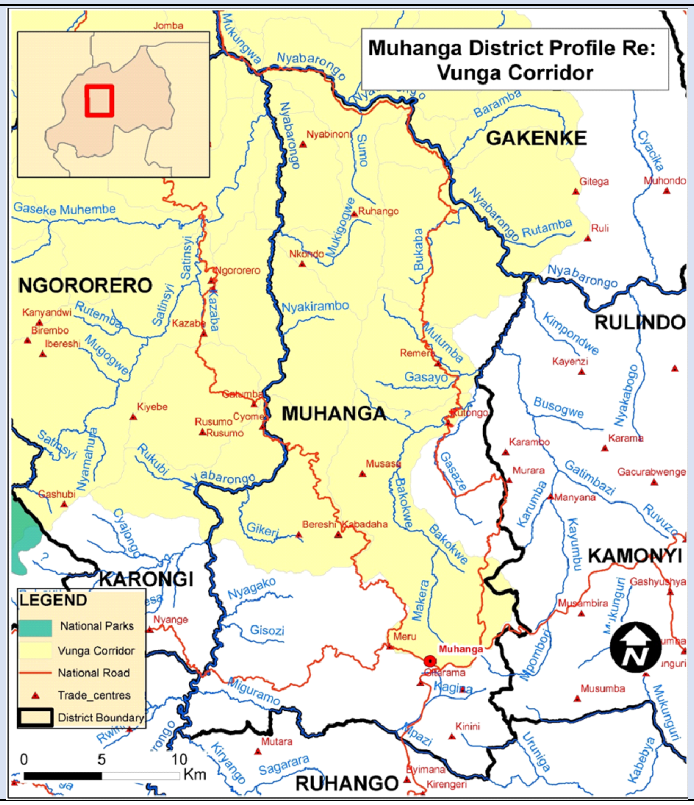
Villages names to be benefited	To be confirmed	
Villages to be affected	To be confirmed	
Beneficiaries expected number	To be confirmed	
Potential affected people	To be confirmed	
COMMUNITY ASSESTS that can be affected by the subproject works	The following will be determined during the ESIA: Church School Market area Dump sites	Bust stops are found in many areas of the project areas
Organizations important of the project area to consider for consultations	The following will be determined during the ESIA: Community Association of the Village xx NGO – wetlands for ever Farmers organizations	
PUBLIC SERVICES AND ECONOMIC ACTIVITIES		
Water Resources	Rutsiro District has significant water reservoirs dominated by Lake Kivu in the west and other several rivers which some head to the Congo basin and others flow to the Nile basin. The most important of these rivers which flow to congo basin are Muregeya, Koko, Nyangore, Gashashi Kimbili, Nyamwenda, Bihongora, Bikeneko and Sebeya. The rivers that flow to Nile basin include, Satinskyi, Nyamwotsi and Kiguhu. The water resource in Rutsiro is threatened by the high erosion risks due to high and steep slopes with arable lands, high mining activities also causes sedimentation into rivers.	
Water Supply	61.2% of households have access to improved source of drinking water as per the RPHC5[27].	
Energy	50.2% of households use electricity of which 42.1% use grid electricity as per the RPHC5 whereas 95.6% of households use firewood for cooking and 3.5% use charcoal.	
Roads and Transportation	The roads in Rutsiro District are not in a good shape, according to EICV4 results indicate that, 73.2% of roads are regularly used, 16.6% are often, and 8.4% are sometimes used while 1.7% of roads in Rutsiro district can't be used at all. Due to poor road networks, public transport is limited; 39.9% of Rutsiro residents don't use public transport, 34.4% sometimes use it and only 17.4% use it regularly. This indicates that Rutsiro district needs to invest heavily in the construction of road networks to foster development, (source EICV4).	

[27] National Institute of Statistics of Rwanda (NISR); The Fifth Rwanda Population and Housing Census, Main Indicators Report, February 2023

Housing	The findings of the RPHC5 show that 86% and 13.6% are covered by local tiles and iron sheets respectively while 95.8% of the houses have walls made from sun-dried bricks. In the district, 80.5% of households reside in planned rural settlements. Regarding household tenure, 85.8% own their private households.
Solid Waste and Sanitation	RPHC5 indicates that 49.9% of households in Rustiro district dispose waste by household compost dumping; 42.8% dump wastes in the household's fields or bush; 5.4% of households use public compost dumping; 0.4% burn wastes; and 0.2% dispose waste through waste collection companies.
Fire service	To be located
Prevalence of medical insurance	The findings of RPHC5 show that for both sex, 97.7% have medical insurance coverage, of which 96.9% are covered by Mutuelle; 2.6% by RSSB; 0.2% private; and 0.4% by employer.
Health Clinic	To be located
PHOTO OF PROJECT AREA	
Constructed terraces in Rutsiro district	

MUHANGA DISTRICT

ENVIRONMENTAL, SOCIAL AND GEO-PHYSICAL BASELINE INFORMATION OF THE PROJECT AND DIRECT INFLUENCE AREA. Rwanda VCRP, May 2023		
DISTRICT	MUHANGA	
Total area of the district:	647.7 km^2	
Proposed interventions	To be determined	
Project areas:	To be determined	
Component	Components 1 and 2	
Estimated budget allocation	To be confirmed	

Distance from Kigali	1 hour	
PHYSICAL CHARACTERISTICS OF THE PROJECT AREA		
ESTIMATED GEOGRAPHICAL LOCATION OF EXPECTED WORKS		
LOCATION:	Located on the central plateau with an altitude range of 1,750 and 1,950 m.a.s.l.	
Hydrological and national road network map of Muhanga district in the context of the Volcanoes region and the Vunga corridor region.		

CLIMATE	Temperatures range between 11^{0}C and 28°C. Rainfall averages at 1028 mm/year
TOPOGRAPHY	Undulating hilly city with gentle to steep slopes.
HYDROLOGY	Drained by Rugando, Nyirabahimba, and Kagina and Rugeramigozi streams characterized by wetland valleys under wetland rice.
Geology and soils	Humus-enriched kaolin derived from granite. Lateritic and granite soils are widespread. Wetlands and valleys covered in clay soils rich in silt and covered in places by alluvium and colluvium.
Climate & other Natural Hazards	In Muhanga district, 10 of its 12 sectors are concerned in VCRP. The soil erosion status as per IUCN report,2022, all sectors concerned in VCRP have some risks on soil erosion. The annex 11 presents the risks per sector. Kabacuzi sector has a very high risk to erosion with 96% of its total land while Shyogwe sector has a low risk to erosion with 29% of its total land. About existing erosion control practices in Muhanga district, only 19% of land at risk is protected by forests (9705 hectares) and Contour bank terraces (37 hectares) and bench terraces (528

	hectares). Considering the sector that are concerned in VCRP, the highest protected are Rongi with 27% of its land at risk protected, followed by Kabacuzi where 24% of the total land at risk is protected and Nyamabuye with 21% of land protected. The least protected sectors are Kibangu with only 14% protected, Cyeza (only 14% protected), Mushishiro (16%) and Muhanga (17% protected).	
ENVIRONMENTAL CHARACTERISTICIS		
Forest Cover	Forests in Muhanga District cover 17,120 ha, about 26% of total district land area of which 16,963 ha are forest plantations and 155 ha are natural forests (mainly Busaga Natural Reserve) located in Rongi sector[28].	
Land Use	The major land use in Muhanga City is mixed agriculture covering 72% of the total land cover.	
Environmental conditions	Project area includes rural areas with important habitats for birds.	
Main habitats	Modified Habitats: Natural habitats: none in the urban area Critical habitat: IBAT (Integrated Biodiversity Assessment Tool) report generated on 2 Feb 2020 indicated that no Key Biodiversity Areas (KBAs) are found within 2.0 km (radius/buffer) of the area of interest (city centre).	
Biodiversity	Most of the current forested area consists of eucalyptus and pinus plantations. However, the District also has a natural forest of 40 ha called Busaga in Ndiza. Surrounded by a buffer zone of Eucalyptus, Grevillea and Alnus species, Busaga has rich plant diversity. The dominant plant species are: *Macaranga neomilbraedina, Maesa lanceolata, Dombeya torrida, Chrysophyllum gorungosanum, Albizia gummifera, Tabernaemontana stapfiana* and *Myrianthus holstii*, etc. The forest also shelters primates such as *Cercopithecus mitis* and various bird species.	
	ENDEMIC	Not available
	Endangered species	NA
	Critical Endangered species	NA
	Vulnerable	NA
	Migratory species	NA
	Congregational species	NA
	Rare or species of cultural value	NA
	Waste disposal sites	The dump site is located about 5 km away from the city centre. Location: not available
SOCIO ECONOMIC CHARACTERISTICS		
Population of district (National Institute of Statistics of Rwanda	Total population: 358,433 population, with **a 173,615 male population and 184,818 female population.**	

[28] Rwanda Forest Cover Mapping, November 2019

(NISR); The Fifth Rwanda Population and Housing Census, Main Indicators Report, February 2023)	Number of households: **93,241** households of which **29.1**% are female headed. The mean size of the household is 3.8. (Source: RPHC5)	
Economic status of the district	Employment status: 54.7% labor force participation rate and 41.7% employment-to-population ratio. (Source: Rwanda Labor Force Survey, 2021) Agriculture status: 79.5% of the households practice agriculture of which 74% are in crop farming; 67.1% in livestock husbandry; 62.6% in horticulture; 0.8% in apiculture. (Source: RPHC5)	
Villages names to be benefited	Not yet available	
Villages to be affected	Not yet available	
Expected number of the beneficiaries	Not yet available	
Potential affected people	Not yet known	
COMMUNITY ASSETS that can be affected by the subproject works	The following will be determined during the ESIA: Church School Market area Dump sites	Bus stops are found in many areas of the project areas
Important Organizations of the project area to consider for consultations	The following will be determined during the ESIA: Community Association of the Village xx NGO – wetlands for ever Farmers organizations	
PUBLIC SERVICES AND ECONOMIC ACTIVITIES		
Water Resources	Muhanga, like many other urban areas in Rwanda, is challenged in the provision of water for domestic, agricultural and industrial uses.	
Water Supply	84.8% of households in Muhanga have access to improved drinking water sources as per the RPHC5 findings.	
Energy	Access to electricity for lighting is at 57.2% in 2022 as per the RPHC5. Firewood and charcoal are the primary fuels used for cooking at 80.9% and 15.9% respectively.	
Roads and Transportation	It takes 19 mins for 87.1% of the population to reach the nearest road and 11.9% take between 20-59 mins to get to the nearest road. Bicycles are the most common mode of transportation, with 7.4% owning one and 0.5% owning a motorcycle.	
Housing	Most of the private housing units are covered by iron sheets and local tiles at 26.8% and 72.9% respectively as per the RPHC5. 88.8% of houses were built with walls made of sun-dried bricks whereas 6.2% were built from burnt bricks.	

	In the district, 67.5% of households reside in planned rural settlements. Regarding household tenure, 77% own their private households.
Solid Waste and Sanitation	65,555 kg/day of solid waste expected from city this year. No primary waste collection service for more than 50% of residents. Dumpsite located about 5 km away from city center. RPHC5 indicates that 46.5% of households in Muhanga district dispose waste by household compost dumping; 42.7% dump wastes in the household's fields or bush; 6.3% dispose waste through waste collection companies; 3.7% of households use public compost dumping; and 0.1% burn wastes.
Fire service	To be located
Prevalence of medical insurance	The findings of RPHC5 show that for both sex, 98% have medical insurance coverage, of which 92.9% are covered by Mutuelle; 5.4% by RSSB; 0.4% private; and 1.1% by employer.
Health Clinic	To be located

PHOTOS PROJECT AREA	
Type of water infrastructure in Muhanga district	

5. IDENTIFICATION OF ENVIRONMENTAL AND SOCIAL IMPACTS

5.1. Introduction

The VCRP activities are associated with positive and negative environmental and social impacts that will be generated through the different phases of the project, from the planning/sitting to the decommissioning. Since this is the ESMF, this section presents potential impacts and risks based upon the present understanding of the Project given all project details (locations, subproject designs, etc.,). and that final identification of impacts and risks will be determined as part of subproject ES assessments.

The ESMF presents the proposed mitigation measures but these will be finalized as part of the ESMF subproject assessment process. The exercise will also examine the cumulative effects of impacts.

Impacts are presented in the manner corresponding to how the baseline data was obtained such as impacts of physical environment (rainfall, climate, soil, relief, slope, topography, water regime, vegetation, among others), biological environment (flora and fauna), socio-economic environment (population, job opportunities, land use, land ownership, infrastructure, health and education services, among others).

The level of each impact is assessed relative to its influence on; its intensity, duration (short, medium or long terms), spatial coverage, frequency of occurrence, all of which contributes to establishing the significance of the impact in order to consider whether there is need for a mitigation measure against it or not.
Under the impact's prediction and analysis, the project has assessed the entire project cycle i.e., project mobilization, construction and operation phases. Impact prediction and evaluation were undertaken through use of a number of tools and techniques.

5.2. Assessment of Magnitude of Potential Impacts and risks

The assessment of magnitude first categorizes VCRP activities as beneficial or as adverse. Potential impacts are thereafter categorized as **High, Substantial, Moderate or Low**, based on consideration of the following parameters:

- Duration of the potential impact.
- Spatial extent of the potential impact.
- Reversibility.
- Likelihood; and
- Legal standards and established professional criteria.

The assessment Matrix for Determination of Magnitude Categories of Potential Project Impacts is given in the table 17. This categorization considers the ES risk categorization in ESF (ESS1, etc.)

5.2.1 Environmental and Social Risk and Impact Classification

Standards can have different environmental and social risk and impact classification and so project categorisation. The WB will classify all projects into one of four classifications: *High Risk*, *Substantial Risk*, *Moderate Risk* or *Low Risk.* In determining the appropriate risk classification, the Bank takes into account relevant issues, such as the type, location, sensitivity, and scale of the project; the nature and magnitude of the potential environmental and social risks and impacts; and the capacity and commitment of the Borrower (including any other entity responsible for the implementation of the project) to manage the environmental and social risks and impacts in a manner consistent with the ESSs. Other areas of risk may also be relevant to the delivery of environmental and social mitigation measures and outcomes, depending on the specific project and the context in which it is being developed.

These legal and institutional considerations; the nature of the mitigation and technology being proposed; governance structures and legislation; and considerations relating to stability, conflict or security could be included. The Bank will disclose the project's classification and the basis for that classification on the Bank's website and in project documents.

Sensitivity of Receptor

The sensitivity of a receptor including human, flora and fauna, and environment in general shall be determined based on review of the population (including proximity/ numbers/ vulnerability) and presence of features on the site or the surrounding area. Criteria for determining receptor sensitivity of the project's potential impacts are outlined in the table 16 below.

Table 15: criteria for receptor sensitivity to potential project impacts

Sensitivity Determination	Definition
Very Severe	Vulnerable receptor with little or no capacity to absorb proposed changes or minimal opportunities for mitigation
Severe	Vulnerable receptor with little or no capacity to absorb proposed changes or limited opportunities for mitigation
MODERATE	Vulnerable receptor with some capacity to absorb proposed changes or moderate opportunities for mitigation
Low	Vulnerable receptor with good capacity to absorb proposed changes or/and good opportunities for mitigation. This is an estimation

5.3. Key project Potential Environmental and Social Impacts.

The overall impact assessment of the VCRP proposed activities reveals that most of the likely adverse impacts are ranked as High to Low and these can be avoided, prevented, mitigated or compensated by implementing the measures and actions plans to be proposed in this ESMF and later assessment in more detail by implementing ESIA/ESMPs. The project interventions will also generate important beneficial impacts to the beneficiary communities.

The project was classified by the World Bank with social and environmental risk of 'High Risk' based in the ESS1. In order to estimate the main risks on the project proposed intervention, the project proposed components and subcomponents have been ranked according to the potential risks based

on the ESS1 risk categories and the significance of each of impacts following the criteria defined in Section 3.2 and Table 16.

In the subsequent sections, these potential impacts of the project (components, sub-components and activities) are discussed in more detail and measures are described to avoid, prevent, mitigate and compensate the impacts and risks that will be acceptable to the World Bank ESF and applicable to Rwanda laws and regulations.

Table 16: Estimated risk of the VCRP components and subcomponent and proposed activities

Activities	**General types of potential impacts**	**Impacts classification**	**ESF Instruments to be prepared by each implementing agency**	**Technical Instruments to be prepared and review by the ESM VCRP team and the World Bank**	**Implementing Agencies**
Component 1: Flood risk management					
Subcomponent 1a: Flood Risk Reduction Investments as potential					RWB
Construction of flood control infrastructures in selected hotspots that include: -Construction of detention ponds in upstream locations and sediment traps -Creation of some new channels, and enhancement and stabilization of existing channels -Stabilization and enhancement of gully banks and beds -Interception & diversion of channels or berms mostly towards detention ponds. -New bulk gullies -Construction of energy management structures (e.g. check dams) -Upgrading of road drainage structures (culverts, bridge and side ditches)	-Loss of agricultural, residential and business properties such as land and houses. -Loss of trees, vegetation, garden and crops and other natural resources. -Disruption of protected and non-protected plants and animal habitats -Impact on surface and sub-surface drainage patterns. -High sediments in sedimentation traps and impact on water quality mainly during construction works -Increased runoff downstream (speed and volume)	High to substantial	-ESIAs and ESMPs for detention ponds, new and existing channels, stabilization of gully banks, energy management structures and dykes -Action plans considering the requirements of LMP, SEP and GAP -RAPs of the detention ponds, channels, dykes whenever displacement is identified as risk and impact	-Tors for ESIA/ESMP, RAP preparation -Tors for planning, and engineering design -Tors for supervision firm -All ESIAs, ESMPs, etc (ie actual plans/reports) -Supervision and monitoring reports (eg by contractors, third party supervisors, operators, etc.) -Any relevant plans for Detention Ponds (noting the size of such ponds is not defined in ESMF - e.g., small dams)	

Activities	**General types of potential impacts**	**Impacts classification**	**ESF Instruments to be prepared by each implementing agency**	**Technical Instruments to be prepared and review by the ESM VCRP team and the World Bank**	**Implementing Agencies**
-Construction of large off-channel detention ponds with dykes in lower areas.	-Possible increased impacts/risks due to natural hazards (eg. Major flooding, rainfall during construction) -Failure of detention ponds and resultant impacts and risks downstream on both human and physical environment. -Reduction/changes of water flow downstream due to detention ponds and its effects. -Possible increase/ change in water borne vectors -Construction waste management and disposal of any vegetation cleared, soil or sediments removed. -Disruption of infrastructure facilities such as water, electricity and communication				

Activities	**General types of potential impacts**	**Impacts classification**	**ESF Instruments to be prepared by each implementing agency**	**Technical Instruments to be prepared and review by the ESM VCRP team and the World Bank**	**Implementing Agencies**
	installations. -Impacts associated with materials sourcing areas such as quarries. -Air emissions and ambient air quality. -Visual impact -Impacts on the cultural and religious values. -Traffic related incidents during construction -Occupational health and safety risks -Risk of communicable diseases (HIV & AIDS, STDs), and different forms of abuse (GBV, SEA, drug, etc.) as a result of migration influx of workers; -Drowning and fall hazards from established ponds				
Nature Based Solutions (NBS) options for all of the above.	-Habitat loss and Introduction of invasive species	Low	NA	ToRs for the NBS	

Activities	**General types of potential impacts**	**Impacts classification**	**ESF Instruments to be prepared by each implementing agency**	**Technical Instruments to be prepared and review by the ESM VCRP team and the World Bank**	**Implementing Agencies**
-Reforestation and afforestation -Wetland restoration -Sustainable land management -Green infrastructure -Stabilization and enhancement of gully banks and beds with vegetation	-Water quality deterioration				
Subcomponent 1b: Flood Early Warning System and Community Level Flood Preparedness					Meteo-Rwanda
Under this sub-project, the FEWS for the volcanoes region will be developed and operationalized. Activities will include among others: Establishing 5 new weather stations at sector office grounds and a weather radar on state owned land in Musanze district. -Upgrading of existing sites/stations -Any works on improvement of existing access road or construction of new road for the weather radar within the	-Soil erosion. - Loss of vegetation cover. -Occupational health and safety risks -Impacts associated with materials sourcing areas such as quarries.	Moderate to low	ESMPs for weather stations and radar works.	- ToRs for the ESMPs. -Tors for planning, and engineering design -Tors for supervision firm -Any relevant plans	

Activities	General types of potential impacts	Impacts classification	ESF Instruments to be prepared by each implementing agency	Technical Instruments to be prepared and review by the ESM VCRP team and the World Bank	Implementing Agencies
state-owned land in Musanze district -Works at the weather stations and radar related to other type of support (e.g., energy, optic fibre, etc.) -Purchase and use of new computer equipment and/or disposal of any existing computer or other electronic equipment -Improving capabilities of detection and monitoring of extreme rainfall using weather radar system. -Improving capacity in analysis of extreme rainfall/floods risks involved in combination with communities' vulnerability and exposure. -Improving communication and dissemination of timely impact-based floods early					

Activities	**General types of potential impacts**	**Impacts classification**	**ESF Instruments to be prepared by each implementing agency**	**Technical Instruments to be prepared and review by the ESM VCRP team and the World Bank**	**Implementing Agencies**
warnings and activation of emergency response plans.					
Component 2: Landscape Restoration and Catchment Management					
Sub-component 2a: Integrated catchment and landscape restoration					REMA
Under this sub-project, activities include: **The VNP expansion:** -Ecological Restoration of the Park Expansion area – 732.5 Ha					
-Ecological Restoration of the Park Expansion area – 732.5 Ha. -Fencing of the Park Expansion Area	-Loss of agricultural, residential and business properties such as land and houses. -loss of livelihood especially land-based -Loss of trees, garden and crops and other natural resources. -Soil erosion -Disturbance to current natural habitat -Soil erosion -Air and noise pollution -Natural resource extraction -Disturbance to natural landscape	High to low	-RAP for the VNP expansion area (which has already been prepared). -Ecological restoration plan (which has already been prepared but might require improvement to align with the entire VCRP ecological restoration plan) -ESIA and ESMP for fence construction activities. -Actions plans considering the	-ToRs for Ecological restoration plans -Tors for planning, and engineering design -Tors for supervision firm -All ESIAs, ESMPs, etc (ie actual plans/reports) -Supervision and monitoring reports (eg by contractors, third party supervisors, operators, etc.) -Any relevant plans for the fence planned for construction	

Activities	**General types of potential impacts**	**Impacts classification**	**ESF Instruments to be prepared by each implementing agency**	**Technical Instruments to be prepared and review by the ESM VCRP team and the World Bank**	**Implementing Agencies**
	-Construction waste management -Impacts on the cultural and religious values; -Occupational health and safety risks (HIV, GBV, SEA, drug abuse, etc.) -Electric shock and fire hazards -Restricted animal movement. -Disruption to migratory corridors.		requirements of LMP, SEP and GAP		
-Updating the VNP Management Plan.	No Expected	None	NA	ToRs for preparation of the VNP management plan	
Ecological Restoration of priority sites in the VCRP landscape (Out of Park Area)					
-Wetlands restoration -Restoration of lakes and islands buffer zones -Roadside protection -Protection of remnant forests -Silvo pastoralism in Gishwati rangelands	-Loss of agriculture businesses and land -Loss of trees, garden and crops and other natural resources; -Disruption of protected plants and animal habitats	Substantial to low	-ESIAs and/or ESMPs for ecological restoration activities -RAP -Biodiversity Management Plan	-Tors for ESIA/ESMP, RAP preparation -Tors for planning, and engineering design -Tors for supervision firm -ToRs for Ecological Restoration Plan -Ecological restoration plan.	

Activities	**General types of potential impacts**	**Impacts classification**	**ESF Instruments to be prepared by each implementing agency**	**Technical Instruments to be prepared and review by the ESM VCRP team and the World Bank**	**Implementing Agencies**
-Ecological restoration in support of catchment management -Restoration of riverbanks. -Plantation of native species in agro-ecosystems, etc.	-Employment labor issues -mosquitoes breeding from the restored wetlands -Habitat loss and introduction of invasive species -Water quality deterioration -Waste management (waste feed, animal waste and carcasses). -Wastewater -Air emissions -Hazardous materials -Ecological impacts			-All ESIAs, ESMPs, RAP, etc (ie actual plans/reports) -Supervision and monitoring reports (eg by contractors, third party supervisors, operators, etc.) -Any relevant plans for river banks restoration.	
Sub-component 2b: Ecological restoration of priority conservation areas					RWB
Under this sub-component, activities include: -Constructing, maintaining, and upgrading terraces, grassed waterways, and contour banks. -Establishing multi-purpose native plants along bunds/terraces and along	-Reduction of soil fertility parameters in terraced land -Water conservation and management -Nutrient management -Soil conservation and management	Substantial to low	-ESIAs and ESMPs for terraces, grassed waterways, and contour banks, agroforestry, rehabilitation of gullies, priority wetlands and other fragile ecosystems,	-Tors for ESIA/ESMP, RAP preparation -Tors for planning, and engineering design -Tors for supervision firm -Biodiversity management plan (BMP).	

Activities	**General types of potential impacts**	**Impacts classification**	**ESF Instruments to be prepared by each implementing agency**	**Technical Instruments to be prepared and review by the ESM VCRP team and the World Bank**	**Implementing Agencies**
rivers as buffers, in streams, and in gullies. -Rehabilitating gullies, priority wetlands and other fragile ecosystems. -Implementing agroforestry to support improved agriculture practices and provision of products. -Afforestation and reforestation measures to meet biodiversity conservation, production and protection needs. -Supporting climate-smart agricultural practices. -Conservation of water through construction of water harvesting infrastructure.	-Crop residue and solid waste management -Water management -Pest management -Biodiversity conservation -Air quality -Gradual soil acidification from fertilizer application -Soil and groundwater contamination -Soil Erosion and landslides -risk of introducing invasive species, pests or diseases to the local forest and agriculture areas and therefore threatening local biodiversity -Risk of maladaptation if local conditions and needs are not adequately considered. -Water logging and salinization		climate-smart agricultural practices and conservation of water through construction of water harvesting infrastructure. -The number of instruments will depend on the sub-project details and components.	-All ESIAs, ESMPs, etc (ie actual plans/reports) -Supervision and monitoring reports (eg by contractors, third party supervisors, operators, etc.) -Any relevant plans for terraces, grassed waterways and contour banks.	

Activities	General types of potential impacts	Impacts classification	ESF Instruments to be prepared by each implementing agency	Technical Instruments to be prepared and review by the ESM VCRP team and the World Bank	Implementing Agencies
	-Algal blooms and weed proliferation -Increase/changes in water borne vectors -Impacts due to water harvesting such as changes in water flows, quality and effects on other water users -Threats to human health and livestock due to improper handling of treated seeds, fertilizers, and pesticides. -Loss of biodiversity on the hillsides and valley -Habitat alteration -Water quality deterioration -Soil productivity -Hazardous materials management (Use of fuel, lubricants and pesticides) -Income losses from missed season				

Activities	General types of potential impacts	Impacts classification	ESF Instruments to be prepared by each implementing agency	Technical Instruments to be prepared and review by the ESM VCRP team and the World Bank	Implementing Agencies
	cultivation due to delays by terracing -On the ground interventions (agroforestry/ANR) could lead to displacement of informal settlers/land occupants. -Employment labor issues including child labor -Risk that vulnerable households are not adequately included in village forest management activities and related benefit sharing arrangements. -Human-wildlife conflicts -Increased social conflicts -Human-caused fires -Population economic displacement as crop is replaced by tree.				

Activities	**General types of potential impacts**	**Impacts classification**	**ESF Instruments to be prepared by each implementing agency**	**Technical Instruments to be prepared and review by the ESM VCRP team and the World Bank**	**Implementing Agencies**
	-Visual impact -Physical hazards				
Sub-component 2c: Livelihoods Development					REMA with various individuals during implementation
Under this sub-project, activities include:					
Individual support -Supply of small livestock to beneficiaries comprising 8000 sheep, 3,200 goats, 1,200 pigs.	-Waste management (waste feed, animal waste and carcasses). -Wastewater -Conflicts between livestock owners and crop farmers over open grazing. -Air emissions Reduced air quality and nuisance resulting from (intensive) livestock farming odour exposure. -Soil and water pollution / overloading / leaching resulting from the overuse of pesticides. -Pollution of hazardous wastes -Ecological impacts	Substantial to low	NA	-Technical specifications for the supply of sheep, goats and pigs.	

Activities	**General types of potential impacts**	**Impacts classification**	**ESF Instruments to be prepared by each implementing agency**	**Technical Instruments to be prepared and review by the ESM VCRP team and the World Bank**	**Implementing Agencies**
	-Hazardous material -Animal diseases -Water conservation and management -Nutrient management -Soil conservation and management -Crop residue and solid waste management -Water management -Pest management -Biodiversity and ecosystems				
Collective Support -Water Supply for livestock farmers in Gishwati rangelands and communities for a 160.212km length of water supply network. -Construction of a water supply system for 6 sites in VCRP for a 60km water supply network.	-Loss of land -Loss of vegetation and crops and other natural resources; -Air and noise pollution, -Construction waste management; -Impacts due to other water uses/users -Visual Impact -Water abstraction -Soil erosion -Water distribution	Substantial to low	-ESIA and/or ESMP for water supply infrastructure -Livelihood plans -Actions plans considering the requirements of LMP, SEP and GAP	-Tors for ESIA/ESMP, Livelihood plan preparation -Tors for planning, and engineering design -Tors for supervision firm -All ESIAs, ESMPs etc (ie actual plans/reports) -Supervision and monitoring reports (eg by contractors, third party supervisors, operators, etc.)	

Activities	General types of potential impacts	Impacts classification	ESF Instruments to be prepared by each implementing agency	Technical Instruments to be prepared and review by the ESM VCRP team and the World Bank	Implementing Agencies
	-Water system leaks and loss of pressure -Water discharges -Impacts associated with materials sourcing areas such as quarries -Employment labor issues -Occupational health and safety risks (HIV, GBV, SEA, drug abuse, etc.); -Impacts on the cultural and religious values			-Any relevant plans for water supply system and network	
Collective Support -Establishment of 1 honey processing center. -Establishment of 3 Milk Collection Centers (MCCs) in the VCRP landscape and supply and installation of these MCCs. -Establishment of 4 Irish Potato_Prebasic seeds production -Establishment of tea plantation on 1000ha	-Storing and handling -Solid and liquid waste management -Hygiene	Low	NA	ToRs for establishment of honey processing centers, milk collection centers and selling points.	

Activities	**General types of potential impacts**	**Impacts classification**	**ESF Instruments to be prepared by each implementing agency**	**Technical Instruments to be prepared and review by the ESM VCRP team and the World Bank**	**Implementing Agencies**
-Establishment of banana plantation on 1000 ha -Establishment of pyrethrum plantation on 1800ha.					
Collective Support -Supply of farm inputs and equipment for Climate Smart Agriculture in the project area.	Covered under sub-components 2a				
Subcomponent 3a: Integrated climate resilient green settlement/VNP expansion, and a model smart green village					RDB
Activities include the construction and operation of the smart green village. The proposed smart green village shall be composed of: Housing blocks and community buildings comprising of: 510 Residential housing – 300 sqm will be allocated to each HH for housing and home garden. A house will be constructed in a 2in1 design to manage space and will incorporate flood	**Planning/sitting and construction phases** -Land acquisition and involuntary resettlement; -Loss of income and disturbance of livelihood -Loss of vegetation and crops; -Construction waste generation -Impacts associated with materials sourcing areas such as quarries;	Substantial to moderate	-ESIA (in preparation), ESMP and RAP (already prepared) for the smart green village including houses, health post, nursery, mini-market, multipurpose hall, office, police station, market agriculture, access roads and agroforestry and associated activities.	-Tors for detailed design -Tors for supervision firm -All ESIAs, ESMPs etc (ie actual plans/reports) -Supervision and monitoring reports (eg by contractors, third party supervisors, operators, etc.) -Any relevant plans for the green village and associated infrastructures	

Activities	General types of potential impacts	Impacts classification	ESF Instruments to be prepared by each implementing agency	Technical Instruments to be prepared and review by the ESM VCRP team and the World Bank	Implementing Agencies
management systems. It is proposed to have rainwater harvesting with gutters and tanks, drainage systems, surrounding elements such as buffered streams and natural forest corridors. -Community buildings shall entail; Health Post 200m^2, Nursery 500m^2, post-Harvest + Mini Market 1000m^2, Multi-purpose Hall 400m^2, Office of local leaders 100m^2, ICT Room (Irembo) 50m^2, Police post 100m^2. -Enterprise zone- including tourism reception, bed and breakfast, cultural facilities and guide hubs. -Market agriculture- involving market-oriented farming of high value livestock such as chicken and dairy farming.	-Air and noise pollution, vibration; -Increased runoff -Soil erosion -Solid and liquid waste generation -Employment labor issues -Impacts on the cultural heritage; -Occupational health and safety risks -Poor working conditions -Risk of communicable diseases and abuse (HIV, GBV, SEA, SEA, drug, etc.); -Increased spread of malaria -Traffic accidents risks -Insecurity from thefts -Fire outbreak -Risk of damaging public utilities -Safety of Services		-Associated activities such as water supply, waste water, solid waste, energy supply -Actions plans considering the requirements of LMP, SEP and GAP		

Activities	**General types of potential impacts**	**Impacts classification**	**ESF Instruments to be prepared by each implementing agency**	**Technical Instruments to be prepared and review by the ESM VCRP team and the World Bank**	**Implementing Agencies**
Agro-logistics- including processing and transport support. Orchard- of permanent tree or shrub crops. -Agro-forestry -Agro-forestry corridors Proposed access roads	-Traffic and Road Safety -Community Exposure to Health Issues -Management and Safety of Hazardous Materials -Emergency Preparedness and Response.				
	Operation phase				
	-Fire outbreak -Solid and liquid waste generation -Increased runoff -Micro-climate modification -Water pollution -Solid and liquid waste generation -Culture shock to new housing -Fire outbreak -Impact due to the existing scenery				

Activities	General types of potential impacts	Impacts classification	ESF Instruments to be prepared by each implementing agency	Technical Instruments to be prepared and review by the ESM VCRP team and the World Bank	Implementing Agencies
	-Waste management (waste feed, animal waste and carcasses). -Wastewater -Air emissions -Hazardous materials -Animal diseases -Nutrient management -Soil conservation and management -Crop residue and solid waste management -Water management -Pest management -Biodiversity and ecosystems -Habitat alteration -Water quality deterioration -Soil productivity -Hazardous materials management (Use of fuel, lubricants and pesticides) -Biodiversity conservation				

Activities	**General types of potential impacts**	**Impacts classification**	**ESF Instruments to be prepared by each implementing agency**	**Technical Instruments to be prepared and review by the ESM VCRP team and the World Bank**	**Implementing Agencies**
	-Occupational health and safety -Emissions to air -Noise pollution -Hazardous materials management -Resource consumption (energy and water conservation) -Wastewater and waste management				
Subcomponent 3b: Livelihoods diversification and income generation activities					RDB
Activities are planned at three levels: individual household level, community level, and host community-resettled community level: A- Livelihood restoration package/options on the household level: • Employment opportunities • Rural Agro-logistics B- Livelihood restoration package/ options on the community level **-Poultry farming**	-Vegetation clearing -Deforestation -Risk of pollution and degradation of water table and water courses cause of use of pesticides and fertilizers -Upsurge in water borne diseases -Insecurity and social constraints owing to the influx of migrants to the project area -Water consumption	Substantial to moderate	-ESIA and ESMP -Actions plans considering the requirements of LMP, SEP and GAP	-Tors for supply of fertilizers and pesticides -Tors for supervision firm -All ESIAs, ESMPs etc (ie actual plans/reports) -Any relevant plan for the livelihood diversification	

Activities	**General types of potential impacts**	**Impacts classification**	**ESF Instruments to be prepared by each implementing agency**	**Technical Instruments to be prepared and review by the ESM VCRP team and the World Bank**	**Implementing Agencies**
-Community Based Tourism **-Vegetables, Horticulture and Irish potato production**	-Use of chemical pesticides in pest management -Pesticides and fertilizers storage and handling -Biodiversity and ecosystems -Energy use -Air quality (atmospheric emissions) associated with combustion of bio-products). -Waste management -Biological and chemical hazards.				
Macro-economy **Eco-lodge/affordable accommodation,** Bed and breakfast facility Tourism reception (bar, restaurant and coffee shop, art and craft workshop and skills centre, and storytelling)	-Biodiversity conservation -Occupational health and safety -Emissions to air -Noise pollution -Hazardous materials management	Substantial to moderate	-ESIA and ESMP -Actions plans considering the requirements of LMP, SEP and GAP	-Tors for supply of fertilizers and pesticides -Tors for supervision firm -All ESIAs, ESMPs etc (ie actual plans/reports) -Any relevant plan for the hospitality facilities	

Activities	**General types of potential impacts**	**Impacts classification**	**ESF Instruments to be prepared by each implementing agency**	**Technical Instruments to be prepared and review by the ESM VCRP team and the World Bank**	**Implementing Agencies**
Tourism services (Tour and hiking guides and conservation guides)	-Resource consumption (energy and water conservation) -Wastewater and waste management				
Component 4: Project Management, Monitoring & Evaluation, and Capacity Building					
Project operations and capacity development and project's staffing					MoE
Under this sub-component, activities include: (1) support the Project Coordination Unit (PCU) and the respective Project Implementation Units (PIUs) in the implementation of the project activities in an efficient and transparent manner, and (2) build the institutional capacity to sustain the implementation of the project beyond the life of the project.	No Expected	NA	NA	NA	

5.4 VCRP Environmental and Social Impacts

5.4.1 Potential Environmental and Social Impact Related to Project Siting/planning

5.4.1.1 Positive impacts

5.4.1.1.1 Conservation Education

VCRP presents an opportunity to raise awareness about the importance of biodiversity conservation and ecosystem restoration. By engaging local communities, schools, and visitors in educational programs and initiatives, the project can foster a sense of stewardship and environmental responsibility. This can lead to a long-term commitment to protect and conserve the restored areas.

5.4.1.1.2 Collaborative Conservation Efforts

Ecological restoration often involves collaboration between various stakeholders, including local communities, government agencies, NGOs, and international organizations. The restoration project in the Volcanoes National Park can foster partnerships and collaboration among these groups, promoting knowledge sharing, capacity building, and cooperative conservation efforts. Such collaboration can have a ripple effect, inspiring similar initiatives in other regions.

5.4.1.1.3 Improvement in environmental, health and safety issues

The project will incorporate environmental, health and safety concerns at the project planning stage. This will ensure a positive impact to the environment, as any adverse impacts have a mitigation plan in place.

5.4.1.2 Adverse impacts

5.1.4.2.1 Loss of agricultural, residential, and business properties such as land and houses (ESS5)

VCRP will endeavor to avoid involuntary resettlement and avoid any physical displacement of residents for activities under the project. However, acquisition of private lands/dwellings or livelihood assets may be required in some areas with the likelihood that may involve displacement of formal and informal private users.

Under component 3a, the project will target 732.5 ha of park expansion in the first phase of implementation, displacing a total 992 households (physically and economically). Of these, the Park expansion will involve the resettlement of around 510 Households physically displaced, on a smart green village of 50ha.
The Implementing of agroforestry to support improved agriculture practices and provision of products will require land that is actually used for farming activities and subsistence agriculture. The acquisition of that land will be associated with economic displacement. On the ground interventions (agroforestry/ANR) could lead to displacement of informal settlers/land occupants or undocumented claimants on both public and private lands as well as potential restriction of access to forest resources, affecting traditional forest users.
The project activities, particularly the establishment of individual or group agroforestry or forestry systems would also have potential involuntary resettlement impacts due to possible displacement of informal settlers/land occupants, tenants, and undocumented occupants, as well as potential restriction of access to forest resources, affecting traditional forest users.

Therefore, ESS5 on involuntary resettlement is relevant to the project and a Resettlement Policy Framework (RPF) has been prepared for VCRP. Site-specific RAPs will be developed if and as necessary during the project implementation. The RPF and any RAP will ensure the proper calculation and recording of the involuntary displacement impacts as well as identification of the affected people and mitigation of their losses and impacts. The purpose of the RPF and implementation of the RAPs is to ensure that there are no adverse effects on the living conditions and livelihoods of the affected people

as a result of the project. The costing of RAPs will be covered with government funding which has already agreed and included in the RPF and the ESCP.

5.1.4.2.2 Loss of income and disturbance of livelihood (ESS5)

The VCRP intervention area is mostly subsistence agriculture. As the Project acquires the land, replacing existing agricultural activities on the site, mostly agriculture, the households will lose part of their source of income from crops, livestock farming and hence experience disturbance of land based livelihood.

5.1.4.2.3 Loss of trees, vegetation, garden and crops and other natural resources (ESS6)

Siting or planning of the proposed infrastructures may require cutting of trees and removal of natural vegetation, which could be cumulatively significant in number.

5.1.4.2.4 Impacts due to water harvesting such as changes in water flows, quality and effects on other water users

Construction of water harvesting infrastructures, dams, dykes and detention ponds will impact water quality and availability of water users downstream. Design must consider the treatment of water upstream such as sediment trap and release of amounts of water that will not impact uses and users downstream.

5.1.4.2.5 Infrastructure and Equipment Design and Safety (ESS4)

ESS4 recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts. In addition, communities that are already subjected to impacts from climate change may also experience an acceleration or intensification of impacts due to project activities.

5.1.4.2.6 Traffic and Road Safety (ESS4)

Traffic safety across the project components should be promoted by all project personnel during displacement to and from the workplace, and during operation of project equipment on private or public roads.

5.1.4.2.7 Community Exposure to Health Issues (ESS4)

Potential negative impacts affecting health and safety may arise from a broad range of supported activities, including from flood control infrastructures, smart green village, water supply system, water harvesting infrastructure, access roads and new roads activities, changes in the nature and volume of traffic and transportation, water and sanitation issues, use and management of hazardous materials and chemicals, impacts on natural resources and ecosystems, the influx of project labor, and potential abuses by security personnel

5.1.4.2.8 Emergency Preparedness and Response (ESS4)

Where there is risk of a spill of uncontrolled hazardous materials, facilities should prepare a spill control, prevention, and countermeasure plan as a specific component of their Emergency Preparedness and Response Plan. The plan should be tailored to the hazards associated with the project.

5.1.4.2.9 Resource consumption (water and energy (ESS4)

Good practice in design can significantly reduce water and energy consumption. Housing infrastructures and hospitality development, especially in dry climates or sensitive sites, can consume too much energy and water.

5.1.4.2.10 Dam safety (ESS4)

The dam and ponds are associated with risk of drowning and fall hazards. There is a probability of drowning or falling into the detention ponds, channels and gullies during flood periods. The drowning and fall could lead to deaths or injuries. The issue is critical for children and livestock moving in the area, especially if nothing was considered as protection to falling or drowning.

5.1.4.2.11 Increasing human-wildlife activities

As the project unfolds and brings forth its anticipated benefits, it's important to acknowledge and address potential risks that could emerge, particularly concerning the augmented interactions between human activities and wildlife, a consequence of the project's interventions. One paramount concern centers on the potential disruption to wildlife habitats and the established patterns of animal movement as a result of the project activities. Such disruptions could potentially amplify the occurrence of human-wildlife conflicts, a multifaceted challenge with ramifications for both local communities and the wildlife population itself.

The alteration of natural habitats due to the VNP expansion activities could inadvertently encroach upon the territories that wildlife species depend on for sustenance and movement. This, in turn, could lead to increased instances of wildlife venturing into human settlements in search of resources, consequently escalating the potential for conflicts. The ramifications of these conflicts are wide-ranging, encompassing the destruction of crops vital for local livelihoods, loss of livestock, and regrettably, the potential for human injuries.

5.4.2 Potential Environmental and Social Impacts during Project Implementation/construction

5.4.2.1 Positive impacts

5.4.2.1.1 Creation of job opportunities

VCRP has the potential to increase the working to population ratio by generating employment opportunities in the project area. This includes direct and indirect job opportunities for a significant number of the population during all phases thus, reducing unemployment and, in the process, providing livelihood. The acquisition of raw materials and necessary fittings and components as well as employment VCRP will have an impact on economic flows within the area and the country. The trading of goods and services will contribute to income generation and development. VCRP will support the business market in Rwanda as a whole.

5.4.2.1.2 Promotion of gender and social cohesion.

The VCRP seeks to promote gender equality and women's economic empowerment in the workplace. Women involved in the project will have a platform to learn and acquire useful knowledge that can increase their skills and competence at the market. The project will value women and men as equal to provide safer and healthier working environment. The VCRP will bring together people with diverse traditions and culture. This project will also be developed in an inclusive manner that promotes social cohesion as it solicits local opinion and builds local capacity.

5.4.2.1.3 Flow of income, revenue, and wealth enhancing activities

The establishment of the VCRP's components will trigger significant economic effects within the nation, encompassing the procurement of essential materials, fittings, and components, as well as the generation of employment opportunities. This surge in economic activity will have a notable impact on the viability and operation of local small and medium enterprises (SMEs), potentially leading to the emergence of new SMEs. Job-related training will contribute to skill development at the local level, leading to a more skilled workforce. Additionally, both national and local government entities will

experience increased revenue due to elevated economic activity, stemming from taxes, licenses, and permit fees. The project's focus on land development will create an immediate demand for services and generate revenue streams for the community through multiple avenues. Notably, the VCRP will contribute to tax revenues for the government at various levels, including the 8 districts and Rwanda, through enhanced land rates and approval fees. Moreover, the project's influence on domestic and regional trade and tourism will impact business investment and location choices, fostering productivity in alignment with local and national development objectives.

5.2.2.2 Adverse impacts

This section presents a summary of potential impacts and risks based upon the present understanding of the Project given all project details (locations, subproject designs, etc.) and final identification of impacts and risks will be determined as part of subproject ES assessments.

5.1.4.2.2.1 Possible increased impacts/risks due to natural hazards (eg. Major flooding and rainfall during construction.

As mentioned in the baseline, the volcanoes region and vunga corridor are prone to floods, erosion and landslides. The causes include high rainfall, the topography characterized by steep slopes, the type of soil and the existing gullies. During the construction activities of the flood control infrastructures, smart green village and associated facilities and water supply infrastructures, there may be possible increased risks due to the mentioned natural hazards.

5.1.4.2.2.2 Effect on riverine flora

Riparian plants face both physiological and physical constraints because of the shifts between submergence and drainage, and erosion of substrates. most riparian plant species are expected to disappear or be pushed towards the upper boundaries of the regulated river margin during the river banks restoration activities.

5.1.4.2.2.3 Disruption access to utility services such as water, electricity and communication installations

The construction of detention ponds, dykes, dams, channels, road drainage structures, smart green village houses…etc could affect the access to the mentioned services if they are damaged or are to be relocated.

5.1.4.2.2.4 Impacts associated with materials sourcing areas such as quarries

Sand, gravel, crushed stone and sand stones are local construction material needed for the proposed water detention ponds, dykes, check dams, channels, road drainage structures, houses…etc. Potential quarries and borrow pit sites may be next to the site or at a certain distance. Sites will be determined based on a closer comparison of environmental and social impacts. These impacts generated at these sites include visual intrusion because of the landscape change, noise (and its associated impacts on wildlife and people), contribution to sedimentation (and associated impacts on water quality) and impacts associated with the transport of material to worksite.

5.1.4.2.2.5 Pesticides and fertilizers storage and handling

Storage and handling of pesticides and fertilizers in their concentrated forms pose the highest potential risk to ground or surface water from agricultural chemicals. For this reason, it is essential that facilities for the storage and handling of these products be properly sited, designed, constructed, and operated.

5.1.4.2.2.6 Noise

Movement of construction equipment and machines during construction activities may cause noise and vibrations that can affect the workers on site, communities living in the surroundings of the project sites. This is the case for excavators, graders, trucks and bulldozers plus other machinery such as concrete mixers, dumpers, etc.

5.1.4.2.2.7 Impacts on the cultural heritage and religious values

During the earthworks, cultural heritages of religious and cultural values might be discovered that shall need to be properly dealt with to avoid or minimize adverse impacts to people or communities that relate to this cultural heritage. A chance find procedure shall therefore need to be prepared for use under such circumstances.

5.1.4.2.2.8 GHG emissions

The project will emit GHGs which include CO_2, the main greenhouse gas rapidly warming the planet. The use of fossil fuels, using electricity, and sending refuse to the dump sites will contribute to carbon footprint of this VCRP. Such emissions can lead to several environmental impacts including global warming and health impacts.

5.1.4.2.2.9 Deforestation

Farming activities, construction of flood control infrastructures upstream and other planned infrastructures may require land covered by forest. These activities will cause deforestation.

5.1.4.2.2.10 Risk of communicable diseases and abuse (HIV, GBV, SEA, drug abuse, etc.)

During the construction, workers are potentially at risk of contagious diseases and disease transfer, which may threaten their health and local communities. Contagious diseases that threaten public health could evolve from activities such as poor hygiene and low living conditions, commercial sex, drug abuse, SEA and GBV. The most concerning infectious diseases in the implementation phase due to labor migration are sexually transmitted diseases such as HIV/AIDS, gonorrhea, syphilis, etc.

Gender based violence and sexual exploitation and abuse could result from project activities as a result of male heads of households earning more and resorting to acquiring a second wife, girls and women lured into Sexual Exploitation and Abuse (SEA), women sexually exploited in order to get jobs in some of the project activities.

With inappropriate waste management, standing waters and open waters of ponds and check dams, the spread of infectious diseases caused by flies, mosquitoes and insects is a possibility. Therefore, the impact should be considered for mitigation.

5.1.4.2.2.11 Traffic and access to homes and social utilities (schools, health centre, churches, etc.).

The construction activities of the proposed detention ponds, dykes, check dams, channels, road drainage structures, houses…etc will affect the existing access to home and social utilities if alternative access roads are not provided. In addition, underregulated traffic of trucks transporting construction materials and other vehicles create risks of accidents and hazards.

5.1.4.2.2.12 Traffic related incidents during construction

During construction, there will be transportation of workers and construction materials from the project site and out of it. In addition, some vehicles will be moving around through the project sites. If these movements are not regulated, they may cause traffic incidents and accidents.

5.1.4.2.2.13 Income losses from missed season cultivation due to delays in terracing.

Farmers will miss seasons of cultivation due to delays in progress of terracing their land. This implies that the farmer will lose the produce that he or she could have obtained that missed season hence a loss in home income and in most cases domestic food. It also affects targets of crop production set by local government officials for their respective district sectors.

5.1.4.2.2.14 Occupational Health and Safety

During project construction, workers shall be exposed to the risk of accidents and hazards from injuries of sharp objects, accidents by falling from high positions like off the roofs, injuries from fires during welding, electrocution from handling electric equipment negligently, drinking non boiled water, accidents from trucks and heavy automobiles used for construction or transportation of material on site or off site.
Poor lightning, unsafe access to within and outside buildings for pedestrians and vehicles could cause accidents.

5.1.4.2.2.15 Labor influx

The implementation of the VCRP subprojects is likely to trigger an influx of individuals, families, and households relocating to exploit job and economic prospects stemming from the project. This unplanned migration, contingent on its magnitude, can pose challenges for host communities, particularly smaller rural settlements. These challenges encompass issues such as the availability and affordability of housing, the emergence of makeshift living spaces, added pressures on infrastructure capacity and service provision, and the potential for social disturbances due to the presence of unfamiliar newcomers. The presence of "outsiders" can lead to cultural disparities, unfamiliar conduct, and perceived competition for resources, potentially giving rise to tensions. It is paramount to establish strategies that foster social unity, inclusiveness, and integration to alleviate potential conflicts and facilitate a harmonious coexistence.

5.1.4.2.2.16 Increasing human-wildlife activities.

The execution of the VCRP is poised to elevate the probability of human-wildlife conflicts, especially given the anticipated upsurge in the presence of influx workers alongside the resident communities. This escalated human engagement within the project vicinity enhances the likelihood of encounters between humans and wildlife, thus magnifying the potential for conflicts to arise. The coexistence of both the workforce and local communities further exacerbates this susceptibility, culminating in a scenario where the natural habitats and movement patterns of wildlife might be perturbed, resulting in potential clashes. Furthermore, the heightened risk of increased poaching activities, directly attributed to the augmented human presence, adds a layer of complexity to the management of interactions between humans and wildlife. This intricate situation has the potential to compromise the conservation endeavors of the project and jeopardize the equilibrium of the local ecosystem and the well-being of the resident communities.

5.4.3 Environmental and social Impacts during the operational phase

Similar to the implementation phase, this section presents a summary of potential impacts and risks based upon the present understanding of the Project given all project details (locations, subproject designs, etc.) and final identification of impacts and risks will be determined as part of subproject ES assessments.

5.4.3.1 Positive impacts

5.4.3.1.1 Reduction of vulnerability to extreme weather events and increased capacity to adapt to changing climatic conditions.

The VCRP will ensure strengthening climate resilience and aims to enhance the region's ability to withstand and recover from the impacts of climate change. This will include implementing measures such as construction of flood control infrastructures, reforestation, watershed management, and sustainable land use practices.

5.4.3.1.2 Risk of damages and loss of life

The proposed activities like improving drainage systems, constructing flood control infrastructure, and implementing flood risk management strategies will mitigate the risks of flooding in the Volcanoes Region and Vunga corridor and decreased frequency and severity of floods, thereby reducing damage to infrastructure, agricultural lands, and communities.

By implementing flood risk reduction measures, such as improved drainage systems and flood control infrastructure, the community is better protected against the devastating effects of floods. This reduces the risk of loss of life and property damage caused by floodwaters. People can feel safer and more secure in their homes and businesses.

5.4.3.1.3 Improving the management of natural resources.

Sustainable forestry practices, watershed protection, and biodiversity conservation will help preserve and restore ecosystems, maintain water quality, and protect habitats for flora and fauna. It will contribute to sustainable livelihoods for local communities' dependent on natural resources.

5.4.3.1.4 Enhance the management of tourism assets in the Volcanoes Region and Vunga corridor.

The infrastructure development, visitor management strategies, and community-based tourism initiatives will improve tourism experience, attracting more visitors to the area, generating income for local communities, and creating employment opportunities. I will also contribute to the conservation of natural and cultural heritage sites, promoting sustainable tourism practices.

The Volcanoes National Park is a popular tourist destination, particularly known for its gorilla trekking experiences. The restoration and expansion of the park can attract even more tourists interested in experiencing the diverse wildlife and pristine natural beauty. This, in turn, can boost local economies through increased revenue from tourism, leading to improved livelihoods and job opportunities for communities living in and around the park.

5.4.3.1.5 Improved Public Safety and Enhanced Infrastructure Resilience:

Flooding can pose a threat to public safety, making it difficult for emergency services to reach affected areas and provide assistance. By reducing flood risks, the community benefits from improved public safety measures. Emergency response times can be quicker, and evacuation procedures can be more efficient and effective, minimizing the impact on residents during flood events.

Flooding can damage critical infrastructure such as roads, bridges, and utilities, disrupting transportation, communication, and access to essential services. By implementing flood risk reduction measures, the community's infrastructure becomes more resilient to flood events. This ensures that essential services remain functional, reducing disruptions and facilitating the community's ability to recover quickly after a flood.

5.4.3.1.6 Improved Water Quality

River dredging and catchment restoration can lead to improved water quality. Dredging removes pollutants and accumulated sediments, resulting in cleaner water. This helps reduce the risk of flooding during heavy rainfall. By managing the landscape and restoring catchments, water can be absorbed more efficiently, reducing the volume and speed of runoff into rivers and decreasing the likelihood of flooding. This benefits people living in flood-prone areas by minimizing property damage and the associated economic and emotional costs of flooding. Catchment restoration involves implementing measures to prevent soil erosion and pollution, such as planting vegetation, establishing buffer zones,

and promoting sustainable land use practices. Cleaner water enhances the health of aquatic ecosystems, supports biodiversity.

5.4.3.1.7 Preservation of Livelihoods

Floods can have a devastating impact on local economies, particularly in areas where agriculture is a primary source of income. Flood risk reduction measures help protect agricultural lands from inundation and soil erosion, preserving livelihoods for farmers and maintaining food security. Additionally, businesses in the community, such as shops, restaurants, and tourism-related enterprises, benefit from a reduced risk of flood damage and can continue to operate more effectively.

5.4.3.1.8 Enhanced Biodiversity and Ecosystem Services

By expanding the habitat for wildlife, the restoration efforts can support the recovery and conservation of endangered and threatened species within the park. This includes iconic animals like the mountain gorillas, golden monkeys, and various bird species. A diverse range of flora and fauna will flourish, contributing to a healthier ecosystem overall.

The restoration efforts will help restore and enhance vital ecosystem services provided by the park. These services include soil erosion control, carbon sequestration, and regulation of microclimates. The restored ecosystem will be better equipped to provide these essential services, benefiting both wildlife and local communities.

Afforestation and reforestation will increase the amount of moisture in the atmosphere and contribute to regulation of precipitation in the ecosystem through the process of evapotranspiration.

5.4.3.1.9 Carbon sequestration

The proposed VCRP project will contribute to the sinking of atmospheric carbon dioxide through photosynthesis on a large scale as a result of afforestation and reforestation. Further, any timber products obtained from the plantations will sequester carbon when in use.

5.4.3.1.10 Forest fires hazard reduction

Establishment of forest will reduce areas with grass cover, incorporate fire breaks and hence reduce fire hazards. Sites dominated by grass and herbs are prone to fires from livestock herders who periodically scorch the areas for seasonal grass rejuvenation and/or accidental torching. The forest restoration in such areas will reduce the fire occurrence incidences.

5.4.3.1.11 Research and education opportunities

The project will utilize technologies from research in the flood reduction, smart agriculture practices, livestock production, water supply, crop production, afforestation and reforestation activities. The impacts will also be monitored to generate new knowledge for application.

5.4.3.1.12 Improved security

The electric fencing project will certainly have positive impacts to local communities who will be living adjacent to the park. It is envisaged that community members will no longer be living in fear of potential raids and attacks by animals.

5.4.3.1.13 Enhanced Conservation Awareness and Collaborative Efforts

The VCRP stands as a transformative avenue to heighten understanding of the significance of biodiversity conservation and ecosystem restoration. Through active involvement in educational programs targeting local communities, schools, and visitors, the project has the potential to cultivate a profound sense of stewardship and environmental accountability. This engagement is poised to instill a lasting dedication to safeguarding and nurturing the rehabilitated regions. Furthermore, the VCRP

serves as a catalyst for collaborative conservation endeavors. Ecological restoration endeavors inherently necessitate partnerships across diverse stakeholders, encompassing local communities, government bodies, NGOs, and international organizations. By fostering these collaborative ties within the framework of the Volcanoes National Park restoration, the project facilitates the exchange of knowledge, capacity enhancement, and cooperative initiatives for conservation. This collaborative ethos can subsequently stimulate analogous undertakings in other geographical locales, amplifying the impact of conservation efforts on a broader scale.

5.4.3.2 Adverse impacts

5.4.3.2.1. Failure of detention ponds and resultant impacts and risks downstream on both human and physical environment.

Water for downstream inhabitants may be cut off for a short time that directly affects their agricultural activities and livelihoods due to rehabilitation and maintenance activities; and can cause floods, damage to property, crops and lives at the downstream side due to emergency flood discharge and pond failure.

5.4.3.2.2 Increase runoff downstream (speed and volume)

The stabilization and enhancement of gully banks and beds will increase runoff downstream as water flows through concrete or volcanic rocks. Surface *runoff* always occurs when the access of water to the ground surface is higher than the infiltration capacity of the soil. Although the impact is not seen as critical, actions and monitoring are needed to anticipate the risks downstream.

5.4.3.2.3 Reduction/changes of water flow downstream due to detention ponds and its effects.

Not well-designed detention ponds, piping failure along conduit, Difficult and costly sediment removal; caused by inadequate sediment basin access, Inadequate sediment storage capacity are some of the common problems that can reduce or change the water flow downstream.

5.4.3.2.4 Water discharges

Water lines may be periodically flushed to remove accumulated sediments or other impurities that have accumulated in the pipe. The major environmental aspect of water pipe flushing is the discharge of flushed water, which may be high in suspended solids, residual chlorine, and other contaminants that can harm surface water bodies.

5.4.3.2.5 Domestic wastewater discharges

Uncontrolled discharge of domestic wastewater from the tourism facilities and the smart green village, including sewage and greywater, into aquatic systems can lead to, among other things, microbial and chemical contamination of the receiving water, oxygen depletion, increased turbidity, and eutrophication. Wastewater discharge onto streets or open ground can contribute to the spread of disease, odors, contamination of wells, deterioration of streets, etc. If not re-used, the effluent or treated wastewater can be discharged to rivers; large surface water bodies; smaller, closed surface water bodies; and wetlands and lagoons.

5.4.3.2.6 Leaks and overflows

An appropriate sewage system is proposed for the smart green village. Leaks and overflows from the sewage system can cause contamination of soil, groundwater, and surface water. Depending on the elevation of groundwater, leaks in gravity mains may also allow groundwater into the sewer system, increasing the volume of wastewater requiring treatment and potentially causing flooding and treatment bypass. Overflows occur when the collection system cannot manage the volume of wastewater, for example due to high flows during rain events or as the result of power loss, equipment

malfunctions, or blockages. The excess flows may contain raw sewage, industrial wastewater, and polluted runoff.

5.4.3.2.7 Crop residue and solid waste management

Crop residue and solid waste have to be appropriately managed to avoid pollution of the site. The volume of this waste will increase if no appropriate measures are considered to reuse for agriculture or other activities.
Mammalian livestock production will also generate waste. Solid waste generated during mammalian livestock production includes waste feed, animal waste, and carcasses. Other wastes include various kinds of packaging, used ventilation filters, unused / spoiled medications, used cleaning materials, and sludges from wastewater treatment if present.

5.4.3.2.8 Visual impact (impact due to existing scenery)

As the smart green village housing infrastructures, water supply infrastructures, flood reduction infrastructures are established and the quarries/ borrow pits are exploited, the surrounding landscape will be permanently altered, going from an open, mostly rural agricultural setting to a developed enclosure. The introduction of discordant features and activities will cause the facilities to fail to complement, coexist, and blend with the existing landscape, which will disrupt the existing scenery.

5.4.3.2.9 Water distribution

The most fundamental environmental health issues associated with distribution networks is the maintenance of adequate pressure to protect water quality in the system as well as sizing and adequate maintenance to assure reliable delivery of water of suitable quality. The most significant environmental issues associated with the operation of water distribution systems include water system leaks and loss of pressure, and water discharges.

5.4.3.2.10 Water management

Maintaining soil structure and irrigation require a substantial quantity of water to maintain high productivity. Water efficiency is key for smart agriculture farming and agroforestry activities.

5.4.3.2.11 Soil conservation and management

With the agro-forestry activities especially for crop production, physical and chemical degradation of soils may result from unsuitable management techniques, such as use of inappropriate machinery or earthworks associated with annual crop preparation and infrastructure development. Chemical degradation of soil may result from insufficient or inappropriate use of mineral fertilizers, failure to recycle nutrients contained in crop residues, and failure to correct changes in soil pH that result from long-term use of nitrogen fertilizers and excessive use of poor-quality water, resulting in salinization.

5.4.3.2.12 Nutrient management

Unsustainable use of nutrient with crop production or agriculture farming activities could pollute the soil, lead to nutrient depletion and over-fertilization.

5.4.3.2.13 Water abstraction

Water abstraction during the supply of water to the project may impact the downstream users and availability of water in the area leading to the competition of this critical resource.
Development of water resources often involves balancing competing qualitative and quantitative human needs with the rest of the environment.

5.4.3.2.14 Air emissions and odors

Air emissions from wastewater treatment operations may include hydrogen sulfide, methane, ozone, volatile organic compounds, gaseous or volatile chemicals used for disinfection processes. Odors from treatment facilities can also be a nuisance to workers and the surrounding community.

Air emissions from mammalian livestock production will include ammonia (e.g. management of animal waste), methane and nitrous oxide (e.g. animal feeding and waste management), odors (e.g. animal housing and waste management), bioaerosols, and dust (e.g. feed storage, loading, and unloading, feeding, and waste management activities).

5.4.3.2.15 Gradual soil acidification from fertilizer application

As part of the terracing activities and catchment management, agriculture in-puts shall be applied to soils. Fertilizers contain phosphorus and nitrogen, which have an acidic reaction with the soils increasing acidity of the soils. Continuous application of such fertilizers could result in progressive soil acidification due to Ammonia nitrification.

5.4.3.2.16 Water system leaks and loss of pressure

With water supply infrastructures, water system leaks can reduce the pressure of the water system compromising its integrity and ability to protect water quality and increasing the demands on the source water supply, the quantity of chemicals, and the amount of power used for pumping and treatment.

5.4.3.2.17 Ecological impacts

Livestock with access to creeks, rivers, and other natural water sources may cause environmental damage by contaminating the water with animal waste, destroying riparian habitat, and eroding the stream banks. In addition, overgrazing may contribute to soil losses because of severe erosion, and a reduction in soil productivity caused by alteration of the vegetation composition and associated organisms in rangelands.

5.4.3.2.18 Loss of biodiversity on hillsides and valleys

It is anticipated that terracing and drainage infrastructure activity will reduce the area of forest plantation and changes in types of crops from common crops to high value could all reduce or cause changes in the fauna and probably the existing biodiversity.

5.4.3.2.19 Animal diseases

Where there is livestock and poultry, there are always diseases and there is the possibility of contamination. Those diseases can lead to losses if no appropriate actions are considered.

5.4.3.2.20 High sediments in sedimentation traps and impact on water quality

With the operation of detention ponds and sediment traps, sediments will accumulate with the filtration of water that crosses the water detention basin before water is channeled downstream. This is done to ensure sediments are trapped for further removal. The quantities of sediments will keep accumulating to a point where they reach a high level, creating a dead load that could lower the detention capacity of the detention basin.

The sediment that will be removed, during the maintenance of sediment traps or dredging process of rivers close to bridges, may be contaminated with diesel range organic pollutants and may pose a risk to downstream water quality during the dredging process.

5.4.3.2.21 Risk of introducing invasive species, pests or diseases to the local forest and agriculture areas and therefore threatening local biodiversity

During ecological restoration of the VNP expansion area and priority sites outside of the VNP but within the other areas of the VCRP interventions, there is a risk of introducing invasive species and pests that could impact the biodiversity of the project areas, especially the forest and agriculture areas.

5.4.3.22 Habitat alteration

The establishment of plantation forests activities involves the replacement of the existing vegetation cover with native and/or non-native species, resulting in the potential loss of habitat diversity and a corresponding loss of wildlife and plant species.

Loss of biodiversity in managed natural forests may be caused by several factors. Certain species of plants and animals may be unable to tolerate the disturbance caused by forest management and harvesting activities, and subsequently leave the area. Other species may not survive habitat modifications caused by forest harvesting practices: for example, canopy dependent species may be unable to crossroad openings and become cut off from a resource critical to their survival.

5.4.3.23 There is a risk of maladaptation if local conditions and needs are not adequately considered.

Local conditions and the needs have to be considered to avoid any maladaptation. Native species cannot be considered to any project area. The conditions and needs differ from one place to the other. Non-native species to be used will be clarified subsequently in the ESIAs and/or ESMPs.

5.4.3.24 Water logging and salinization

Horticulture projects as part of the Income Generating Activities (IGA) for livelihood restoration in the green village, could be associated with salinization and the rise in the local water-table (waterlogging). Low irrigation efficiencies are one of the main causes of the rise of the water table. Poor water distribution systems, poor main system management and archaic in-field irrigation practices are the main reason. However, the proposed smart agriculture activities are expected to use improved/modern irrigation technologies leading to water application efficiency to mitigate water-logging and salinization occurrences.

5.4.3.25 Algal blooms and proliferation

Agriculture farming activities have the potential to cause algal blooms if there is an excess of nutrients like nitrogen and phosphorus feed algae causing them to ‘bloom’. When the blooms die, the decomposition processes use up available oxygen in the water, creating a dead zone where no aquatic life can survive.

5.4.3.26 Air quality and emissions

Atmospheric emissions are primarily associated with emissions of combustion by-products during agriculture farming activities and agroforestry—including carbon dioxide (CO2), sulfur dioxide (SO2), nitrogen oxide (NOx), and particulate matter (PM) —resulting from the operation of mechanized equipment or from combustion by-products from the disposal or destruction of crop residues or processing by-products.

5.4.3.2.2.27 Threat to human health

If there is improper handling of treated seeds, fertilizers and pesticides, there will be threats to human health and livestock.

5.4.3.2.2.28 Use of chemical pesticides and other chemical agricultural inputs.

Pests will negatively affect production from smart agriculture activities and agroforestry in case of inappropriate maintenance of soil structure and soil organic matter. Pest will exacerbate if there is no adequate weed selection. The use of pesticides through farming activities and livestock farmers may

lead to overuse and cause diseases and so disrupt natural ecosystems, especially if there is no appropriate targeted species for selectivity and efficiency.

Adsorption, degradation, and movement are key processes conditioning the behavior and fate of pesticides and fertilizers in the soil. Six processes that can move pesticides are leaching, diffusion, volatilization, erosion and run-off, assimilation by microorganisms, and plant uptake. Leaching is a vertical downward displacement of pesticides and fertilizers through the soil profile and the unsaturated zone, and finally to groundwater, which is vulnerable to pollution. The issue is critical in case no estimated quantities of pesticides to be used for a particular soil, land, and crop. It is important to carry out integrated pest management and best irrigation practices.

5.4.3.2.2.29 Malaria spreading from mosquito breeding.

During operation of the green village, dams, dykes and ponds, stagnant water could become favorable breeding grounds for malaria spreading mosquitoes. Also, unattended bushes and shrubs could also breed mosquitoes. This could result in increased cases of malaria for household members in green villages and the neighboring communities, if not managed.

5.4.3.2.2.30 Habitat loss and introduction of invasive species

Creation of buffer zones will deteriorate habitat. In addition, alien/invasive species of flora may accidentally be introduced through the transportation and planting of native species.

5.4.3.2.2.31 Water quality deterioration

Restoration activities will increase sediment and turbidity in the protected waters and so impact the water quality.

5.4.3.2.2.32 Increased runoff

During the operation phase of the smart green village, the roof catchment of each house will lead to increased runoff. The total surface area that will act as the project rainwater catchment is based on the roof catchment and the annual precipitation.

There is increased fluctuation in stream flow amounts with sharp increase during rainy weather and sharp decrease during dry weather. The cumulative effect as a result of the entire built-up area of the project is felt more downstream.

Surface runoff is also an agent of pollution, and it will therefore contribute to the pollution of water bodies particularly because it will flow through urban zones that are bound to have a lot of solid waste.

5.4.3.2.2.33 Microclimate modification

The paving and concrete used in the premises of the smart green village will reflect heat from the sun, thus modifying the area microclimate. Shortwave rays from the sun are converted into long wave rays on reflection from the ground surface. These are not able to leave the atmosphere, hence creating increased heat. As a result, increased in paved regions also leads to increased long wave occurrence and hence increased microclimate modification. The paved areas will also retain heat that will be released at night when the land cools.

This impact will be felt during the operational phase of this project. The scope of the impact will be within the immediate project area.

5.4.3.2.2.34 Water quality deterioration

Forest operations may negatively impact water quantity and quality of streams, water bodies, and ground water resulting in seasonal hydrologic changes and potential negative impacts on downstream river biota, communities, and fisheries.

5.4.4 Potential Environmental and Social Impacts that occur in both during Project construction and operation phases

5.4.4.1 Positive impacts

5.4.4.1.1 Creation of job opportunities

VCRP has the potential to increase the working to population ratio by generating employment opportunities in the project area. This includes direct and indirect job opportunities for a significant number of the population during all phases thus, reducing unemployment and, in the process, providing livelihood.

The acquisition of raw materials and necessary fittings and components as well as employment VCRP will have an impact on economic flows within the area and the country. The trading of goods and services will contribute to income generation and development. VCRP will support the business market in Rwanda as a whole.

5.4.4.2 Negative impacts

5.4.4.2.1 Competition for water consumption

Considering the number of houses to be constructed for the smart green village and other infrastructures including health post, nursery, multipurpose hall, market agriculture, the project will require a large amount of water during construction and operation. If appropriate measures are not considered for a continuous and new supply of water during construction and operation phases, the project will compete with the surrounding communities, and this will definitely impact their health and hygiene.

5.4.4.2.2 Disruption of protected and non-protected plants and animal habitats

The proposed flood reduction infrastructure activities and some other project activities will impact natural habitats for some plants or animals of national and international importance. Disturbance of their habitat or displacement of the species is expected during construction and operation phases.

5.4.4.2.3 Impact on surface and sub-surface drainage patterns

Construction and operation activities during the rainy season will increase the quantities of sediments running into water resources as trenches/drains will be excavated and culvert constructed to operate and increase the conveyance of water. Dumping of soil waste has been observed in existing drains. Excavation of drains, cutting, clearing of the top earth and banks stabilization will expose the soil to erosion which will range from rills to gully depending on the season in which these works will be undertaken. This will threaten not only the agricultural production, but also siltation will pollute the nearby water bodies.

5.4.4.2.4 Employment labor issues

There is a medium probability that some labor abuses could be associated with the Project activities. Such instances could include for example, employment of children in the agroforestry activities, in the establishment of tree nurseries and plantations. While Rwandan laws forbid children under 18 years of age to work, the Project may face challenges to enforce the appropriate involvement of children in activities, particularly in poorer remote locations where school attendance may not be regular and where families depend on labor contributions from their children.

There is also the possibility of discrimination in hiring processes, particularly by subcontractors or project partners. For instance, women may face prejudices in recruitment and even lack of information about work opportunities, thereby limiting their access to benefits. Sexual harassment in the workplace or during implementation of project activities may also occur.

5.4.4.2.5 Risks that vulnerable women are not adequately included in village forest management.

If there are no agreed gender mainstreaming considerations or set criteria, there are risks that vulnerable women are not adequately included in village forest management activities and related benefit sharing arrangements.

5.4.4.2.6 Risks associated with the construction and operation of the electric fence.

Under component 3, Electric fencing can have various impacts, including accidents resulting from electric shocks and fire hazards. These accidents pose risks to both people and wildlife in the VNP, particularly if individuals are not educated about the potential dangers associated with electric fences. Additionally, accidents can occur during the transport and development phases, involving the handling of machinery, tools, and vehicles. Uncovered holes also pose a threat, potentially causing injuries to people and wildlife.

5.4.4.2.7 Fire outbreak

Construction works will require a fuel store for re-fueling the heavy equipment used for earth works. Mistakes with handling fuels or electrical short circuits can easily result in fire outbreaks that could cause serious damage. E.g. loss of equipment, property, bush fires and in some cases loss of lives to fires. This can happen at the campsites of construction workers as well as within the village houses. Fire outbreak is a possibility during the operation phase considering the electrical installations (electrical fence) and possible use and storing of hydrocarbons.

5.4.4.2.8 Soil and groundwater contamination

Environmental hazards at construction sites may seem obvious – construction waste and fossil fuel guzzling equipment literally generate tons of unwanted byproducts. The excess sediment itself in water can be a problem, but also contaminated discharge from construction activities mixes with soil particles. These particles can be swept off site or directly enter a nearby body of water, harming the surrounding ecosystem. Not to mention any discharge that directly enters the groundwater.
Uncontrolled farming activities will also contaminate the soil with use of excess nutrients, pesticides and fertilizers.

5.4.4.2.9 Energy use and conservation

Construction activities and operation of the planned infrastructures will increase energy if non appropriate measures are taken to minimize the energy consumption. Operation of construction machines and equipment, heating, hot water, cooling and refrigeration, lighting, washing and drying can require a lot of energy. The planned processing activities, storing and handling will require energy. Agriculture and forestry require energy as an important input to production. Agriculture and forestry use energy directly as fuel or electricity to operate machinery and equipment, to heat or cool buildings, and for lighting on the farm, and indirectly in the fertilizers and chemicals produced off the farm.

5.4.4.2.10 Water conservation

The project will require a huge amount of water during construction of flood control infrastructures, smart green village houses, road drainage structures, water harvesting infrastructures, energy management structures, fence of park expansion...etc. During operation, a significant amount of water will be needed for operation and maintenance, especially for the green village houses and energy management structures. The water consumption is expected to increase during the dry season when the rainwater harvesting is limited.

5.4.4.2.11 Soil erosion and landslides

Activities including preparation of terraces, site clearing, excavations for the detention ponds, dykes, land clearing, excavation of trenches, will all destabilize soil composition and expose it to the agents of erosion, mostly run-off, resulting in increased erosion and landslides at terrace and different embankments. If not combated, it can develop into a cumulative impact of loss of valuable productive soils to the receiving waters, sedimentation of receiving waters, silting and blockage of delivering canals, and loss of agricultural productivity of the lands and marshlands.

5.4.4.2.12 Management and Safety of Hazardous Materials (ESS4)

There may be some hazardous waste generated during the construction activities. Hazardous solid wastes generated in camps, repair points for construction machinery and equipment include rag, paper during the cleaning process for equipment and machinery, and Cans, tanks. This weight of hazardous wastes does not currently have standards to calculate, but based on the same construction works, the weight of this type of waste is not large.

Forestry operations and road construction will involve the use of machinery, vehicles, and related fuels, lubricants, and other materials which may cause negative impacts if accidentally spilled.

Mammalian livestock operations could generate hazardous materials in case of standing water, mosquitoes breeding, poor management of manure and inappropriate mechanical controls (e.g., traps, barriers, light, and sound).

5.4.4.2.13 Biodiversity conservation and ecosystems

Construction of tourism and hospitality facilities may impact biodiversity, and vegetation can also be affected during operation by the presence of tourists in ecologically sensitive areas engaging in activities (e.g. picking flowers, felling young trees, damage to coral reefs) that may damage biodiversity.

During the agriculture farming and agroforestry activities, there will be impact on biodiversity and ecosystems. Direct impacts relate to habitat conversion or degradation, water usage, pollution, introduction of invasive species, inappropriate cultivation techniques, and quality and or availability of priority ecosystem services. Indirect impacts relate to in-migration, and induced changes to access for traditional land uses.

5.4.4.2.14 Possible increase/ change in water borne vectors

Poor sanitary conditions and breeding habitats during construction and operation cause vector borne diseases especially when there is no vector borne control programme. The risk may be increased if people are not sufficiently educated/informed or are located in high-risk zones.

5.4.4.2.15 Restricted animal movement

During construction and operation of the VNP electric fence, animals will be restricted to movement in the surroundings but also their movements will be restricted to the park conservation area.

5.4.4.2.16 Disruption to migratory corridors

With the construction and operation of the electric fence, migratory birds will see their movements disrupted with possibility of not crossing at all in case contact to the fence resulting in electrocution.

5.4.4.2.17. Waste management

Domestic solid waste generated by construction activities of workers includes plastic bags, wastepaper, plastic bottles and excess foods...etc. Solid wastes generated during the construction process include broken bricks, stones, scrap metal, cement bags, etc. The weight of generated construction solid waste depends on the management and labour operations, the use of equipment, quality of materials…etc.

During operation, waste will be generated by the smart green village, tourism and hospitality facilities. The waste normally includes paper and cardboard items, glass and aluminum products, plastic items, organic waste, building materials and furniture, and used oils and fats. Hazardous wastes may include batteries, solvents, paints, antifouling agents, and some packaging wastes.

Solid waste generated during mammalian livestock production includes waste feed, animal waste, and carcasses. Other wastes include various kinds of packaging, used ventilation filters, unused / spoiled medications, used cleaning materials, and sludges from wastewater treatment if present. Mammalian livestock production operations generate significant quantities of animal waste, mainly in the form of un-metabolized nutrients excreted as manure.

Livestock feed includes hay, grain (sometimes supplemented with protein, amino acids, enzymes, vitamins, mineral supplements, hormones, heavy metals, and antibiotics), and silage. Feed can become unusable waste material if spilled during storage, loading, and unloading or during animal feeding. Waste feed, including additives, may contribute to the contamination of stormwater runoff, primarily because of its organic matter content.

5.4.4.2.18 Wastewater and Ambient Water Quality

Wastewater will be generated from the project sites during construction from the campsites and during operation of the smart green village. The most significant wastewater flow generated by the village houses, tourism and hospitality facilities is domestic sewage from bathing and toilet flushing, but important streams are also produced by the laundry and dry-cleaning, housekeeping, maintenance, and kitchen departments.

Livestock operations most commonly generate non-point source effluents due to runoff from feed (including silage) storage, loading, and unloading, livestock housing, feeding, and watering, waste management facilities, and areas of land application of manure.

5.4.5 Potential indirect or cumulative impacts

These are impacts that occur as a result of a combination of the Subproject with other projects that cause associated impacts. These impacts occur when the incremental impact of the subprojects is combined with the cumulative effects of past, present, or future projects that have the potential for predictability.

The subproject consists of many flood control infrastructures, houses, livestock, and farming facilities. However, the planned infrastructures, facilities and assets are scattered and independent in the operation. Moreover, the locations and some of the sub-project infrastructures, facilities, assets and some of the details are unknown to predict what could be the cumulative impacts.

Based on available information, cumulative impacts will include air emissions, impact on water quality, sedimentation, competition for water consumption, erosion, soil and groundwater contamination. ESIAs/ESMPs will address indirect and cumulative impacts.

6. ENVIRONMENTAL AND SOCIAL MANAGEMENT PROCEDURES

This section outlines the procedures and measures employed by the Project to address environmental and social concerns throughout the identification, preparation, approval, and implementation of site-specific subprojects. It provides guidelines for conducting environmental and social assessments and specifies the steps necessary to mitigate potential adverse impacts in accordance with the Environmental and Social Management Framework (ESMF). The subsequent subsection details the procedures and steps designed to adequately address and manage environmental and social risks and impacts. The ESMF emphasizes the project's planning focus on ensuring that proposed subproject activities are environmentally sustainable, socially acceptable, and align with the "do no harm" principle. This is achieved through the application of best practices and effective mitigation measures, as outlined in this Section of the ESMF and the forthcoming ESF instruments that will be prepared once subproject implementation sites are identified.

The VCRP project utilizes a structured approach to environmental and social management, ensuring compliance with the 8 applicable Environmental and Social Standards (ESSs) and following a mitigation hierarchy that includes avoidance, minimization, mitigation, compensation/offset for negative impacts, and enhancement of positive impacts whenever feasible. The subsequent sections delineate the necessary actions at each stage of the project's life cycle, including sub-project implementation, monitoring, and progress reporting. The subproject environmental and social screening and management process will be implemented by following the specified procedures and steps.

6.1 General requirements

6.1.1 Institutional responsibilities for ESIA/ESMP and other ESF documents preparation

The ESMF states that the Government of Rwanda is accountable for adhering to national regulations, policies, and the World Bank's Environmental and Social Framework, which includes the 8 ESSs and ESH Guidelines. The Ministry of Environment (MoE) is in charge of obtaining environmental clearance from both the Rwanda Development Board (RDB), which is responsible for environmental and social impact assessments in Rwanda, and the World Bank, as needed. The implementation of this VCRP

project will be consistent with the overall institutional structure based on existing institutions and processes. The primary responsibility for the implementation of this VCRP Project lies with the Ministry of Environment (MoE).

The effective implementation agency for the Rwanda VCR Project will therefore be MoE. However, since the project is multi-sectoral in nature, MoE will collaborate closely with other partners in the activity's implementation but at varying degrees. The figure 5 below presents an overview of the implementation structure of this VCRP project. The implementation of the VCRP project will be under the supervision of the Project Steering Committee (PSC) and a Project Technical Advisory Committee (TAC) established by MoE that will be created to provide ongoing technical support to project implementation as well as the Project Implementation Units (PIUs) established in each implementing entity, where the Head of Institution will be responsible for the financial management and overall project implementation at the level of the institution management. The project governance arrangements at the national level are designed to build upon the institutional structure of MoE as overall coordinator and Implementing Partners and are supplemented by:

- A Project Steering Committee (PSC) established by MoE, where the Permanent Secretary will be Chair.
- A project Technical Advisory Committee (TAC) established by MoE to provide ongoing technical support to project implementation.
- The Project Implementation Units (PIUs) are established in each implementing entity, where the Head of Institution will be responsible for the financial management and overall project implementation at the level of the institution management.
- The Project implementation arrangements take place at three levels: national, district and community level.

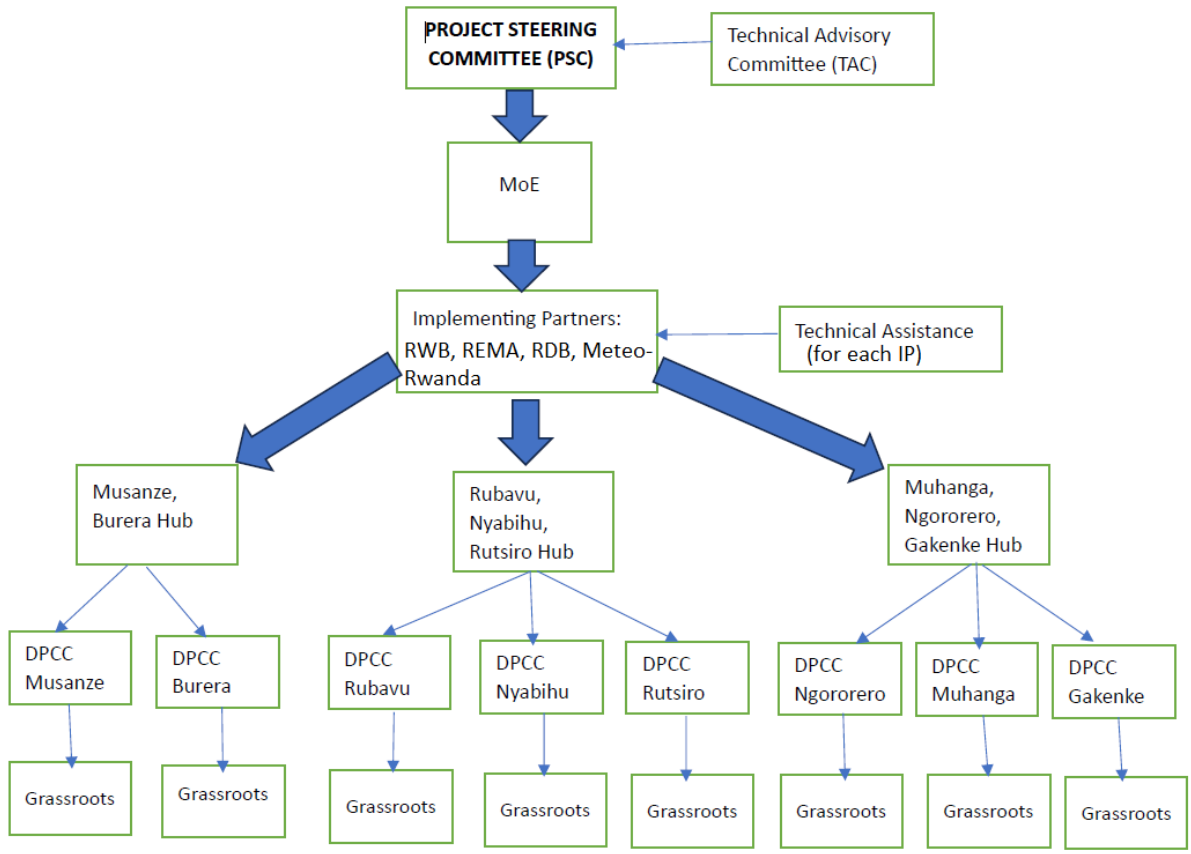


Figure 5: Environmental and Social Management for VCRP– Institutional Arrangements at the National, District and Community Levels.

Project Steering Committee

The PSC will be mainly responsible for the following aspects, on a national basis:

- Policy guidance on all issues relating to the project.
- Ensuring implementation of specific EHS measures.
- Provide overall strategic guidance and oversight to the Project, including policy and strategic issues related to urbanization.
- Approval of project investments.
- Approval and monitoring of project annual work plans and budgets.
- Resolving implementation bottlenecks and providing positive impetus to facilitate achievement of the project's development objectives (results/outcomes).
- Review and approve annual work plans.
- Provide high-level project oversight and policy coordination, including addressing any intergovernmental issues that may need to be resolved at government level.

The PSC, which is expected to meet on a semiannual basis each year and as needed, will be chaired by the Permanent Secretary of MoE and will have VCRP Coordinator as Secretary to the steering committee.

Project Technical Coordination Committee

The technical coordination committee (TAC) is in charge of ensuring technical guidance to both the project execution team and the Project Steering Committee. The TAC will be engaged in providing technical support on an on-going basis to facilitate effective implementation and mainstreaming of project interventions beyond the life of the project. Thus, the members of the TAC will bring expertise from their respective institutions to make technical contributions to the project implementation.

The TAC will be formed and comprised of Department Heads, Division Managers and Project Coordinators from relevant Ministries and Institutions as follows: MININFRA, MINALOC, MoE, MINEMA, MINAGRI, RHA, RTDA, LODA, REMA, National Land Authority, Rwanda Meteorology Agency (RMA), WASAC. The TAC will provide technical advisory support to project contractors and consultants (through the Implementing Agencies), review implementation progress and handle day-to-day project coordination.

The TAC will be chaired by the Program Manager of MoE-SPIU having VCRP under his/her portfolio of management and will meet on a quarterly basis; and anytime if need arises. It will review progress on Project activities, discuss issues and operational aspects of the project along with providing technical advisory support to project contractors and consultants through the implementing agencies. It will also prepare a monitoring and evaluation capacity building plan which will be reported to the PSC.

In details, the TAC will have the following responsibilities:

- To ensure that the VCRP activities are innovatively executed on the basis of comprehensive stakeholder support, contribution and technical guidance to ensure alignment of the VCRP with other sector specific national priorities.
- To provide technical information from partnering institutions they represent and specific member inputs to activity execution to facilitate successful implementation of the VCRP.
- To review implementation reports and advise the PSC and project teams (PMU and PIU) on guiding implementation to ensure consistency and achievement of objectives and targets.
- To approve designs and amendments of the Project Implementation manuals and implementation plans.
- To inform and support the sector engagement framework through the partnering institutions aimed at ensuring the project activity execution, (monitoring, evaluation and reporting) achieves results and consolidates innovations and lessons from the project and overall knowledge management and transfer informs replication and scale up.
- Ensure that sector specific interventions are effectively and efficiently supported by the responsible partner institution.
- To ensure the implementation of specific EHS measures.

The District Coordination Committee (DCC)

At districts level there will be decentralized financed HUB/ PIUs at the Districts level, staffed with technical staff and finances officers. They will be responsible for overall project coordination for Component 1a. 2.a,2. b and 2.c, 3.a and 3b to cater for technical and finances project related activities environmental and social risk management, M&E and facilitation and follow-up on all institutional and capacity building. In addition, they will be responsible for EHS staffing and ensuring implementation of specific EHS measures.

Each PIU staff will be supported by other existing District staff members in the domains where needed (Flood management, hydro-meteo, land husbandry, accountant, engineering, livelihood) under the leadership of the District Executive Secretary to manage the implementation of the VCRP.

A collaborative MoU of collaboration will be concluded between the implementing agencies and district to decentralize the project activities.

The main implementing entity within Local Government level will be the 8 Districts, which will be responsible for delivering the core activities for all components. The activities will be integrated into the Single Action Plan and will be reported on at the District Management Meetings, and District Coordination committee made by technical staff from sectors of intervention, districts chaired by the Executive secretary.

Implementation at Community Level

At community level, the Community Coordination Committees will have the following responsibilities:

- To provide an active interface between District management, service providers and the communities
- To facilitate coordination of information of activities (such as surveys, supervising documentation) for monitoring purposes in accordance with procedures put in place by the project.
- To work in collaboration with staff at the district and central levels to ensure that fair and just compensation at replacement cost is reached in accordance with the law and requirements of the project, and to be involved in conflict and grievances management.
- To work with livelihoods-based cooperatives, farmers, and tea workers to facilitate meetings and groups.
- To facilitate the channels of information to farmers whenever it is required, say during training, counseling, and sensitization meetings.
- To monitor the roll out of community training.
- To be involved in monitoring and evaluation of project activities, provide support in areas such as gender responsiveness and to promote the spirit of ownership among the communities.
- To ensure the implementation of specific EHS measures.
- To document and report any allegations of bias or misapplication of policy, procedure or law related to the project activities or allegations of corruption.
- Provide general orientations for the catchment management plan and advice measures to be provided.

Specific to Environmental and social risk management

Specific to environmental and social risk management for the different activities under each VCRP components, the ESMF understands the staff that will be available to oversee the implementation of Environmental and social safeguards (ESS) under this project are:

- An ESS specialist at HUB I, HUB II and HUB III for the different districts of project intervention.
- Implementing Partners (IPs) shall rely on this ESS above.
- The ESS specialist at MoE PCU shall oversee ESS activities for all components of the VCRP.

While REMA has experience with World Bank-financed projects, RWB and RDB have none. It is imperative for MoE, RWB, REMA and RDB to have dedicated personnel that will be charged with ensuring regular coordination to avoid project delays. The 3 entities each have Single Project Implementation Units for project implementation, but they lack sufficient specialists in environment and social safeguards. REMA SPIU has 68 staff, including one environmental safeguard, one social, and two social/community mobilizers. RDB SPIU has 17 staff but lacks environmental or social safeguards specialists. RDB is responsible for reviewing and issuing EIA certificates, while REMA monitors EIA implementation compliance. Though about 24 staff of the RWB are dedicated for the SPIU, there is no environment or social safeguards person in the SPIU. To mitigate risks and ensure smooth project

operations, the project will engage specialists like Community Engagement specialists, Environmental specialists, Gender specialists, and Social Specialists. It is crucial for RWB and RDB to immediately hire dedicated specialists, and REMA should analyze existing workload and consider augmenting staff. Specific staff/capacity assessments must be conducted during project preparation, focusing on the unique EHS skills required. Further, it is envisaged that a project steering committee will be established to facilitate coordination and decision making among the agencies. Due to capacity limitations in implementing resettlement activities, RWB, RDB and REMA will engage with local NGOs to facilitate the resettlement process. The Bank will facilitate training on the ESF to enhance client capacity on risk management during project implementation. The Bank will closely monitor institutional performance throughout the project cycle.

6.1.2 General Environmental and Social Management procedures and responsibilities of the Implementing Agencies

The general requirements and responsibilities for the Implementing agencies for the application of this ESMF and the ESS1, ESS2, ESS3, ESS4, ESS5, ESS6, ESS8 and ESS10 Environmental and Social Standards include:

- Comply with the requirements and measures described in this ESMF which requires the preparation of subproject specific ESIA-ESMP or only ESMP or Strategic measures in TA as described in the report.
- Comply with the LMP prepared for the project and include the agreed measures in the subproject specific ESIA-ESMP, bidding documents and contracts as described in the report.
- Comply with the SEP to ensure proper consultations, communications and stakeholder participation in all project activities and as described in the report.
- Comply with the RPF to ensure proper management of Land and resettlement issues.
- Comply with the ESCP and agreed measures and actions to ensure proper management of environmental and social issues.
- Comply with the Gender and Gender Based Violence Action Plan (GAP) to ensure promotion of gender equality and fight against GBV during project implementation.
- Environmentally sensitive areas, cultural sites, restricted or disputed lands should be taken care of with appropriate mitigation or compensation measures during implementation.
- Ensure proper timing for ESIA-ESMP, RAP preparation for proper planning and design of the works and supervision and monitoring.
- Ensure proper planning and budget allocation among different agencies for implementation of all ESF documents, ESCP and ensure minimal cumulative impacts.
- Perform supervision and monitoring of implementation of Project EA instruments (ESMF, LMP, etc.) and of subproject ESHS performance.
- Perform routine and incident reporting on ES performance as required by the Project ESCP.
- Ensure adequate staffing of EHS professionals to implement all requirements.
- Perform training to various Project participants related to Project EHS requirements and management.
- Participation of stakeholders (especially local community) should be ensured by MoE in planning, implementation and monitoring of each sub-project and associated activities.
- MoE will ensure an appropriate institutional set up for implementing environmental and social management plans and inter-agency coordination.
- Contractors to be engaged for Flood risk management, Ecological and Landscape Restoration, Volcanoes National Park expansion investment and livelihood diversification, will ensure Health and safety measures for workers and provision of personal protective equipment; proper drinking water supply at the workers camp sites; sanitation facilities separated for men and women; First Aid Kits; clean areas to eat and change; insurance in case of accidents, etc.

- MoE will ensure that Procurement teams from all agencies coordinates closely with the Environmental and Social Management Units at the District Hub level since they will give clearance to packages before they are sent to be procured (either post review or prior review by the World Bank) to ensure all ESF instruments agreed with the World Bank are costed by contractors, and measures implemented.
- MoE will ensure that all contractors include in their costing the prevention and mitigation measures included in these ESF instruments (i.e.ESMF, RPF, LMP, GAP, SEP, ESCP) and the respective ESMP. It will not be acceptable if contractors do not implement measures because of lack of funds or lack of presence in the bidding/ tender documents.
- MoE will ensure safety provision for the resettlement sites.
- MoE and all other implementing agencies will be responsible to upload ESIA/ESMP, RAP, monitoring reports, communication news, etc. to inform the public on the results of the project and comply with the public disclosure of project interventions and potential impacts.

The following sections will describe the environmental and social management procedures that all implementing agencies will use to comply with the ESF and the ESCP. These include a summary of the VCRP environmental and social management procedures for subproject screening, preparation of appropriate ESF instruments, integrating Environmental and Social clauses into bid documents, monitoring works, reporting and grievance management.

6.2 Environmental and Social Screening of Subprojects

Environmental and Social Screening Process outlined below complies with:

- The Rwanda environmental assessment requirements, as outlined in Law N°48/2018 on Environment and the EIA and Audit guidelines.
- The World Bank's Environmental and Social Standards, especially ESS1, ESS2, ESS3, ESS4, ESS5, ESS6, ESS8, ESS10.

The screening process provides a mechanism for ensuring that potential adverse environmental and social impacts and risks of VCRP sub-projects are identified, assessed, and mitigated as appropriate, through an environmental and social screening process – to comply with national EIA requirements and the WB ESS1.

6.2.1 National EIA requirement

The environmental and social screening process begins with the project proponent/ consultant submitting a project description note, called the project brief, along with terms of reference (ToRs) to the RDB One Stop Center. Officials from the RDB, who are responsible for conducting statutory environmental assessments, then conduct field visits as part of the screening procedure. Based on the findings, they review and approve the Terms of Reference (ToR) for the Environmental Impact Assessment (EIA) study. Based on the impact category of the project, the project proponent/ consultant will conduct the necessary study and submit either a complete or partial Environmental Impact Assessment (EIA) report with ESMP being one section of the ESIA report. The reports are then reviewed by the RDB, which can either certify or reject them as appropriate. However, the law allows the project proponent the opportunity to appeal if needed.

This approach will be employed for VCRP subprojects, as most of them involve civil and/or earth-moving works, except for Technical Assistance projects.

Environmental and social screening process for the subprojects of Flood risk management, Ecological and Landscape Restoration, Volcanoes National Park expansion investment and livelihood diversification, will be carried out to achieve the following:

- Determine the level of environmental work and the type of follow-up management instruments required; Chance Finds Procedures, and other preventive and mitigation measures required.
- Determine which infrastructure for flood risk management, Ecological and Landscape Restoration, volcanoes national park expansion investment and livelihood diversification, that are likely to have potential negative environmental and social impacts.
- Determine if EIA or ESMP is needed.
- Indicate the need for a Resettlement Action Plan (RAP), which would be in line with the Resettlement Policy Framework (RPF).
- Review and approval of the screening results regarding construction (civil/earthmoving works) and rehabilitation proposals.

Environmental and social screening for VCRP subprojects will be carried out as described below:

The ES specialists in PIUs will prepare screening forms and then use consultants to carry out environmental and social screening studies including ToR for appropriate subsequent Environmental and Social instruments to be prepared. RWB and Meteo-Rwanda PIU Coordinator will be responsible for commissioning the screening work for flood risk management subproject; REMA and RWB PIU Coordinator for Ecological and Landscape Restoration subproject; and RDB PIU Coordinator for Volcanoes National Park Expansion Investment & Livelihood Diversification subprojects.

Coordinators of RWB, Meteo-Rwanda, REMA and RDB PIU for VCRP will submit subproject specific ES instrument report (ESIA with ESMP, ETC.) to MoE PCU through the VCRP Environmental and Social Coordinator and to WB for review. The MoE PCU will in turn submit results to RDB for review and approval of ToR for subsequent preparation of ESMP or ESIA and RAP as found appropriate.

The current estimates suggest that 27 ESIAs and 16 RAPs will be required, which are further broken down as 8 ESIAs and 8 RAPs for sub-component 1.a, 8 ESIAs and 8 RAPs for sub-component 2.a; 7 ESIAs for sub-component 2.b; 3 ESIAs for sub-component 2.c; and 1 ESIA for sub-component 3.b.
ESIA approval will be required where ESIA is required. The ESIA approval will be secured from RDB for the construction permit, before construction activities commence.

6.2.2 Preparation of ESIA/ESMP instruments

The implementing partner will be responsible for preparing environmental and social management instruments (such as Environmental and Social Impact Assessments/Environmental and Social Management Plans/Resettlement Action Plans) for the specific subprojects.

All subprojects will be screened against the exclusion list presented in Annex 1.

ESIA- ESMP, RAP ToR preparation

- Environmental and Social Specialists within the Implementing units will prepare or supervise consultancy services for the preparation of ToR, as well as select an Environmental consultant for preparing the necessary subproject environmental documents (ESIAs/ESMPs/RAP).
- An ESIA-ESMP will be prepared for some sub projects as indicated in table 18.
- PIU Coordinators of RWB, REMA, Meteo-Rwanda, and RDB for VCRP will submit ToR for ESIA and RAP to MoE PCU through the VCRP Environmental and Social Coordinator and to WB for review and approval. The MoE PCU will in turn submit ESIA with ESMP (including RAP as necessary) to RDB for input/comments and approval.

ESIA/RAP/ESMF study commissioning

- PIU Coordinators of RWB, REMA, Meteo-Rwanda, and RDB for VCRP will contract out consultancy services for the preparation of draft ESIAs/RAPs/ESMFs, who will carry out public consultations with stakeholders, people that may be affected and local authorities and incorporate results into final ESIA-ESMP, RAPs.
- ESIA-ESMP, RAPs will be monitored and checked by the MoE PCU reviewed by RDB for national legislation, WB for compliance with the ESF and approved by both RDB and WB.

6.2.3 ESIA/RAP/ESMF Review, clearance, and disclosure

- Consultations on instruments take place before they are finalized and approved.
- MoE Project Coordination Unit (PCU) Environment and Social Coordinator will submit draft ESIAs-ESMP, RAP to RDB for review and certification if needed after review and approval by the WB. Other instruments might not be required like SESA, etc.
- Following approval of the ESF instruments, the MoE Project Coordination Unit (PCU) Environment and Social Coordinator will also carry out the necessary arrangements for Disclosure and Consultations taking into account ESS10 and ensure harmonization with the VCRP Stakeholder Engagement Plan.
- The MoE Project Coordination Unit (PCU) Environment and Social Coordinator will follow up and obtain required licenses/ permits that comply with approved ESIAsfor the necessary VCRP subproject works.
- All implementing agencies will have to create a webpage for the project on their institutional website and publish all ESF documents and reports as defined in this ESMF. See requirements for the project webpage (Box 1).
- WB will disclose the approved ESF instruments prepared and approved for the project in the project web page already created and that will be permanently accessible for all during all project implementation and after closure.
  https://projects.worldbank.org/en/projects-operations/project-detail/P165017?lang=fr
- WB receives and takes note of consultation reports.

Table 17: Requirements for each PIU webpage

Requirements for the project webpage to be included at each implementing agency to disclose ESF documents and maintain the page functional and update during the project implementation.	
Project Name	Logo institution
Project Description (components, subcomponents, and activities	Photos
Environmental and Social Management of the project -Explain about the ESF and the 8 ESS -Include short summary of the ESMF and other instruments	
Please place all ESF documents prepared and cleared by the WB – with complete names first as draft- after consultation as final documents. Place attach them as PDF and the option for people to download or read. -ESMF, RPF, SEP, LMP, ESCP, GAP, ESIAs, RAPs.	
Online consultation Explain that the project needs to have a consultation of the documents and invite readers to send comments. Place a date for at least 1 week to receive comments for the appraisal. **Insert at Window for sending comment**s, observations to the ESF documents.	**Contact person** Environmental/Social Specialists Email, phone, fax

6.2.4 Integrating ESIA/ESMF requirements into VCRP subproject bidding documents.

Environmental and Social Specialists within the institutional implementing units will integrate prevention, mitigation and compensation measures included in the approved ESIAs/ESMP into respective subproject bidding/tender documents with reference to the standardized Environmental and Social Technical Clauses (ESTC) along with any subproject specific clauses, to be included in the tender technical specifications. This entire process will adhere to the World Bank's standard Environmental and Social terms and conditions as stated in the WB procurement documents. The following ESTCS are described in detail in the Annex 4 for inclusion in tender documents and the Contractor-ESMPs as applicable to VCRP subprojects.

ESTC 1: Waste Management

ESTC 2: Fuels and Hazardous Substances Management

ESTC 3: Water Resources Management

ESTC 4: Drainage Management

ESTC 5: Soil Quality Management

ESTC 6: Erosion and Sediment Control

ESTC 7: Topsoil Management

ESTC 8: Topography and Landscaping

ESTC 9: Sand Extraction

ESTC 10: Air Quality Management

ESTC 11: Noise and Vibration Management

ESTC 12: Protection of Flora

ESTC 13: Protection of Fauna

ESTC 14: Wetland use activities.

ESTC 15: Construction Camp Management

ESTC 16: Cultural and Religious Issues

ESTC 17: Workers Health and Safety

ESTC 18: Social Impacts

-Disruptions of utility services e.g., water/ electricity.
-Temporary loss of /restricted access to homes, businesses, agricultural fields, or other natural livelihood assets.
-Noise, dust, and other nuisances.

- Environmental and Social Specialists will indicate in the respective subproject bidding documents that past environmental and social performance and existing and proposed project consultant capacity will be one of the criteria when selecting contractors.
- Environmental and Social Specialists will include explanations in bidding documents that contractors must prepare Contractor-ESMPs.
- RWB and Meteo-Rwanda Environmental and Social Specialists will ensure the ESTC are integrated in bidding documents of Flood risk management subprojects.
- REMA and RWB Environmental and Social Specialists will ensure the ESTC and any subproject specific requirements such as ESMPs, etc., are integrated in bidding documents of Ecological and Landscape Restoration subprojects.
- RDB Environmental and Social Specialists will ensure the ESTCs are integrated in bidding documents of Volcanoes National Park Expansion Investment & Livelihood Diversification subprojects.
- Environmental and Social Specialists will include in tender documents that Contractors will be required to hire and maintain through all works trained and experienced environmental and social management staff.
- Environmental and Social Technical Clauses (ESTC) will be formulated for subproject ESIA/ESMP which will be expanded upon based on the findings and recommendations of the sub-project ESIAs. General ESTC provisions include the following:

    - *Prepare cost estimates of what is to be incorporated in Bid Documents e.g., cost of GBV action plan implementation, cost of ESMP implementation and mitigation measures*. Initially, the cost estimates will be provided by the Environmental and Social specialist in the Project Implementation Unit (PIU).

- The C-ESMP *along with the Environmental and Social Codes of Practice (ESCoP) to be incorporated in the bid document 's work requirements.*
- *Penalty clauses for not complying with contract ESHS requirements including ESMP, C-ESMP requirements to be incorporated.*
- *The contractor has to follow all environmental mitigation and management measures as defined in the technical specifications contract ESHS requirements including ESMP, C-ESMP. Damage shall be levied at the rate of up to RWF 100,000 per day per location for nonconformity of ESMP measures as per the decision of the MoE PCU.*
- *The contractor has to ensure that prior to every rainy season, during the construction period; all the temporary and permanent cross drainage structures are free from debris as defined in the Technical Specifications read along with the ESMP. Damage shall be levied at the rate of RWF 30,000 per day per location for non-conformity as per the decision of the MoE PCU.*
- *The contractor has to ensure that a comprehensive Health and Safety program is in place for the duration of construction, which should meet the OHS plan requirement as established in the project LMP (per WB ESS2). Implementation of the program will include, among other aspects, ensuring that each worker receives a personal Personnel Protective Equipment (PPE), and it is replaced as needed during the construction; the PPE should be provided to staff and labour all time as defined in the labour codes of Rwanda and the requirements of this ESMF and ESMP. Damage shall be levied at the rate of up to RWF 50,000 per day for non-conformity as per the decision of the MoE PCU.*
- *In addition, for any non-compliance causing damages or material harm to the natural environment, public or private property or resources, the contractor will be required to either remediate / rectify any such damages in a timeframe specified by and agreed with the engineer or pay MoE PCU for the cost (as assessed by MoE PCU) of contracting a third party to carry out the remediation work.*

- Since many contractors may not have a clear understanding of the need for environmental management, some quote a very low price for implementation of ESMP and eventually cannot implement ESMP as per specific requirement of ESMP and project design.
- The contractors may need orientation on the requirement of the ESMP in the pre-bidding meeting. Additional cost can be included as services ordered to the contractors as needed, but often the engineers do not want to do this since it increases the cost of the work. Therefore, it is recommended to maintain a fixed percentage to ensure that environmental and social measures of this ESMF, SEP, LMP, ESCP are appropriately implemented in the project activities.
- The integration of the ESMP measures and ESS requirements into subproject bidding documents will be supervised by the MoE PCU at the Project Coordinator and the Environmental and Social Coordinator, as well as the Environmental and Social Supervisor.
- The MoE PCU Environment and Social Coordinator will coordinate the review and clear Contractor-ESMPs in bid submissions.
- WB will review and approve bidding documents and provide no-objections for contract awards as appropriate.
- Overall oversight is provided by the VCRP Steering Committee.

6.3 Supervision and Monitoring

Implementing agencies and their PIUs, district HUBs will monitor overall environmental performance during project implementation. Each VCRP sub-project will have a site-specific C-ESMP document as

well as ES terms and conditions in construction contract, in which monitoring requirements will be presented.

Typically, the contractor, the PIU's Environmental and Social Risk management specialists, and the entities in charge of the operation phase are responsible for monitoring. This ESMF presents a monitoring program in section 6.11 and table 24, which will be finalized to provide a comprehensive plan for each subproject in the subproject specific ES instruments.

6.3.1 Remote supervision plan

In order to ensure a smooth project implementation, regular project monitoring, evaluation, supervision and reporting of environmental and social aspects as well as complying with ESF documents will be required throughout the project life span. Simple ICT Tools for baseline data collection, remote supervision, and M&E will be used. A Geo-Enabling initiative for Monitoring and Supervision (GEMS) technology may be used by the project staff particularly E&S staff to allow a systematic recording of project indicators and survey responses to strengthen project planning implementation, risk assessments, and coordination across operations. The project safeguards team at national level may provide training to the district's HUB staff on the use of GEMS for project data collection, supervision, monitoring, evaluation, and reporting. The reporting may be on a quarterly basis and /or any specified time as it may be required.

6.3.2 Contractor supervision and monitoring

- The Contractor will implement all ESHS measures as established in Contractor contract including mitigation and monitoring measures, training and EHS performance reporting (including accidents) .
- Monitored by RWB, REMA, RDB, METEO-RWANDA coordinators for VCRP subprojects and the MoE ESS specialist.
- Monitored by District HUBs Environmental Specialists and Social Specialists for the subprojects.
- Supervising firm conducts internal monitoring of Contractor-ESMPs.
- Supervision by PIU environmental and social safeguards specialist for each VCRP subprojects and supervision firm.
- WB conducts random checking.

6.3.3 External monitoring

- External periodic environmental monitoring will be carried out by the Project Steering Committee (PSC) and independent consultants on behalf of MoE PCU; RWB PIU, REMA PIU, METEO-RWANDA PIU, RDB PIU and district Hubs.
- External monitoring periodically checked by WB.

6.3.4 Daily internal monitoring

- Environmental and Social Specialists in REMA, RWB, RDB, METEO-RWANDA PIU will carry out internal monitoring and supervision on daily basis of compliance to Contractor-ESMPs relevant to VCRP subprojects.
- The District HUBs Environmental and Social Specialist and District engineers at the district level will carry out supervision on daily basis of compliance to Contractor-ESMPs relevant to VCRP subprojects.
- The MoE PCU Environmental Specialist and Social Specialist will provide oversight for daily monitoring of the VCRP subprojects.

- Daily monitoring will take into consideration ESTCs featured in the Annex of this ESMF and the Contractors Code of Conduct for Individuals. Contractor performance indicators will include the following:
    - **Safety:** Hours worked, recordable incidents and corresponding Root Cause Analysis (lost time incidents, medical treatment cases), first aid cases, high potential near misses, and remedial and preventive activities required (for example, revised job safety analysis, new or different equipment, skills training, and so forth).
    - **Environmental incidents and near misses**: Environmental incidents and high potential near misses as recorded in the Incident Report and how they have been addressed, what is outstanding, and lessons learned.
    - **Major works**: Those undertaken and completed, progress against project schedule, and key work fronts (work areas).
    - **E&S requirements**: Noncompliance incidents with permits and national law (legal noncompliance), project commitments, or other E&S requirements.
    - **E&S inspections and audits**: By contractor, engineer, or others, including authorities—to include date, inspector or auditor name, sites visited, and records reviewed, major findings, and actions taken.
    - **Workers:** Number of workers, indication of origin (expatriate, local, nonlocal nationals), gender, age with evidence that no child labor is involved, and skill level (unskilled, skilled, supervisory, professional, management).
    - **Training on E&S issues**: Including dates, number of trainees, and topics.
    - **Footprint management**: Details of any work outside boundaries or major off-site impacts caused by ongoing construction—to include date, location, impacts, and actions taken.
    - **External stakeholder engagement**: Highlights, including formal and informal meetings, and information disclosure and dissemination—to include a breakdown of women and men consulted and themes coming from various stakeholder groups, including vulnerable groups (e.g., disabled, elderly, children, etc.).
    - **Details of any security risks**: Details of risks the contractor may be exposed to while performing its work—the threats may come from third parties external to the project.
    - **Worker grievances**: Details including occurrence date, grievance, and date submitted; actions taken and dates; resolution (if any) and date; and follow-up yet to be taken, grievances listed should include those received since the preceding report and those that were unresolved at the time of that report.
    - **External stakeholder grievances**: Grievance and date submitted, action(s) taken and date(s), resolution (if any) and date, and follow-up yet to be taken, grievances listed should include those received since the preceding report and those that were unresolved at the time of that report. Grievance data should be gender disaggregated.
    - **Major changes to contractor's environmental and social practices**.
    - **Deficiency and performance management**: Actions taken in response to previous notices of deficiency or observations regarding E&S performance and/or plans for actions to be taken—these should continue to be reported until VCRP PCU determines the issue is resolved satisfactorily.

6.3.5 Operation phase monitoring

- During the operation phase of the VCRP subprojects, regular monitoring will be conducted by the PIU environmental and social safeguards specialists of each VCRP subproject.
- M&E will undertake environmental and social compliance mid-term and final audit.
- VCRP will engage after year 2 an independent consulting firm to conduct external and independent environmental and social Audit and monitoring of the VCRP subprojects.

6.4 Reporting

Regular reporting is mandatory for all key individuals involved in the project implementation. The reports should cover environmental and social compliance, project progress, and environmental performance. Along with the monitoring parameters mentioned below, these reports should provide information about the implementation status of the Project ES instruments (ESMF, LMP, etc.) and subproject ES instruments (e.g., ESMPs) for both construction and operation phases. They should also include details about the progress of EHS mitigation and protection measures, challenges faced, how they were dealt with, and proposed solutions for the future. Additionally, the reports may encompass additional mitigation measures that may be necessary, instances of non-compliance with relevant environmental permits, and any complaints received from residents, NGOs, and others, as well as the actions taken to address them.

The contractors, consultants, supervising firm, and operators must provide reports to their respective project implementing units. These reports should be submitted monthly, quarterly, annually, and include an overall project report upon completion of the civil works. The implementing units will review the reports, assess their relevance, and grant approval. Similarly, the implementing units will submit reports to the Ministry of Environment (MoE) with the same content and frequency as described above. The MoE will then report to the World Bank for review and comments on a quarterly and annual basis. The MoE must also adhere to the reporting procedures outlined in the Environmental and Social Commitment Plan (ESCP) document regarding material measures and actions. The World Bank will review the reports and verify their accuracy through periodic site visits.

The project implementing units will be responsible for monitoring and ensuring compliance with the Environmental and Social Management Framework (ESMF) and subproject Environmental and Social Management Plans (ESMPs). This includes monitoring the implementation of site-specific measures for each sub-project during project implementation. The implementing units will report their findings in writing to the World Bank through the MoE based upon project ESCP reporting requirements. In the event of incidents and accidents, the developer will report immediately not later than 48 hours after learning of the incident or accident, and provide a subsequent report to the Bank within a timeframe acceptable to the Bank. Both the implementing units and the Contractor share the responsibility of reporting and investigating such incidents. The Contractor is obligated to inform the project manager and local authorities promptly within 24 hours of the occurrence of an accident. If the project manager is unavailable, the Contractor must inform the implementing units about the accident. Each implementing and coordinating agency/institution will establish and maintain a database that will contain environmental and social data for all sub-projects, including monitoring data.

A comprehensive monitoring parameters and details on reporting arrangements will be described in each subproject ESIA/ ESMP and will be site-specific. In this ESMF, the monitoring parameters are presented in Table 24.

The following general parameters will be monitored:

- Drinking water quality given to workers

- Water quality of wetlands and streams where drains are discharged.
- Disturbance to the biodiversity in priority conservation areas
- Soil contamination on sites
- Noise quality and air pollution
- Debris and waste disposal
- Occupational Health and Safety
- The number of trees cut and planted.
- Number of affected houses/public areas with the works (damages caused to entrances, gardens, schools, etc)
- Number of claims by affected people.
- Compliance with ESMP and relevant national environmental laws/ regulations and or WB requirements
- Number of accident/ miss incident
- Environmental performance and compliance with the 5 ESF documents prepared for the project.

6.5 Gender mainstreaming

The economic and social commission of the United Nations defines Gender mainstreaming as "the process of assessing the implications for women and men of any planned action, including legislation, policies or programs, in all areas and at all levels. A strategy for making women as well as men's concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of policies and programs in all political, economic and societal spheres so that women and men benefit equally, and inequality is not perpetuated. The ultimate goal is to achieve gender equality" (UN ECOSOC, 1997).

Rwanda prioritizes gender equality and social inclusion mainstreaming as key measures towards sustainable social economic transformation. The NSTI considers gender equality, social inclusion as cross-cutting areas. Mainstreaming Gender equality and social inclusion (including youth, Persons with disabilities and other vulnerable groups) also aligns with the sustainable development goals principle of leaving no one behind (LNOB).

Rwanda stands out globally for its efforts in advancing gender equality and women's empowerment (GEWE), particularly in political participation where for example the country ranks first worldwide in terms of women parliamentarians' representation (61%). Despite the fact that the country cherishes this achievement, there is still a lot to do in the journey of advancing gender equality and women's empowerment in different sectors.

The Rwanda National Constitution of 2003 as amended in 2015 provides for at least a 30% quota of women representation in all decision-making positions at all levels.

VCRP will aim at addressing gender gaps identified in decision making during project planning and implementation by ensuring that at least 340% of the representation of women in all leadership, management and coordination and monitoring committees at all levels (be it at central or decentralised) levels. The Gender and Anti-GBV action plan have been developed with an objective of serving as a tool for effective gender mainstreaming and Prevention and management of Gender based violence in VCRP. Gender and social inclusion mainstreaming will ensure that the process of implementing the project is as inclusive as possible and men, women, youth, persons with disabilities as well as the elderly will equitably participate in and benefit from the project. The following are the objectives of the GAP:

- To guide and facilitate gender analysis to inform gender responsive designing, implementation, monitoring and evaluation of planned activities;

- To give due attention to specific needs of men and women, boys and girls among beneficiaries to facilitate ownership and sustainability of implemented activities;
- To ensure inclusiveness of different vulnerable social categories including youth, elderly persons, people with disability (PWDs), etc.
- To tackle gender-based violence likely to emerge from implementation of some planned activities;
- To promote equal participation of men and women, boys and girls as workers and beneficiaries;
- To equip implementing partners (IPs) with needed knowledge and skills to ensure effective gender equality and social inclusion mainstreaming in their respective VCRP related interventions;
- To raise awareness of all VCRP Coordinating structures such as hubs and others like Community Coordination committees in gender equality and social inclusion.

The GAP complements the Environmental and Natural Resources Sector Gender Assessment and Mainstreaming Strategy 2018/2019 to 2023/2024 developed by the Ministry of environment.

6.6 Gender-based violence

GBV remains a national concern and Rwanda has adopted initiatives to bring a response to it. The National Policy against Gender Based Violence 2011 gives orientation on how GBV should be tackled and provides for the One Stop Center Approach commonly known as Isange One Stop Center, as the holistic approach Rwanda should use to tackling different faces of GBV.

Strategies for addressing the problem include a policy of “zero tolerance” to GBV across all sectors, supported by a strong legal framework including the Law No.59/2008 on the Prevention and Punishment of Gender-Based Violence (GBV), which prevents and punishes Gender Based Violence Crimes in all of its forms. This law is paired with the Prime Minister's Order N°001/03of 11/01/2012 determining modalities in which Government Institutions Prevent and Respond to Gender Based Violence: The law gives responsibility for all Government institutions for GBV prevention and Response and Reporting.

The Isange One Stop Centre (IOSC) is an outstanding model of response to Gender-Based Violence (GBV).

An outstanding model of response to GBV is the Isange One Stop Centre (IOSC), initiated in 2009 by the Government of Rwanda and the ONE UN, through UN Women and UNFPA. This model calls for a holistic, multidisciplinary approach in terms of the provision of medical, legal, forensic/investigation, psychosocial and safety needs to help victims of violence and child abuse, the majority of whom are women and girls. At present, Rwanda has 44 Isange One Stop Centers including 30 of them hosted within the district hospitals with the target of having IOSC in each health center of the country.

Other strategies include local mechanisms put in place to closely work with IOSC as part of the existing pathway in addressing GBV. They include: 1) the Inshuti z’Umuryango literally translating ‘family friend’ and commonly known as IZU are volunteers helping keep children safe in the communities; 2) Umugoroba w’Imiryango which is a village-based forum that brings together (men, women and youth) residing in the same village to discuss issues of common interest GBV included.

6.7 Grievance Redress Mechanisms (GRM)

To ensure that complaints from local communities are handled appropriately, a specific Grievance Redress mechanism (GRM) will be established for each sub-project. This mechanism aims to address grievances by taking corrective actions and informing the complainant about the outcome. It will be applicable to all complaints received from affected parties. The entities responsible for implementation will maintain a database of complaints, which will contain comprehensive information

such as the nature of the complaint, its location, timing, actions taken to address the issue, and the final resolution. In collaboration with the implementing agencies, the Local government entity (i.e. District or sector office) will establish a committee dedicated to addressing grievances that may arise during project implementation. The objective is to resolve these grievances within a period of 15 working days.

- The GRM for Environmental, Health and Safety and Social aspects will follow mechanisms detailed in the SEP and here in the ESMF.
- Environmental and Social specialists are responsible to enforce, disseminate and monitor the GRMs. Each Environmental and Social Management Units at each implementing agency can divide their responsibilities on addressing GRM at the national, district and community level.
- Environmental specialists will focus on claims related to ESS1, ESS2, ESS3, ESS4, ESS6 mostly Environmental, Health and Safety: this includes accidents of workers, pollution and waste caused to public areas, communities, explosions, spills, claims in water and sanitation conditions, housing conditions for workers.
- Social specialists will focus on claims related to ESS2, ESS4, ESS5, and ESS8 for example: resettlement issues, land compensation claims, accidents caused to community members, labor contracting, interruption of public services on local people, etc.
- Social Specialists in Project Implementing units will implement the Grievance Redress Mechanism for complaints associated with subprojects in reference to the implementation framework for the mechanism in the LMP and SEP.
- District HUB Environmental and Social Specialists and the District Gender Monitoring Officer will supervise the implementation of the Grievance Redress Mechanism for workers and stakeholders as provided for in the Contractor -ESMPs that respond to the ESMP, the ESTC in the contract, SEP and the LMP.

6.7.1 Work –related Grievance Redress Mechanism

The GRM has been put forward and examined in more detail in the LMP, which serves as guidelines for the project GRM for workers' grievances during project implementation. Nevertheless, there might be complaints arising from the construction site or other field-level locations, which can greatly impact the successful execution of the project activities. Therefore, the contractor, in collaboration with the implementing agencies, will establish a committee to handle and resolve grievances raised during the project implementation process. It is expected that all grievances will be addressed and resolved within a period of 15 working days.

Each contractor must prepare a GRM as part of their ESMP which include the following requirements:

- **Provision of information.** All workers should be informed about the grievance mechanism at the time they are hired, and details about how it operates should be easily available, for example, included in worker documentation or on noticeboards.
- **Transparency of the process**. Workers must know to whom they can turn to in the event of a grievance and the support and sources of advice that are available to them. All line and senior managers must be familiar with their organization's grievance procedure.
- **Keeping it up to date.** The process should be regularly reviewed and kept up to date, for example, by referencing any new statutory guidelines, changes in contracts or representation.
- **Confidentiality.** The process should ensure that a complaint is dealt with confidentiality. While procedures may specify that complaints should first be made to the workers' line manager, there should also be the option of raising a grievance first with an alternative manager, for example, a human resource (personnel) manager.
- **Non-retribution.** Procedures should guarantee that any worker raising a complaint will not be subject to any reprisal.

- **Reasonable timescales.** Procedures should allow for time to investigate grievances fully but should aim for swift resolutions. The longer a grievance is allowed to continue, the harder it can be for both sides to get back to normal afterwards. Time limits should be set for each stage of the process, for example, a maximum time between a grievance being raised and the setting up of a meeting to investigate it.
- **Right of appeal**. A worker should have the right to appeal to the representative authority or national courts if he or she is not happy with the initial finding.
- **Right to be accompanied.** In any meetings or hearings, the worker should have the right to be accompanied by a colleague, friend, or union representative.
- **Keeping records**. Written records should be kept at all stages. The initial complaint should be in writing, if possible, along with the response, notes of any meetings and the findings and the reasons for the findings.
- **Relationship with collective agreements.** Grievance procedures should be consistent with any collective agreements.
- **Relationship with regulation.** Grievance processes should be compliant with the national employment code.

6.7.2 Grievance procedures

The project implementation will minimize grievances throughout all its stages. All eligible PAPs will be informed about the VCRP in general and on the resettlement process and livelihood packages. The preparation of RAPs and ESIAs requires consultation and participation of the community where the project is located, local leadership representatives and every PAP. Through a dynamic participatory approach, PAPs are involved in decision making about livelihood and community development programs; and it is through citizen engagement forums that they shall be informed about their rights and options, and all grievances will be recorded. Stakeholders and

PAPs will be given a chance to raise any queries and anonymous feedback, which will be taken into consideration when preparing the Resettlement Action Plans.

The project aims to:

- Embody the principles of zero tolerance of corruption and ensure transparency, social justice community engagement and empowerment.
- Fairly, ethically and impartially implement all its activities;
- 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;
- Ensure that all opportunities for investment in low carbon businesses are widely publicized and that all potential investors have an equal opportunity to submit proposals, have them properly and fairly evaluated and receive prompt feedback;
- Ensure that groups from the community who find it difficult to participate in economic activities are given equal access (women and youth);

It is essential that the communities affected by or with an opportunity to participate in the project have an understanding of the project objectives, how it will be implemented and who can participate. 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.

6.7.3 Grievance-mechanism process

Grievances will be reported and followed up at different levels. 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. Grievance redress mechanisms will be put in place to ensure that project affected people (PAPs) are able to raise complaints or concerns without cost, and with the assurance of a timely and satisfactory resolution of the issue. The procedures also ensure that the entitlements are effectively transferred to the intended beneficiaries. All stakeholders will be informed of the intention to implement the grievance mechanism, and the procedure will be communicated before the starting of civil works. The Grievance redress mechanism is one of the strategies put in place to monitor and resolve complaints that may arise during or after the Project implementation by the affected people.
Grievances may be raised informally or formally. GBV/SEA/SH related grievances will be handled through a separate channel which will be described in the GBV Action Plan.

6.7.4 Roles and responsibilities during the Grievance-mechanism process

Beside the affected person or complainant, the following entities will be key players during the process:

- Community coordination committee: The primary point of entry for informal grievances will be members of the Community Coordination Committee.
- Cell and sector office: The complainant must go to the Cell or Sector Office, whichever is the more convenient and the offices should receive grievances during normal office hours.
- The grievance will be recorded on a Formal Grievance Form copies of which will be held at cell and sectors offices where the project is implementing activities. Each appeal or complaint will be given a unique code in the following format:
  - Cell office/A001 (002 etc)
  - Sector office/U001 (002 etc).
- District Good Governance Office: The grievance forms will be received by the Good Governance Unit in the District. Immediately upon receipt, the Good Governance Unit will record the information in the grievance monitoring database/Grievance Register.
  The Grievance Register will subsequently be updated for all decisions and referrals and the Good Governance Unit will be responsible for communicating the final decision of all grievances considered by the District or MoE (District Executive Secretary or District Joint Action Development Forum or project Steering Committee to the complainant in writing through the cell or sector office where the grievance was originally lodged.
- The District Executive Secretary is the first point at which grievances may be resolved.
  - The District Executive Secretary will convene a meeting of all persons relevant to resolving the grievance. Although this is likely to include people involved in the implementation of the project: If the grievance refers to the behaviour of one or more persons involved in the project they shall not participate in any meeting or any investigation;
  - The final decision lies with the District Executive Secretary; and
  - All persons participating will use their best endeavours to assess and resolve the grievance fairly and will act without prejudice or bias.

The District Executive Secretary will: In respect of grievances which are upheld, informs the Project Management Unit in MoE/IPs about the grievance, decision and recommended redress so that (i) policy and procedures may be amended (ii) training may be designed and implemented to prevent the same situation recurring in the future

The community will also be able to log their complaints through an online platform developed by the Ministry of Environment "Baza MOE" (Kinyarwanda name meaning ask the Ministry of Environment (https://bazamoe.environment.gov.rw/home/index).

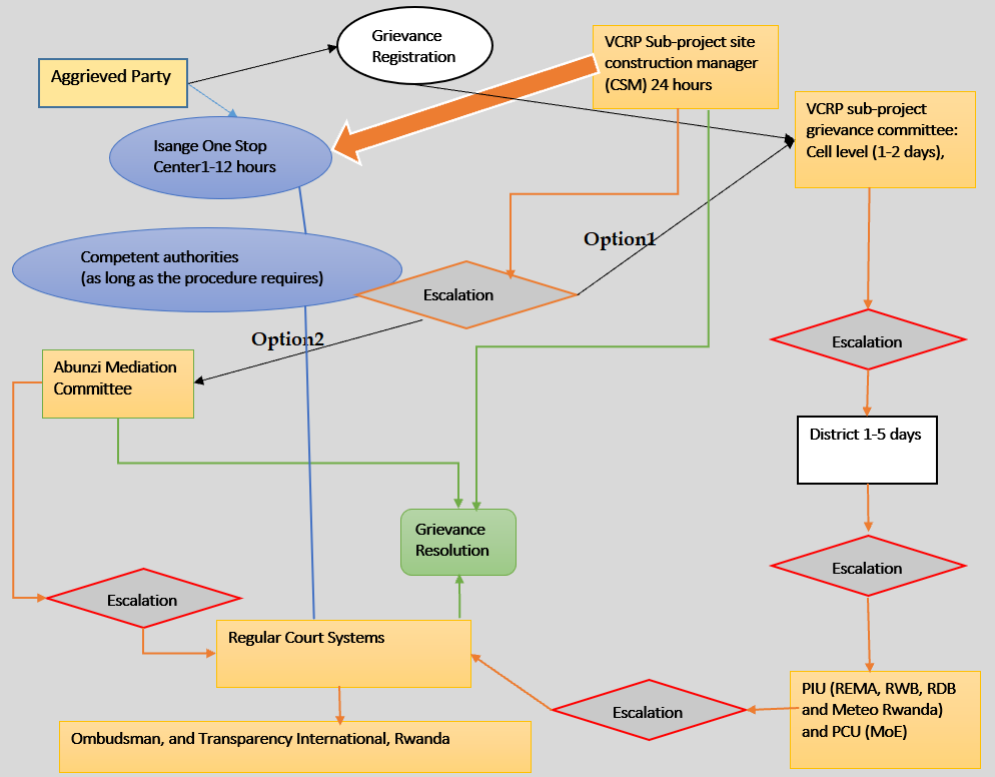


Figure 6: Project Grievance Redress Mechanism

Table 18: Summary table for the VCRP environmental and social management procedures

Steps	Environmental Action Required	Implemented by	Monitored/ Checked by
Sub-project Identification: ***Screening and Scoping of subprojects through the National EIA system***	• Prepare project briefs and ToR for subprojects and submit them to RDB for review and approval. • Commission, oversee subproject screening and submit results to RDB for review and approval	• RWB and Meteo-Rwanda PIU Coordinator will be responsible for commissioning the screening work for flood risk management subprojects. • REMA and RWB PIU Coordinator for Ecological and Landscape Restoration subprojects. • RDB PIU Coordinator for Volcanoes National Park Expansion Investment & Livelihood Diversification subprojects.	• The Ministry of Environment PCU monitors and verifies. • WB will review the screening results. • RDB will conduct field visits as part of the screening procedure. Based on the findings, they review and approve the Terms of Reference (ToR) for the Environmental Impact Assessment (EIA) study
Sub-project Preparation: ***ESIAs/ESMP ToR***	• Prepare or supervise ToR to select Environmental consultancy for preparing necessary subproject environmental documents (ESIAs/ESMPs)	• Environmental consultant under supervision of RWB and Meteo-Rwanda PIU Coordinator for flood risk management subproject. • Environmental consultant under supervision of REMA and RWB PIU Coordinator for catchment. • management and landscape restoration subproject. • Environmental specialist under supervision of RDB PIU Coordinator for Volcanoes National Park Expansion Investment & Livelihood Diversification subprojects.	• The Ministry of Environment PCU monitors and checks. • WB reviews and clears.
Sub-project Preparation: ***ESIAs/ESMP commissioning***	• Commission consultancy services for the preparation of draft ESIAs/RAPs/ESMPs and carry out public	• Environmental consultant under supervision of RWB PIU coordinator for RWB and Meteo-Rwanda PIU Coordinator for flood risk management subproject.	• The Ministry of Environment PCU monitors and checks. • WB reviews all draft ESIAs-ESMP/RAP/BAP.

Steps	Environmental Action Required	Implemented by	Monitored/ Checked by
	consultations with potential affected people and local authorities and incorporate results into final ESIAs- ESMP, RAP, BAP. ● Submit draft ESIA-ESMP; RAP; BAP to PCU through PIUs.	● Environmental consultant under supervision of REMA and RWB PIU Coordinator for Ecological and Landscape Restoration subproject. ● Environmental consultant under supervision of RDB PIU Coordinator for Volcanoes National Park Expansion Investment & Livelihood Diversification subprojects.	
Sub-project Preparation: ***ESIAs/ESMP Review and Clearance; Disclosure and Consultations***	● Submit draft ESIA-ESMP/RAPs to RDB for review and certification. ● Carry out Disclosure and Consultations according to the VCRP Stakeholder Engagement Plan. ● Obtaining required licenses/ permits that comply with approved ESMF.	● MoE PCU Environment and Social Coordinator. ● All Implementing agencies in the project approved website, disclose prepared and approved ESIA/ESMP/RAPs and BAP.	● MoE PCU provides oversight for consultations. ● WB discloses approved ESF instruments (ESIA-ESMP) in its disclosure media. ● WB receives and takes note of consultation reports.
Sub-project bidding: **Integrating ESIA/ESMP requirements into bidding documents**	● EHS prevention and mitigation measures and/or requirements as featured in approved ESIAs/ESMP into a bidding document with reference to ESTC provided in the Annex 4.	● Environmental and social safeguards specialist in RWB and Meteo-Rwanda PIU for Ecological and Landscape Restoration subproject. ● Environmental and social safeguards specialist in REMA and RWB PIU for Ecological and Landscape Restoration subproject. ● Environmental and social safeguards specialist in RDB PIU for Volcanoes National Park Expansion	● Monitored by RWB, REMA, METEO-RWANDA, RDB, PIU coordinators for subprojects. ● Monitored by PIU Environmental and Social Supervisors. ● WB will review and approve bidding documents.

Steps	Environmental Action Required	Implemented by	Monitored/ Checked by
	● Include mitigation measures/ requirements into rehabilitation document and contract (if any). ● Include mitigation measures/ requirements into equipment supplier contract (if any). ● Include mitigation measures/ requirements into construction supervision bidding document and contract (if any).	Investment & Livelihood Diversification subprojects.	● WB reviews and approves bidding documents. ● WB provides no-objections on contract awards as appropriate. ● Overall oversight by VCRP Steering Committee.
Implementation Phase: Monitoring	● Implement mitigation measures as specified in Contractor-ESMPs and other project ES instruments.	● Contractors ● Subcontractors ● Consultants	● Monitored by RWB, REMA, METEO-RWANDA, RDB, PIU coordinators for subprojects. ● Monitored by PIU Environmental and Social Supervisors. ● Monitored by ESS specialists at District HUBs. ● Internal monitoring by a Supervising firm. ● Supervision missions of the World Bank.
Implementation Phase:	Carry out internal monitoring and supervision on daily basis of compliance to Contractor-ESMPs with	● Environmental and social safeguards specialist in RWB PIU for Flood reduction investments and Integrated catchment and landscape restoration subprojects.	● Monitored by RWB, REMA, METEO-RWANDA, RDB, PIU coordinators for subprojects.

Steps	Environmental Action Required	Implemented by	Monitored/ Checked by
Monitoring	reference to ESMF and ESMP, ESTCs provided in the Annex 4 and with reference to VCRP Labour Management Plan (LMP) Contractors Code of Conduct for Individuals including: *Safety; Environmental incidents and near-misses; Major works; E&S requirements; E&S inspections and audits; Worker's profile and Training on E&S issues; Footprint management; External stakeholder engagement; Details of any security risks; Worker grievances; External stakeholder grievances; Major changes to contractor's ESTCs; and Deficiency and performance management.*	● Environmental and social safeguards specialist in METEO-RWANDA PIU for Flood early warning systems subproject. ● Environmental and social safeguards specialist in REMA PIU for Landscape restoration and Livelihoods development subprojects. ● Environmental and social safeguards specialist in RDB PIU for Integrated climate resilient green settlements and livelihood improvements and Livelihood diversification and income generation activities subprojects. ● Environmental and social safeguards specialist in MoE PCU for Impact monitoring. ● District Engineer.	● Monitored by PIU Environmental and Social Safeguards Specialists for subprojects. ● Monitored by ESS specialists at District HUBs.
Implementation Phase: Monitoring	● Carry out external periodic environmental monitoring.	● Project Steering Committee (PSC) and independent consultant on behalf of MoE PCU; RWB PIU, REMA PIU, METEO-RWANDA PIU, RDB PIU and district Hubs.	● Periodically checked by WB.

Steps	Environmental Action Required	Implemented by	Monitored/ Checked by
Operation phase: **Monitoring**	● Environmental and social audit and monitoring of the VCRP subprojects.	● PIUs Environmental and social safeguards specialists. ● PCU Environmental and social safeguards specialist. ● Independent Consultant firm.	● Monitored by RWB, REMA, METEO-RWANDA, RDB, PIU coordinators for subprojects. ● Periodically checked by WB.
Implementation and operation Phases: **Reporting**	● Report on subproject environmental compliance to MoE, RWB, REMA, METEO-RWANDA, and RDB for review.	● Coordinators of MoE PCU; RWB PIU, REMA PIU, METEO-RWANDA PIU, RDB PIU. ● ESS specialists at District HUBs.	● Reviewed by MoE, RWB, REMA, METEO-RWANDA, and RDB. ● Random check by WB.
Implementation and operation Phases: **Reporting**	● Report on whole project environmental compliance to the Project Steering Committee (PSC) and to WB for review	● MoE, RWB, REMA, METEO-RWANDA, RDB.	● Reviewed by PSC and WB.
Implementation and operation Phases: **Grievance redress**	● Implement the Grievance Redress Mechanism for workers and stakeholders as provided for in the C-ESMPs, this ESMF, LMP and SEP. ● Specific to GBV grievances, a separate channel with confidentiality and a survivor-centred approach shall be applied involving direct communication and handling by the existing nearest District One stop	● Social specialists in RWB and METEO-RWANDA PIU for flood risk management subproject social specialists in METEO-RWANDA PIU for Flood early warning systems subproject. ● Social specialists in REMA and RWB PIU for Ecological and Landscape Restoration subproject. ● Social specialists in RDB PIU for Volcanoes National Park Expansion Investment & Livelihood Diversification subprojects. ● District Gender Monitoring Officer for infrastructure provision subprojects.	● The PSC has the overall responsibility to address persistent grievances. ● MoE PCU will ensure support of the Environment and Social Coordinator for the project Social Specialists and District Gender Monitoring Officer at RWB, RDB, METEO-RWANDA, REMA and at district hubs. ● WB provides assistance in redressing persistent grievances.

Steps	Environmental Action Required	Implemented by	Monitored/ Checked by
	centre Isange to address GBV.		

6.8 Planning/sitting phase Mitigation Measures

Prior to the construction activities and interventions for the VCRP subproject, it is important to identify potential environmental and social impacts that may arise during the planning/sitting phase. This includes both the construction activities themselves and any associated maintenance activities. The first step is to identify the specific activities in detail, and then determine the set of actions or interventions that will be implemented. It is crucial to assess the potential effects that each action may have.

To address these potential impacts, it is necessary to explore and implement best practice mitigation or enhancement measures in the field. The following table provides a comprehensive list of mitigation measures against the anticipated environmental and social impacts during the planning/sitting phase of the VCRP. These measures aim to prevent and mitigate any negative effects that may arise beforehand.

The cost estimates for these mitigation and enhancement measures will be determined during the ESIA processes of the subprojects. Factors such as the project's location, the types of construction involved, the implementation schedule, and the overall cost of project implementation will be taken into account when estimating the costs associated with the mitigation and enhancement activities required.

Table 19: VCRP Environmental and social prevention and Mitigation measures to be considered for the planning/sitting stage.

Risks/ Environmental and Social Standard Relevant	Potential Environmental and Social Impacts	Proposed PREVENTION/ Mitigation /COMPENSATION Measures	Responsibility	
			Implementation	Supervision
Loss of agricultural, residential, and business properties such as land and houses, denied access to resources **(ESS5)**	The Volcanoes Community Resilience Project (VCRP) aims to avoid involuntary resettlement and displacement of residents. However, in some cases, acquisition of private lands and assets may require displacement of formal and informal users. To address this, an Involuntary Resettlement Policy Framework (RPF) has been prepared, and site-specific Resettlement Action Plans (RAPs) will be developed if necessary. The RPF and RAPs ensure proper calculation, recording, and mitigation of displacement impacts, aiming to safeguard the living conditions and livelihoods of affected people. The government will fund the implementation of RAPs as agreed in the RPF and Environmental and Social Commitment Plan (ESCP).	-Resettlement Action Plans (RAPs) are proposed to guide the process of compensation for property to be expropriated. The RAPs will be prepared under the guidance of the Resettlement Policy Framework (RPF). -A grievance mechanism and livelihood restoration measures shall also be included in the RAPs. -Establish and operationalize a GRM for the PAPs and the Workers	PIU District HUB environmental officer	MoE PCU facilitated by Environment and Social Safeguards specialist.

Risks/ Environmental and Social Standard Relevant	Potential Environmental and Social Impacts	Proposed PREVENTION/ Mitigation /COMPENSATION Measures	Responsibility	
			Implementation	Supervision
Loss of trees, vegetation, garden and crops and other natural resources ESS6	Siting or planning of the proposed infrastructures may require cutting of trees and removal of natural vegetation, which could be cumulatively significant in number.	-District engineer shall approve such felling; only when the proponent secures "clearance" for such felling from the designated Environmental Specialist. -During the tree removal from the construction sites, the number of trees will be recorded by the ESS of the supervision firm. -Trees cuts with a DBH (Diameter at breast height) of 15cm or greater will be replaced by planting three saplings for every tree cut. -Before commencing construction, the necessary vegetation on the proposed construction sites will be cleared, in consultation with the appropriate local authorities. -Take precautions to minimize disruption and exercise caution when maneuvering construction vehicles and equipment. -Proper H&S measures (use of appropriate PPE such as hand gloves, safety shoes and helmet) for the workers should be taken during removal of trees, bushes & crops.	Contractor	Environmental and Social Specialist for the subproject by national Implementing Agency and Project Supervision firm

Risks/ Environmental and Social Standard Relevant	Potential Environmental and Social Impacts	Proposed PREVENTION/ Mitigation /COMPENSATION Measures	Responsibility	
			Implementation	Supervision
		-To mitigate the ecological impact, a tree-planting plan will be considered in the design & accordingly tree-planting will be done in an appropriate location to be determined by the Environmental Specialist for the subproject.		
Loss of income and disturbance of livelihood **ESS 5**	Activities such as VNP expansion shall mean loss of land and therefore loss of income for households that have depended on land for agriculture.	-RAPs shall include livelihood restoration measures for the project affected households that shall be implemented by the project. -The project implementation is required to initiate the proposed livelihood restoration activities right after compensation, acquiring the land and during the project implementation. -The affected parties must be compensated and assisted through accompanying measures during implementation of the RAPs. -The affected parties will be the first beneficiary of project employment to ensure minimum disturbance of the livelihood and a way of providing an alternative source of income.	RDB PIU Relevant District District HUB Environmental officer	MoE PCU

6.9 Construction/Implementation Phase – Prevention and Mitigation Measures to Address Environmental and Social Impacts/risk.

VCRP will support activities related to construction and technical assistance. Most of the significant impact on the environment, communities and workers will be related to the different civil works that are planned for interventions related to flood risk reduction, Ecological and Landscape Restoration, Landscape restoration, integrated climate resilient green settlements and livelihood improvement, and associated maintenance activities.

The potential EHS impacts and risks that may arise during the construction/implementation phase of various construction activities can differ depending on the specific location. This ESMF outlines the general potential impacts and risks that can result from different interventions related to waste generation, pollution, health and safety concerns, accidents, depletion of natural resources (such as tree cutting, soil removal, reduced water infiltration) and impacts on community safety, among others.

The table below provides an overview of the environmental and social impacts that have been preliminary identified at this stage of the project, along with the preventive and mitigative measures planned to address any potential environmental and social impacts during the construction/implementation phase of the VCRP.

During the ESIA processes specific prevention, mitigation and compensation measures and cost estimates will be determined for each sub-project/activity based on its location, construction intervention, risks of the area. The ESMP will describe specific prevention and mitigation measures, the implementation schedule, estimated cost, monitoring plan and compliance.

The ESMP will prepare and describe prevention and mitigation measures as Environmental and Social Technical Clauses to ensure its inclusion in the tender documents in the technical specifications section and to ensure these are costed by the contractors and later legally bound to the contract. These technical specifications will be expanded and detailed at the subproject ESIA level. All the ESTC will be included in the bidding documents and make contractors responsible for their compliance and budgeted by the contractor.

The Project Environmental and Social Management Units formed by the Environmental and Social Coordinator, Supervisor, Specialists at the National Level, Environmental and Social Specialists at the District level and consultant (Supervision firms) will be responsible for the environmental and social supervision of the works or activities to be financed by the project. Community Verifiers will also support by checking and keeping track of any issues caused by the contractors, impacts caused to the communities and reporting GRM or GBV issues.

Furthermore, in order to facilitate data collection and project environmental and social performance and compliance with the ESMF, ESMP, supervision and monitoring plans, the project will hire the support from an IT consultant to prepare a supervision and monitoring system that can facilitate supervision using information technology, photos and simple attributes. It is recommended that Geo-Enabling Initiative for Monitoring and Supervision (GEMS), be used in this regard. A simple app could be installed in the tablets to be purchased for the PIU Environmental and Social Safeguards Specialists and this will help environmental specialist in the field and district and supervisors collect data on the progress of the works, use of PPE, number of accidents, report in the implementation of the project monitoring plan in the ESMF, the implementation of the SEP, LMP, ESCP, etc.

Table 20: VCRP Potential environmental and social impacts and prevention and mitigation measures proposed to be mandatory during construction/implementation phase

RISKS/ Environmental and Social Standards	Potential Environmental/Social Impacts	Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision National/district
Disruption of protected plants and animal habitats **ESS6**	Flood reduction infrastructure activities will cause: -Disturbance of natural habitats for some plants or animals of national and international importance. -Displacement of the species from their natural habitats. The location of construction activities can result in the loss of wildlife habitat and habitat quality. Impact on migratory birds, its habitat, and its active nests. Clearance of vegetation may impact shelter, feeding and/or breeding and/or physical destruction and severing of habitat areas.	-Where it's unavoidable, species will be relocated to other suitable locations. -Revegetation should enhance and restore habitat connectivity. -Areas to be cleared should be worked from one side to another, or from the center out, to prevent animals becoming trapped. -Avoid wherever possible the habitats of conservation interests used by animal species. -Areas used for breeding, nesting, feeding, migration, and congregation shall be demarcated and clearly signposted. -Prohibit access to areas with conservation interest. -Limit the construction works within the designated sites allocated to the contractors -Check the site for animals trapped in, or in danger from site works and use a qualified person to relocate the animal. -Not be permitted to destruct active nests or eggs of migratory birds -Minimize the tree removal during the bird breeding season. If works must be continued during the bird breeding season, a nest	Environmental specialist. Contractor	Environmental and Social Safeguards Specialist MoE, RWB/ REMA/ Meteo-Rwanda/ RDB. District Environmental and Social Safeguards Specialist. Supervision Firm.

RISKS/ Environmental and Social Standards	Potential Environmental/Social Impacts	Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision National/district
	Illegal poaching	survey will be conducted by a qualified biologist prior to commence of works to identify and located active nests. -Minimize the release of oil, oil wastes or any other substances harmful to migratory birds to any waters or any areas frequented by migratory birds. -Restrict the tree removal to the minimum required. -Retain tree hollows on site, or relocate hollows, where appropriate. -Leave dead trees where possible as habitat for fauna. -Fell the hollow bearing trees in a manner which reduces the potential for fauna mortality. Felled trees will be inspected after felling for fauna and if identified and readily accessible will be removed and relocated or rendered assistance if injured. After felling, hollow bearing trees will remain unmoved overnight to allow animals to move of their own volition. -Provide adequate knowledge to the workers regarding protection of flora and fauna, and relevant government regulations and punishments for illegal poaching.		

RISKS/ Environmental and Social Standards	**Potential Environmental/Social Impacts**	**Proposed Mitigation Measures**	**Responsibility**	
			Implementation	**Supervision National/district**
Vegetation Clearance **ESS6**	Farming activities, construction of flood control infrastructures upstream and other planned infrastructures may require land covered by forest. These activities will cause deforestation. Damage to flora has a wide range of adverse environmental impacts.	-Revegetation will incorporate native/ indigenous trees and shrubs of local provenance. -Reduce disturbance to surrounding vegetation. -Use appropriate type and minimum size of machine to avoid disturbance to adjacent vegetation. -Get approval from supervision consultant for clearance of vegetation. -Make selective and careful pruning of trees where possible to reduce the need of tree removal. -Control noxious weeds by disposing of at designated dump site or burn on site. -Clear only the vegetation that needs to be cleared in accordance with the plans. These measures are applicable to both the construction areas as well as to any associated activities such as sites for stockpiles, disposal of fill and construction of diversion roads, etc. -Do not burn off cleared vegetation – where feasible, chip or mulch and reuse it for the rehabilitation of affected areas, temporary access tracks or landscaping. Mulch provides a seed	Environmental specialist. Contractor	Environmental and social safeguards specialist MoE, RWB/ REMA/ RDB. District Environmental and Social Safeguards Specialist. Supervision Firm.

RISKS/ Environmental and Social Standards	Potential Environmental/Social Impacts	Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision National/district
		source, can limit embankment erosion, retains soil moisture and nutrients, and encourages regrowth and protection from weeds. -Return topsoil and mulched vegetation (in areas of native vegetation) to approximately the same area of the roadside it came from. -Avoid work within the dripline of trees to prevent damage to the tree roots and compacting the soil. -Minimize the length of time the ground is exposed, or excavation left open by clearing and re-vegetate the area at the earliest practically possible. -Ensure excavation works occur progressively and revegetation done at the earliest. -Provide adequate knowledge to the workers regarding nature protection and the need of avoid felling trees during construction -Supply appropriate fuel in the work camps to prevent fuel wood collection.		
Impact on surface and sub-surface	-Construction of water harvesting infrastructures, dams, dykes, culverts, and detention ponds will impact	-Install drainage systems with scour checks. -Cover drainage systems with concrete blocks. -Extend drainages to the receiving water resources.	Contractor	Environmental and Social Safeguards Specialist MoE, RWB/

RISKS/ Environmental and Social Standards	Potential Environmental/Social Impacts	Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision National/district
drainage patterns **ESS3** **ESS6**	water quality and availability of water downstream. -Most riparian plant species are expected to disappear or be pushed towards the upper boundaries of the regulated river margin during the riverbank's restoration activities. -Soil erosion and dust from the material stockpiles will increase the sediment and contaminant loading of surface water bodies. -Earthworks will change topography and disturb the natural rainwater/flood water drainage as well as will change the local landscape.	-Redesign the road and flood reduction infrastructures side drainage and extend them downstream to the recipient. -Stabilize the cleared areas not used for construction activities with vegetation or appropriate surface water treatments as soon as practicable following earthwork to minimize erosion. -Ensure that roads used by construction vehicles are swept regularly to remove sediment. -Water the material stockpiles, access roads and bare soils on an as required basis to minimize dust. -Install monitoring wells in both upstream and downstream areas near construction yards and construction camps to regularly monitor the water quality and water levels. -Protect groundwater supplies of adjacent lands. -Ensure the topography of the final surface of all raised lands (construction yards, approach roads, access roads, bridge end facilities, etc.) are conducive to enhance natural drainage of rainwater/flood water. -Keep the final or finished surface of all the raised lands free from any kind of depression that insists on water logging.		REMA/ Meteo-Rwanda/ RDB. District Environmental and Social Safeguards Specialist. Supervision Firm.

RISKS/ Environmental and Social Standards	**Potential Environmental/Social Impacts**	**Proposed Mitigation Measures**	**Responsibility**	
			Implementation	**Supervision National/district**
Construction site drainage Management **ESS3** **ESS4**	-Lack of proper drainage for rainwater/liquid waste or wastewater owing to the construction activities, can harm the environment in terms of water and soil contamination. -Ponding of water poses health hazards due to mosquito breeding.	-Prepare a program to prevent/avoid standing waters, which the Supervision firm will verify in advance and confirm during implementation. -Provide alternative drainage for rainwater if the construction works/earth-fillings cut the established drainage line. -Rehabilitate road drainage structures immediately if damaged by contractors' road transports. -Build new drainage lines as appropriate and required for wastewater from construction yards connecting to the available nearby recipient water bodies. Ensure wastewater quality conforms to the relevant standards provided by Rwanda Standards Board (RSB) before it is discharged into the recipient water bodies. -Ensure the internal roads/hard surfaces in the construction yards/construction camps have storm water drainage to accommodate high runoff during downpour and that there is no stagnant water in the area at the end of the downpour. -Construct wide drains instead of deep drains to avoid sand deposition in the drains that require frequent cleaning.	Contractor	Environmental and Social Safeguards Specialist MoE, RWB/ REMA/ Meteo-Rwanda/ RDB. DISTRICT Environmental and Social Safeguards Specialist. Supervision Firm.

RISKS/ Environmental and Social Standards	Potential Environmental/Social Impacts	Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision National/district
		-Provide appropriate silt collector and silt screen at the inlet and manholes and periodically clean the drainage system to avoid drainage congestion. -Protect natural slopes of drainage channels to ensure adequate storm water drains. -Regularly inspect and maintain all drainage channels to assess and alleviate any drainage congestion problem. -Do not allow ponding/storage of water especially near the waste storage areas and construction camps. -Discard all the storage containers that are capable of storing water, after use or store them in an inverted position.		
Discharge from construction sites **ESS3** **ESS6**	During construction both surface and groundwater quality may deteriorate due to sediments, and sewerage from construction sites and work camps. These changes in hydrological regime may lead to increased rate of runoff, increase in sediment and contaminant loading, increased flooding,	-Install temporary drainage works in areas required for sediment and erosion control and around storage areas for construction materials. -Install temporary sediment basins, where appropriate, to capture sediment-laden run-off from site. -Divert runoff from undisturbed areas around the construction site. -Stockpile materials away from drainage lines.	Contractor	Environmental and Social Safeguards Specialist MoE, RWB/ REMA/ Meteo-Rwanda/ RDB. District Environmental and Social Safeguards Specialist. Supervision Firm.

RISKS/ Environmental and Social Standards	Potential Environmental/Social Impacts	Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision National/district
	groundwater contamination, and effect habitat of fish and other aquatic biology.	-Prevent all solid and liquid wastes entering waterways by collecting waste and transporting it to an approved waste disposal site or recycling depot. -Wash out ready-mix concrete agitators and concrete handling equipment at washing facilities off site or into approved bunded areas on site.		
Risks associated with filling of Sites with dredge spoils. **ESS3**	During construction activities involving dredging, soil contamination can occur through the drainage of dredged spoils.	-Ensure that dredged sand used for land filling shall be free of pollutants. Prior to filling, sand quality shall be tested to confirm whether soil is pollution free. Sediments shall be properly compacted. -Leaching from the sediments shall be contained to seep into the subsoil. -No sediment laden water in the adjacent lands near the construction sites, and/or wastewater of suspended materials in excess of 200mg/l from dredge spoil storage/use in the adjacent agricultural lands.	Contractor	Environmental and Social Safeguards Specialist MoE, RWB/ REMA/ Meteo-Rwanda/ RDB. DISTRICT Environmental and Social Safeguards Specialist. SUPERVISION FIRM.
Increase in runoff downstream (speed and volume)	The stabilization and enhancement of gully banks and beds will minimize soil infiltration capacity thus increasing runoff downstream as water flows	- Establish detention ponds uphill of the gulleys to reduce speed of run-off. -Provide check dams to reduce the speed.	Contractor	Environmental and Social Safeguards Specialist MoE, RWB/ REMA/ Meteo-Rwanda/ RDB.

RISKS/ Environmental and Social Standards	**Potential Environmental/Social Impacts**	**Proposed Mitigation Measures**	**Responsibility**	
			Implementation	**Supervision National/district**
ESS6	through concrete or volcanic rocks.	-The size of the stabilized gully to be done in consideration of the water speed that won't impact downstream.		District Environmental and Social Safeguards Specialist. Supervision Firm.
Disruption of access to utility services such as water, electricity, and communication installations. **ESS4**	The construction activities of the proposed detention ponds, dykes, check dams, channels, road drainage structures, houses…etc will affect the existing access to homes, agriculture fields, and social utilities if alternative access roads are not provided.	-The Contractors must conduct prior consultation and prepare a contingency plan with the local authorities for the consequences of discontinuance. -Collaborating with relevant utilities to develop appropriate construction plans that would avoid damage or disruption of public utilities. -Notify the relevant utility companies about the construction project and coordinate with them to identify any areas of concern. e.g., utility companies like; WASAC, REG, MTN, AIRTEL, AOS. -Providing information to the affected households about construction time as well as planned service interruption (at least 5 days in advance). -The Contractors plan to provide replacement water for agriculture to the affected people in the event of a long disruption for more than one day.	Contractor	Environmental and Social Safeguards Specialist MoE, RWB/ REMA/ Meteo-Rwanda/ RDB. DISTRICT Environmental and Social Safeguards Specialist. Supervision Firm.

RISKS/ Environmental and Social Standards	Potential Environmental/Social Impacts	Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision National/district
		-Any damage to the cable lines, power lines, water supply network will be reported to the authorities and repaired immediately. -Conduct a thorough survey of the area to identify the location of underground utilities. This will help to avoid accidentally damaging these utilities during construction. -Use protective measures such as shoring, fencing, and barriers to protect utilities from excavation and other construction activities. -Use vibration monitoring equipment to ensure that nearby utilities are not being damaged by the operation of heavy machinery. -Clean-up the construction site properly at the end of each workday. -Use reliable detection tools before excavating the area, scan, and mark-up of the site by trained personnel. -Place wooden planks over constructed ditches which have not been reinstated to ensure access to the households along the construction route. -Set up construction and traffic warning signs at the construction site.		

RISKS/ Environmental and Social Standards	Potential Environmental/Social Impacts	Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision National/district
		-Deploy staff to guide the traffic during construction during transportation, loading and unloading of construction materials and wastes, and to guard high risk operations.		
Impacts associated with materials sourcing areas such as quarries. **ESS3** **ESS4** **ESS6**	Impacts generated at these sites include: -Visual intrusion due to landscape change. -Noise impacts wildlife and surrounding communities. -Sedimentation impacting water quality. -Impacts associated with the transport of material to worksite.	-Prepare and get the approval of the management and rehabilitation plan for the borrow pits and dumpsites. -Avoid disposing of wastes in wetlands and waterways. -Carefully plan sequential exploitation of quarries and borrow pits allowing the exhausted section of the quarry to be reinstated, while starting the exploitation of a new section. -Stockpile the topsoil to be used in re-vegetation. Re-vegetation shall be done with the previously existing vegetation. -Rehabilitate the borrow pits and dumpsites to the satisfaction of the supervising firm, district, and project environmentalists, and in conformity of the agreed environmental mitigation plan. -Do not extract sand from the riverbed in long continuous stretches. -Do not collect large quantities of sand from any single location, and do not excavate deeper than 3 m at any single location. -Do not carry out sand extraction near chars that have sensitive Habitats.	Contractor	Environmental and Social Safeguards Specialist MoE, RWB/ REMA/ Meteo-Rwanda/ RDB. District Environmental and Social Safeguards Specialist. Supervision Firm.

RISKS/ Environmental and Social Standards	Potential Environmental/Social Impacts	Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision National/district
		-Maintain record of all sand extraction (quantities, location shown on map, timing, any sighting of key species). -Provide silt fences, sediment barriers or other devices around the extraction areas to prevent migration of sediment rich water into the river channels. -Supervision firm will carry out survey of the area prior to sand extraction, determine 'no-go' areas for sand extraction, monitor the activity to ensure that the contractor complies with the conditions described, and survey the area after sand extraction to identify any leftover impacts		
Noise pollution, vibration **ESS3** **ESS4**	Movement of construction equipment and machines during construction activities may cause noise and vibrations that can affect the workers on site, communities living in the surroundings of the project sites, and fauna. This is the case for excavators, graders, trucks, and bulldozers plus other machinery such as concrete mixers, dumpers, etc.	-Activities and equipment that create lots of noise or irritations shall be restricted to normal working hours (7h00-17h00). -The contractor is required to use equipment and automobiles that have certification of good working conditions from the "National Automobile inspection center". -VCRP project coordination on site (i.e. District HUB staff) will ensure that contractors will be doing routine maintenance, repair of trucks and machines. -Install acoustic enclosures around generators to reduce noise levels. -Make sure all drivers will comply with the traffic codes concerning maximum speed limit, driving hours, etc.	Contractor	Environmental and Social Safeguards Specialist MoE, RWB/ REMA/ Meteo-Rwanda/ RDB. District Environmental and Social Safeguards Specialist. Supervision Firm.

RISKS/ Environmental and Social Standards	Potential Environmental/Social Impacts	Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision National/district
		-Organize the loading and unloading of trucks, and handling operations for the purpose of minimizing construction noise on the work site. -Do not carry out any blasting during excavation or any other activity. -Provide PPE protection to workers (masks, ear protection). -Control noise and vibration according to level acceptable in the country regulations or the WB. -Appropriately site all noise generating activities to avoid noise pollution to residents. -Use the quietest available plant and equipment. -Modify equipment to reduce noise (for example, noise control kits, lining of truck trays or pipelines). -Maintain all equipment to keep it in good working order in accordance with manufacturer's maintenance procedures. -Equipment suppliers and contractors shall present proof of maintenance register of their equipment.		

RISKS/ Environmental and Social Standards	Potential Environmental/Social Impacts	Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision National/district
		-Fit high efficiency mufflers to appropriate construction equipment. -Install acoustic enclosures for equipment causing radiating noise. -Avoid the unnecessary use of alarms, horns, and sirens. -Compensate damage to houses and other property. -Notify adjacent landholders prior any typical noise events outside of daylight hours -Educate the operators of construction equipment on potential noise problems and the techniques to minimize noise emissions. -Employ best available work practices on-site to minimize occupational noise levels. -Install temporary noise control barriers where appropriate. -Notify affected people if major noisy activities will be undertaken, e.g. pile driving. -Plan activities on site and deliveries to and from site to minimize impact.		

RISKS/ Environmental and Social Standards	Potential Environmental/Social Impacts	Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision National/district
		-Monitor and analyze noise and vibration results and adjust construction practices as required. -Avoid undertaking the noisiest activities, where possible, when working at night near the residential areas.		
Impacts on culture heritage. **ESS8**	-During earthworks, underground cultural heritages of religious and cultural values may be discovered. -Disturbance from construction works to the cultural and religious sites, and contractors lack of knowledge on cultural issues cause social disturbances.	If the Contractors discovers archaeological sites, historical relics, remains and antiques, including graveyards and/or individual graves during excavation or construction, the Contractors shall: -Cease construction activities within the scope of discovery. -Delineate location or area of discovery. -Keep the locations safe to protect objects that can be removed from the areas. -The agency in charge of protection of local or national heritages will be responsible for protecting and preserving these sites before deciding on further procedures. -The decision on how to handle the search is made by the agency responsible for protecting local heritages. - A chance find procedure shall be prepared and rehearsed before commencement of construction by the contractor.	Contractor	Environmental and Social Safeguards Specialist MoE, RWB/ REMA/ Meteo-Rwanda/ RDB. District Environmental and Social Safeguards Specialist. SUPERVISION FIRM.

RISKS/ Environmental and Social Standards	Potential Environmental/Social Impacts	Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision National/district
		-Communicate to the public through community consultation regarding the scope and schedule of construction, as well as certain construction activities causing disruptions or access restriction. -The contractor shall not block access to cultural and religious sites, wherever possible. -Restrict all construction activities within the footprints of the construction sites. -Stop construction works that produce noise (particularly during prayer time) shall there be any place of worship/religious/educational institutions close to the construction sites and users make objections. -Take special care and use appropriate equipment when working next to a cultural/religious institution. -Show appropriate behavior with all construction workers, especially women and elderly people, leaders, and supervision consultants. -Establish a mechanism that allows local people to raise grievances arising from the construction process.		

RISKS/ Environmental and Social Standards	Potential Environmental/Social Impacts	Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision National/district
		-Ensure the local authorities responsible for health, religious and security are duly informed before commencement of civil works so as to maintain effective surveillance over public health, social and security matters.		
Soil erosion, siltation, and landslides **ESS4** **ESS6**	Activities including preparation of terraces, site clearing, excavations for the detention ponds, dykes, land clearing, excavation of trenches, will all destabilize soil composition and expose it to the agents of erosion, mostly run-off, resulting in increased erosion and landslides at terrace and different embankments. If not combated, it can develop into a cumulative impact of loss of valuable productive soils to the receiving waters, sedimentation of receiving waters, silting and blockage of delivering canals, and loss	-Encourage the planting of Napier grass "Urubingo" along the embankments of terraces to hold soils and avoid erosion. -Avoid excavation during the rainy season. -Plan to excavate the plot sections demarcated for construction, in stages to avoid opening big plots of the area at once. -The project can possibly be fast tracked so that the time the land is left bare and exposed to potential erosion agents is minimized. -Debris in the compaction and construction of the foundation for the structures should be resurfaced and leveled. -After any excavation or trenching is completed on site, immediate backfilling and resurfacing should be done to avoid facilitation of erosion agents. -Compaction will be necessary to stabilize the soil. -Planting grass on bare land and slopes of the dyke's embankments to minimize erosion tendencies should be given priority. -Avoiding vegetation clearance that will expose soil to agents of erosion during construction phase.	Contractor	Environmental and Social Safeguards Specialist MoE, RWB/ REMA/ Meteo-Rwanda/ RDB. District Environmental and Social Safeguards Specialist. Supervision Firm.

RISKS/ Environmental and Social Standards	Potential Environmental/Social Impacts	Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision National/district
	of agricultural productivity of the lands and marshlands.	-Re-vegetating the cleared sites with local species of vegetation. -Protect the toe of all stockpiles, where erosion is likely to occur, with silt fences, straw bales, or bunds. -Mulch to protect slopes before planting. -Cover unused areas of disturbed or exposed surfaces immediately with mulch/grass turfings/tree plantations. -Locate stockpiles away from drainage lines. -Remove debris from drainage paths and sediment control structures. -Cover the loose sediments and water them if required. -Install 'cut off drains' on large cut/fill batter slopes to control water runoff speed and hence erosion. -Observe the performance of drainage structures and erosion controls during rain and modify as required.		
Risks associated with topsoil management. **ESS3**	-Earthworks and vehicular movement outside ROW or temporary access roads, will impact the fertile topsoil that is enriched with	-Strip the topsoil to a depth of 15 cm and store in stockpiles of height not exceeding 2m. -The stockpiles will be done on slopes of 2:1 to reduce surface runoff and enhance percolation through the mass of stored soil.	Contractor	Environmental and Social Safeguards Specialist MoE, RWB/

RISKS/ Environmental and Social Standards	Potential Environmental/Social Impacts	Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision National/district
ESS6	nutrients required for plant growth or agricultural development.	-Construct diversion channels and silt fences around the topsoil stockpiles to prevent erosion and loss of topsoil. -Spread the topsoil to maintain the physio-chemical and biological activity of the soil. The stored topsoil will be utilized for covering all disturbed areas and along the proposed plantation sites. -Prior to the re-spreading of topsoil, the ground surface will be ripped to assist the binding of the soil layers, water penetration and revegetation. -Limit equipment and vehicular movements within the approved construction zone. -Use vehicle-cleaning devices, for example, ramps or wash down areas.		REMA/ Meteo-Rwanda/ RDB. District Environmental and Social Safeguards Specialist. Supervision Firm.
Risks associated with earthworks and green infrastructure construction activities in wetlands.	-The presence of construction pipelines and other construction activities in the wetland can cause hindrance and accident risks to the farmers.	-Avoid as much as possible disruption of wetland farming and other livelihood activities.	Contractor	Environmental and Social Safeguards Specialist MoE, RWB/ REMA/ Meteo-Rwanda/ RDB. District Environmental and

RISKS/ Environmental and Social Standards	Potential Environmental/Social Impacts	Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision National/district
ESS4		-Identify the channel to be followed clearly using navigation aids such as buoys on open water, beacons, and lighting. -Where possible, provide proper buoyage, navigation lights and markings for bridges and earthworks to guide the other normal wetland use activities. -Prepare an emergency plan for dealing with accidents while making earthworks and civil works in wetland rehabilitation activities. -Ensure sufficient equipment and staff are available to execute the emergency plans. -Provide appropriate lighting for earthworks and construction vessels.		Social Safeguards Specialist. Supervision Firm.

Risks associated with construction camps. **ESS4** **ESS6**	- Illegal sourcing of fuel wood by construction workers will impact the natural flora and fauna. -There will be a potential for diseases to be transmitted including malaria, exacerbated by inadequate health and safety practices. There will be an increased risk of work crews spreading sexually transmitted infections and HIV/AIDS. - In adequate safety facilities to the construction camps may create security problems and fire hazards.	-Local authorities responsible in the district for Environment health, social affairs and security shall be duly informed on the set up of camp facilities to maintain effective surveillance over public health, social and security matters. -Ensure locations for the proposed construction and labor camps which are acceptable from environmental, cultural, or social point of view. -Consider location for construction and labor camps away from communities in order to avoid social conflict in using the natural resources such as water or to avoid the possible adverse impacts of the construction camps on the surrounding communities. -Conduct awareness campaigns to educate workers on preserving the protection of the biodiversity and wildlife of the project area, and relevant government regulations and punishments on wildlife protection. -Provide adequate health care facilities within construction sites and maintain stock of medicines in the facility and appoint full-time designated first-aider or nurse. -Provide ambulance facility for the laborers during emergencies to be transported to nearest hospitals. -Initial health screening of the laborers coming from outside areas.	Contractor	Environmental and Social Safeguards Specialist MoE, RWB/ REMA/ Meteo-Rwanda/ RDB. District Environmental and Social Safeguards Specialist. Supervision Firm.

RISKS/ Environmental and Social Standards	Potential Environmental/Social Impacts	Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision National/district
		-Train all construction workers in basic sanitation and health care issues and safety matters, and on the specific hazards of their work -Provide HIV awareness programming, including STI and HIV information, education, and communication for all workers on a regular basis. -Complement educational interventions with easy access to condoms at campsites as well as voluntary counseling and testing. -Install drainage facilities throughout the construction and labor camps and other project areas to ensure that disease vectors such as stagnant water bodies and puddles do not form. -Regular mosquito repellant sprays during the wet seasons. -Carryout short training sessions on best hygiene practices to be mandatorily participated by all workers. Place display boards at strategic locations within the project area containing messages on best hygienic practices. -Provide appropriate security personnel and enclosures to prevent unauthorized entry into the camp area. -Maintain register to keep track of a head count of persons present in the camp at any given time.		

RISKS/ Environmental and Social Standards	Potential Environmental/Social Impacts	Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision National/district
		-Encourage use of flameproof material for the construction of labor housing / site offices. Also, ensure that these houses/rooms are of sound construction and capable of withstanding storms with strong winds and installed with lightning protection. -Provide appropriate types of firefighting equipment suitable for the construction camps. -Display emergency contact numbers clearly and prominently at strategic places in camps. -Communicate the roles and responsibilities of laborers in case of emergency in the monthly meetings with contractors. -Dismantle and remove from the site all facilities established within the construction camp including the perimeter fence and lockable gates if built. -Restore the camp site to its condition prior to commencement of the works or to an agreed condition with the landowner.		
Traffic related incidents **ESS4**	During construction, there will be transportation of workers and construction materials from the project	-Minimizing the interaction of pedestrians with construction vehicles.	Contractor	Environmental and Social Safeguards Specialist MoE, RWB/

RISKS/ Environmental and Social Standards	Potential Environmental/Social Impacts	Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision National/district
	site and out of it. In addition, some vehicles will be moving around through the project sites. If these movements are not regulated, they may cause traffic incidents and accidents.	-Cooperating with local communities and competent agencies to improve the signage, vision, and overall safety of roads, especially along strips located near schools or other places where there are children. -Working with local communities on traffic education and pedestrian safety (e.g., school education campaigns). -Coordinating with emergency response agencies to ensure that appropriate first aid measures are provided in the event of an accident. -Adoption of best transport safety practices across all aspects of project operations with the goal of preventing traffic accidents and minimizing injuries suffered by project personnel and the public. Measures should include emphasizing safety aspects among drivers; improving driving skills and requiring licensing of drivers; adopting limits for trip duration and arranging driver rosters to avoid overtiredness; avoiding dangerous routes and times of day to reduce the risk of accidents; use of speed control devices (governors) on trucks, and remote monitoring of driver actions. -Employing safe traffic control measures, including road signs and flag persons to warn of dangerous conditions. -Regular maintenance of vehicles and use of manufacturer approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure.		REMA/ Meteo-Rwanda/ RDB. District Environmental and Social Safeguards Specialist. Supervision Firm.

RISKS/ Environmental and Social Standards	Potential Environmental/Social Impacts	Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision National/district
		-Using locally sourced materials, whenever possible, to minimize transport distances. -Locating associated facilities such as worker camps close to project sites and arranging worker bus transport to minimize external traffic.		
Income losses from missed season cultivation due to delays in terracing. **ESS5**	Farmers will miss seasons of cultivation due to delays in the progress of terracing their land. This implies that the farmer will lose the produce that he or she could have obtained that missed season hence a loss in home income and in most cases domestic food. It also affects targets of crop production set by local government officials for their respective district sectors.	-A clear implementation program indicating areas to be terraced, dates when they will occur and a monitoring exercise involving project staff, sector agronomists and zonal or cooperative committees should be established. It should also be shared with the local farmers as an awareness campaign. -Farmers who have been affected should be given an affirmative priority in employing them for jobs for terracing occurring at that time. This will be an alternative income source to sustain their domestic requirements.	Contractor Social specialist	Environmental and Social Safeguards Specialist MoE, RWB/ REMA/ Meteo-Rwanda/ RDB. District Environmental and Social Safeguards Specialist. Supervision Firm.

6.10 Operation Phase Mitigation Measures to Address Environmental and Social Impacts

As part of the ESMF, this section presents key impacts during the VCRP operations and associated mitigation measures. In addition, each mitigation measure is associated with the information about who is responsible for implementation and monitoring such measures.

Mitigation measures during the VCRP are discussed in this section. Mitigation measures cost estimates during this phase will be determined during ESIA processes of sub-projects based on its location, types of construction, implementation schedule, cost for project implementation and requirement of mitigation and enhancement activities. Examples of such mitigation measures are illustrated in the table below.

Table 21: VCRP Operational phase mitigation measures

Potential Environmental Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
Drowning and fall hazards at ponds and gullies. **ESS2**	There is a probability of drowning or falling into the detention ponds, channels and gullies during flood periods. The drowning and fall could lead to deaths or injuries. The issue is critical for children and livestock moving in the area, especially if nothing was considered as protection to falling or drowning.	-Protect the pond by providing the fence in the buffer zone. -Awareness campaign for children falling and drowning into the detention pond. -Warning signs next to those areas where drowning and fall are anticipated.	Operator	MoE PCU PIU Environment and social safeguards specialist. District HUB Environmental and social safeguard specialists. Consultant firm.
Biodiversity conservation and ecosystem **ESS6**	During agriculture, farming and agroforestry activities, there will be impact on biodiversity and ecosystems. Direct impacts relate to habitat conversion or degradation, water usage, pollution, introduction of invasive species, inappropriate cultivation techniques, and quality and or availability of priority ecosystem services.	-Timely identification of sensitive habitats and implementation of protective measures. -Reducing the impact of the hotel presence on nocturnal environments by avoiding lighting that extends off site or into the night sky. -Identification and engagement in regional coordination to enable management of potential impacts related to migratory species and transboundary ecosystems. -Establishing limits (e.g., numbers of visitors) for excursions to sensitive sites.	Operator	MoE PCU PIU Environment and social safeguards specialist. District HUB Environmental and social safeguard specialists. Consultant firm.

Potential Environmental Impacts of VCRP activities and subproject		**Proposed Mitigation Measures**	**Responsibility**	
			Implementation	**Supervision**
	Indirect impacts relate to in-migration, and induced changes to access for traditional land uses.	-Coordinating with ancillary suppliers to ensure sustainable practices for biodiversity conservation in the supply chain. -Implementing appropriate landscape, sacred-site, cultural, and natural heritage conservation activities and plans. -Promoting appropriate guest and staff behaviors and also developing specific codes of conduct for sustainable practices in tourism-related activities. -Developing and implementing contingency plans for emergencies that may threaten the environment and the conservation and sustainable use of biodiversity. -Implementing specifically tailored environmental and cultural sustainability audits and tourism activity reviews to assess the effectiveness of impact management measures. -Maintaining, establishing, or restoring corridors (e.g., riparian areas, movement corridors for wildlife), set asides, and buffer zones (e.g., to minimize off-site disturbance to neighboring riparian areas and wetlands, protected areas, and other important sites). -Active management and monitoring may be required to maintain required biodiversity values.		

Potential Environmental Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
		-Developers should seek to avoid the introduction of invasive species, as well as control and reduce their further spread. -Developers should use planting material that does not contain seeds from invasive alien species and that complies with local quarantine and hygiene regulations. -Leave (reserve) trees or groups of trees in the harvest concession for regeneration purposes, and provide den and nesting sites, food sources, cover, and travel corridors for wildlife, including raptors. -Appropriate conservation of understory species, as well as snags, slash, and wood debris on site should also be considered to enhance wildlife habitat. -Conserve and protect permanent seasonal habitat to ensure their use for migration, spawning, and rearing. -Manage riparian zones to preserve water quality and wildlife habitat. -Canopy closure should be allowed over roads to maintain habitat continuity. -Schedule harvesting activities to avoid breeding and nesting seasons for any critically endangered or endangered wildlife species.		

Potential Environmental Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
		-Natural vegetation in the forest management area should be managed to ensure a variety of successional stages. -Roadside strips should be left vegetated with natural cover. -Natural vegetation should not be treated with pesticides. -Biodiversity reserves should be created, managed, and monitored, to protect critical natural habitat, and high conservation value forest as representative samples of existing ecosystems in their natural state. -Long-term harvest planning should ensure that forestry operations are restricted to as small an area as possible and are not concentrated in one area for long periods of time. -Minimize damage to the forest ecosystem during harvesting. -Diversity in plantation stands should be promoted (e.g., multi-age, and multi-species, varying size and spatial distribution of compartments (blocks). -Before converting land to plantation forest, the project area should be surveyed to identify, categorize, and delineate natural and modified habitat types and ascertain their biodiversity value at the regional or national level.		

Potential Environmental Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
		-Ensure that any natural or modified habitat to be converted to plantation forest does not contain critical habitat, including known habitat of critically endangered or endangered species. -Identify the presence of critically endangered or endangered species in areas already used for plantation forest and ensure that their habitat is appropriately managed. -Set aside any identified critical habitat for biodiversity conservation purposes and for eventual restoration of the natural forest cover. -To ensure sustainable rates of harvesting, per hectare harvesting practices should be set on the basis of a scientific understanding of the regeneration success, growth rates, and distribution of the species in question. -Forest managers should use as wide a range of tree species as possible. -Minimum diameter limits should be set with consideration of the existing density and diameter of target species in the stand. -Understory clearing should be avoided. -Felling cycles should be set according to species regeneration studies, depending on local conditions.		

Potential Environmental Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
		-Inclusion of activity to grow more forest plantations to offset the project effect on forest will regenerate the lost biodiversity. -The selection of species will be based on the principle of site-species matching, which ensures that promoted species have suitable characteristics given the environmental and bio-geophysical conditions. Natural regeneration has priority over assisted regeneration, but of course it is dependent on specific site conditions. -Prevent overgrazing of pastureland through use of rotational grazing systems based on seasonal and local ecosystem resilience.		
Habitat loss and introduction of invasive species **ESS3** **ESS6**	The establishment of buffer zones can negatively impact habitats, while the transportation and planting of native species may inadvertently introduce alien/invasive flora species.	-Regularly monitor the (re)growth of exotic species so that they do not spread beyond the desired area and do not threaten native/endemic species. -Seek appropriate technical guidance from experts before introduction of a new species and follow existing regulatory framework for such introduction. -Appropriately clean all farming and construction materials at source before their use at the site.	Operator	MoE PCU PIU Environment and social safeguards specialist. District HUB Environmental and social safeguard specialists. Consultant firm.

Potential Environmental Impacts of VCRP activities and subproject		**Proposed Mitigation Measures**	**Responsibility**	
			Implementation	**Supervision**
High sediments in sedimentation traps and impact on water quality **ESS3**	With the operation of detention ponds and sediment traps, sediments will accumulate with the filtration of water that crosses the water detention basin before water is channeled downstream. The sediment that will be removed, during the maintenance of sediment traps or dredging process of rivers close to bridges, may be contaminated with diesel range organic pollutants, and may pose a risk to downstream water quality during the dredging process.	-It is important to regularly clean out these sediments to ensure proper operation of the sediment traps, detention ponds, dykes, and check dams. -Dredging activities associated with rivers at the areas close to bridges, should aim to minimize the spatial and temporal extent of sediment disturbances. In the case that dredge sediment reflects increased concentrations of diesel range organics, this should be removed and disposed of at an area outside of the riparian zone, river, dam or any other drainage line and associated vegetation.	Operator	MoE PCU PIU Environment and social safeguards specialist District HUB Environmental and social safeguard specialists. Consultant firm.
The risk of maladaptation if local conditions and needs are not adequately considered. **ESS6**	Local conditions and the needs have to be considered to avoid any maladaptation. The conditions and needs differ from one place to the other.	-Conducting Climate Risk and Vulnerability Assessment in a participatory manner, further, capacity development will be promoted on climate risk and vulnerability for local communities. -Best practices will be promoted that have been trialed and tested in the project region. For natural restoration, the use of native species will be promoted.	Operator	MoE PCU PIU Environment and social safeguards specialist. District HUB Environmental and social safeguard specialists. Consultant firm.

Potential Environmental Impacts of VCRP activities and subproject		**Proposed Mitigation Measures**	**Responsibility**	
			Implementation	**Supervision**
Use of pesticides, fertilizers, and other chemical agricultural inputs. **ESS3** **ESS4** **ESS6**	Adsorption, degradation, and movement are key processes conditioning the behavior and fate of pesticides and fertilizers in the soil. Six processes that can move pesticides are leaching, diffusion, volatilization, erosion and run-off, assimilation by microorganisms, and plant uptake. Leaching is a vertical downward displacement of pesticides and fertilizers through the soil profile and the unsaturated zone, and finally to groundwater, which is vulnerable to pollution. The issue is critical in case no estimated quantities of pesticides to be used for a particular soil, land, and crop. Uncontrolled use of pesticides can lead to diseases, increase soil acidity and disruptions in natural ecosystems.	-Integrated pest management is required for sustainable agricultural intensification. -Use pest-resistant tree varieties. -Agroforestry techniques minimize the need to use fertilizers/soil conditioners, but they do not eliminate it. The quantities of chemical fertilizers used are expected to be very modest. -The spread of latent disease will be controlled through guidelines for surveillance of outbreaks in the project area. -Use lime to raise the soil pH and precipitate soluble Aluminum ions and use well humified organic matter to complex Aluminum ions. -Periodic soils tests are recommended to measure its nutrient levels, acidity levels and other soil characteristics that might determine the trend of soil fertility. -Identify the main pests affecting crops in the region, assess the risks to the operation, and determine whether a strategy and capacity are in place to control them. -Apply early-warning mechanisms i.e., pest and disease forecasting techniques. -Rotate crops to reduce the presence of insects, disease, or weeds in the soil or crop ecosystems.	Operator	MoE PCU PIU Environment and social safeguards specialist. District HUB Environmental and social safeguard specialists. Consultant firm.

Potential Environmental Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
		-Support beneficial bio-control organisms—such as insects, birds, mites, and microbial agents by providing a favorable habitat, such as bushes for nesting sites and other original vegetation that can house pest predators and parasites. -Favor manual, mechanical weed control and/or selective weeding. -Consider using mechanical controls—such as traps, barriers, light, and sound—to kill, relocate, or repel pests. -Maintain structures to keep out pests (e.g., plug holes, seal gaps around doors and windows). -Store fertilizers in their original packaging and in a suitable dedicated location that can be locked. -Ensure that Safety Data Sheets and inventories are available at fertilizer storage facilities and available to first responders when necessary. -Only purchase and store minimal fertilizer requirements and use older fertilizers first.		

Potential Environmental Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
		-Keep fertilizer stores separate from pesticides and machinery. -Know and understand each crop's fertilizer requirements and only apply what is required. -Implement a suitable training program for personnel that are transporting, handling, loading, storing, and applying fertilizers. -Improve drainage and reduce standing water to control mosquito populations. -Consider covering manure piles with geotextiles to reduce fly populations. -Avoid the use of pesticides that fall under the WHO Recommended Classification of Pesticides and in the Stockholm Convention. -The mixing and transfer of pesticides should be undertaken by trained personnel in ventilated and well-lit areas, using containers designed and dedicated for this purpose. -Establish untreated buffer zones or strips along water sources, rivers, streams, ponds, lakes, and ditches to help protect water resources.		
Impact associated with soil conservation during crop production.	With the agro-forestry activities especially for crop production, physical and chemical degradation of soils may result from unsuitable management techniques, such as use of	-Practice reduced and zero tillage as well as direct seeding and planting, to minimize damage to soil structure, conserve soil organic matter, and reduce soil erosion.	Operator	MoE PCU PIU Environment and social safeguards specialist.

Potential Environmental Impacts of VCRP activities and subproject		**Proposed Mitigation Measures**	**Responsibility**	
			Implementation	**Supervision**
ESS6	inappropriate machinery or earthworks associated with annual crop preparation and infrastructure development. Chemical degradation of soil may result from insufficient or inappropriate use of mineral fertilizers, failure to recycle nutrients contained in crop residues, and failure to correct changes in soil pH that result from long-term use of nitrogen fertilizers and excessive use of poor-quality water, resulting in salinization.	-Consider contour and strip planting, terracing, intercropping with trees, and grass barriers in sloping areas. -Minimize soil compaction, damage, or disturbance by using appropriate land preparation machinery at the right time of year. -Consider a crop rotation program to maintain the soil coverage during the year. -Manage soil organic matter by returning crop residues or adding compost and manures whenever available and economically viable. -Plan soil preparation when weather conditions pose the lowest risk of causing environmental damage. -Draw up mitigation plans for planting or harvest operations that must take place during unsuitable periods. -Plan and control the flow of water from access roads to avoid erosion from the roads' diverted water. Use flow control weirs and diversion canals to reduce erosion in areas with field drainage. -Restrict the width of roads to the minimum that will provide the means for efficient and safe transport.		District HUB Environmental and social safeguard specialists. Consultant firm.

Potential Environmental Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
		-Forest cover should be reestablished as quickly as possible after clear felling. -Temporary mulch or slash may be considered to protect erosive soils until desired vegetation has become reestablished. -Compartment (block) areas should be minimized (as far as economically practical) to reduce the contiguous land area exposed to wind and rain. -Harvesting operations should be timed to avoid the wet season, and exceptionally wet periods, when soils are saturated. -Harvesting machinery and use of draught animals should be selected to minimize soil disturbance. -On slopes exceeding 30 percent, cable extraction systems should be used to avoid use of vehicles on slopes susceptible to erosion. -Slash and debris should be stacked along the contour.		
Impacts associated with Nutrient management in annual crop production. **ESS6**	Unsustainable use of nutrients with crop production or agriculture farming activities could pollute the soil, lead to nutrient depletion and over-fertilization.	-Consider the use of green manures, cover crops, or mulching techniques. -Plan a crop rotation program to incorporate nitrogen-fixing legume crop plants and cover crops in the cropping cycle.	Operator	MoE PCU PIU Environment and social safeguards specialist. District HUB Environmental and

Potential Environmental Impacts of VCRP activities and subproject		**Proposed Mitigation Measures**	**Responsibility**	
			Implementation	**Supervision**
		-Draw up balanced fertilizer programs for each soil management unit. -Time the application of crop nutrients to maximize uptake and minimize nutrient runoff or volatilization. -Assess soil pH periodically and apply soil amendments to correct changes in soil pH. -Conduct periodic soil analysis to detect changes in soil fertility, inform decisions on fertilizer application rates, and avoid unsustainable nutrient depletion and over-fertilization. -Establish and respect setbacks from watercourses including appropriate buffer zones and strips along water sources and ditches to act as a filter for potential nutrient runoff from the land. -Implement nutrient planning, monitoring, and documentation. -Provide farm operators with training in nutrient management. -Ensure that all personnel are trained in and use appropriate management procedures for the storage,		social safeguard specialists. Consultant firm.

Potential Environmental Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
		handling, and application of all types of fertilizers, including organic wastes		
Animal diseases **ESS6**	Where there is livestock, there are always diseases and there is possibility of contamination. Those diseases can lead to losses if no appropriate actions are considered.	-Control farm animals and poultry, equipment, personnel, and wild or domestic animals entering the facility. For example, quarantine periods for new animals, washing and disinfecting equipment, showering and protective clothing and footwear for personnel, and keeping out stray animals, rodents, and birds). -Sanitize animal and bird housing areas. -Identify and segregate sick animals and develop management procedures for adequate removal and disposal of dead animals. -Prevent the interaction of wild birds with feed. -Vehicles that go from farm to farm should be subject to special precautions such as limiting their operation to special areas with biosecurity measures, spraying of tires and treating parking areas with disinfectants. -Establish a detailed animal health program supported by the necessary veterinary and laboratory capability. -Where possible establish all in- all out systems with only one age group per farm.	Operator	MoE PCU PIU Environment and social safeguards specialist. District HUB Environmental and social safeguard specialists. Consultant firm.

Potential Environmental Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
		-Workers on multiple age bird farms should always work with the youngest birds first before moving on to the older birds. -Train workers in the application of animal health products.		
Increased runoff **ESS3** **ESS6**	During the operation phase of the smart green village, the roof catchment of each house will lead to increased runoff. The total surface area that will act as the project rainwater catchment is based on the roof catchment and the annual precipitation. There is increased fluctuation in stream flow amounts with sharp increase during rainy weather and sharp decrease during dry weather. The cumulative effect as a result of the entire built-up area of the project is felt more downstream. Surface runoff is also an agent of pollution, and it will therefore contribute to the pollution of water bodies particularly because	-The project will contribute towards minimizing the cumulative effects of storm runoff and therefore reducing sedimentation and erosion along the rivers which currently are facing similar problems. -Mitigation activities will contribute to ensure that storm water is contained near source and that as much as possible is allowed to percolate. -The project will in addition undertake roof catchment where the water is stored and used for landscaping activities. Such stored water will also be utilized for cleaning activities.	Operator	MoE PCU PIU Environment and social safeguards specialist. District HUB Environmental and social safeguard specialists Consultant firm.

Potential Environmental Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
	it will flow through urban zones that are bound to have a lot of solid waste			
Microclimate modification **ESS6**	Paved surfaces in the smart green village reflect and retain heat, modifying the microclimate by increasing long wave occurrence and heat retention. This impact will be localized to the project area during the operational phase.	-The whole project area of the green village should not be paved, and the paved area must be minimized. Landscaping of the area will reduce the effect of heat reflection thus reducing microclimate modification. -On the onset of the project, ideal zones where there will be little movement should be identified and trees planted in these zones. The project proponent should ensure as many indigenous species are planted as possible.	Operator	MoE PCU PIU Environment and social safeguards specialist. District HUB Environmental and social safeguard specialists. Consultant firm.
Visual impact **ESS6**	The establishment of smart green villages and associated infrastructure will permanently change the surrounding landscape, transitioning from a rural agricultural setting to a developed enclosure. This alteration may disrupt the existing scenery due to the introduction of incompatible features and activities.	-Project components should be designed to blend well with the existing surrounding structures, which constitutes a valued added impact to the existing facilities. -The proponent should ensure re-vegetation and adequate landscaping to blend the establishment in a more suitable manner. It is recommended that green spaces are diversified and rich in different flora species. -Retention of key landscape features where possible and new tree planting.	Operator	MoE PCU PIU Environment and social safeguards specialist. District HUB Environmental and social safeguard specialists. Consultant firm.

Potential Environmental Impacts of VCRP activities and subproject		**Proposed Mitigation Measures**	**Responsibility**	
			Implementation	**Supervision**
		Sensitive and uniform coloration paint specifications of the proposed infrastructures to be constructed.		
Water Abstraction **ESS4**	Water abstraction during the supply of water to the project may impact the downstream users and availability of water in the area leading to the competition of this critical resource. Development of water resources often involves balancing competing qualitative and quantitative human needs with the rest of the environment.	-Obtain water abstraction permits from the Water Resources Management Authority. -The amount of water abstracted to be based on availability and usage to avoid competition and shortage. -Evaluate potential adverse effects of surface water withdrawal on the downstream ecosystems and use appropriate environmental flow assessment to determine acceptable withdrawal rates. -Design structures related to surface water withdrawal, including dams and water intake structures, to minimize impacts on aquatic life. -Avoid construction of water supply wells and water intake structures in sensitive ecosystems. -Evaluate potential adverse effects of groundwater withdrawal, including modeling of groundwater level changes and resulting impacts to surface water flows, potential land subsidence, contaminant mobilization and saltwater intrusion.	Operator	MoE PCU PIU Environment and social safeguards specialist. District HUB Environmental and social safeguard specialists. Consultant firm.
Water logging and salinization	Horticulture projects as part of the Income Generating Activities (IGA) for livelihood restoration in	-Use of proper irrigation management, closely matching irrigation demands and supply.	Operator	MoE PCU

Potential Environmental Impacts of VCRP activities and subproject		**Proposed Mitigation Measures**	**Responsibility**	
			Implementation	**Supervision**
ESS3 **ESS6**	the green village, could be associated with salinization and waterlogging. Low irrigation efficiencies are one of the main causes of the rise of the water table. Poor water distribution systems, poor main system management and archaic in-field irrigation practices are the main reason. However, the proposed smart agriculture activities are expected to use improved/modern irrigation technologies leading to water application efficiency to mitigate water-logging and salinization occurrences.	-Installation and maintenance of an adequate drainage system. -Careful management should be practiced, to reduce the rate of salinity build up and minimize the effects on crops.		PIU Environment and social safeguards specialist. District HUB Environmental and social safeguard specialists. Consultant firm.
Algal blooms and proliferation **ESS3** **ESS6**	Agriculture farming activities have the potential to cause algal blooms if there is an excess of nutrients like nitrogen and phosphorus feed algae causing them to 'bloom'. When the blooms die, the decomposition processes use up available oxygen in the water, creating a dead zone where no aquatic life can survive.	-Reduction of input to and release of nutrients (nitrogen and phosphorus) from cropped fields. -Use organic instead of chemical fertilizers where possible.	Operator	MoE PCU PIU Environment and social safeguards specialist. District HUB Environmental and social safeguard specialists. Consultant firm.

Potential Environmental Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
Threat to human health **ESS4**	Improper handling of treated seeds, fertilizers, and pesticides poses risks to both human health and livestock well-being.	-Use certified crop seeds that do not contain seeds from invasive alien species. -The introduction of GMO crops should be assessed for compliance with Rwanda regulatory framework for such introductions. -Proper storage of seeds.	Operator	MoE PCU PIU Environment and social safeguards specialist. District HUB Environmental and social safeguard specialists. Consultant firm.
Increased spread of malaria **ESS6**	During operation of the green village, dams, dykes and ponds, stagnant water could become favourable breeding grounds for malaria spreading mosquitoes. Also, unattended bushes and shrubs could also breed mosquitoes. This could result in increased cases of malaria for household members in green villages and the neighbouring communities, if not managed.	Operators will comply with the 2016 comprehensive malaria contingency plan, which includes measures such as distributing treated mosquito nets, providing affordable health insurance with free malaria treatment, expanding indoor residual spraying, conducting home-based testing and treatment, and using drones for localized mosquito breeding area spraying.	Operator	MoE PCU PIU Environment and social safeguards specialist. District HUB Environmental and social safeguard specialists. Consultant firm.

6.11 Construction and operation Phase Mitigation Measures to Address Environmental and Social Impacts

Table 22: VCRP Construction and operational phase mitigation measures

Potential Environmental and social Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
Employment labor issues **ESS2**	The project faces a medium risk of labor abuses, including child labor in agroforestry activities and discrimination in hiring processes, particularly for women. Challenges may arise in enforcing child labor laws in remote areas, where school attendance is irregular, and families depend on child labor. Discrimination in recruitment and instances of sexual harassment are also potential concerns during project implementation.	- The contractors must ensure that the hired workforce during the construction period is screened based on their National Identification ID for eligible age to work (18 years of age). -Incidence of child labor in Project supported activities will lead to possible termination of contract and suspension of support to the implementing partner. -Non-compliance on child labor issues in accordance with the above legal and policy framework will also be highlighted specifically in the design of the Project-level grievance mechanism. -The implementing agencies and financiers will reconfirm and will monitor closely during the project implementation that beneficiaries that could potentially employ children below the nationally defined minimum employment age (18) will not be eligible as recipients of the project technical and financial support. -With regards to sexual harassment, all project employees are obligated to undergo awareness trainings on sexual harassment in the workplace and to become familiar with procedures for addressing such	Contractor and operator	MoE PCU PIU Environment and social safeguards specialist District HUB Environmental and social safeguard specialists Supervision firm

Potential Environmental and social Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
		abuse. Issues of sexual harassment or gender-based violence in relation to project activities, may also be addressed by the grievance mechanism, particularly for GBV/SEA a channel separate from the project GRM, one of confidentiality and survivor-centered approach.		
Risk that vulnerable groups and women are not adequately included in village forest management activities and related benefit sharing arrangements. **ESS2** **ESS4**		-The project management at appropriate levels will ensure that vulnerable groups and women are engaged in training and activities related to the project benefit sharing arrangements. This includes gender-responsive mechanisms for community monitoring. -The Gender Action Plan to include measures to sufficiently include women in the project activities and income generating activities, including quotas for training and for the participation in meetings and related training. The project's target is that at least 30% of the beneficiaries adopting improved and/or new climate-resilient livelihood options are female. -The project wide target of 35% women will be applied in recruitment to the Project Management Unit (PMU), with responsibility for day-to-day management. -All data will be systematically disaggregated in the different activity reports and/or other Project documents in order to highlight the different situations of each of the targets (men/women/youth).	Contractor and operator	MoE PCU PIU Environment and social safeguards specialist District HUB Environmental and social safeguard specialists Supervision firm

Potential Environmental and social Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
		-During implementation, there will be a systematic focus on incorporating the specific needs of men, women, youth, and elderly in all interventions. -In addition, the Ministry for the Promotion of Women and Integration of Women in Development will coordinate closely with the project and provide support for gender mainstreaming (i.e. capacity building, awareness). This Ministry will also be represented in the Project's Technical Committee, part of the Project governance structure. -The Project will be based on the situational analysis and other qualitative and quantitative data (disaggregated by gender) at the time the gender impact of the Project's interventions is evaluated. -The capacities of the Project team's agents will be strengthened on gender and development modules, to ensure effective gender mainstreaming in the different components of the VCRP. Awareness raising and procedures for handling cases of GBV will be part of the capacity building strategy. -A Project Stakeholder Engagement plan will specifically address how best to engage and ensure the benefits for women, youth, and the elderly in project activities. -A Project Communication Strategy will include appropriate messaging on gender-based violence (GBV).		

Potential Environmental and social Impacts of VCRP activities and subproject		**Proposed Mitigation Measures**	**Responsibility**	
			Implementation	**Supervision**
		-The Project Grievance mechanism will be fully accessible to women. The mechanism will include clear procedures to deal with GBV and those handling complaints will be trained on appropriate steps to take. Information will be forthcoming on medical, psychological, legal, security and socioeconomic support for victims. Complaints may be submitted orally if necessary. -Prevention of GBV will also be promoted by incorporating messaging on GBV in the project's Communication Strategy, by encouraging household/couples dialogue, by mobilizing local leaders for GBV related conflict management, and by including GBV in the project' grievance mechanism. The project will collaborate with organizations providing support and advice on GBV (e.g. the nearest District One stop centre Isange to address GBV). -Women's participation during meetings will be monitored. A notetaker will record how many times men and women intervene during meetings and how their interventions are handled.		

Air pollution **ESS3** **ESS4** **ESS6**	-Air quality can be adversely affected by vehicle exhaust emissions and combustion of fuels. - Air quality can be adversely affected by emissions from machinery and combustion of fuels. -Air quality can be adversely affected by emissions from sewage; mammalian livestock, poultry and crop production. -Dust generation from construction sites, material stockpiles and access roads are a nuisance in the environment and can be a health hazard. -Diesel combustion will generate pollutant emissions that can lead to several environmental impacts including global warming and health impacts.	-Fit vehicles with appropriate exhaust systems and emission control devices. Maintain these devices in good working condition. -Operate the vehicles in a fuel-efficient manner. -Cover haul vehicles carrying dusty materials and impose speed limits on all vehicle movement at the worksite. -Limit the idling time of vehicles not more than 2 minutes. This should be enforced through a penalty system, where offenders are warned, then fined. -Focus special attention on containing the emissions from generators. -Machinery causing excess pollution (e.g., visible smoke) will be banned from construction sites. -Provide filtering systems, duct collectors or humidification or other techniques to the concrete batching and mixing plant. -Water the material stockpiles, access roads and bare soils on a required basis. -Minimize the extent and period of exposure of the bare surfaces.	Contractor and operator	MoE PCU PIU Environment and social safeguards specialist District HUB Environmental and social safeguard specialists Supervision firm

Potential Environmental and social Impacts of VCRP activities and subproject		**Proposed Mitigation Measures**	**Responsibility**	
			Implementation	**Supervision**
	-Air emissions from wastewater treatment operations consist of hydrogen sulfide, methane, ozone, volatile organic compounds (VOCs), and gaseous or volatile chemicals used for disinfection.	-Reschedule earthwork activities or vegetation clearing activities, where practical to avoid during periods of high wind and if visible dust is blowing off-site. -Restore disturbed areas as soon as practicable by vegetation/grass-turfing. -Store the cement in silos and minimize the emissions from silos by equipping them with filters. -Establish adequate locations for storage, mixing and loading of construction materials, in a way that dust dispersion is prevented because of such operations. -Crushing of rocky and aggregate materials shall be wet-crushed or performed with particle emission control systems. -Use the cleanest fuels within technically feasible possibilities as well as low-sulfur diesel. -Use of ozone depleting refrigerants should be avoided, and refrigerants with low global warming potential (GWP) should be selected. -Increase the carbon to nitrogen ratio in feeds to reduce methane and nitrous oxide production.		

Potential Environmental and social Impacts of VCRP activities and subproject		**Proposed Mitigation Measures**	**Responsibility**	
			Implementation	**Supervision**
		-Control the temperature, humidity, and other environmental factors of manure storage to reduce methane and nitrous oxide emissions. -Install dust collection systems such as misters in feed grinding areas. -Avoid open burning for land preparation, weed control, and post-harvest treatments. -Adopt Integrated Pest Management (IPM) strategies to avoid and reduce use of pesticides and associated drift. -Modify timing of operations, where possible, to coincide with favorable atmospheric conditions and reduce risk of air pollution. -Establish natural wind barriers such as vegetative field borders, hedgerows, herbaceous wind barriers, and tree/shrub.		
Water quality deterioration **ESS3** **ESS4** **ESS6**	- Project activities will have either direct or indirect discharge of wastewater from project operations or storm water to the environment. -Restoration activities will lead to an increase in	-Planting activities to be done in the dry season. -Plan and implement the segregation of liquid effluents to limit the volume of water requiring specialized treatment. -Design, construct, operate, and maintain wastewater treatment facilities and achieve effluent water quality consistent with applicable national requirements and internationally accepted standards.	Contractor and operator	MoE PCU PIU Environment and social safeguards specialist District HUB Environmental

Potential Environmental and social Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
	sediment and turbidity levels within the protected waters. -Water quality deterioration from water distribution systems due to water system leaks and loss of pressure, and water discharges. -Flushing water lines remove accumulated sediments and impurities, but it can lead to the discharge of water containing suspended solids, residual chlorine, and contaminants that can harm surface water bodies. -Uncontrolled discharge of domestic wastewater from tourism facilities and smart green villages, which includes sewage and greywater, into aquatic systems can result in various consequences such as microbial and chemical pollution of the receiving	-When a spill, leak, and/or overflow occurs, keep sewage from entering the storm drain system by covering or blocking storm drain inlets or by containing and diverting the sewage away from open channels and other storm drain facilities. -Land application or other beneficial reuse of wastewater treatment plant residuals should be considered but only based on an assessment of risks to human health and the environment. -Limit the sewer depth where possible -Wastewater from washing construction machines and equipment must be collected in the settling pond before being discharged into the local sewage system. -Upon the completion of the construction works, the wastewater tanks and septic tanks must be safely treated or sealed up. -Consider discharge of treated wastewater to natural or constructed wetlands. -Water uses efficiency to reduce the amount of wastewater generation.		and social safeguard specialists Supervision firm

Potential Environmental and social Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
	water, depletion of oxygen levels, higher turbidity, and eutrophication. -Leaks and overflows in sewage systems pose a significant threat to water quality, leading to its deterioration. These problems arise from various factors, including heavy rain causing increased flows, power outages, equipment failures, or obstructions. Consequently, the released wastewater can comprise untreated sewage, industrial waste, and polluted runoff, exacerbating the contamination further. - Construction sites generate waste, emissions, and discharge sediment and contaminants. These can harm ecosystems, water bodies, and groundwater. - Wastewater is generated during construction and	-Reduce water use and spills from animal watering by preventing overflow of watering devices and using calibrated, well-maintained self-watering devices. -Reuse water used for cleaning milking equipment to clean the milking parlor. -Process modification, including waste minimization, and reducing the use of hazardous materials to reduce the load of pollutants requiring treatment. -Minimizing use of the laundry by asking guests to reuse towels and bedding. -Conduct regular inspection and maintenance and implement a leak detection and repair program. -Install vegetative filters to trap sediment and install surface water diversions to direct clean runoff around areas containing waste. -Implement buffer zones to surface water bodies, avoiding land spreading of manure within these areas. -Reduce leachate from silage by allowing plant material to wilt in the field for 24 hours, varying cutting and harvesting times, and adding moisture-absorbent material as the silage is stored.		

Potential Environmental and social Impacts of VCRP activities and subproject		**Proposed Mitigation Measures**	**Responsibility**	
			Implementation	**Supervision**
	operation of the smart green village, primarily from domestic sewage, laundry, dry-cleaning, housekeeping, maintenance, and kitchen departments. Livestock operations also contribute non-point source effluents through runoff from feed storage, livestock housing, waste management facilities, and land application of manure.	-Implementation of a riparian management zone (RMZ) plan. -Minimize vehicular movement over perennial and intermittent streams, and wetland areas. -Locate manure stacks away from water bodies, floodplains, wellhead fields, or other sensitive habitats. -Maximize use of existing skid trails and landings and ensure that runoff drainage does not empty directly into water bodies without diversions and sediment control.		
Waste generation **ESS3**	-Generation of domestic solid wastes and hazardous, that present pollution of water resources, soil, and air. -Effective management of crop residue and solid waste is essential to prevent site pollution and potential volume increase. Mammalian livestock production also generates	-Establish waste management priorities at the outset of activities and develop a waste management plan for various specific waste streams. -Before construction, the Contractors must ensure that all permits or waste treatment contracts are available. -Contractors must provide garbage bins, containers, and waste collection facilities, at all construction sites. -Maintain all construction sites in a cleaner, tidy, and safe condition.	Contractor and operator	MoE PCU PIU Environment and social safeguards specialist District HUB Environmental and social safeguard specialists

Potential Environmental and social Impacts of VCRP activities and subproject		**Proposed Mitigation Measures**	**Responsibility**	
			Implementation	**Supervision**
	solid waste, including feed, animal waste, carcasses, packaging, filters, medications, cleaning materials, and wastewater treatment sludge if applicable. -Construction activities generate domestic solid waste such as plastic bags, wastepaper, plastic bottles, and excess food, as well as broken bricks, stones, scrap metal, and cement bags. During operation, the smart green village, tourism, and hospitality facilities produce waste including paper, cardboard, glass, aluminum, plastic items, organic waste, building materials, furniture, and used oils and fats, with potential hazardous waste like batteries, solvents, paints, and certain packaging materials.	-Solid waste may be temporarily stored at site in the designated areas approved before being collected and treated through licensed waste collectors. -Waste packaging must be protected against corrosion. -Do not burn, bury, or dump solid waste inappropriately. -Re-usable materials will be collected and classified at site from other sources for recycling or for sale. -Hiring local workers to limit waste. -Storage of hazardous wastes in tightly closed containers away from direct sunlight, wind, and rain. -Appropriate storing, collection, transportation, disposal, and treatment/recycling of hazardous waste. -Make Available Material Safety Data Sheets (MSDS) for hazardous materials on-site during construction. -Segregate and reuse or recycle all the wastes, wherever practical. -Waste should be stored in a manner that prevents the contact between incompatible wastes and allows for inspection between containers to monitor leaks or spills.		Supervision firm

Potential Environmental and social Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
	-Mammalian livestock production generates solid waste, including waste feed, animal waste, carcasses, packaging, ventilation filters, medications, cleaning materials, and sludge from wastewater treatment if applicable. The primary form of animal waste is un-metabolized nutrients excreted as manure, resulting in significant quantities of waste. -Livestock feed consists of hay, grain, and silage, often supplemented with protein, amino acids, enzymes, vitamins, mineral supplements, hormones, heavy metals, and antibiotics. Spilled feed during storage, loading, unloading, or feeding can become unusable waste material and potentially	-Train and instruct all personnel in waste management practices. -Measures should be taken to minimize potential waste generation. Request suppliers to minimize packaging where practicable. -Place a high emphasis on good housekeeping practices. -Buy in bulk quantities, avoid use of polystyrene foam, and use glass or durable plastic whenever possible in all operations. -Implementing organic-waste composting. -Facilitate discharge of fecal sludge and septage at storage and treatment facilities so that untreated septage is not discharged to the environment. -Develop and implement a crop residue management plan -Consider using crop residues for animal feed, bedding, or thatching. -Consider mixing waste feed with other recyclable materials destined for use as fertilizer.		

Potential Environmental and social Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
	contaminated stormwater runoff, primarily due to its organic matter content.	-Use covered or protected feeders to prevent feed from exposure to rain and wind. -Grind feed to increase utilization efficiency by the animals. -Use low-protein diets, supplemented with amino acids, and use low-phosphorus diets with highly digestible inorganic phosphates. -Store carcasses until collection, cooling if necessary to prevent putrefaction. Use a reliable collection company approved by local authorities that disposes of carcasses.		
Water conservation **ESS6** **ESS4**	-The project requires a large amount of water for construction and operation, including flood control infrastructures, green village houses, drainage structures, water harvesting, energy management, and park expansion. Water consumption is expected to increase during the dry season when rainwater harvesting is limited.	-Rainwater harvesting through a network of gutters and pipes and channeled into a cistern or a catchment basin, to be used for irrigation, cleaning, for evaporative cooling equipment, and for replacing pool water. -Zero discharge design/Use of treated wastewater to be included in project design processes. -Use of localized recirculation systems in facilities, with provision only for makeup water. -Use of dry process technologies e.g., dry quenching, dry cleaning processes with a scrapper, etc -Process water system pressure management.	Contractor and operator	MoE PCU PIU Environment and social safeguards specialist District HUB Environmental and social safeguard specialists

Potential Environmental and social Impacts of VCRP activities and subproject		**Proposed Mitigation Measures**	**Responsibility**	
			Implementation	**Supervision**
	-Maintaining soil structure and irrigation require a substantial quantity of water to maintain high productivity. Water efficiency is key for smart agriculture farming and agroforestry activities. -Designing with good practices can greatly reduce water consumption in housing infrastructure and hospitality development, particularly in dry climates or environmentally sensitive locations, where excessive water usage can be a concern.	-Project design to have measures for adequate water collection, spill control and leakage control system. -Use water-saving equipment, including ultra-low-flush toilets, spray nozzles, urinals, faucet aerators, and low-flow showerheads, infrared and ultrasonic sensors, water spigots, and pressure-control valves. -When irrigation is practiced develop an appropriate irrigation plan, schedule, and monitor consumption, and adopt water-efficient irrigation systems. -Reduce evapotranspiration by using shelterbelts and windbreaks. -Ensure appropriate soil moisture by active monitoring of soil humidity.		Supervision firm
Life and fire safety ESS4	Fuel storage for heavy equipment poses a fire risk due to mishandling and electrical short circuits. Potential consequences include damage to	-Regular checks on electrical installations and proper insulation of cables, to prevent short circuits that could trigger fires. -Specific area restricted to only authorized personnel, should be allocated for fuel storage.	Contractor and operator	MoE PCU PIU Environment and social safeguards specialist

Potential Environmental and social Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
	equipment, property, bushfires, and even loss of life. Both construction campsites and village houses are susceptible to such fire outbreaks.	-The area should have sufficient fire extinguishing equipment to stop fires escalating. -Water tank automobiles with hose pipes need to be part of the equipment required at the sites, for purposes of extinguishing fires. -Fire management drills for the workers should regularly be done. - Prepare a Life and Fire Safety Master Plan identifying major fire risks, applicable codes, standards and regulations, and mitigation measures.		District HUB Environmental and social safeguard specialists Supervision firm
Energy conservation **ESS3**	-Construction activities and operation of planned infrastructures can lead to increased energy consumption if appropriate measures are not taken to minimize it. Energy-intensive tasks such as operating construction machinery, heating, cooling, lighting, processing, storing, handling, and agricultural and forestry activities all contribute to energy usage.	-Use of passive solar design to take advantage of natural sunlight and airflow. -Optimized building orientation. -Use of direct gain and day lighting techniques, allowing sunlight to penetrate a building to provide light to illuminate interiors and to provide heat. -Implementation of Trombe walls (glazing-encased thin airspace in front of a thermally massive wall). -Installation of renewable energy systems where local conditions permit.	Contractor and operator	MoE PCU PIU Environment and social safeguards specialist District HUB Environmental and social safeguard specialists Supervision firm

Potential Environmental and social Impacts of VCRP activities and subproject		**Proposed Mitigation Measures**	**Responsibility**	
			Implementation	**Supervision**
	This includes the direct use of fuel and electricity for machinery and equipment, building heating and cooling, lighting, as well as indirect energy use in fertilizers and chemicals. -Designing with good practices can greatly reduce energy consumption in housing infrastructure and hospitality development, particularly in dry climates or environmentally sensitive locations, where excessive energy usage is a concern.	-Reduction of energy consumption associated with heating, ventilation, and air conditioning (HVAC) systems. -Reduction of energy consumption associated with lighting.		
Occupational health and safety risks **ESS 2**	Workers shall be exposed to the risk of accidents and hazards from injuries of sharp objects, accidents by falling from high positions like off the roofs, injuries from fires during welding, electrocution from handling electric equipment negligently, drinking	-Surfaces, structures, and installations should be easy to clean and maintain, and not allow for accumulation of hazardous compounds. -Buildings should be structurally safe, provide appropriate protection against the climate, and have acceptable light and noise conditions. -Floors should be level, even, and non-skid.	Contractor and operator	PIU Environment and social safeguards specialist District HUB Environmental and social

Potential Environmental and social Impacts of VCRP activities and subproject		**Proposed Mitigation Measures**	**Responsibility**	
			Implementation	**Supervision**
	unboiled water, accidents from trucks and heavy automobiles used for construction or transportation of material on site or off site.	-Heavy oscillating, rotating or alternating equipment should be located in dedicated buildings or structurally isolated sections. -The contractor should develop an Environmental health and safety (EHS) Plan upon contract signature and before the start of construction activities. -The contractor and developer should develop an Emergency Response Plan (ERP) for handling any emergencies arising thereof during the construction and operation. -A perimeter fence should be erected all around the construction site to keep the place secure and away of any unauthorized persons. -Restrictive entrance by placing "No ENTRY" signs should be installed to keep away unqualified workers from access to restricted areas. For instance, areas where flammable material is stored like fuels, oils and greases. -Loading and unloading machines must be operated only by qualified staff and a site supervisor should be on site at all times to ensure adherence. -Ensure that all equipment is in good working conditions to prevent occupational hazards. -Provision of condoms through dispensers located strategically at all workstations. -Provision of information posters.		safeguard specialists Supervision firm

Potential Environmental and social Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
		-There will be no on-site burning of solid waste to avoid the risk of fire. -The contractor will develop a solid waste management plan. -The care and maintenance of vehicles and construction equipment will be performed only in specially equipped areas. The fuel depots and lubricants will be secured by intercepting traps. -Workplace structures should be designed and constructed to withstand the expected elements for the region and have an area designated for safe refuge, if appropriate. -Standard Operating Procedures (SOPs) should be developed for projects or process shutdown, including an evacuation plan. -The space provided for each worker, and in total, should be adequate for the safe execution of all activities. -Passages to emergency exits should be unobstructed at all times. -Facilities also should be designed and built taking into account the needs of disabled persons. -Equipping facilities with fire detectors, alarm systems, and fire-fighting equipment.		

Potential Environmental and social Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
		-Provision of manual firefighting equipment that is easily accessible and simple to use. -Fire and emergency alarm systems that are both audible and visible. -Adequate lavatory facilities (toilets and washing areas) should be provided. -Suitable arrangements should be provided to ensure clean eating areas and facilities for showering and changing are available to workers potentially exposed to poisonous substances through ingestion and skin contamination -Adequate supplies of potable drinking water should be provided from a fountain with an upward jet or with a sanitary means of collecting the water for the purposes of drinking. -Water supplied to areas of food preparation or for the purpose of personal hygiene (washing or bathing) should meet drinking water quality standards. -Workplaces should, to the degree feasible, receive natural light and be supplemented with sufficient artificial illumination. -Emergency lighting of adequate intensity should be installed and automatically activated upon failure of the principal artificial light source to ensure safe shut-down, evacuation, etc.		

Potential Environmental and social Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
		-Passageways for pedestrians and vehicles within and outside buildings should be segregated and provide easy, safe, and appropriate access. -Hand, knee and foot railings should be installed on stairs, fixed ladders, platforms, permanent and interim floor openings, loading bays, ramps, etc. -Openings should be sealed by gates or removable chains. -Covers should, if feasible, be installed to protect against falling items. -Measures to prevent unauthorized access to dangerous areas should be in place. -The employer should ensure that qualified first aid can be provided at all times. Appropriately equipped first-aid stations should be easily accessible throughout the place of work. -Where the scale of work or the type of activity being carried out so requires, dedicated and appropriately equipped first aid room(s) should be provided. First aid stations and rooms should be equipped with gloves, gowns, and masks for protection against direct contact with blood and other body fluids. -Provisions should be made to provide OHS orientation training to all new employees to ensure they are		

Potential Environmental and social Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
		apprised of the basic site rules of work at / on the site and of personal protection and preventing injury to fellow employees. -If visitors to the site can gain access to areas where hazardous conditions or substances may be present, a visitor orientation and control program should be established to ensure visitors do not enter hazard areas unescorted. -Designing machines to eliminate trap hazards and ensuring that extremities are kept out of harm's way under normal operating conditions. -Turning off, disconnecting, isolating, and de-energizing machinery with exposed or guarded moving parts, or in which energy can be stored during servicing or maintenance. -No employee should be exposed to a noise level greater than 85 dB(A) for a duration of more than 8 hours per day without hearing protection. In addition, no unprotected ear should be exposed to a peak sound pressure level (instantaneous) of more than 140 dB(C). -Prior to the issuance of hearing protective devices as the final control mechanism, use of acoustic insulating materials, isolation of the noise source, and other engineering controls should be investigated and implemented, where feasible.		

Potential Environmental and social Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
		Periodic medical hearing checks should be performed on workers exposed to high noise levels. -Supply of safe potable water for drinking, bathing, food preparation, and other purposes where it may be ingested. -Regular testing of potable water according to World Health Organization (WHO) standards as a minimum. -Use low-VOC-emitting products and avoid aerosols, air fresheners and sprays. -Expose products in open or ventilated areas before installation and increase ventilation rates during and after installation. -Institute a no-smoking policy. -Provide specific staff-training and guest information. -Equipping shower stalls with non-slip surfaces or anti-slip strips, secure handles, and ready access to emergency phones. -Maintaining frequently transited areas as dry as possible. -Placing temporary or permanent warning signs on wet floors during cleaning or after rain.		

Potential Environmental and social Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
		-Compliance with food hygiene and water-quality standards. -Implement a confined spaces entry program that is consistent with applicable national requirements and internationally accepted standards. Valves to process tanks should be locked to prevent accidental flooding during maintenance. -Use proper techniques for trenching and shoring. -Locate all underground utilities before digging. -Provide worker immunization (e.g. for Hepatitis B and tetanus) and health monitoring, including regular physical examinations. -Marking all energized electrical devices and lines with warning signs. -Conducting detailed identification and marking of all buried electrical wiring prior to any excavation work. -Checking all electrical cords, cables, and hand power tools for frayed or exposed cords and following manufacturer recommendations for maximum permitted operating voltage of the portable hand tools. -Facility and workstation design with 5th to 95th percentile operational and maintenance workers in mind. -Use of mechanical assists to eliminate or reduce exertions required to lift materials, hold tools and work		

Potential Environmental and social Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
		objects, and requiring multi-person lifts if weights exceed thresholds. -Installation of guardrails with mid-rails and toe boards at the edge of any fall hazard area. -Proper use of ladders and scaffolds by trained employees. -Replacement of the hazardous substance with a less hazardous substitute. -Implementation of engineering and administrative control measures to avoid or minimize the release of hazardous substances into the work environment keeping the level of exposure below internationally established or recognized limits. -Keeping the number of employees exposed, or likely to become exposed, to a minimum. -Communicating chemical hazards to workers through labeling and marking according to national and internationally recognized requirements and standards. -Identification and provision of appropriate PPE that offers adequate protection to the worker, co-workers, and occasional visitors, without incurring unnecessary inconvenience to the individual.		

Impacts associated with hazardous materials management. **ESS3** **ESS4** **ESS6**	Materials used in construction have the potential to be a source of contamination. Improper storage and handling of fuels, lubricants, chemicals, and hazardous goods/materials on-site, and potential spills from these goods may harm the environment or health of construction workers. -Facilities should develop a spill control, prevention, and countermeasure plan as part of their Emergency Preparedness and Response Plan to address the risk of uncontrolled hazardous material spills. The plan should be customized to the specific project hazards. -Forestry operations and road construction involve the use of machinery and fuels, which can pose risks of accidental spills and negative impacts. Mammalian livestock operations may generate hazardous	-Prepare spill control procedures and submit the plan for Supervision firm approval. -Train the relevant personnel in handling of fuels and spill control procedures. -Store dangerous goods in bunded areas on top of a sealed plastic sheet away from watercourses. -Refueling shall occur only within bunded areas. -Make available MSDS (Material Safety Data Sheet) for chemicals and dangerous goods on-site. -Transport waste of dangerous goods, which cannot be recycled, to a designated disposal site approved by REMA. -Provide absorbent and containment material (e.g., absorbent matting) where hazardous material is used and stored and personnel trained in the correct use. -Provide protective clothing to personnel, appropriate to materials in use. -Make sure all containers, drums, and tanks that are used for storage are in good condition and are labeled with expiry date. -Store hazardous materials above flood plain level.	Contractor and operator	MoE PCU PIU Environment and social safeguards specialist District HUB Environmental and social safeguard specialists Supervision firm

Potential Environmental and social Impacts of VCRP activities and subproject		**Proposed Mitigation Measures**	**Responsibility**	
			Implementation	**Supervision**
	materials through poor management of manure, standing water, mosquito breeding, and inadequate mechanical controls.	-Avoid the use of material with greater potential for contamination by substituting them with more environmentally friendly materials. -Return the gas cylinders to the supplier. -Remediate the contaminated land using the most appropriate available method to achieve required commercial/industrial guideline validation results. -Identify the cause of contamination, if it is reported, and contain the area of contamination. -Implement inspection programs to maintain mechanical integrity and operability. -Prepare a Hazardous Materials Transportation Plan. -Logging equipment should not be washed near streams.		
Community Health and safety risks such as (HIV, GBV, SEA, drug abuse, Vector-Borne Diseases etc.) **ESS4**	-Activities such as flood control, green village development, transportation changes, and hazardous material management can have negative health and safety impacts on communities,	-The Subprojects must implement risk management strategies to protect the community from physical, chemical, or other hazards associated with construction areas. -Limiting access to construction sites via a combination of internal controls and administrative measures for the high-risk structures or areas, depending on specific	Contractor and operator	PIU Environment and social safeguards specialist District HUB Environmental

Potential Environmental and social Impacts of VCRP activities and subproject		**Proposed Mitigation Measures**	**Responsibility**	
			Implementation	**Supervision**
	including labor abuses, hazardous materials, labor influx and ecosystem disruption. -During construction, workers and local communities are at risk of contagious diseases due to poor hygiene and living conditions. Sexually transmitted diseases, such as HIV/AIDS, gonorrhea, and syphilis, are a significant concern. Gender-based violence and sexual exploitation can also occur, with men seeking multiple wives and women being lured into sexual exploitation and abuse. Inadequate waste management and standing water increase the risk of infectious diseases spread by flies, mosquitoes, and insects, emphasizing the need for mitigation measures.	circumstances, fencing, signage, and communications of the risk to the local community. -Eliminating dangers on construction sites that cannot be effectively controlled by restricting access to the site such as covering open areas into shielded spaces, creating paths to the larger openings such as ditches or dug holes. -Training health workers on disease treatment. -Implementing vaccination programs for local community workers to improve health and prevent infections. -Providing treatment through case management at on-site or community-based health care facilities. -Ensuring the access to appropriate medical treatment, confidentiality, and care, especially for migrant workers. -Promoting cooperation with local authorities to increase access of workers' families and the community to public health services and promoting vaccination. -Inclusion of buffer strips or other methods of physical separation around project sites to protect the public from major hazards associated with hazardous materials incidents or process failure, as well as nuisance issues related to noise, odors, or other emissions. -Incorporation of siting and safety engineering criteria to prevent failures due to natural risks. -Application of locally regulated or internationally recognized building codes 80 to ensure structures are		and social safeguard specialists Supervision firm

Potential Environmental and social Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
	-Project activities, equipment, and infrastructure can heighten community exposure to risks and impacts, particularly for communities already affected by climate change. -Rehabilitation and maintenance activities can temporarily disrupt water supply for downstream inhabitants, impacting their agriculture and livelihoods. Emergency flood discharge and pond failure can lead to floods, property damage, crop loss, and potential loss of life downstream. -Poor sanitary conditions and breeding habitats during construction and operation can lead to the spread of vector-borne diseases, particularly without proper control programs. The risk is heightened in areas where	designed and constructed in accordance with sound architectural and engineering practice, including aspects of fire prevention and response. -Reducing the probability that releases will occur through improved site operations and control, and through improvements in maintenance and inspection. -Reducing off-site impacts of releases through measures intended to contain explosions and fires, alert the public, provide for evacuation of surrounding areas, establish safety zones around a site, and ensure the provision of emergency medical services to the public. -Determine the area that contributes water to the source and identify potential sources of contamination. -Evaluate the vulnerability of the water source to disruption or natural events and implement appropriate security measures as necessary. -Construct, operate, and manage the water distribution system in accordance with applicable national requirements and internationally accepted standards. -Construct and maintain the distribution system so that it acts as a barrier and prevents external contamination from entering the water system. -Maintain adequate water pressure and flow throughout the system.		

Potential Environmental and social Impacts of VCRP activities and subproject		**Proposed Mitigation Measures**	**Responsibility**	
			Implementation	**Supervision**
	people lack sufficient education and information.	-Prevent introduction of contamination from the distribution system itself. -Preventing sewerage system overflows; · Preventing buildup of potentially toxic and explosive gasses in the sewer. -Restrict access to waste management facilities by implementing security procedures. -Provide adequate buffer area, such as trees, or fences, between processing areas and potential receptors. -Stop irrigation with treated wastewater two weeks prior to harvesting. -Limit irrigation with treated wastewater to crops that are cooked before eating. -Restrict public access to hydraulic structures carrying wastewater and to fields irrigated with treated wastewater. -Providing surveillance and active screening and treatment of workers. -Preventing illness among workers in local communities by undertaking health awareness and education initiatives; training health workers in disease treatment; conducting immunization programs for workers in local communities; and providing health services.		

Potential Environmental and social Impacts of VCRP activities and subproject		Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
		-Providing treatment through standard case management in on-site or community health care facilities. -Prevention of larval and adult propagation through sanitary improvements and elimination of breeding habitats close to human settlements. -Elimination of unusable impounded water. -Increase in water velocity in natural and artificial channels. -Implementation of integrated vector control programs. -Promoting use of repellents, clothing, netting, and other barriers to prevent insect bites. -Monitoring and treatment of circulating and migrating populations to prevent disease reservoir spread. -Educating project personnel and area residents on risks, prevention, and available treatment. -Monitoring communities during high-risk seasons to detect and treat cases.		
Risks associated with the construction and operation of the electric fence.	-Electric fencing can have various impacts, including accidents resulting from electric shocks. These accidents pose risks to both	-Develop comprehensive educational programs and awareness campaigns to inform park staff, local communities, and visitors about the potential dangers and risks associated with electric fences.	Contractor and operator	MoE PCU PIU Environment and social

Potential Environmental and social Impacts of VCRP activities and subproject		**Proposed Mitigation Measures**	**Responsibility**	
			Implementation	**Supervision**
ESS3 **ESS4** **ESS6**	people and wildlife in the VNP. -Accidents can occur during the handling of machinery, tools, and vehicles. Uncovered holes also pose a threat, potentially causing injuries to people and wildlife. -The fence will restrict animal movement, disrupt migratory corridors, lead to overgrazing along the fence line and result in conflicts with wildlife seeking alternative routes. -With the construction and operation of the electric fence, migratory birds will see their movements disrupted with possibility of not crossing at all in case contact to the fence resulting in electrocution.	-Provide training to park personnel on the safe installation, operation, and maintenance of electric fences. -Implement strict safety protocols during the transportation and development phases, including the handling of machinery, tools, and vehicles. -Establish a routine maintenance schedule for electric fences to ensure they are in good working condition. -Conduct thorough assessments to identify critical migratory corridors and wildlife movement patterns within the park. -Design and implement measures to maintain wildlife connectivity, such as incorporating wildlife-friendly features into the fence design (e.g., underpasses, overpasses). -Develop strategies for managing conflicts between wildlife and the electric fence. This can include employing deterrents or diversionary tactics to guide wildlife away from the fence, such as using visual or audio cues to discourage animals from approaching the area.		safeguards specialist District HUB Environmental and social safeguard specialists Supervision firm

The project will achieve full compliance with the World Bank EHS Construction Guidelines, upon which this ESMP is based, through regularly monitoring and addressing on-site situations and through applying the relevant mitigation measures.

The Environmental Officer can issue penalties, in consultation with relevant authorities, for incidents of non-compliance, and always in liaison with the environmental authority.

6.12 Monitoring Program

An integral component of the Environmental and Social Management Framework (ESMF) and future Subproject ESMPs is the implementation of a comprehensive monitoring program. This program aims to ensure compliance monitoring, effects monitoring, and external monitoring, with the primary goal of effectively implementing the tasks outlined in the ESMP, including the mitigation measures. Additionally, the monitoring program serves to evaluate the impacts of the program on key EHS parameters. The monitoring plans encompass various types of monitoring strategies, which will be further elaborated below.

6.12.1 Compliance Monitoring

The purpose of the compliance monitoring is to ensure that the contractor and operator implements the EHS mitigation measures given in the ES terms and conditions of their contract including ESMPs, etc., are effectively and timely implemented. This monitoring will generally be commissioned by the Contractor, PIU and operator with the help of checklists to be prepared on the basis of the Mitigation Plan discussed above. Supervision will be carried out by the subproject PIU Environmental and social safeguards specialists and independent supervision firms.

6.12.2 Effects Monitoring During Project Implementation

Effects monitoring is a very important aspect of environmental management to protect the environment. The effects monitoring plan proposed for the VCRP, after the specific ESIA, this project will be revisited and revised. The monitoring will comprise surveillance to check whether the contractor is meeting the provisions of the contract during construction and operation of the program including the responsible agencies for implementation and supervision.

6.12.3 Third Party Monitoring

VCRP will engage after year 2 an independent consulting firm to conduct external and independent Audit and monitoring of the implementation of the below activities. The Environmental and Social Audit will be performed after the second year, once a year and a report submitted to the Bank before the end of each year.

- Application of the requirements of the World Bank Group General and Industry specific EHS guidelines.
- Requirements of World Bank Group EHS performance and monitoring.
- Requirements set up in this ESMF, RPF, ESIA/ESMP, National EIA certificate and agreed Monitoring indicators and agreed performance indicators.
- Review grievances and level of attention and resolution
- Accidents, GBV, etc.
- Documentation and development of a culture of safety and accountability at the district, participating environmental and social management units, etc.
- Application of national regulations in OHS, ESIA, Labour, others.
- Access of information

- Other instruments agreed with the World Bank and the national agencies (permits, licences, certificates)

The primary objective of the external audit is to verify that all key implementing entities and contractors are fulfilling their assigned roles in the implementation of the ESMP, and that all ESMP requirements are being effectively and timely implemented. Among the primary objectives of this third-party monitoring is continued capacity building and improvement based on challenges and lessons learnt. The Terms of Reference (ToR) for engaging the external auditing consultancy will be prepared and submitted to the World Bank for approval, and it will also be included in the Project Operational Manual (POM).

6.12.4 Performance Indicators

To assess the effectiveness of the EHS management and monitoring plan, performance indicators are established to track the efficient and timely implementation of measures outlined in the ESMP. These indicators cover both the implementation phase and the operation/maintenance phase. Each subproject implementing the agency's Environmental and Social Safeguards Specialist is responsible for collecting and maintaining an Environmental and Social Supervision and Monitoring system. The Environmental and Social Coordinator at the MoE PCU will compile information from all PIU Environmental and Social Safeguards Specialists and prepare monthly reports.

Supervision and monitoring system. In order to facilitate data collection and project environmental and social performance and compliance with the ESMF and the monitoring plan, the project will hire the support of an IT consultant to prepare a supervision and monitoring system that can facilitate supervision using information technology, photos and simple attributes. It is recommended that Geo-Enabling Initiative for Monitoring and Supervision (GEMS), be used in this regard. A simple APP could be installed in the tablets to be purchased for the Environmental and Social Specialists, which will help environmental specialist in the field and district and supervisors collect data on the progress of the works, use of PPE, number of accidents, report in the implementation of the project monitoring plan in the ESMF, the implementation of the SEP, LMP, ESCP, etc. The EIAs and ESMP for each subproject will include performance and monitoring indicators.

Also, to measure the overall environmental performance of the program, an additional list of performance indicators is given below and definition on the importance of availability of E&S Specialists are provided as minor, major, non-compliance and availability in parenthesis..

- Number of 1.a, 2.a, 2.b, 2.c, and 3.b subcomponents ESIAs and ESMPs conducted.
- Number of inspections carried out by/on behalf of MoE PCU per month.
- Number of non-compliances observed by PIU Environmental and Social Safeguards Specialist, and time taken to resolve non-compliance. Classify minor and major non-compliances.
- Availability of environmental and social specialists in VCRP Environmental Management Units at RWB, METEO-RWANDA, REMA and RDB (major).
- Availability of environmental and social specialists in the District HUBs (major).
- Availability of environmental and social specialists with contractors (major).
- Availability of environmental and social specialist at the three levels (major).
- Timely reporting of documents (as defined in ESMP and monitoring plan).
- Number and types of trainings imparted to stakeholders/other capacity building initiatives.
- Timely disbursement of compensation/ timely resettlement of PAPs.
- Timely implementation of resettlement schedule.
- Number of grievances received.
- Number of grievances resolved.
- Number of constructions related accidents/injuries.
- Number of unplanned events/ accidents.

INCIDENT REPORT: Each implementing agency and contractors will be responsible to report incidents related to accidents, injuries or any related action, of workers, community members or any visitor to the project areas. The incident report format should include information as requested by WB ES Incident reporting system.

Table 23: VCRP monitoring requirement[29]

Impacts/Issues	Time Frame	Monitoring Cost	Monitoring Responsibility		Key monitoring indicators	Monitoring frequency
			Implementation	Supervision		
ENVIRONMENTAL AND SOCIAL IMPACTS DUE TO PROJECT SITING/PLANNING						
Loss of agricultural, residential, and business properties such as land and houses.	Component time frame	In the Project budget	PIU Environment & Social Safeguards Specialists	PCU	-RAPs approved and implemented. -PAPs and worker complaints.	Before commencement of construction activities.
Loss of trees, garden and crops and other natural resources.	Component time frame	In the ESMP Budget	PIU Environment & Social Safeguards Specialists	PCU	-The number of trees and crops cut down, and those re-planted.	Before commencement of and during construction.
On the ground interventions (agroforestry/ANR) could lead to displacement of informal settler's/land occupants or undocumented claimants on both public and private lands as well as potential restriction of access to forest	Component time frame	In the Project Budget	PIU Environment & Social Safeguards Specialists	PCU	-Displaced informal settlers and land occupants. -Access restrictions on forest resources.	Before commencement of construction activities.

[29] The final set of monitoring measures (in particular monitoring parameter, indicators, and frequency) will be established in subproject ESMP (noting some will not be relevant for all subprojects and some additional subproject specific ones may be needed).

Impacts/Issues	Time Frame	Monitoring Cost	Monitoring Responsibility		Key monitoring indicators	Monitoring frequency
			Implementation	Supervision		
resources, affecting traditional forest users.						
ENVIRONMENTAL AND SOCIAL IMPACT DURING PROJECT IMPLEMENTATION						
Disruption of protected plants and animal habitats	Component time frame	In the contractor budget	Contractor	PCU, PIU Environmental and Social Safeguards specialist Supervision firm	-Species relocated and suitability of the relocations. -Number of native trees and shrubs replanted. -Maintained areas of conservation interests. -Number of cases of animal species being harmed.	Monthly
Vegetation clearance	Component time frame	In the contractor budget	Contractor	PCU, PIU Environmental and Social Safeguards specialist Supervision firm	-Number of trees felled. -Number of native species planted. -Timing of excavation and reinstatement practices.	Monthly
Impact on surface and sub-surface drainage patterns	Component time frame	In the contractor budget	Contractor	PCU, PIU Environmental and Social Safeguards specialist	-Adequacy of the drainage structures and systems.	Quarterly

Impacts/Issues	Time Frame	Monitoring Cost	Monitoring Responsibility		Key monitoring indicators	Monitoring frequency
			Implementation	Supervision		
				Supervision firm	-Quality of the receiving water resources. -Indications of water logging.	
Construction drainage management	Component time frame	In the contractor budget	Contractor	PCU, PIU Environmental and Social Safeguards specialist Supervision firm	-Effectiveness of the drainage systems. -Indications of stagnant waters on site. -Number of silt collectors and screens provided on site.	Monthly
Discharge from construction sites.	Component time frame	In the contractor budget	Contractor	PCU, PIU Environmental and Social Safeguards specialist Supervision firm	-Drainage structures provided on site. -Sediment basins retention efficiency. -Location of the stockpiles and equipment washing facilities.	Monthly
Risks associated with filling of Sites with dredge spoils.	Component time frame	In the contractor budget	Contractor	PCU, PIU Environmental and Social Safeguards specialist Supervision firm	-Pollutant concentration in the dredge soil.	Quarterly

Impacts/Issues	Time Frame	Monitoring Cost	Monitoring Responsibility		Key monitoring indicators	Monitoring frequency
			Implementation	Supervision		
Increase in runoff downstream (speed and volume)	Component time frame	In the contractor budget	Contractor	PCU, PIU Environmental and Social Safeguards specialist Supervision firm	-Speed and discharge of runoff downstream	Quarterly
Disruption of access to utility services such as water, electricity, and communication installations.	Component time frame	In the contractor budget	Contractor	PCU, PIU Environmental and Social Safeguards specialist Supervision firm	-Marked-up and fenced utility areas. -Number of damages and repairs to utilities. -Implementation of the contingency plan in events of discontinuance. -Number of detection and monitoring equipment.	Quarterly
Impacts associated with materials sourcing areas such as quarries.	Component time frame	In the contractor budget	Contractor	PCU, PIU Environmental and Social Safeguards specialist Supervision firm	-Approved and implemented borrow pits and dumpsites rehabilitation plan. -Revegetated borrow pits and quarries. -Effectiveness of the sediment control devices. -Sand extraction rates.	Quarterly

Impacts/Issues	Time Frame	Monitoring Cost	Monitoring Responsibility		Key monitoring indicators	Monitoring frequency
			Implementation	Supervision		
Noise pollution	Component time frame	In the contractor budget	Contractor	PCU, PIU Environmental and Social Safeguards specialist Supervision firm	-Noise levels below standard thresholds. -Number of PPE provided. -Noise mufflers on equipment.	Monthly
Impacts on cultural heritage.	Component time frame	In the contractor budget	Contractor	PCU, PIU Environmental and Social Safeguards specialist Supervision firm	-Cultural and religious objects discovered on construction sites. -Instances of damages encountered.	Monthly
Soil erosion, siltation, and landslides	Component time frame	In the contractor budget	Contractor	PCU, PIU Environmental and Social Safeguards specialist Supervision firm	-Cleared areas and the number of trees re-planted. -Compacted and stabilized areas. -Number of native trees replanted -Eroded areas, gullies, rills. -Handling and storage of stockpiles.	Monthly

Impacts/Issues	Time Frame	Monitoring Cost	Monitoring Responsibility		Key monitoring indicators	Monitoring frequency
			Implementation	Supervision		
Risks associated with topsoil management.	Component time frame	In the contractor budget	Contractor	PCU, PIU Environmental and Social Safeguards specialist Supervision firm	-Stockpile height -Depth of topsoil removed -Adequacy of the silt fences and diversion channels -Soil quality.	Monthly
Risks associated with earthworks and green infrastructure construction activities in wetlands.	Component time frame	In the contractor budget	Contractor	PCU, PIU Environmental and Social Safeguards specialist Supervision firm	-Presence and effectiveness of navigation aids, buoyage, markings. -Adequacy of the emergency plan.	Monthly

Impacts/Issues	Time Frame	Monitoring Cost	Monitoring Responsibility		Key monitoring indicators	Monitoring frequency
			Implementation	Supervision		
Risks associated with construction camps.	Component time frame	In the contractor budget	Contractor	PCU, PIU Environmental and Social Safeguards specialist Supervision firm	-Cleanliness and tidiness of the construction camps. -Number of health awareness campaigns and education materials provided. -Health care facilities present on site. -Number of firefighting equipment present on site. -Number of awareness campaigns on biodiversity preservation, conducted. -Adequacy of drainage facilities.	Monthly
Traffic related incidents.	Component time frame	In the contractor budget	Contractor	PCU, PIU Environmental and Social Safeguards specialist Supervision firm	-Traffic signage posted within and around construction sites. -Number of first-aid stations present on the construction sites. -Number of traffic accidents reported.	Quarterly

Impacts/Issues	Time Frame	Monitoring Cost	Monitoring Responsibility		Key monitoring indicators	Monitoring frequency
			Implementation	Supervision		
Income losses from missed season cultivation due to delays in terracing.	Component time frame	In the contractor budget	Contractor	PCU, PIU Environmental and Social Safeguards specialist Supervision firm	-Alternative income sources provided to those affected.	Monthly
ENVIRONMENTAL AND SOCIAL IMPACT DURING PROJECT OPERATIONS						
Biodiversity conservation and ecosystem	Post implementation	In the project budget.	PIU Environmental and Social Safeguards specialist	PIU Environmental and Social Safeguards specialist Independent Consulting firm	-Number of incidents and accidents reported, of potential threats to species and habitats. -Implementation of the emergency response plans. -Number of audits conducted. -Conditions, effectiveness, and vegetation dynamics of corridors, set aside, riparian and buffer zones. -Presence of invasive species. -Maintained understory species.	Quarterly

Impacts/Issues	Time Frame	Monitoring Cost	Monitoring Responsibility		Key monitoring indicators	Monitoring frequency
			Implementation	Supervision		
					-Afforested areas. -Number of trees and plantations re-forested.	
Drowning and fall hazards.	Post implementation	In the project budget.	PIU Environmental and Social Safeguards specialist	PIU Environmental and Social Safeguards specialist Independent Consulting firm	-Record of near misses and/or incidents of falls and drowning hazards recorded. -Number of awareness campaigns conducted. -Warning signs erected.	Every six months
Habitat loss and introduction of invasive species	Post implementation	In the project budget.	PIU Environmental and Social Safeguards specialist	Independent consulting firm	-Exotic species visible and present on sites. -Compliance with existing regulatory framework for invasive species introduction. -Cleanliness of farming and construction materials.	Quarterly
High sediments in sedimentation traps and impact on water quality	Post implementation	In the project budget.	PIU Environmental and Social Safeguards specialist	Independent consulting firm	-Dredging activities. -Quality of the dredged material.	Quarterly

Impacts/Issues	Time Frame	Monitoring Cost	Monitoring Responsibility		Key monitoring indicators	Monitoring frequency
			Implementation	Supervision		
The risk of maladaptation if local conditions and needs are not adequately considered.	Post implementation	In the project budget.	PIU Environmental and Social Safeguards specialist	Independent consulting firm	-Number of climate risk and vulnerability assessments conducted. -Number of capacity development sessions conducted. -Number of native species used in restoration practices.	Annually
Use of pesticides, fertilizers, and other chemical agricultural inputs.	Post implementation	In the project budget.	PIU Environmental and Social Safeguards specialist	Independent consulting firm	-Application of integrated pest management techniques. -Number of pest-resistant tree varieties planted. -Number of soil tests carried out. -Characteristics and fertility of the soils on site. -Presence of bio-control organisms and mechanical controls that keep out pests.	Bi-annually

Impacts/Issues	Time Frame	Monitoring Cost	Monitoring Responsibility		Key monitoring indicators	Monitoring frequency
			Implementation	Supervision		
					-Adequacy of fertilizer and pesticide storage facilities. -Training provided to personnel handling pesticides and fertilizers.	
Impact associated with soil conservation during crop production.	Post implementation	In the project budget.	PIU Environmental and Social Safeguards specialist	Independent consulting firm	-Zero tillage, direct seeding, contour and strip planting, crop rotation, terracing, intercropping, and grass barriers. -Quantities of Compost, crop residues and manure applied. -Erosion control structures.	Bi-annually
Impacts associated with Nutrient management in annual crop production.	Post implementation	In the project budget.	PIU Environmental and Social Safeguards specialist	Independent consulting firm	-Quantities of green manure applied. -Mulching and crop rotation. -Soil PH -Activities encroaching the riparian zones.	Bi-annually

Impacts/Issues	Time Frame	Monitoring Cost	Monitoring Responsibility		Key monitoring indicators	Monitoring frequency
			Implementation	Supervision		
					-Number of trainings to farm operators and workers.	
Animal diseases	Post implementation	In the project budget.	PIU Environmental and Social Safeguards specialist	Independent consulting firm	-Sanitary conditions of animal and bird houses. -Implementation of the animal health program.	Quarterly
Increased runoff	Post implementation	In the project budget.	PIU Environmental and Social Safeguards specialist	Independent consulting firm	-Runoff rills observable on site. -Stormwater collection and harvesting techniques. -Quantities of stormwater harvested.	Bi-annually
Microclimate modification	Post implementation	In the project budget.	PIU Environmental and Social Safeguards specialist	Independent consulting firm	-Vegetation retained on site. -Number of indigenous tree species planted. -Ground coverage of the infrastructures.	Annually
Visual impact	Post implementation	In the project budget.	PIU Environmental and Social	Independent consulting firm	-Re-vegetated areas and green spaces	Bi-annually

Impacts/Issues	Time Frame	Monitoring Cost	Monitoring Responsibility		Key monitoring indicators	Monitoring frequency
			Implementation	Supervision		
			Safeguards specialist		-Key landscape features retained. -Compatibility of structures with the surroundings.	
Water abstraction	Post implementation	In the project budget.	PIU Environmental and Social Safeguards specialist	Independent consulting firm	-Water abstraction permit obtained -Quantities of water abstracted. -Adequacy of the constructed dams and water intake structures.	Bi-annually
Threat to human health	Post implementation	In the project budget.	PIU Environmental and Social Safeguards specialist	Independent consulting firm	-Certified crop seeds distributed to communities. -Approved GMO crops planted. -Adequacy of seeds' storage.	Quarterly
Increased spread of malaria	Post implementation	In the project budget.	PIU Environmental and Social Safeguards specialist.	Independent consulting firm	-Mosquito breeding areas visible within the project areas.	Bi-annually
ENVIRONMENTAL AND SOCIAL IMPACT DURING BOTH CONSTRUCTION AND OPERATION						

Impacts/Issues	Time Frame	Monitoring Cost	Monitoring Responsibility		Key monitoring indicators	Monitoring frequency
			Implementation	Supervision		
Employment labor issues	During implementation and post implementation	In the contractor budget and project budget.	Contractor PIU Environmental and Social Safeguards specialist	Supervision firm	-Indications of children working on construction sites. -Age eligibility of the workforce hired on site. -Number of trainings held on sexual harassment in the workplace. -Cases of sexual harassment and GBV reported. -Worker GRM.	Monthly
Risk that the vulnerable and women are not adequately included in village forest management activities and related benefit sharing arrangements.	During implementation and post implementation	In the contractor budget and project budget.	Contractor PIU Environmental and Social Safeguards specialist District Gender Monitoring Officer	Supervision firm	-Number of women engaged in training and activities related to project benefit arrangements. - Number of women benefitting from Income generating activities from VCRP. Implementation of the Gender Action Plan.	Quarterly

Impacts/Issues	Time Frame	Monitoring Cost	Monitoring Responsibility		Key monitoring indicators	Monitoring frequency
			Implementation	Supervision		
					-Number of women recruited. -Gender disaggregated data provided. -Number of female focal points designated for each project village. -Number of trainings and awareness programs on GBV. -GRM in place. - Number of GBVs incidences reported as a in relation to project activities.	
Water quality deterioration	During implementation and post implementation	In the project budget	Contractor PIU Environmental and Social Safeguards specialist	Supervision firm	-Water quality of the water sources. -Segregation of liquid effluents -Wastewater facility compliance with national and international standards -Re-use of water	Quarterly

Impacts/Issues	Time Frame	Monitoring Cost	Monitoring Responsibility		Key monitoring indicators	Monitoring frequency
			Implementation	Supervision		
					-Frequency of inspections conducted. -Number of maintenance activities performed. -Compliance with waste reduction targets and regulations. -Records of waste disposal and hazardous material management. -Compliance with buffer zone regulations and establishment of buffer widths. -Installation vegetative filters and surface water diversions -Compliance with designated vehicle routes and restrictions. -Use of dripping trays.	

Impacts/Issues	Time Frame	Monitoring Cost	Monitoring Responsibility		Key monitoring indicators	Monitoring frequency
			Implementation	Supervision		
Air pollution	During implementation and post implementation	In the project budget	Contractor PIU Environmental and Social Safeguards specialist	Supervision firm	-Equipment with certification for good working conditions. -Dust suppression -Schedules of noisy activities -Machinery causing excess pollution -filtering systems -Vegetation cleared. - Restoration of disturbed areas. - Use the cleanest fuels -Installed dust collection systems.	Bi-annually
Waste generation	During implementation and post implementation	In the project budget	Contractor PIU Environmental and Social Safeguards specialist	Supervision firm	-Comprehensive waste management plan. -Waste control processes adapted on all construction sites. -Incidences of spills, leakages from wastewater treatment plants.	Monthly

Impacts/Issues	Time Frame	Monitoring Cost	Monitoring Responsibility		Key monitoring indicators	Monitoring frequency
			Implementation	Supervision		
					-Cleanliness on site -Location of waste collection points. -Suitability waste containers. -Garbage bins provided. -Allocated waste collection and storage areas. -Waste reduction and recycling techniques -Hazardous waste storage areas. -Waste segregation and labeling. -Number of trainings provided. -Packaging. -Organic-waste composting. -Crop residues utilized. -Animal feed composition used.	

Impacts/Issues	Time Frame	Monitoring Cost	Monitoring Responsibility		Key monitoring indicators	Monitoring frequency
			Implementation	Supervision		
					-Adequacy of the slurry storage capacity. -Segregation of low-risk and high-risk materials.	
Water conservation	During implementation and post implementation	In the project budget.	Contractor PIU Environmental and Social Safeguards specialist	Supervision firm	-Number of rainwater harvesting tanks. -Quantity of water consumed. -Water system pressure management. -Water-saving equipment. -Shelterbelts and windbreaks in use. -Appropriate irrigation plan.	Bi-annually

Impacts/Issues	Time Frame	Monitoring Cost	Monitoring Responsibility		Key monitoring indicators	Monitoring frequency
			Implementation	Supervision		
Occupational health and safety risks	During implementation and post implementation	In the project budget.	Contractor PIU Environmental and Social Safeguards specialist	Supervision firm	-Compliance with building codes and standards. -Structural integrity. -Environmental health and safety (EHS) Plan. -Emergency Response Plan (ERP). -Fencing. -Installation of signage. -Qualified staff operating. -Working condition of the equipment. -solid waste management plan. -Leak detection. -Standard Operating Procedures (SOPs). -Existing fire protection systems. -Intercepting traps. -Clean eating areas.	Daily

Impacts/Issues	Time Frame	Monitoring Cost	Monitoring Responsibility		Key monitoring indicators	Monitoring frequency
			Implementation	Supervision		
					-emergency exits. -Existing lavatory facilities. -Available Emergency Lighting. -Existing Safety railings. -First-aid stations. -Training provided. -Use low-VOC-emitting products. -Aerosols, air fresheners and sprays in use. -Food hygiene and water-quality. - Appropriate PPE. - Provided ladders and scaffolds.	
Life and fire safety	During implementation and post implementation	In the project budget.	Contractor PIU Environmental and Social Safeguards specialist	Supervision firm	- Available water tank automobiles. -Existing fire protection systems. -Number of fire drills conducted.	Annually

Impacts/Issues	Time Frame	Monitoring Cost	Monitoring Responsibility		Key monitoring indicators	Monitoring frequency
			Implementation	Supervision		
					- Number of fire outbreak incidences. -Emergency Response plan. - Life and Fire Safety Master Plan	
Energy conservation	During implementation and post implementation	In the project budget.	Contractor PIU Environmental and Social Safeguards specialist	Supervision firm	-Renewable energy -Day lighting techniques applied. -Energy efficient systems.-Use of insulated sterilizers.	Bi-annually
Community Health and safety risks such as (HIV, GBV, SEA, drug abuse, Vector-Borne Diseases etc.)	During implementation and post implementation	In the project budget.	Contractor PIU Environmental and Social Safeguards specialist	Supervision firm	Implementation of risk management strategies. -Training provided. Implementation of vaccination program. -Health care facilities. - Buffer strips -Incorporated safety criteria.	Bi-annually

Impacts/Issues	Time Frame	Monitoring Cost	Monitoring Responsibility		Key monitoring indicators	Monitoring frequency
			Implementation	Supervision		
					-Compliance with the Building code. -Implemented security measures. - Distribution system. -Personal protective measures provided. -Integrated vector control programs -Comprehensive healthcare interventions. -Presence and effectiveness of buffer areas (trees, fences) - Frequency and severity of sewerage system overflows. -Levels of potentially toxic and explosive gases in the sewer system	
Risks associated with the construction and operation of the electric fence.	During implementation and post implementation	In the project budget.	Contractor PIU Environmental and Social Safeguards specialist	Supervision firm	-Locations of warning signs and informative signage provided. -Deterrents provided near the fence.	Monthly

Impacts/Issues	Time Frame	Monitoring Cost	Monitoring Responsibility		Key monitoring indicators	Monitoring frequency
			Implementation	Supervision		
			Ecologist		Implementation of safety protocols. - Number of incidences of electrocution of wildlife or humans.	
Impacts associated with hazardous materials management.	During implementation and post implementation	In the project budget.	Contractor PIU Environmental and Social Safeguards specialist Ecologist	Supervision firm	-Spill control procedures. -Training provided. -Absorbent and containment material provided. -protective equipment provided. -Hazardous Materials Transportation Plan.	Monthly

6.13 Budget for Environmental and Social Management

As per the World Bank's Environmental and Social Framework (ESF), all projects funded by the World Bank must incorporate a budget specifically allocated for the environmental and social management of the project. The budget for implementing the Environmental and Social Management Framework (ESMF) primarily focuses on the preparation and supervision/monitoring of ESF tool implementation. The costs associated with mitigation measures will be included in the Environmental Social Impact Assessments (ESIAs), Environmental and Social Management Plans (ESMPs), and Resettlement Action Plans (RAPs).

The contractor will bear the responsibility for covering all construction costs, except for those that fall under the implementing agency's responsibility, such as their own supervision/monitoring, and possibly certain EHS mitigation measures that the contractor cannot undertake. The implementing agencies are responsible for the cost of the Resettlement Action Plan (RAP), and construction activities will commence once the relocation activities have been completed. During the operational phase, the PIUs will bear the costs associated with EHS management.

The budget for the Environmental and Social Management of the (VCRP) is divided into two main areas. Firstly, there is a budget allocated to support activities such as planning, evaluation, supervision, monitoring, and reporting. This funding is aimed at ensuring effective management and oversight of the environmental and social aspects of the project. Secondly, there is a budget allocated for the implementation of environmental and social measures and clauses included in the contracts with contractors. This funding is intended to prevent, mitigate, or compensate for environmental and social risks and impacts associated with the project and its subprojects. By allocating resources to these two areas, the VCRP aims to proactively address and manage environmental and social concerns throughout the project lifecycle.

Additionally, a budget is designated for the implementation of environmental and social clauses during the operational phase, which will be included as part of the project's operational cost.

Due to the scope of the programme, VCRP will require professionals with relevant expertise and skills to effectively implement ESF instruments (ESMF, RPF, SEP, LMP, ESCP, GAP). Additionally, adherence to both national and international environmental, health, safety, social, labor regulations, and the World Bank's eight Environmental and Social Standards applicable to the project is crucial.

To ensure the proper application of the ESMF and other project instruments in compliance with the World Bank ESF, the following budget estimates represent the minimum acceptable levels. The budget should account for the necessary resources to support the expertise and capacities required for implementing the ESMF and related instruments effectively. It should cover the costs associated with training, hiring professionals, and obtaining necessary certifications. Furthermore, the budget should allocate funds for monitoring and ensuring compliance with both national and international regulations governing various aspects of the project, such as environmental, health, safety, social, and labor standards.

By allocating sufficient resources, the VCRP can ensure the successful implementation of the ESMF and associated instruments while meeting the requirements set by the World Bank's Environmental and Social Standards.

6.13.1 VCRP Project Costs and Financing

Table 25 below provides a detailed budget breakdown of the main cost items to implement the ESMF.

Table 24: Operational Support Budget for Environmental and Social management of VCRP

	Table 25 Operational Support Budget for Environmental and Social Management of VCRP Estimated Cost.						
ESMF1	**Env/Soc core team**	**FY1**	**FY2**	**FY3**	**FY4**	**FY5**	**Sub-total**
	MoE Hiring of (1) Environmental and social safeguards specialist and (1) Community specialist	48,000	48,000	48,000	48,000	48,000	$240,000
	REMA Hiring of (3) District environmental specialists, (3) Community development officer, (1) Environmental risk management specialist, (1) Social risk management officer, (1) Ecology specialist, (1) Community specialist.	240,000	240,000	240,000	240,000	240,000	$1,200,000
	RWB Hiring of (1) Environmental and social safeguards specialist, (1) Gender specialist.	48,000	48,000	48,000	48,000	48,000	$240,000
	RDB Hiring of (1) Civil engineer	24,000	24,000	24,000	24,000	24,000	$120,000

	Table 25 Operational Support Budget for Environmental and Social Management of VCRP Estimated Cost.						
	Env/Soc core team	**FY1**	**FY2**	**FY3**	**FY4**	**FY5**	**Sub-total**
ESMF2	Equipment support (goods)						
	Laptops and others	42,000	22,000	22,000	22,000	22,000	$130,000
	National - transportation car renting	25,000	25,000	25,000	25,000	25,000	$125,000
	District transportation: 8 motorbikes and maintenance	16,000	5,000	5,000	5,000	5,000	$36,000
ESMF3	Consulting services						
	ESIA-ESMP, RAP	1,290,000					$1,290,000[30]
	Annual Env/S audit		25,000	25,000	25,000	25,000	$100,000
	Capacity Building Program (ESF, EIA-ESMP, supervision, district and community, technical courses (e.g Health and safety), webinars, workshops, conferences,	34,500	28,500	22,500	16,500	13,500	$115,500
Other Environmental and Social Instruments prepared for VCRP							
	GBV						

[30] Based on estimates of the number of ESIAs (27) and RAPs (16) for subprojects.
1.a: 8 ESIAs and 8 RAPs
2.a: 8 ESIAs and 8 RAPs
2.b: 7 ESIAs
2.c: 3 ESIAs
3.b: 1 ESIAs

	Table 25 Operational Support Budget for Environmental and Social Management of VCRP Estimated Cost.						
GBV-1	Preparation of action plan	20,000					$20,000
GBV-2	Support for victims and follow up	10,000	10,000	10,000	10,000	10,000	$50,000
GRAND TOTAL							**$3,566,500**

By providing a detailed breakdown of ESMF cost components, the budget ensures that the necessary resources are allocated appropriately for the successful implementation of each aspect of the VCRP.

6.14 Capacity Building

Effective implementation of this ESMF and the other ESF instruments (SEP, LMP, ESCP, RPF, GAP) will require capacity building for those responsible for implementing sub-projects at the implementing institutions and at the community levels. The table below provides recommendations on the capacity building and training program on environmental and social management and safety. Training programs will be developed and implemented by the Environmental and Social Safeguards Specialists at each Implementing Agency, district HUB and coordination among all. The Environmental and Social Safeguards Specialists will also have support from the consultants through technical assistance for the implementation of environmental and social safety procedures for PIUs and District HUBs. Environmental and Social Safeguards Specialists and other PIU members with the help of consultants will provide training for the representatives of local authorities, and other groups (community verifiers, district officers, etc.).

Target Categories: PIUs environmental and social safeguards specialists; District HUBs, supervision firms, and affected/beneficiary community representatives. Environmental and social specialists at the national level will train the Environmental and social specialist at the district level. The latter will train the contractor's environmental and social specialists who in turn, will be responsible to train the workers and drivers.

Training Schedule: Training will be given at least one month before performing the first construction contract. Subsequent training sessions can be modified to suit the construction schedule for project components. Training for the operators will be given 1 month before the end of construction.

Frequency of training: An example of training programs given in the subsequent tables of 5 days to be provided every 6 months for each year of VCRP implementation and the contents will be updated and tailored to items to be implemented. Training programs for PIU and District HUBs staff are expected to continue in years 1, 2 and 3 of the Project. Three-day training for the Supervising firm is also planned to take place twice a year for at least 2 years. Also, short training of 1-2 hours or half day will be implemented.

Responsibilities

The Environmental and Social Management Units at each Implementing Agency (MoE, RWB, REMA, RDB, METEO-RWANDA) will prepare an annual capacity building plan following the guidance of this ESMF to strengthen the environmental and social capacity of the teams at national, district and community level. The plan will include the topics, modality, frequency, and indicators to be achieved per year. This target will be monitored in the progress reports to be sent to the World Bank and monitored in the Annual Environmental and Social Audit.

Table 25: Capacity building and training program on environmental and social management and safety

Topics	Target	Duration	Modality	Indicators	Budget
-Principles of the ESF -Review of the ESMF, ESCP, and RPF -Review of the LMP, GAP and SEP	● PIU teams ● District HUBs teams ● Environmental and social safeguard specialists ● Procurement teams	● Long: 4-5 days ● Medium: 2-3 days ● Short: 0.5-1 day	-Induction - Workshops -Seminar -Webinar -Field courses	-# of PIU staff trained -# of district officers trained and workers trained. -# of trained Environmental and Social	-Estimated in the global Environmental and Social Safeguards Specialist budget

Topics	Target	Duration	Modality	Indicators	Budget
- Environmental and Labor regulations in Rwanda applicable to the project		● micro: 1-4 hours	- Conference national or international	Safeguards Specialists trained in technical topics # of trained Environmental and Social Safeguards Specialists participated in national, regional, or international conferences	

Table 26: Example of a Training program for the environmental and social management team and capacity building at all implementing agencies.

TRAINING DETAILS	TARGET CATEGORY
Training 1: Project Implementation units (PIUs) and district HUBs	
Training course	ES screening of subprojects, preparation of subproject ES instruments, inclusion of ES risk management terms and conditions in procurement documents and monitoring and reporting.
Participants	PIU and District HUBs Staff in charge of environmental issues including MoE PCU Environmental and Social Specialist and Community specialist, Environmental and Social Safeguards Specialists and Community development officers at PIU and District HUBs, Gender Monitoring Specialist, and RDB, MoE, Meteo-Rwanda, REMA, RWB Civil Engineers.
Training frequency	Immediately after the project becomes effective, but at least one month prior to the first bid package.
Duration	Five days
Content	Project-related environmental and social management including the following as specified in the ESCP: 1. Environmental and social risks and impacts of the Project and ESMF application 2. Strengthen awareness on the environmental, social, health and safety issues associated with the construction works including HIV/AIDS, sexual exploitation, and abuse, GBV and child labour. 3. Environmental and Social issues associated with the ongoing construction works and workers health and safety.

TRAINING DETAILS	TARGET CATEGORY
	4. Environmental and Social monitoring and reporting on EHS performance of the project. Reporting should include regular reporting, incident reporting and contractor's reporting. 5. Capacity building on the ESF and the Project different ESF instruments and aspects triggered by the project including but not limited to the following: ● Occupational Health and Safety Training, ● Labour Management Procedures ● Community Development ● Community Health and Safety planning, management, and promotion. ● Grievance and Conflict Resolution ● Environmental and Social Impact Assessment and Audit ● Gender Based Violence prevention and response. ● Other issues to be determined
Responsibility	MoE PCU Environmental and Social staff.
Training 2: Supervision firm and local authorities	
Training course	Implementation of mitigation measures
Participants	Supervision firm; Representatives of Local Authorities (Heads of Villages – Imidugudu; Heads of Cells).
Training frequency	Shortly after awarding contracts to Contractors with updates on demand
Duration	Three-day training for the Supervision firm, and two-day training for reps of Local Authorities (Heads of Villages – Imidugudu; Heads of Cells).
Content	● Overview of EHS subproject contract EHS requirements (plans, staffing, mitigation, monitoring, training, reporting, etc.) ● Requirements of environmental and social monitoring. ● Roles and responsibility of the Supervision firm and local authorities regarding Occupational Health and Safety Training, Labour Management Procedures; Community Health and Safety planning, management, and promotion; Grievance and Conflict Resolution ● Special session on Gender Based Violence (GBV) Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH), Action Plan and its implementation. ● Content and method of environmental monitoring. ● Reaction and risk control. ● Introducing monitoring forms and instructions on filling out forms and reporting incidents including Incident Reporting form. ● Other issues to be determined. ● Preparing and submitting reports
Responsibility	**MoE PCU Environmental and Social staff**
Training 3: Affected communities	
Training course	Health Safety and Environment

TRAINING DETAILS	TARGET CATEGORY
Participants	Community opinion leaders
Training frequency	As appropriate
Duration	One day of presentation and one day of on-site presentation
Content	● Key issues requiring the attention of the community to mitigating safety risks. ● Special session on Gender Based Violence (GBV) Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH); Action Plan and its implementation. ● Grievance and Conflict Resolution. ● Methods of dealing with emergency situations. ● The rights and responsibilities in environmental monitoring. ● Environmental and social monitoring, environmental and social monitoring form including Incident Reporting form. ● Other issues to be determined
Responsibility	**MoE PCU Environmental and Social staff**

Estimated cost for the training program in the first year is about USD: 34,500 as presented in the table below.

Table 27: Estimated budget for First year of training on VCRP ESMF implementation

Training Content	Target Category	Unit	Quantity	Unit Price (USD)	Estimated Total Price (USD)
I. Environmental monitoring and reporting					
PCU	MoE PCU Environmental & Social Safeguards Specialist and Community Engagement Specialist.	Course	2	1500	3,000
II. Implementation of mitigation measures					
RWB, Meteo-Rwanda **Flood risk management**	Environmental and Social Safeguard Specialist, Gender Specialist. (4)	Course	2	1500	3,000
RWB, REMA **Ecological and Landscape Restoration**	Environmental Risk Management Specialist, Social Risk Management Specialist, Ecology Specialist, Community Development Specialist, District	Course	10	1500	15,000

Training Content	Target Category	Unit	Quantity	Unit Price (USD)	Estimated Total Price (USD)
	Environmental specialists, and Community development officer.				
RDB **Volcanoes National Park Expansion Investment & Livelihood Diversification**	Sector Specialist (Civil eng.)	Course	1	1500	1,500
III. Safety and environmental sanitation					
District Hubs	District Hubs and community opinion leaders/verifiers	Course	8	1500	12,000
Total (USD)					**34,500**

7.0 PUBLIC CONSULTATION AND PARTICIPATION

7.1 Introduction

This section provides a summary of anticipated benefits and issues raised during the stakeholder consultation of the ESMF and RPF and a stakeholder engagement plan that could be applied during project implementation.

Public participation and community consultation have been taken up as an integral part of the social assessment process of the project. Consultation was used as a way to inform stakeholders and collect their views and concerns about the proposed action both before and after the development decisions were made. This participatory process enables participation in the decision-making process. Initial Public consultations were carried out in the project areas with the objectives of informing the PAPs about the project, its components, potential positive and adverse impacts, it also involved collecting their views and concerns about the project and possible strategies to minimize probable adverse impacts.

7.2 Stakeholder's identification

The consultant began by identifying the key stakeholders who would be consulted depending on whether they could be affected by or would influence project activities. This list of key stakeholders was presented at the ESF instrument inception report stage and agreed upon during its validation.

Involving stakeholders through participatory direct or indirect consultations is central to preparation of the ESMF and RPF. The stakeholders were those who have an interest in the project (both positive and negative), and who will be involved in the further consultative process. The main groups of stakeholders met at local level include the following:

- Potential Project Affected Persons (PAPs).
- Local community authorities at village, cell, sector and District level of potential project areas of intervention.
- VCRP implementing agencies. e.g. MoE, RWB, Meto Rwanda, REMA, RDB.

7.3 Consultation and citizen engagement

In the process of elaborating the ESMF and RPF, consultations with potential PAPs along the project area and relevant stakeholders have been conducted to collect their views, concerns and issues pertaining to the project. Below sub sections discuss the applied methods, meeting procedures and findings of consultations, i.e issues raised and proposed mitigation measures.

7.3.1 Methods applied.

During the Stakeholder's engagement, the study applied different participatory methods, including:

- Public consultation meetings with PAPs which were held from the 02nd to the 04thMay as shown in the schedule below.
- Key informant Interviews with proposed VCRP implementing agencies held on 26th April 2023. Implementing agencies comprised of; Moe, RWB, REMA, Meteo-Rwanda, RDB.

Table 28: Summary of details of ESMF and RPF preparation stage stakeholder engagement Schedule

Date	Meeting time	Meeting venue	Participants by District	Total Number	Participants by gender		Age groups of participants		
					Male	Female	18-35yrs (Youth)	36-64 yrs	>65yrs (elderly)
02-May, 2023	09-12 pm	Gahunga Sector	Burera	18	14	4	1	8	9
02 May, 2023	2-5 pm	Cyuve Sector	Musanze	77	27	50	29	43	5
03 May, 2023	9-12 pm	Mukamira Sector	Nyabihu	40	20	20	17	20	3
04 May, 2023	9-12 pm	Matyazo Sector	Ngororero	63	45	18	24	32	7
Total				**198**	**106**	**92**	**71**	**103**	**24**
Percentage				**100**	**53.5**	**47.5**	**35.9**	**52.0**	**12.0**

Stakeholders consulted were informed about the proposed project and different experts including consultants were able to guide the discussions and obtain relevant information on the likely impacts of the project activities (i.e., positive and negative impacts). Stakeholders were asked to raise their concerns about 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 amongst the different kinds of stakeholders.

7.3.2 Meeting procedure

All field meetings began with an introduction by the district officers and sectors introducing his team to the attendees, where they are coming from and the purpose of their visit. Those consulted also introduced themselves. The stakeholder engagement agenda generally followed but was not limited to the following discussion points:

- Project introduction was done- this included introducing the project objectives, key activities, project administrative area of influence.
- Participants were requested to mention issues faced within the project area that locals expect the project to solve (if any).
- Mention benefits they expect from the project.
- Mention risks and adverse impacts expected from the project activities.
- Propose mitigation measures or adaptation measures to avoid or minimize the adverse impacts.
- How they expect to collaborate with the project.

7.3.3 Issues raised and measures proposed.

Opinions and questions from the stakeholders were recorded and where necessary responses given to questions raised. Follow up on those questions that were not answered was also included. A summary of the expected benefits and issues raised by stakeholders is presented in Table 30 along with the mitigation measures proposed by stakeholders during the consultation.

Table 29: Summary of expected benefits and issues raised during stakeholder consultation and proposed mitigation measures

Benefits and Issue recorded Benefits expected	Stakeholders that responded	Suggested mitigation measures by stakeholders
Mitigation of floods that have been affecting communities in the volcanoes region and vunga corridor, directly responsible for the loss of houses, land, crops and human lives due to the downstream flow of water from upstream in the volcanic region.	RWB	Suggested mitigation measures towards flood risk reduction comprise; detention ponds upstream of the main gullies, stabilization of gulley embankments, rehabilitation of culverts, bridges, construction of check dams, dykes.
Sediment deposit management in the main rivers (Giciye, Rubagabaga, Satinsyi rivers) draining into the vunga corridor, to avoid flood risks and destruction of homes, plantations, infrastructure such as roads, bridges, hydropower plants.	RWB	Suggested mitigation measures towards flood risk reduction comprise; river dredging, catchment restoration and landscape management.
Minimizing landslide and erosion risks along the Vunga corridor hillsides	RWB/ REMA	Landscape restoration through the use of a tool known as CROM-DSS and the utilization of best practices to effectively mitigate the effects of erosion and reclaim land affected by erosion through activities such as radical terraces, rainwater harvesting, afforestation, reforestation, improved agricultural practices, suited crops to grow.
Development of flood early warning systems that helps to communicate information to the community in time in order to avoid severe flood impacts.	Meteo-Rwanda, RWB	Improved rainfall and flood forecasts to inform flood early warning systems in the Volcanoes region.
Ecological restoration of the Volcanoes National Park to host an expanded habitat for wildlife and to improve biodiversity around ecologically sensitive areas out of the park but inside the VCRP project area	REMA, RDB	Guidance by ecological restoration plans for the park and outside the park.

Benefits and Issue recorded **Benefits expected**	**Stakeholders that responded**	**Suggested mitigation measures by stakeholders**
With what has been proposed as the VCRP interventions of flood reduction measures in their areas, they stand to benefit in the following manner: Minimised loss of crops, land, houses and lives by communities in the route of Rukangabana, Nyabyunga gully, Nyabutoshwa gully and other gullies in Volcanoes region, especially during rainy seasons. Minimised damage to infrastructure such as; bridges, roads, power transmission lines. Benefit from employment and sources of income by VCRP from the construction of flood reduction interventions. i.e. youth, women and men working as masons, casual labourers. The income gained from this employment, households are able to pay for the Community Based Health Insurance (CBHI), school fees for their children and feed their households.	Gahunga sector officials, in Burera District. Local communities in Gahunga sector, in Burera District. Local community from Cyuve sector, Musanze district. Local community from Kanyove cell, Mukamira sector, Nyabihu district. Local community from Matyazo sector, Ngororero district	For flood impacts in Gahunga sector, suggested mitigation measures were for construction of detention ponds upstream of those gullies and stabilisation of their embankments, rehabilitation and/or construction of bridges along the gullies. For flooding issues in the Cyuve sector, suggested mitigation measures were to rehabilitate the existing bridge at Bazizana to allow flow without flooding the area and to improve 4 bridges on the road in Buriba cell, Cyuve sector to minimise floods. For the flood impacts faced in Kanyove cell, Mukamira sector, mitigation measures suggested were to establish flood risk detention systems upstream of the main source of the flooding, which will reduce the volume of rainfall run-off reaching the village. Unclog the caves in Kanyove village and Jenda village to allow for quick infiltration of rainfall run-off floods that reach these villages and thereby minimising or avoiding flooding of the villages and roads adjacent. Proper channeling of the streams and gullies that drain rainfall run-off into their village by directing it into the caves and protecting adjacent lands from overflow flooding. To restore hillside catchments upstream of Bikwi gulley, associated streams and adjacent to the villages with the aim of increasing rainfall infiltration in the soils and reducing soil erosion thereby reducing the amount of rainfall run-off and sediments causing the flooding.

Benefits and Issue recorded Benefits expected	Stakeholders that responded	Suggested mitigation measures by stakeholders
		They offered to support flood risk prevention initiatives by offering community participatory labour as part of the monthly national voluntary community clean-up "locally called Umuganda". For the flood impacts faced in Matyazo sector, Ngororero district at Rubagabaga river bridge, mitigation measures suggested were to establish flood risk detention systems upstream of the main source of the flooding, which will reduce the volume of rainfall run-off reaching the village. To support households in the river catchment with rainwater harvesting (such as water tanks) to collect rainwater off their house roofs which could minimize on contribution to run-off that causes landslides and ends up in the river causing flooding. To support in channeling excess rainwater run-off from their settlements into pipes or other suitable drains directed to natural gullies that drain directly into the rivers hence minimizing soil erosion and landslides that are part of the sources of sediment deposition in the rivers. As part of catchment restoration, support the community in tree planting but with special attention to community participation and ownership of these trees. An example was given that the project should directly supply and employ the local community in planting and caretaking of the trees that way ensures sustainability of the trees to grow rather than hire private companies that only plant trees and leave with no intention of following them up.
Issues raised	**Stakeholders**	**Suggested mitigation measures by stakeholders**

Benefits and Issue recorded **Benefits expected**	**Stakeholders that responded**	**Suggested mitigation measures by stakeholders**
Issues raised during Stakeholder consultation meetings in the VCRP intervention districts		
Participants in the stakeholder engagement expressed that the Gahunga sector was facing a number of issues as a result of floods from Rukangabana, Nyabyunga and Nyabutoshwa gullies upstream that drain water from Volcanoes uphill into their sector. Issues mentioned comprise of; Damage of infrastructure such as; bridges, roads, power transmission lines. Destruction of houses. Destruction of plantations leading to loss of crops and therefore food and income for households in their communities In some cases, loss of lives by people was washed away by the heavy run-off in the gullies when crossing. Loss of land owned by locals, eroded away by floods. Flood the market causing it not to operate on day communities have traveled long distances with their food supplies to sell and buy needed commodities for their households. They also anticipated the following impacts from VCRP activities: Land acquisition for the project activities, which results in expropriation involuntary resettlement. Issue of project work given to migrant workers and not local communities. Participants informed the consultation that they have educated and skilled youth, men and women with required skills to work, educated beyond secondary schools, vocational training schools.	Gahunga sector officials, in Burera District. Local communities in Gahunga sector, in Burera District.	Suggested mitigation measures are: construction of detention ponds upstream of those gullies and stabilization of their embankments, rehabilitation and/or construction of bridges along the gullies. For land acquired as a result of VCRP activities, compensation payment of lost assets to displacement should be planned for and implemented.

Benefits and Issue recorded **Benefits expected**	**Stakeholders that responded**	**Suggested mitigation measures by stakeholders**
Participants informed the consultation that as a result of flooding caused by Ruvumu, Muhogote and Kuzi streams that drain into Cyuve stream, increasing the volume of water and clogging the bridge at Bazizana to the extent, it is not capable of allowing such amounts of flow under it and thereby flooding an area called Bazizana and its adjacent area, the following are the flood impacts on these communities. Destruction of houses. Destruction of plantations leading to loss of crops and therefore food and income for households in their communities. Loss of land owned by locals, eroded away by floods. Damage of infrastructure such as; bridges, roads. In some cases, loss of lives by people was washed away by the heavy run-off in the gullies when crossing.	Local community from Buruba cell in Cyuve sector, Musanze district.	Suggested mitigation measures are: To rehabilitate the existing bridge at Bazizana to allow flow without flooding the area. To improve 4 bridges on the road in Buriba cell, Cyuve sector to minimise floods.

Benefits and Issue recorded **Benefits expected**	**Stakeholders that responded**	**Suggested mitigation measures by stakeholders**
Participants informed the consultation that as a result of flooding caused by Rurage and Kagenda streams discharging into Bikwi gulley which discharges at Kanyove cell resulting in flooding Kanyove village, the following are the flood impacts on these communities. Flooding and destruction of houses. Destruction of plantations leading to loss of crops and therefore food and income for households in their communities. Loss of land owned by locals, inundated by floods. Damage of infrastructure such as; flooding the access roads connecting the households in Kanyove village, possible flooding of Musanze- Mukamira road at Kanyove cell road section, destruction of power transmission lines. In addition to the above issues faced, specifically women informed the discussion that when it floods, they are not able to leave their homes to go to work on their plantations because they have to watch their children from possibility of drinking the dirty sedimented flood water or drowning in it the ponds created by flooded water in the village.	Local community from Kanyove cell, Mukamira sector, Nyabihu district.	Suggested mitigation measures are: To establish flood risk detention systems upstream of the main source of the flooding, which will reduce the volume of rainfall run-off reaching the village. Unclog the caves in Kanyove village and Jenda village to allow for quick infiltration of rainfall run-off floods that reach these villages and thereby minimizing or avoiding flooding of the villages and roads adjacent. Proper channeling of the streams and gulley that drain rainfall run-off into their village by directing it into the caves and protecting adjacent lands from overflow flooding. To restore hillside catchments upstream of Bikwi gulley, associated streams and adjacent to the villages with the aim of increasing rainfall infiltration in the soils and reducing soil erosion thereby reducing the amount of rainfall run-off and sediments causing the flooding. They offered to support flood risk prevention initiatives by offering community participatory labour as part of the monthly national voluntary community clean-up “locally called Umuganda”.

As a result of high sediment load on Rubagabaga river, areas along its banks and bridge are flooded, resulting in the following impact. Rubagabaga river has a high sediment deposition which blocks the flow of river water under the Rubagabaga bridge, raises the river water level and causes flooding of the surrounding areas. Potential of complete clogging of the Rubagabaga bridge in the very near future. This has led to flooding and destruction of 8 houses the previous day to the time of the stakeholder consultation. Destruction of plantations leading to loss of crops and therefore food and income for households in their communities. As informed by participants, about 25ha of rice below Rubagabaga had been covered by sediments from Rubagabaga river floods the previous day. Loss of land owned by locals, inundated by floods. Damage of infrastructure such as; Rubagabaga hydro power plant had been severely damaged by the floods the previous day, the mostly used access road from Shyira sector in Nyabihu district to Matyazo sector in Ngororero district had been blocked by landslides making it impossible for the field visit team to reach Satinsyi river proposed for river dredging.	Local community from Matyazo sector, Ngororero district.	Suggested mitigation measures are: To dredge the Rubagabaga river at its bridge as a short-term quick mitigation measure to avoid its complete clogging by sediment deposits and eventually making it impassable during rainy seasons or getting damaged. To establish flood risk detention systems upstream of the main source of the flooding, which will reduce the volume of rainfall run-off reaching the village. To support households in the river catchment with rainwater harvesting (such as water tanks) to collect rainwater off their house roofs which could minimize the contribution to run-off that causes landslides and ends up in the river causing flooding. To support in channeling excess rainwater run-off from their settlements into pipes or other suitable drains directed to natural gullies that drain directly into the rivers hence minimizing soil erosion and landslides that are part of the sources of sediment deposition in the rivers. As part of catchment restoration, support the community in tree planting but with special attention to community participation and ownership of these trees. An example was given that the project should directly supply and employ the local community in planting and caretaking of the trees that way ensures sustainability of the trees to grow rather than hire private companies that only plant trees and leave with no intention of following them up. They offered to support soil erosion and flood risk prevention initiatives by offering community participatory labour as part of the monthly national voluntary community clean-up “locally called Umuga”.

Benefits and Issue recorded **Benefits expected**	**Stakeholders that responded**	**Suggested mitigation measures by stakeholders**
The representatives from VCRP mentioned the principal concern within the volcanic region is the occurrence of flooding resulting from the downstream flow of water originating from the upstream volcanic areas. This issue has far-reaching consequences, including the loss of homes, land, crops, and, in severe cases, human lives.	RWB	The construction of detention ponds upstream of the 16 catchments within this area to prevent the risk of downstream flooding as it has been done in the Muhe catchment where 2 detention ponds had been constructed with holding capacities of 13,000 m^3 and another proposed measure consist of the rehabilitation of gullies to facilitate the retention and controlled drainage of excess floodwaters.
It was mentioned that in the Vunga corridor, the main issue is sediment management. The excess accumulation in river channels results in rising water levels and subsequent flooding in surrounding areas.	RWB	Proposed measures include the dredging of rivers in the Vunga corridor namely, Mukungwa, Satinsyi and Rubagabaga rivers and increase in drainage capacity by culverts and bridges and check dams and dykes' installation.
Another issue highlighted is the assessment of erosion risk and the identification of best practices tailored to address the specific conditions of each location.	RWB	The proposed measure is the use of CROM-DSS, a tool that assesses the erosion risk and offers the best practices according to each area's topographical characteristics, namely the main interventions include radical terraces, rainwater harvesting, afforestation, reforestation, improved agricultural practices, suited crops to grow.
It was indicated that there is a necessity of developing develop an early warning system for incoming rainfall and flood risks which will be used to disseminate the information to the community in affected areas to avoid high level flood impacts.	Meteo-Rwanda	Three key agencies would be involved in the proposed measure; Meteo Rwanda whose role is providing accurate weather forecasts by closely monitoring the temperature in the volcanic region and amount of rainfall and RWB whose role is utilizing the forecasted data to run hydrological models. These hydrological models along with hydraulic models of flood forecasts will estimate the expected water flows and predict potential flood risks and MINEMA whose role will be to assess potential flood risks and their impacts. Their role will involve informing the public in the affected areas directly early enough to avoid flood impacts, ensuring that communities receive timely and accurate information about the flood risks and necessary precautionary measures.

Benefits and Issue recorded **Benefits expected**	**Stakeholders that responded**	**Suggested mitigation measures by stakeholders**
The VCRP representatives mentioned another concern which involves the creation of favorable conditions that promote the establishment and flourishing of wildlife populations within the expanded park boundaries and the Landscape restoration outside the park as well.	REMA, RDB	Assisted regeneration within expanded park boundaries which essentially entails the restoration and enhancement of the suitability of the park expansion area for wildlife habitats through activities such as; Decontamination of the area from agricultural activities (fertilizers, pesticides, etc) and housing activities (sanitation activities), Removal of invasive plant species, Planting of native species, Fencing around the park boundaries whereas outside the park, the main activities would involve; Introduction of native species which will be assisted by the CROM-DSS tool, Restoration and protection of buffer zones, Restoration and protection of riverbanks.

8. REFERENCES

1. Concept Environmental and Social review summary (CESRS).
2. Government of Rwanda, National Strategy for Transformation, 2017
3. Ministry of Family and Gender promotion, Revised National gender Policy, February 2021
4. Ministry of Finance and Economic Planning, Rwanda (2016) the Rwanda we want: Towards "Vision 2050". Available at http://www.minecofin.gov.rw/fileadmin/user_upload/ Hon_Gatete_Umushyiki rano_Presentation_2016.pdf [Accessed 05 September 2019]
5. Ministry of Health, National Health Policy, 2016
6. Ministry of Infrastructure, Transport Policy, 2008
7. Ministry of Local government, National Social protection Policy, June 2020.
8. Ministry of Public Service, National Occupational Safety and Health Strategy, 2019 http://www.rtda.gov.rw/fileadmin/templates/publications/Rwanda_Road_Act.
9. RDB: Volcanoes National Park Expansion program proposal in Rwanda, Africa, 2018.
10. Republic of Mozambique, Ministery of Land Environment and Rural Developmpment National Sustainable Development Fund, **Environmental and Social Management Framework (ESMF)** for the MozBio Project – Phase 2, June 2018
11. Republic of Rwanda (2012) Vision 2020. Available at http://www.minecofin.gov.rw/fileadmin/templates/documents/NDPR/Vision____2020_.pdf [Accessed 15 September 2019]
12. The Constitution of the Republic of Rwanda of 2003, revised in 2015.
13. The Constitution of the Republic of Rwanda of 2003, revised in 2015. Available at http://www.rwandabar.org.rw/wp-content/uploads/2017/03/The-NewConstitution-of-the-Repblic-of-Rwanda-3.pdf [Accessed 20September 2019]
14. The World Bank ESF, ESS5: Land Acquisition, Restrictions on Land Use and Involuntary available at https://www.worldbank.org/en/projects-operations/environmental-and-social-framework.pdf [Accessed 15th August 2019]
15. The world Bank: The world Bank Environmental and Social ((ESSs) Framework, 2017
16. Vanguard economics et al, 2022: Livelihood Implementation Action plan (LIAP).
17. Vanguard economics et al, 2022: Vulnerable community resettled in green villages- Annex 2C.
18. https://projects.worldbank.org/en/projects-operations/project-detail/P150844
19. https://www.worldbank.org/en/projects-operations/environmental-and-social-framework
20. https://www.worldbank.org/en/projects-operations/environmental-and-social-framework/brief/environmental-and-socialstandards?cq_ck=1522164538151#ess1
21. https://elaw.org/rwanda-environmental-impact-assessment-law-and-regulations
22. Ecological restoration plan for VNP prepared by Vanguard economics and ENTREM Ltd in 2022.
23. Mass design group, Vanguard economics and Entrem Ltd report for Vulnerable community resettled in green villages, Annex 2C, prepared for FONERWA.
24. REMA, 2020 (Nile Mukungwa (NMUK) Catchment Integrated Pollution Management Plan)
25. National Institute of Statistics, Census, 2022
26. REMA, 2020 (NILE MUKUNGWA (NMUK) CATCHMENT INTEGRATED POLLUTION MANAGEMENT PLAN)
27. Republic of Rwanda, Rwanda Urban Development Project (RUDP -II), Labour Management Procedures, July 2020
28. Republic of Rwanda, Rwanda Urban Development Project (RUDP -II), Resettlement Policy Framework, July 2020
29. Fonerwa, Vulnerable Community Resettled in Green Villages, Mass Design Group, 19th April 2022
30. Project Proposals for the Climate Adaptation in the Volcano Region of Rwanda Design Report Green Model Village, Mass Design Group

31. Rwanda Water resources Board (RWB), Volcano Catchment Flood Assessment and Analysis, 2022
32. Ministry of Environment (MoE), Volcanoes Community Resilience Project (VCRP), Project Preparation Advance (PPA), Draft Stakeholder Engagement Plan (SEP), Guidelines for a Community Approach to Landscape Restoration and Integrated Water Resources Management in Rwanda, unpublished.
33. Fonerwa, Detailed Design of Flood Control Measures in the Volcanoes Region, Rwanda, Entrem Ltd, March 2019
34. BRL Ingénierie, Development of National Early Warning Platform and of a Flood Early warning System for the Sebeya River, December 2021.
35. BRL Ingénierie, Development of a National Early Warning Platform for Rwanda and a Flood Early Warning System for the Sebeya River Basin, Assessment Report, 208
36. Law No.17/2010 of 12/05/2010 Establishing and Organizing the Real Property Valuation Profession in Rwanda:
37. Expropriation law N° 32/2015 of 11/06/2015.
38. Water for Growth Rwanda, IWRM Programme Rwanda, January 2019
39. Ministry of Environment, National Land Policy, June 2019
40. Law N° 27/2021 of 10/06/2021 Law governing land in Rwanda.
41. Official Gazette of the Republic of Rwanda, Law N°55/2011 of 14/12/2011 Governing Roads in Rwanda. Available at
42. Mass Design Group, Livelihood Implementation Action Plan, April 2022
43. Ministry of Finance and Economic Planning, Vision 2050, December 2020.

ANNEXES

Annex 1: Sample of an Environmental and Social Screening Form

Each subproject should be first screened against an exclusion checklist provided below:

- 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. (Convention on International Trade in Endangered Species).
- 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 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.
- Production or activities involving harmful or exploitative forms of forced labor /harmful child labor.
- Commercial logging operations for use in primary tropical moist forest.
- Production or trade in wood or other forestry products other than from sustainably managed forests.
- That results in long-term, permanent and/or irreversible negative impacts (e.g., loss of major natural habitat).
- That involves the transformation or degradation of a critical natural habitat and may result in the loss of biodiversity, including any official protected natural area, such as national parks and other protected areas or can cause degradation of critical habitats.
- That have a high probability of causing serious adverse effects on human health and/or the environment.
- That include activities that may have significant adverse social impacts and may give rise to significant social conflict between communities.
- That cause or lead to child abuse, child labor exploitation, forced labor or human trafficking.
- That result in involuntary restrictions on land use or access to legally designated parks and protected areas.
- That have significant risks and/or adverse impacts on sensitive cultural receptors, tangible or intangible, or that could damage non-replicable cultural property.
- That impact land owned or claimed by Historically Disadvantaged Local Communities and/or Indigenous Peoples without complete and documented free, prior, and informed consent of such communities.

A. ENVIRONMENTAL SCREENING FORM

1. **Sub-project Name: …….**
2. **Location (Village, Cell, Sector, Secondary City): ……**
3. **Component/sub-project: ……....**
4. **Number of people benefiting the sub-project: ……..……**
5. **Contact person's name……**
6. **Mobile Telephone Number……**
7. **General Description of the sub project:-**

i. Sub-project objectives: …….
……
……

ii. Subproject activities
……
……
……

8. **Baseline Description of affected Environment**

i. Description of physical chemical environment (soil, air, water, etc.)

……
……
……
……
……
……

ii. Description of Biological Environment (habitats and Communities, Flora etc):

……
……
……
……
……
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iii. Description of Socio-economic Environment e.g. historical sites, aesthetic aspects, public health facilities, infrastructure

……
……
……
……
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……..

9. **Overall risk rating of the sub-project and the instruments that need to be prepared.**

9.1 Overall risk rating of the sub-project

Aspects	**Yes**	**No**	**Scale of Impact**			**Remarks**
			High	**Medium**	**Low**	
● Loss of top soil?						
● Negative effects on flora and fauna and their habitats?						
● Negative effects on wetlands?						
● Negative effects on vegetation?						
● Destruction of trees and vegetation						
● Impact on fish or other wildlife migration?						
● Drainage congestion in project area?						
● Water logging in project areas?						
● Negative effects on surface water quality, quantities or flow?						
● Negative effects on soil stability and compactness?						
● Negative effects in irrigation and canals?						
● Increased noise due to day-to-day construction activities?						
● Increased wind-blown dust from materials areas e.g. fine aggregate storage?						
● Degradation or disturbance of historical or culturally important sites (places of worship, burial sites, monuments etc.)?						

9.2 Instruments that need to be prepared

Sub- project	***Instruments to be prepared***				
	ESIA	ESMP	RAP	LMP	Any other
	*	-	*	-	*

10. **Possible environmental impacts of the sub-project**

Environmental Impacts	**Mitigation Measures (Identify relevant ESTC)**

11. The Environment and Social Management Plan (ESMP) to be taken during implementation of the subproject. (If impacts beyond the **ESTC)**

Recommendations:

……
……
……

B. SOCIAL SCREENING FORM

12. **Socio-economic information**

What assets would be affected due to sub-project intervention? Fill in **Yes** of **No** as appropriate

- Land …….
- Physical structure (dwell in or commercial) ……..
- Trees/crops …….
- Natural resources (water bodies/forests/ponds) ……
- Others (specify)……
- ……
- ……

13. **Land**

- Land ownership: Is the land public or private? ……..
- Type of land : Agricultural/homestead/pond/natural vegetation

Other (specify): ……

- Does the sub-project require additional land permanently or on a temporary basis?
- In case of land acquisition, will there be physical or economic displacement of people?
- What would be the total number of affected families ……..

14. Will the project implementation result into loss of access to the following? (Fill in **Yes** of **No** as appropriate)

- Land
- House
- Public services (water, electricity, public latrines, etc.)
- Others (specify)

15. **Structure (residential or business)**

- Total number of residential structures that would be affected ……..
- Total number of commercial/business structures that would be affected …….
- Ownership types of the structures to be affected: Please specify among: Private with land title/Private without land title/Tenant …….

16. **Trees and Crops**

- Is there any tree or plant that may be affected? Fill in **Yes** of **No** as appropriate: …….
  - Total estimated number by size ……
- Is there any social forestry/plantation project that would be affected? Fill in **Yes** of **No** as appropriate: …….
- Are there any fruit-bearing trees that would be affected? Fill in **Yes** of **No** as appropriate: …..
- Are there any agricultural lands/crops to be included in the subproject footprint: Fill in **Yes** of **No** as appropriate: …….
  - If yes, please provide relevant information regarding type of production on the land to be affected, estimated quantity of crop(s) and estimated market value
- Is there any community resource property that might be affected? E.g. open space, wetland etc. Fill in **Yes** of **No** as appropriate: …….
  - If yes please describe the community dependency of the resources that would be affected…….

……

……

……

……

17. **Beneficiaries**

- Who are the beneficiaries? ……
- How would they benefit from the subproject? Fill in **Yes** of **No** as appropriate:
  - Access to infrastructure and services? ……..
  - Access to services? ……..
  - Source of income generation? ……
  - Are the people/residents ready to cooperate with the project? ……..
  - Please provide explanatory notes below

……
……
……..

18. **Possible social impacts of the sub-project**

Social Impacts	**Mitigation Measures (Identify relevant ESTC)**

19. The Environment and Social Management Plan (ESMP) to be taken during implementation of the subproject. (If impacts beyond the **ESTC)**

Recommendations:

……
……
……..

Prepared by: ……, Signature: ……..Date and time: …….

Approved by: ……., Signature: ……, Date and time: …….

Annex 2: Generic Terms of Reference (ToR) for Environmental and Social Impact Assessment (ESIA) of Volcanoes Community Resilience Subprojects.

Introduction

Rwanda is highly vulnerable to seasonal climate variability and long-term climate change. Heavy rainfall and floods are likely to have significant consequences on the environment, society, food security, and the wider economy. Significant impacts are also expected for the country's water resources, agriculture, and health sectors. Increased temperatures, flooding, droughts, and soil erosion puts both urban and rural communities at risk, particularly poor and vulnerable groups. The combined effects of climate change and environmental degradation (soil erosion, deforestation, and loss of ecosystem services) present significant obstacles to the country's development. Climate variability is likely to affect agricultural production, which is rainfed and the source of livelihoods for most of the population. Increased temperatures and variable rainfall will affect the country's forests–both natural and planted–also critical to livelihoods, nature-based tourism, and ecosystem services.

The Government of Rwanda (GoR) has requested support from the World Bank to implement the Volcanoes Community Resilience Project (VCRP) through the (Government of Rwanda) GoR's various institutions including Rwanda Environment Management Authority (REMA), Rwanda Water Resources Board (RWB), Rwanda Development Board (RDB), and Rwanda Meteorological Agency (Meteo-Rwanda), under coordination of the Ministry of Environment. In addition to the designated implementing agencies of the VCRP, the Rwanda Forestry Authority (RFA), Rwanda Housing Authority (RHA), and Ministry of Emergency Management (MINEMA) will assume crucial roles as key stakeholders in facilitating the successful implementation of the VCRP. The objective of this project is to strengthen climate resilience, reduce the risks of flooding, and improve the management of natural resources and tourism assets in the Volcanoes Region of Rwanda.

It is in this context that Rwanda has initiated the Volcanoes Community Resilient Project (VCRP).
The proposed project strengthens climate resilience and contributes to scaling up climate action in accordance with the WBG Climate Action Plan 2016–2020 and the Action Plan on Climate Change Adaptation and Resilience. In addition, the proposed project will support Rwanda's GGCRS, Environmental Vision to 2030, Biodiversity Strategy, the National Policy on Water Resources, and the national mandate for an Integrated Water Resources Management Authority. Through investments in resilient infrastructure, nature-based solutions, and institutional strengthening to improve the capacity for climate resilient planning, the project will contribute to reducing the frequency and impact of water-related disasters.

Brief description of the Project

The Volcanoes Community Resilient Project (VCRP) will support the following activities:

Sub-component 1.a:

- Construction of detention ponds in upstream locations Construction of sediment traps
- Creation of some new channels, and enhancement and stabilization of existing channels
- Stabilization and enhancement of gully banks and beds
- Interception & diversion of channels or berms mostly towards detention ponds.
- New bulk gullies
- Construction of energy management structures (e.g. check dams)
- Upgrading of road drainage structures (culverts, bridge and side ditches)
- Dredging in selected rivers
- Construction of large off-channel detention ponds with dykes in lower areas
- Propose Nature Based Solutions (NBS) options for all of the above.

Sub-component 1b: Flood Early Warning System (FEWS):

- Improving capabilities of detection, monitoring, and forecasting of the flood hazards using a Radar system and other existing meteorological tools
- Improving capacity in analysis of risks involved
- Improving dissemination of timely warnings and activation of emergency response plans.

Sub-component 2a: Integrated catchment and landscape restoration

- Constructing, maintaining, and upgrading terraces, grassed waterways, and contour banks.
- Establishing multi-purpose native plants along bunds/terraces and along rivers as buffers, streams, and in gullies.
- Rehabilitating gullies, priority wetlands and other fragile ecosystems.
- Implementing agroforestry to support improved agriculture practices and provision of products.
- Afforestation and reforestation measures to meet biodiversity conservation, production and protection needs.
- Supporting climate-smart agricultural practices.
- Conservation of water through construction of water harvesting infrastructure.

Sub-component 2b: Landscape restoration

- The ecological restoration for the park expansion area will cover an estimated 732.5ha which forms part of a much broader and ambitious park expansion plan. An ecological restoration plan has already been developed for the VNP expansion area.
- The ecological restoration of potential sites in the VCRP landscape (outside the park expansion area) will cover 28,000ha with plantation of trees (number unknown) in rehabilitated landscape. An ecological restoration plan is yet to be developed for the VCRP landscape outside the park expansion area.

Sub-component 2c: Livelihoods Development

- Individual support
    - Supply of small livestock to beneficiaries comprising 8000 sheep, 1,600 goats, 1,600 pigs.
    - Supply of 50,000 improved cookstoves in project areas.
- Collective Support
    - Water Supply for livestock farmers in Gishwati rangelands and communities for 160.212km length of water supply network.
    - Construction of water supply system for 6 sites in VCRP for 60km water supply network.
    - Establishment of 5 honey processing centers.
    - Establishment of 4 Milk Collection Centers (MCCs) in the VCRP landscape and supply and installation of these MCCs.
    - Establishment of 8 selling points for supported community organizations.
    - Supply of farm inputs and equipment for Climate Smart Agriculture in the project area.
    - Construction of 16 suspended pedestrian bridges.
    - Supply of Liquefied Petroleum Gases (LPGs) in 40 schools in the project area.
    - Supply of collective water harvesting tanks
    - Establishment of 4 Handcrafts facilities and supply of handicraft equipment in selected districts.

Subcomponent 3a: Integrated climate resilient green settlements and livelihood improvement

The Park expansion involving construction of model smart green village houses and the resettlement of around 510 Households on smart green village of 50ha, of the 992households that will be affected by the VNP expansion (i.e. both physically and/or economically displaced).

- 510 Residential housing – 300 sqm will be allocated to each HH for housing and home garden. A house will be constructed in a 2in1 design to manage space and will incorporate flood management systems.
- Community buildings shall entail; Health Post 200m^2, Nursery 500m^2, post-Harvest + Mini Market 1000m^2, Multi-purpose Hall 400m^2, Office of local leaders 100m^2, ICT Room (Irembo) 50m^2, Police post 100m^2.
- Enterprise zone- including tourism reception, bed and breakfast, cultural facilities and guide hubs.
- Market agriculture- involving market-oriented farming of high value livestock such as chicken and diary farming.
- Agro-logistics- including processing and transport support.
- Orchard- of permanent tree or shrub crops.
- Agro-forestry
- Agro-forestry corridors
- Proposed access roads

Subcomponent 3b: Livelihood diversification and income generation activities:

- Employment opportunities
- Mushroom farming
- Community handcrafts
- Cultural Art village.
- Horticulture growing berries and Tree tomatoes.
- Bed and breakfast facility.
- Tourism reception (bar, restaurant, coffee shop, art and craft workshop and skills centre ans storytelling).
- Tourism services (Tour and hiking guides and conservation guides)

Based on this ESFM, several project interventions will require an Environmental and Social Impact Assessment (ESIA) to comply with both national environmental laws and the Bank's Environmental and Social Standards (ESSs) and procedures. The ESIA will be designed to identify, assess and evaluate both positive and negative environmental and social risks and impacts of the sub-project's activities and avoid, minimize, reduce or mitigate them.

Objectives of the ESIA:

The main objective of the assignment of conducting an ESIA study will be to carry out the tasks related to environmental aspects. This will include mainly the preparation of the Environmental Impact Assessment including Environmental and Social Management Plan (ESMP) of the VCRP.

Scope of Services: The consultant/ firm will carry out a full Environmental and Social Impact Assessment (ESIA) and prepare ESMP for the project activities 'sites covered under the VCRP. The ESIA and ESMP will be prepared in accordance with the Rwandan Environmental laws and policies, this ESMF, and World Bank ESS1 requirements and procedures. The Consultant will familiarize with the project details, components and sub-components. The Consultant liaise, collaborate and interact with the project implementation unit (PIU) staff to determine best way of conducting environmental activities and properly plan the timing of the deliverables. The main consultant activities to be further detailed will include, but not limited, to the following:

- Review the Project ESMF document, which is available online in the webpage of REMA, MoE, RWB, RDB and Meteo Rwanda, the national policy legal and institutional framework and other relevant project documents.

- Describe the Project activities and specify the boundaries of the study area for the assessment
- Conduct a project site reconnaissance and describe environmental baseline and socio-economic conditions of the project areas using the Screning Checklist Annex 1.
- Undertake the stakeholder consultations particularly with the communities to be positively and negatively affected by the project.
- Determine and evaluate potential adverse environmental and social risks and impacts of the proposed project activities and propose corresponding mitigation measures
- Develop an Environmental and Social Management Plan (ESMP)
- Prepare an ESIA report whose structure will include the main following sections:
  - ✔ Executive summary
  - ✔ Introduction
  - ✔ Policy, legal and administrative framework
  - ✔ Description of the investments/activities to be assessed
  - ✔ Diagnosis of the Environmental and social baseline – mapping
  - ✔ Evaluation of the environmental and social risks and impacts
  - ✔ Environmental and Social Management Plan (ESMP) – Clear section on the Environmentan and social clauses for the bidding document and contract
  - ✔ Supervision arragements: responsible parties from REMA, RWB, RDB, Meteo-Rwanda, District, consultants
  - ✔ Mandatory obligations of contractors based in the ESMF- insurance, permits, community communication, emergency plan, preparation of the Contractor- ESMP
  - ✔ Stakeholder consultation
  - ✔ GRM mechanisms for workers and communities
  - ✔ References
  - ✔ Annexes

Minimum requirements of the ESIA team composition and qualifications

The present assignment will require interdisciplinary expertise with specialized sector knowledge such as ecology, civil engineering, environmental sciences and engineering, GIS, Biologists, and Sociologists, Urban planning, Land use planning, Geology and Hydrology, etc. The consulting team will be led by a Team Leader with at least 10 years of experience leading ESIA studies, including prior experience on similar types of projects, and prior experience as either team leader or deputy team leader on at least one previous major ESIA for World Bank funded projects.

Schedule/Duration of the study:

The study period is estimated for 3 months from the date of commencement of the ESIA/ESMP study since this ESMF contain already important baseline and identification of measures and protocols that will expedite the ESIA.

Reports:

The consultant will submit the minimum following ESIA/ESMP reports both in hard and soft copy (number to be determined) as follows: Inception Report, Draft detailed ESIA and Final Report to be approved by RDB and WB respectively. These reports will be submitted to REMA or RWB (procurement entity at the MoE).

Annex 3: Guidelines for preparing the Environmental and Social Management Plan (ESMP).

The main purpose of establishing an ESMP is to manage adverse environmental and social risks and impacts of the project interventions in a manner that minimizes the potential adverse impact on the environment and people of the program influence area. Specific objectives of the ESMP are to: (i) identify the mitigation measures during ESMF and ESIA; and facilitate implementation of those during implementation of VCRP sub-project activities, (ii) maximization of the potential project benefits while minimizing to the acceptable level the adverse impacts, (iii) draw responsibilities for program proponent, contractors, consultants, and other members of the program team for the environmental and social management of the program; and (iv) define a monitoring mechanism and identify monitoring parameters.

The consulting firm will be required to develop an Environmental and Social Management Plan (ESMP) consisting of a set of feasible and cost-effective mitigation measures and monitoring and institutional plan to avoid or reduce significant negative impacts to acceptable levels. This will include measures for emergency response to accidental events such as fire, explosion, etc., as appropriate. The consulting firm will also provide an estimation of the impacts and costs of the mitigation measures, and of the institutional and training requirements to implement them. The relevant components of ESMP include:

- **Environmental and Social Mitigation & Enhancement Measures**

The consulting firm will recommend feasible and cost-effective measures to prevent or reduce significant negative impacts to acceptable levels. In addition to the mitigation of the potential adverse impacts on the environmental components, the ESMP will identify existing opportunities for the enhancement of the environmental quality along the surrounding area. Furthermore, the indirect, direct and residual impacts will also be clearly identified and measures included in the ESMP. Moreover, it will be included in the ESMP the detailed specification, bill of quantities (BoQ), execution drawings and contracting procedures for execution of the environmental mitigation and enhancement measures suggested, separate for planning/sitting, construction and operation periods. Good practice guides related to construction and upkeep of plant and machinery will also be included in the ESMP. Responsibilities for execution and supervision of each of the mitigation and enhancement measures will be specified in the ESMP. An annex of a plan for a continued consultation to be conducted during implementation stage of the project will also be appended to the ESMP.

- **Institutional arrangements, capacity building and trainings**

The ESMPs will describe the implementation arrangements required for the project, implementation of ESMP, particularly the capacity building proposals including the staffing of the environment unit suitable to implement the environmental mitigation and enhancement measures. A detailed job duties and responsibilities will be specified for each staff position recommended to be created. In addition, equipment and resources required for the environment unit will be specified, as well as the bill of quantities prepared. Furthermore, a training plan including schedule will be prepared specifying the target groups for individual training programs, the content and mode of training. This training plans will normally be made for the client agency including the environmental unit, the supervision consultants and the contractors.

- **Supervision and Monitoring**

As an integral part of the ESMP, an environmental monitoring plan will outline specific data and information to be collected to ensure environmental quality at different stages of the project implementation. In addition, the parameters and their frequency of monitoring will be provided along with cost of the monitoring plan and institutional arrangements for conducting monitoring. Another important aspect is the reporting formats which will be provided along with a clear arrangement for

reporting and talk corrective action. In addition, the ESMP will list all mandatory government clearance modalities and conditions, and the status of procuring clearances.

- **Reporting**

This ESMP will specify the documentation and reporting requirements. The complete record will be maintained for compliance monitoring, effects monitoring, trainings, grievances, accidents, incidents, resource usage, and waste disposal quantities.

- **Grievance Redress Mechanism (GRM)**

The grievance redress mechanism (GRM) described in the ESMP will help to address the project-related grievances and complaints particularly from the local communities and other affected persons (PAPs). The procedures for receiving and handling complaints are presented in annex 5).

- **ESMP implementation cost**

The costs for implementing the ESMP are part of the project cost and will include personnel costs, costs on trainings, effects monitoring, additional studies, and other important aspects.

Annex 4: Standardized Environmental and Social Technical Clauses (ESTCs) to be considered in the ESMP and for later inclusion in Tender Documents

ESTC 1: Waste Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
General Waste	Soil and water pollution from the improper management of wastes and excess materials from the construction sites.	The Contractor shall: ● Develop waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food waste etc.) prior to commencing of construction and submit to DSM for approval. ● Organize disposal of all wastes generated during construction in an environmentally acceptable manner. This will include consideration of the nature and location of disposal site, so as to cause less environmental impact. ● Wherever practical. ● Segregate and reuse or recycle all the wastes, wherever practical. ● Prohibit burning of solid waste ● Collect and transport non-hazardous wastes to all the approved disposal sites. Vehicles transporting solid waste shall be covered with tarps or nets to prevent spilling waste along the route ● Train and instruct all personnel in waste management practices and procedures as a component of the environmental induction process. ● Provide refuse containers at each worksite. ● Request suppliers to minimize packaging where practicable. ● Place a high emphasis on good housekeeping practices. ● Maintain all construction sites in a cleaner, tidy and safe condition and provide and maintain appropriate facilities as temporary storage of all wastes before transportation and final disposal.
Hazardous Waste	Health hazards and environmental impacts due to improper waste management practices	The Contractor shall ● Collect chemical wastes in 200-liter drums (or similar sealed container), appropriately labeled for safe transport to an approved chemical waste depot. ● Store, transport and handle all chemicals avoiding potential environmental pollution. ● Store all hazardous wastes appropriately in bunded areas away from water courses. ● Make available Material Safety Data Sheets (MSDS) for hazardous materials on-site during construction.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		● Collect hydrocarbon wastes, including lube oils, for safe transport off-site for reuse, recycling, treatment or disposal at approved locations. ● Construct concrete or other impermeable flooring to prevent seepage in case of spills.

ESTC 2: Fuel and hazardous waste

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Fuels and hazardous goods	Materials used in construction have a potential to be a source of contamination. Improper storage and handling of fuels, lubricants, chemicals and hazardous goods/materials on-site, and potential spills from these goods may harm the environment or health of construction workers	The Contractor shall; ● Prepare spill control procedures and submit the plan for DSM approval. ● Train the relevant construction personnel in handling of fuels and spill control procedures. ● Store dangerous goods in bunded areas on a top of a sealed plastic sheet away from watercourses. ● Refueling shall occur only within bunded areas. ● Make available MSDS for chemicals and dangerous goods on-site. ● Transport waste of dangerous goods, which cannot be recycled, to a designated disposal site approved by REMA. ● Provide absorbent and containment material (e.g., absorbent matting) where hazardous material are used and stored and personnel trained in the correct use. ● Provide protective clothing, safety boots, helmets, masks, gloves, goggles, to the construction personnel, appropriate to materials in use. ● Make sure all containers, drums, and tanks that are used for storage are in good condition and are labeled with expiry date. Any container, drum, or tank that is dented, cracked, or rusted might eventually leak. Check for leakage regularly to identify potential problems before they occur. ● Store hazardous materials above flood plain level. ● Put containers and drums in temporary storages in clearly marked areas, where they will not be run over by vehicles

		or heavy machinery. The area shall preferably slope or drain to a safe collection area in the event of a spill. ● Put containers and drums in permanent storage areas on an impermeable floor that slopes to a safe collection area in the event of a spill or leak. ● Take all precautionary measures when handling and storing fuels and lubricants, avoiding environmental pollution. ● Avoid the use of material with greater potential for contamination by substituting them with more environmentally friendly materials. Return the gas cylinders to the supplier. However, if they are not empty prior to their return, they must be labeled with the name of the material they contained or contain, information on the supplier, cylinder serial number, pressure, their last hydrostatic test date, and any additional identification marking that may be considered

ESTC 3: Water Resources Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Hazardous Material and Waste	Water pollution from the storage, handling and disposal of hazardous materials and general construction waste, and accidental spillage.	The Contractor shall: ● Follow the management guidelines proposed in ESTCs 1 and 2. ● Minimize the generation of sediment, oil and grease, excess nutrients, organic matter, litter, debris and any form of waste (particularly petroleum and chemical wastes). These substances must not enter waterways, storm water systems or underground water tables.
Discharge from Construction sites	During construction both surface and groundwater quality may be deteriorated due to construction activities in the river, sewerages from construction sites and work camps. The construction works will modify groundcover and topography changing the	The Contractor shall: ● Install temporary drainage works (channels and bunds) in areas required for sediment and erosion control and around storage areas for construction materials ● Install temporary sediment basins, where appropriate, to capture sediment-laden run-off from site ● Divert runoff from undisturbed areas around the construction site ● Stockpile materials away from drainage lines ● Prevent all solid and liquid wastes entering waterways by collecting solid waste, oils, chemicals, bitumen spray waste and wastewaters from brick, concrete and asphalt cutting where possible and transport to an approved waste disposal site or recycling depot ● Wash out ready-mix concrete agitators and concrete handling equipment at washing facilities off site or into approved bunded areas on site. Ensure that tires of

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
	surface water drainage patterns of the area including infiltration and storage of storm water. These changes in hydrological regime led to increased rate of runoff, increase in sediment and contaminant loading, increased flooding, groundwater contamination, and effect habitat of fish and other aquatic biology.	construction vehicles are cleaned in the washing bay (constructed at the entrance of the construction site) to remove the mud from the wheels. This shall be done in every exit of each construction vehicle to ensure the local roads are kept clean.
Soil Erosion and siltation	Soil erosion and dust from the material stockpiles will increase the sediment and contaminant loading of surface water bodies.	The Contractor shall: ● Stabilize the cleared areas not used for construction activities with vegetation or appropriate surface water treatments as soon as practicable following earthwork to minimize erosion ● Ensure that roads used by construction vehicles are swept regularly to remove sediment ● Water the material stockpiles, access roads and bare soils on an as required basis to minimize dust. Increase the watering frequency during periods of high risk (e.g. high winds)
Construction activities in water bodies	Construction works in the water bodies will increase sediment and contaminant loading, and effect habitat of fish and other aquatic biology.	The Contractor shall: ● Dewater sites by pumping water to a sediment basin prior to release off site – do not pump directly off site ● Monitor the water quality in the runoff from the site or areas affected by dredge plumes, and improve work practices as necessary ● Protect water bodies from sediment loads by silt screen or bubble curtains or other barriers ● Minimize the generation of sediment, oil and grease, excess nutrients, organic matter, litter, debris and any form of waste (particularly petroleum and chemical wastes).

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		These substances must not enter waterways, storm water systems or underground water tables. ● Use environment friendly and nontoxic slurry during construction of piles to discharge into the river. ● Reduce infiltration of contaminated drainage through storm water management design ● Do not discharge cement and water curing used for cement concrete directly into water courses and drainage inlets.
Drinking water	Groundwater at shallow depths is contaminated with arsenic and hence not suitable for drinking purposes.	The Contractor shall: ● Pumping of groundwater shall be from deep aquifers of more than 300 m to supply arsenic free water. Safe and sustainable discharges are to be ascertained prior to selection of pumps. ● Tube wells will be installed with due regard for the surface environment, protection of groundwater from surface contaminants, and protection of aquifer cross contamination ● All tube wells, test holes, monitoring wells that are no longer in use or needed shall be properly decommissioned.
	Depletion and pollution of groundwater resources	● Install monitoring wells both upstream and downstream areas near construction yards and construction camps to regularly monitor the water quality and water levels. ● Protect groundwater supplies of adjacent lands

ESTC 4: Drainage Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Excavation and earth works, and construction yards	Lack of proper drainage for rainwater/liquid waste or wastewater owing to the construction activities harms environment in terms of water and soil contamination, and mosquito growth.	The Contractor shall: ● Prepare a program for prevent/avoid standing waters, which DSM will verify in advance and confirm during implementation ● Provide alternative drainage for rainwater if the construction works/earth-fillings cut the established drainage line ● Establish local drainage line with appropriate silt collector and silt screen for rainwater or wastewater connecting to the existing established drainage lines already there ● Rehabilitate road drainage structures immediately if damaged by contractors' road transports. ● Build new drainage lines as appropriate and required for wastewater from construction yards connecting to the available nearby recipient water bodies. Ensure

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		wastewater quality conforms to the relevant standards provided by Rwanda Standards Board (RSB), before it being discharged into the recipient water bodies. ● Ensure the internal roads/hard surfaces in the construction yards/construction camps that generate has storm water drainage to accommodate high runoff during downpour and that there is no stagnant water in the area at the end of the downpour. ● Construct wide drains instead of deep drains to avoid sand deposition in the drains that require frequent cleaning. ● Provide appropriate silt collector and silt screen at the inlet and manholes and periodically clean the drainage system to avoid drainage congestion. ● Protect natural slopes of drainage channels to ensure adequate storm water drains. ● Regularly inspect and maintain all drainage channels to assess and alleviate any drainage congestion problem. ● Reduce infiltration of contaminated drainage through storm water management design.
Ponding of water	Health hazards due to mosquito breeding	The Contractor shall: ● Do not allow ponding/storage of water especially near the waste storage areas and construction camps ● Discard all the storage containers that are capable of storing of water, after use or store them in inverted position.

ESTC 5: Soil Quality Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Filling of Sites with dredge spoils	Soil contamination will occur from drainage of dredged spoils	The Contractor shall: ● Ensure that dredged sand used for land filling shall be free of pollutants. Prior to filling, sand quality shall be tested to confirm whether soil is pollution free. Sediments shall be properly compacted. Top layer shall be the 0.5 m thick clay on the surface and boundary slopes along with grass. Side Slope of Filled Land of 1:2 shall be constructed by suitable soils with proper compaction as per design. Slope surface shall be covered by top soils/ cladding materials (0.5m thick) and grass turfing with suitable grass. ● Leaching from the sediments shall be contained to seep into the subsoil or shall be discharged into settling lagoons before final disposal.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		● No sediment laden water in the adjacent lands near the construction sites, and/or wastewater of suspended materials in excess of 200mg/l from dredge spoil storage/use area in the adjacent agricultural lands.
Storage of hazardous and toxic chemicals	Spillage of hazardous and toxic chemicals will contaminate the soils	The Contractor shall: ● Strictly manage the wastes management plans proposed in ESTC1 and storage of materials in ESTC2 ● Construct appropriate spill contaminant facilities for all fuel storage areas ● Establish and maintain a hazardous materials register detailing the location and quantities of hazardous substances including the storage, use of disposals ● Train personnel and implement safe work practices for minimizing the risk of spillage ● Identify the cause of contamination, if it is reported, and contain the area of contamination. The impact may be contained by isolating the source or implementing controls around the affected site ● Remediate the contaminated land using the most appropriate available method to achieve required commercial/industrial guideline validation results.
Construction material stock piles	Erosion from construction material stockpiles may contaminate the soils	The Contractor shall: ● Protect the toe of all stockpiles, where erosion is likely to occur, with silt fences, straw bales or bunds.

ESTC 6: Erosion and Sediment Control

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Clearing of construction sites	Cleared areas and slopes are susceptible for erosion of top soils that affects the growth of vegetation which causes ecological imbalance	The Contractor shall: ● Reinstate and protect cleared areas as soon as possible. ● Mulch to protect batter slopes before planting ● Cover unused area of disturbed or exposed surfaces immediately with mulch/grass turfings/tree plantations.
Construction	The impact of soil erosion are (i)	The Contractor shall: ● Locate stockpiles away from drainage lines

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
activities and material stockpiles	Increased run off and sedimentation causing a greater flood hazard to the downstream, (ii) destruction of aquatic environment in nearby lakes, streams, and reservoirs caused by erosion and/or deposition of sediment damaging the spawning grounds of fish, and (iii) destruction of vegetation by burying or gullying.	● Protect the toe of all stockpiles, where erosion is likely to occur, with silt fences, straw bales or bunds ● Remove debris from drainage paths and sediment control structures ● Cover the loose sediments and water them if required ● Divert natural runoff around construction areas prior to any site disturbance ● Install protective measures on site prior to construction, for example, sediment traps ● Control drainage through a site in protected channels or slope drains ● Install 'cut off drains' on large cut/fill batter slopes to control water runoff speed and hence erosion ● Observe the performance of drainage structures and erosion controls during rain and modify as required.

ESTC 7: Top Soil Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Land clearing and earth works	Earthworks will impact the fertile top soils that are enriched with nutrients required for plant growth or agricultural development	The Contractor shall: ● Strip the top soil to a depth of 15 cm and store in stock piles of height not exceeding 2m. ● Remove unwanted materials from top soil like grass, roots of trees and similar others. ● The stockpiles will be done in slopes of 2:1 to reduce surface runoff and enhance percolation through the mass of stored soil. ● Locate topsoil stockpiles in areas outside drainage lines and protect from erosion. ● Construct diversion channels and silt fences around the topsoil stockpiles to prevent erosion and loss of topsoil. ● Spread the topsoil to maintain the physico-chemical and biological activity of the soil. The stored top soil will be utilized for covering all disturbed area and along the proposed plantation sites

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		● Prior to the re-spreading of topsoil, the ground surface will be ripped to assist the bunding of the soil layers, water penetration and revegetation.
Transport	Vehicular movement outside ROW or temporary access roads will affect the soil fertility of the agricultural lands	The Contractor shall: ● Limit equipment and vehicular movements to within the approved construction zone ● Construct temporary access tracks to cross concentrated water flow lines at right angles ● Plan construction access to make use, if possible, of the final road alignment ● Use vehicle-cleaning devices, for example, ramps or wash down areas.

ESTC 8: Topography and Landscaping

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Land clearing and earth works	Flood plains of the existing Project area will be affected by the construction of various project activities. Construction activities especially earthworks will change topography and disturb the natural rainwater/flood water drainage as well as will change the local landscape.	The Contractor shall: ● Ensure the topography of the final surface of all raised lands (construction yards, approach roads, access roads, bridge end facilities, etc.) are conducive to enhance natural draining of rainwater/flood water; ● Keep the final or finished surface of all the raised lands free from any kind of depression that insists water logging ● Undertake mitigation measures for erosion control/prevention by grass-turfing and tree plantation, where there is a possibility of rain-cut that will change the shape of topography. ● Cover immediately the uncovered open surface that has no use of construction activities with grass-cover and tree plantation to prevent soil erosion and bring improved landscaping.

ESTC 9: Sand Extraction

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Sand extraction	Sand extraction can potentially impact the aquatic habitat, water quality, and key aquatic species and their food availability.	The Contractor shall: ● not extract sand from the river bed in long continuous stretches; alternate patches of river bed will be left undisturbed to minimize the potentially negative impacts on the aquatic habitat. ● not collect large quantities of sand from any single location ● not excavate deeper than 3 m at any single location. ● not carry out sand extraction near chars that have sensitive Habitats ● not carry out sand extraction during the night particularly near the chars ● obtain approval from DSM before starting sand extraction from any location. ● carry out sand extraction from sand bars to the extent possible. ● maintain record of all sand extraction (quantities, location shown on map, timing, any sighting of key species) ● provide silt fences, sediment barriers or other devices around the extraction areas to prevent migration of sediment rich water in to the river channels. ● refuel of trucks with a proper care to avoid any spills. ● make available spill kits and other absorbent material at refueling points on the trucks. DSM will: ● carry out survey of the area prior to sand extraction ● identify any sensitive receptors/habitats (e.g. bird colony) at or near the proposed sand extraction locations. ● determine 'no-go' areas for sand extraction, based upon the above survey, ● monitor the activity to ensure that the contractor complies with the conditions described earlier. ● survey the area after sand extraction to identify any leftover impacts.

ESTC 10: Air Quality Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction vehicular traffic	Air quality can be adversely affected by vehicle exhaust	The Contractor shall: ● Fit vehicles with appropriate exhaust systems and emission control devices. Maintain these devices in good working condition.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
	emissions and combustion of fuels.	● Operate the vehicles in a fuel-efficient manner ● Cover haul vehicles carrying dusty materials moving outside the construction site Impose speed limits on all vehicle movement at the worksite to reduce dust emissions ● Control the movement of construction traffic ● Water construction materials prior to loading and transport ● Service all vehicles regularly to minimize emissions ● Limit the idling time of vehicles not more than 2 minutes.
Construction machinery	Air quality can be adversely affected by emissions from machinery and combustion of fuels.	The Contractor shall: ● Fit machinery with appropriate exhaust systems and emission control devices. Maintain these devices in good working condition in accordance with the specifications defined by their manufacturers to maximize combustion efficiency and minimize the contaminant emissions. Proof or maintenance register shall be required by the equipment suppliers and contractors/ subcontractors ● Focus special attention on containing the emissions from generators ● Machinery causing excess pollution (e.g. visible smoke) will be banned from construction sites ● Service all equipment regularly to minimize emissions ● Provide filtering systems, duct collectors or humidification or other techniques (as applicable) to the concrete batching and mixing plant to control the particle emissions in all its stages, including unloading, collection, aggregate handling, cement dumping, circulation of trucks and machinery inside the installations
Construction activities	Dust generation from construction sites, material stockpiles and access roads is a nuisance in the environment and can be a health hazard.	The Contractor shall: ● Water the material stockpiles, access roads and bare soils on an as required basis to minimize the potential for environmental nuisance due to dust. Increase the watering frequency during periods of high risk (e.g. high winds). Stored materials such as gravel and sand shall be covered and confined to avoid their being wind-drifted ● Minimize the extent and period of exposure of the bare surfaces ● Reschedule earthwork activities or vegetation clearing activities, where practical, if necessary to avoid during periods of high wind and if visible dust is blowing off-site ● Restore disturbed areas as soon as practicable by vegetation/grass-turfing ● Store the cement in silos and minimize the emissions from silos by equipping them with filters.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		● Establish adequate locations for storage, mixing and loading of construction materials, in a way that dust dispersion is prevented because of such operations ● Crushing of rocky and aggregate materials shall be wet-crushed, or performed with particle emission control systems.

ESTC 11: Noise and Vibration Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction vehicular traffic	Noise quality will be deteriorated due to vehicular traffic	The Contractor shall: ● Maintain all vehicles in order to keep it in good working order in accordance with manufactures maintenance procedures ● Make sure all drivers will comply with the traffic codes concerning maximum speed limit, driving hours, etc. ● Organize the loading and unloading of trucks, and handling operations for the purpose of minimizing construction noise on the work site
Construction machinery	Noise and vibration may have an impact on people, property especially damage caused to houses and other property due compacting vibrations and excavations during road construction.	The Contractor shall: ● Not carry out any blasting during excavation or any other activity ● Provide PPE protection to workers (masks, ear protection) ● Control noise and vibration according to level acceptable in the country regulations or the WB ● Appropriately site all noise generating activities to avoid noise pollution to local residents ● Use the quietest available plant and equipment ● Modify equipment to reduce noise (for example, noise control kits, lining of truck trays or pipelines) ● Maintain all equipment in order to keep it in good working order in accordance with manufactures maintenance procedures. Equipment suppliers and contractors shall present proof of maintenance register of their equipment. ● Install acoustic enclosures around generators to reduce noise levels. ● Fit high efficiency mufflers to appropriate construction equipment ● Avoid the unnecessary use of alarms, horns and sirens ● Compensate damage to houses and other property

Construction activities	Noise and vibration may have an impact on people, property, fauna, livestock and the natural environment.	The Contractor shall: ● Notify adjacent landholders prior any typical noise events outside of daylight hours ● Educate the operators of construction equipment on potential noise problems and the techniques to minimize noise emissions ● Employ best available work practices on-site to minimize occupational noise levels ● Install temporary noise control barriers where appropriate ● Notify affected people if major noisy activities will be undertaken, e.g. pile driving ● Plan activities on site and deliveries to and from site to minimize impact ● Monitor and analyze noise and vibration results and adjust construction practices as required. ● Avoid undertaking the noisiest activities, where possible, when working at night near the residential areas.

ESTC 12: Protection of Flora

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Vegetation clearance	Local flora is important to provide shelters for the birds, offer fruits and/or timber/fire wood, protect soil erosion and overall keep the environment very friendly to human living. As such damage to flora has wide range of adverse environmental impacts.	The Contractor shall: ● Reduce disturbance to surrounding vegetation ● Use appropriate type and minimum size of machine to avoid disturbance to adjacent vegetation. ● Get approval from supervision consultant for clearance of vegetation. ● Make selective and careful pruning of trees where possible to reduce need of tree removal. ● Control noxious weeds by disposing of at designated dump site or burn on site. ● Clear only the vegetation that needs to be cleared in accordance with the plans. These measures are applicable to both the construction areas as well as to any associated activities such as sites for stockpiles, disposal of fill and construction of diversion roads, etc. ● Do not burn off cleared vegetation – where feasible, chip or mulch and reuse it for the rehabilitation of affected areas, temporary access tracks or landscaping. Mulch provides a seed source, can limit embankment erosion, retains soil moisture and nutrients, and encourages regrowth and protection from weeds. ● Return topsoil and mulched vegetation (in areas of native vegetation) to approximately the same area of the roadside it came from. ● Avoid work within the drip-line of trees to prevent damage to the tree roots and compacting the soil.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		● Minimize the length of time the ground is exposed or excavation left open by clearing and re-vegetate the area at the earliest practically possible. ● Ensure excavation works occur progressively and revegetation done at the earliest ● Provide adequate knowledge to the workers regarding nature protection and the need of avoid felling trees during construction ● Supply appropriate fuel in the work caps to prevent fuel wood collection

ESTC 13: Protection of Fauna

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction activities	The location of construction activities can result in the loss of wild life habitat and habitat quality.	The Contractor shall: ● Limit the construction works within the designated sites allocated to the contractors ● Check the site for animals trapped in, or in danger from site works and use a qualified person to relocate the animal.
	Impact on migratory birds, its habitat and its active nests	The Contractor shall: ● Not be permitted to destruct active nests or eggs of migratory birds ● Minimize the tree removal during the bird breeding season. If works must be continued during the bird breeding season, a nest survey will be conducted by a qualified biologist prior to commence of works to identify and located active nests ● Minimize the release of oil, oil wastes or any other substances harmful to migratory birds to any waters or any areas frequented by migratory birds.
Vegetation clearance	Clearance of vegetation may impact shelter, feeding and/or breeding and/or physical destruction and severing of habitat areas	The Contractor shall: ● Restrict the tree removal to the minimum required. ● Retain tree hollows on site, or relocate hollows, where appropriate ● Leave dead trees where possible as habitat for fauna ● Fell the hollow bearing trees in a manner which reduces the potential for fauna mortality. Felled trees will be inspected after felling for fauna and if identified and readily accessible will be removed and relocated or rendered assistance if injured. After felling, hollow bearing trees will remain

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		unmoved overnight to allow animals to move of their own volition.
Construction camps	Illegal poaching	The Contractor shall: ● Provide adequate knowledge to the workers regarding protection of flora and fauna, and relevant government regulations and punishments for illegal poaching.

ESTC 14: Wetland use activities

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Earthworks and green infrastructure construction activities in wetlands	The presence of construction pipe lines and other construction activities in the wetland can cause hindrance and risks to the farmers.	The Contractor shall: ● Avoid as much as possible disruption of wetland farming and other livelihood activities ● Identify the channel to be followed clearly using navigation aids such as buoys on open water, beacons, and lighting ● Where possible, provide proper buoyage, navigation lights and markings for bridge and earthworks to guide the other normal wetland use activities
	Accidents	The Contractor shall: ● Prepare an emergency plan for dealing with accidents while making earthworks and civil works in wetland rehabilitation activities. ● Ensure sufficient equipment and staff available to execute the emergency plans ● Provide appropriate lighting to earthworks and construction vessels.

ESTC 15: Construction Camp Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Siting and Location of construction camps	Campsites for construction workers are the important locations that have significant	-**Labor camps will be small in the project- these camps will not include dormitories, only areas for eating, hygiene and sanitation, storage of belongings, etc.** -Construction camps are/will be small and will be place in areas approved by the Project Engineer and the Environmental Officer at

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
	impacts such as health and safety hazards on local resources and infrastructure of nearby communities.	the district and the monitoring team. These are areas to store materials, machinery, etc. -Labor camps and Construction camps will be installed as far as possible from the communities in order to avoid social conflicts; The Contractor shall propose in its Construction-ESMP: ● Locations for the proposed construction and labor camps which are acceptable from environmental, cultural or social point of view. ● Consider location for construction and labor camps away from communities in order to avoid social conflict in using the natural resources such as water or to avoid the possible adverse impacts of the construction camps on the surrounding communities. ● Submit to the DSM for approval a detailed layout plan for the installment of construction and labor camp showing the relative locations of all temporary buildings and facilities that are to be constructed in relation to roads, fuel storage areas (for use in power supply generators), solid waste management and dumping locations proposal, and drainage facilities, prior to the initiation of the construction. ● Local authorities responsible in the district for Environment health, social affairs and security shall be duly informed on the set up of camp facilities so as to maintain effective surveillance over public health, social and security matters.
Construction Camp Facilities	Lack of proper infrastructure facilities, such as housing, water supply and sanitation facilities will increase pressure on the local services and generate substandard living standards and health hazards.	The Contractor shall provide the following facilities in the camp sites: ● Adequate housing for all workers ● Safe and reliable water supply. Water supply from deep tube wells of 300 m depth that meets the national standards ● Hygienic sanitary facilities and sewerage system. The toilets and domestic wastewater will be collected through a common sewerage. Provide separate toilets and bathing places for males and females with total isolation by wall or by location. The minimum number of toilet facilities required is one toilet for every ten persons. ● Treatment facilities for sewerage of toilet and domestic wastes ● Storm water drainage facilities. Both sides of roads are to be provided with shallow v drains to drain off storm water to a silt retention pond which shall be sized to provide a minimum of 20 minutes retention of storm water flow from the whole site. Channel all discharge from the silt retention pond to natural drainage via a grassed swale at least 20 meters in length with suitable longitudinal gradient.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		● Paved internal roads. Ensure with grass/ vegetation coverage to be made of the use of top soil that there is no dust generation from the loose/exposed sandy surface. Pave the internal roads of at least haring-bond bricks to suppress dusts and to work against possible muddy surface during monsoon. ● Provide child crèches for women working construction site. The crèche shall have facilities for dormitory, kitchen, indoor and outdoor play area. Schools shall be attached to these crèches so that children are not deprived of education whose mothers are construction workers ● Provide in-house community/common entertainment facilities. Dependence on local entertainment outlets by the construction camps to be discouraged/prohibited to the extent possible.
Disposal of waste	Management of wastes is crucial to minimize impacts on the environment	The Contractor shall: ● Ensure proper collection and disposal of solid wastes within the construction camps ● Insist waste separation by source; organic wastes in one pot and inorganic wastes in another pot at household level. ● Store inorganic wastes in a safe place within the household and clear organic wastes on daily basis to waste collector. Establish waste collection, transportation and disposal systems with the manpower and equipment/vehicles needed. ● Dispose organic wastes in a designated safe place on daily basis. At the end of the day cover the organic wastes with a thin layer of sand so that flies, mosquitoes, dogs, cats, rats, are not attracted. One may dig a large hole to put organic wastes in it; take care to protect groundwater from contamination by leachate formed due to decomposition of wastes. Cover the bed of the pit with impervious layer of materials (clayey or thin concrete) to protect groundwater from contamination. ● Locate the garbage pit/waste disposal site min 500 m away from the residence so that peoples are not disturbed with the odor likely to be produced from anaerobic decomposition of wastes at the waste dumping places. Encompass the waste dumping place by fencing and tree plantation to prevent children to enter and play with. ● Do not establish site specific landfill sites. All solid waste will be collected and removed from the work camps and disposed in approval waste disposal sites.
Fuel supplies for cooking	Illegal sourcing of fuel	The Contractor shall:

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
purposes	wood by construction workers will impact the natural flora and fauna	● Provide fuel to the construction camps for their domestic purpose, in order to discourage them to use fuel wood or another biomass. ● Made available alternative fuels like natural gas or kerosene on ration to the workforce to prevent them using biomass for cooking. ● Conduct awareness campaigns to educate workers on preserving the protecting the biodiversity and wildlife of the project area, and relevant government regulations and punishments on wildlife protection.
Health and Hygiene	There will be a potential for diseases to be transmitted including malaria, exacerbated by inadequate health and safety practices. There will be an increased risk of work crews spreading sexually transmitted infections and HIV/AIDS.	The Contractor shall: ● Provide adequate health care facilities within construction sites. ● Provide first aid facility round the clock. Maintain stock of medicines in the facility and appoint fulltime designated first aider or nurse. ● Provide ambulance facility for the laborers during emergency to be transported to nearest hospitals. ● Initial health screening of the laborers coming from outside areas ● Train all construction workers in basic sanitation and health care issues and safety matters, and on the specific hazards of their work ● Provide HIV awareness programming, including STI (sexually transmitted infections) and HIV information, education and communication for all workers on regular basis ● Complement educational interventions with easy access to condoms at campsites as well as voluntary counseling and testing ● Install drainage facilities throughout the construction and labor camps and other project areas to ensure that disease vectors such as stagnant water bodies and puddles do not form. ● Regular mosquito repellant sprays during the wet seasons. ● Carryout short training sessions on best hygiene practices to be mandatorily participated by all workers. Place display boards at strategic locations within the project area containing messages on best hygienic practices
Safety	In adequate safety facilities to the construction camps may create security problems and fire hazards	The Contractor shall ● Provide appropriate security personnel (police / home guard or private security guards) and enclosures to prevent unauthorized entry in to the camp area. ● Maintain register to keep a track on a head count of persons present in the camp at any given time. ● Encourage use of flameproof material for the construction of labor housing / site office. Also, ensure that these

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		houses/rooms are of sound construction and capable of withstanding storms with strong winds and installed with lightening protection. ● Provide appropriate type of firefighting equipment suitable for the construction camps ● Display emergency contact numbers clearly and prominently at strategic places in camps. ● Communicate the roles and responsibilities of laborers in case of emergency in the monthly meetings with contractors
Site Restoration	Restoration of the construction camps to original condition requires demolition of Construction camps.	The Contractor shall: ● Dismantle and remove from the site all facilities established within the construction camp including the perimeter fence and lockable gates if build. ● Maintain the noise levels within the national standards during demolition activities or international standards (noise residential level cannot be more than 70 dB) ● Constrictor should connect with NGOs or the community to see potential use of good material that can be use by others. ● Dispose remaining debris at the designated waste disposal site. ● Handover the areas to land owner or district if agreement between both parties (contactor and land-owner) has been made and it will be signed and verify in a written report by the ESS that the area is clean of construction waste, hazardous waste (painting, diesel, oils, others). ● Restore the site to its condition prior to commencement of the works or to an agreed condition with the landowner.

ESTC 16: Cultural and Religious Issues

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction activities near religious and cultural sites	Disturbance from construction works to the cultural and religious sites, and contractors lack of knowledge on cultural issues cause social disturbances.	The Contractor shall: ● Communicate to the public through community consultation and newspaper announcements regarding the scope and schedule of construction, as well as certain construction activities causing disruptions or access restriction. ● Will not block access to cultural and religious sites, wherever possible ● Restrict all construction activities within the foot prints of the construction sites. ● Stop construction works that produce noise (particularly during prayer time) shall there be any place of worship/religious/educational institutions

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		close to the construction sites and users make objections. ● Take special care and use appropriate equipment when working next to a cultural/religious institution. ● Stop work immediately and notify the site manager if, during construction, an archaeological, grave or burial site is discovered. It is an offence to recommence work in the vicinity of the site until approval to continue is given by the DSM/PIU. Provide separate prayer facilities to the construction workers. ● Show appropriate behavior with all construction workers especially women and elderly people ● Allow the workers to participate in praying during construction time ● Resolve cultural issues in consultation with local leaders and supervision consultants ● Establish a mechanism that allows local people to raise grievances arising from the construction process. ● Ensure the local authorities responsible for health, religious and security are duly informed before commencement of civil works so as to maintain effective surveillance over public health, social and security matters

ESTC 17: Worker Health and Safety

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Best practices	Construction works may pose health and safety risks to the construction workers and site visitors leading to severe injuries and deaths. The population in the proximity of the construction site and the construction workers will be exposed to a number of (i) biophysical health	The Contractor shall: Implement suitable safety standards for all workers and site visitors which shall not be less than those laid down on the international standards (e.g. International Labor Office guideline on 'Safety and Health in Construction; World Bank Group's 'Environmental Health and Safety Guidelines') and contractor's own national standards or statutory regulations, in addition to complying with the national standards of the Government of Rwanda (e.g. `Law no 66/2018 regulating labor in Rwanda') ● Provide the workers with a safe and healthy work environment, taking into account inherent risks in its particular construction activity and specific classes of hazards in the work areas,

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
	risk factors, (e.g. noise, dust, chemicals, construction material, solid waste, waste water, vector transmitted diseases etc), (ii) risk factors resulting from human behavior (e.g. STD, HIV etc) and (iii) road accidents from construction traffic.	● Provide personal protection equipment (PPE) for workers, such as safety boots, helmets, masks, gloves, protective clothing, goggles, full-face eye shields, and ear protection. Maintain the PPE properly by cleaning dirty ones and replacing them with the damaged ones. ● Safety procedures include provision of information, training and protective clothing to workers involved in hazardous operations and proper performance of their job ● Appoint an environment, health and safety manager to look after the health and safety of the workers ● Inform the local authorities responsible for health, religious and security duly informed before commencement of civil works and establishment of construction camps so as to maintain effective surveillance over public health, social and security matters.
	Child and pregnant labor	The Contractor shall: ● Not hire children of less than 18 in accordance with the Law no 66/2018 regulating labor in Rwanda.
Accidents	Lack of first aid facilities and health care facilities in the immediate vicinity will aggravate the health conditions of the victims	● Provide health care facilities and first aid facilities are readily available. Appropriately equipped first-aid stations shall be easily accessible throughout the place of work ● Document and report occupational accidents, diseases, and incidents. ● Prevent accidents, injury, and disease arising from, associated with, or occurring in the course of work by minimizing, so far as reasonably practicable, the causes of hazards. In a manner consistent with good international industry practice. ● Identify potential hazards to workers, particularly those that may be life-threatening and provide necessary preventive and protective measures. ● Provide awareness to the construction drivers to strictly follow the driving rules ● Provide adequate lighting in the construction area and along the roads
Construction Camps	Lack of proper infrastructure facilities, such as housing, water supply and sanitation facilities will increase pressure on the local services and generate substandard living	● The Contractor shall provide the following facilities in the campsites to improve health and hygienic conditions as mentioned in ESTC 17 Construction Camp Management ● Adequate ventilation facilities ● Safe and reliable water supply. Water supply from deep tube wells that meets the national standards

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
	standards and health hazards.	● Hygienic sanitary facilities and sewerage system. The toilets and domestic wastewater will be collected through a common sewerage system. ● Treatment facilities for sewerage of toilet and domestic wastes ● Set up storm water drainage facilities. ● Set up recreational and social facilities ● Set up safe storage facilities for petroleum and other chemicals in accordance with ESTC2 ● Arrange solid waste collection and disposal system in accordance with ESTC1. ● Arrangement for trainings ● Pave internal roads. ● Erect a security fence at least 2 m height. ● Establish a sick bay and first aid facilities
Water and sanitation facilities at the construction sites	Lack of Water sanitation facilities at construction sites cause inconvenience to the construction workers and affect their personal hygiene.	● The contractor shall provide portable toilets at the construction sites, if about 25 people are working the whole day for a month. Location of portable facilities shall be at least 6 m away from storm drain system and surface waters. These portable toilets shall be cleaned four times a day and all the sewerage shall be pumped from the collection tank once a day and shall be brought to the common septic tank for further treatment. ● Contractor shall provide bottled drinking water facilities to the construction workers at all the construction sites.
Other ESTCs	Potential risks on health and hygiene of construction workers and general public	The Contractor shall follow the following ESTCs to reduce health risks to the construction workers and nearby community ● ESTC 2: Fuels and Hazardous Goods Management ● ESTC 4: Drainage Management ● ESTC 10: Air Quality Management ● ESTC 11: Noise and Vibration Management ● ESTC 15: Road Transport and Road Traffic Management ● ESTC 16: Wetland use activities
Trainings	Lack of awareness and basic knowledge in health care among the construction workforce, make them susceptible to potential diseases.	The Contractor shall: ● Train all construction workers in basic sanitation and health care issues (e.g., how to avoid malaria and transmission of sexually transmitted infections (STI) HIV/AIDS. ● Train all construction workers in general health and safety matters, and on the specific hazards of their work Training shall consist of basic hazard awareness, site specific hazards, safe work practices, and emergency procedures for fire, evacuation, and natural disaster, as appropriate.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		● Commence the malaria, HIV/AIDS and STI education campaign before the start of the construction phase and complement it with by a strong condom marketing, increased access to condoms in the area as well as to voluntary counseling and testing. ● Implement malaria, HIV/AIDS and STI education campaign targeting all workers hired, international and national, female and male, skilled, semi- and unskilled occupations, at the time of recruitment and thereafter pursued throughout the construction phase on ongoing and regular basis. This shall be complemented by easy access to condoms at the workplace as well as to voluntary counseling and testing.

ESTC 18: Social impacts

Project Activity/ Impact Source	Social Impacts	Mitigation Measures/ Management Guidelines
Civil works for infrastructure provision/ upgrade; Civil works for wetland rehab and flood risk reduction	Disruptions of utility services e.g. water/ electricity; Temporary loss of /restricted access to homes, businesses, agricultural fields or other natural livelihood assets; Noise, dust and other nuisances	The Contactor Shall: ● Inform the community at least 2 weeks before commencement of the construction. In case electricity and water supplies are to be disrupted, the project management must inform affected households and businesses of the same at least 2 days in advance. ● Limit construction activities at night. In case night construction is inevitable or in case construction causes a disruption of services (power supply, water supply, etc.), inform the community at least 2 days in advance and remind one day in advance. ● Place wooden planks over constructed ditches which have not been reinstated to ensure access to the households along the construction route. ● Inform the street household businesses of the construction activities and their potential impacts such, waste, dust, and noise, traffic, and construction schedule at least 2 weeks before start of the construction. ● Set up construction and traffic warning signs at the construction site. ● Provide safe and easy access to the household businesses putting clean and strong thick wood panels or steel plates over the open ditches. ● Will not gather materials and wastes within 20m from household businesses and shops. ● Will not use machines generating loud noise and high vibration levels near the businesses.

Project Activity/ Impact Source	Social Impacts	Mitigation Measures/ Management Guidelines
		● Spray sufficient water to suppress dust during dry and windy days at least three times a day at site. ● Deploy staff to guide the traffic during construction during transportation, loading and unloading of construction materials and wastes, and to guard high risk operations. ● Ensure successive supply of materials according to construction schedule, and tidy construction materials and stockpiles every working session. ● Clean up construction areas at the end of the day, especially construction areas in front of business shops. ● Provide night lighting system with luminously painted fence and night lamp.
	Community health and safety risks due to lack Inadequate/ineffective communication to local community	● Employ local laborers for simple tasks. Instruct workers on environmental issues, safety and health before construction tasks are assigned. It is advisable to communicate to migrant workers on local customs, practices and habits in order to avoid conflicts with local people. ● Maintain open communications channels with the local government and concerned communities; the contractor shall coordinate with local authorities (leaders of Cells or Villages, leaders of Sectors) for agreed schedules of construction operations in areas nearby sensitive places or during sensitive times (e.g. religious; sports events). ● Copies of Rwandan versions of these ESTCs and of other relevant environmental protection documents shall be made available to local communities and to workers at the site. ● Project information will be disseminated to affected parties (e.g. local authorities, businesses and affected households, etc.) through community meetings before construction commencement. ● A contact address will be provided to the community. ● The community will be provided with all information, especially technical findings, in a language that is understandable to the general public and in a form convenient to interested citizens and elected officials through the preparation of fact sheets and news releases, when major findings become available during project phase. ● Community concerns and requested information are to be monitored as the project progresses. ● Inquiries must be responded by telephone and written correspondence in a timely and accurate manner.

Project Activity/ Impact Source	Social Impacts	Mitigation Measures/ Management Guidelines
		● Local residents must be informed about construction and work schedules, interruption of services, traffic detour routes and provisional bus routes, demolition operations, as appropriate. ● Technical documents and drawings will be provided to local authorities, especially the sketch of construction areas and the ESMP of the construction site. ● Notification boards shall be erected at all construction sites providing information about the project, as well as contact information about the site managers, environmental staff, health and safety staff, telephone numbers and other contact information so that affected people could have a channel to voice their concerns and suggestions.

Annex 5: Example of GRM language

Procedures for Complaints

Registering Complaints

The RESPONSIBLE AUTHORITY will provide multiple access points to the Project's GM focal point for beneficiaries to voice their concerns. These access points will be advertised. They will include a complaint box at the RESPONSIBLE AUTHORITY's office, mail, telephone, email and website:

Address

Telephone

Email

Website

The RESPONSIBLE AUTHORITY will keep a log of issues brought to their attention verbally or in writing by Project affected communities or individuals. The RESPONSIBLE AUTHORITY will determine if these concerns rise to the level of a complaint.

The RESPONSIBLE AUTHORITY will register the complaint in a dedicated log, including a copy of the complaint and supporting documents. A draft template for registering grievances is found in Annex.

Tracking, Investigating and Resolving Complaints

The GM log maintained by the RESPONSIBLE AUTHORITY will track the date the complaint was received, date responded to, the type of response, and if the complaint was resolved to the satisfaction of the plaintiff.

The GM Focal Point will ensure prompt follow up action in response to each complaint. More specifically, the GM focal point will for named complaints:

1. *inform the plaintiff if the complaint is accepted or rejected within one week of receiving the complaint; any technical input from Project engineers; if necessary, the response will require input from Project engineers*
2. *if the complaint is accepted, send the plaintiff an officially stamped review card indicating:*
    - *plaintiff name or legal representative*

- *plaintiff address*
- *complaint title*
- *review date*
- *list of annexes submitted with the complaint*

3. *work with engineers, implementing partners, and contractors to resolve the complaint within 28 days of its submission*

The RESPONSIBLE AUTHORITY will include the log of complaints as part of The RESPONSIBLE AUTHORITY quarterly reporting to the World Bank.

Gender sensitivity

The RESPONSIBLE AUTHORITY will make the GRM gender sensitive by appointing female staff to:

- *inform women of the Project's GM and its procedures*
- *receive any project-related complaints from women*

Grievance Redress Service

http://pubdocs.worldbank.org/en/440501429013195875/GRS-2015-BrochureDec.pdf

The World Bank's Grievance Redress Service (GRS) provides an additional, accessible way for individuals and communities to complain directly to the World Bank if they believe that a World Bank-financed project had or is likely to have adverse effects on them or their community. The GRS enhances the World Bank's responsiveness and accountability by ensuring that grievances are promptly reviewed and responded to, and problems and solutions are identified by working together.

The GRS accepts complaints in English or the official language of the country of the person submitting the complaint. Submissions to the GRS may be sent by:

- *Email: grievances@worldbank.org*
- *Fax: +1-202-614-7313*
- *Letter: The World Bank*

  Grievance Redress Service (GRS)

  MSN MC 10-1018

  1818 H St NW

  Washington, DC 20433, USA

World Bank Inspection Panel

http://ewebapps.worldbank.org/apps/ip/Documents/Guidelines_How%20to%20File_for_web.pdf

The Inspection Panel is an independent complaints mechanism for people and communities who believe that they have been, or are likely to be, adversely affected by a World Bank-funded project. The Board of Executive Directors created the Inspection Panel in 1993 to ensure that people have access to an independent body to express their concerns and seek recourse. The Panel assesses allegations of harm to people or the environment and reviews whether the Bank followed its operational policies and procedures.

The Panel has authority to receive Requests for Inspection, which raise issues of harm as a result of a violation of the Bank's policies and procedures from:

- *Any group of two or more people in the country where the Bank financed project is located who believe that, as a result of the Bank's violation of its policies and procedures, their rights or interests have been, or are likely to be adversely affected in a direct and material way. They may be an organization, association, society or other group of individuals;*
- *A duly appointed local representative acting on explicit instructions as the agent of adversely affected people;*
- *In exceptional cases, a foreign representative acting as the agent of adversely affected people;*

- *An Executive Director of the Bank in special cases of serious alleged violations of the Bank's policies and procedures.*

The Panel may be contacted by:

email at ipanel@worldbank.org

phone at +1-202-458-5200

fax at +1 202-522-0916 (Washington, D.C.)

mail at: Inspection Panel, Mail Stop MC 10-1007, 1818 H Street, N.W., Washington, D.C. 20433, U.S.A.

Annex 6: Standardized Incident reporting format

INCIDENT REPORT FORMAT

To be completed by implementing agency/contractor staff within 24 hours of incident/accident

Incident date: ……..Incident Time: ……

Incident's place (District, Sector, Cell, Village: ……..

Injured/dead person name: ……..

Address: ……

Phone number: ……..

Male/Female:……..Date of Birth

Incident category:

Category 1: "Minor or negligible, no one was injured"

Category 2: Moderate, injuries with short term impairement

Category 3: Critical/ major, susceptible to lead to serious illness or death

Details of incident:

……

……

……

Who was injured person?: ……

Injury type: ……

Does injury require hospital/Physician?. Yes: ……No: ……..

Hospital name: ……

Address: ……

Hospital phone number: ……

Injured person/party signature/ date: ……/……..

Important notes / instructions

……

……

Prepared by: ……, Signature: ……..Date and time: ……..

Approved by: ……., Signature: ……, Date and time: ……..

Annex 7: Code of Conduct for Contractors and workers hired under VCRP project

General Code of Conduct to be inserted in the ESMP, ESTC in the Tender documents.

VCRP will comply with ESS2 and ESS4 and the Environmental, Social Health and Safety Guidelines of the WB (ESHS) and the Occupational Health and Safety (OHS) and Labor regulations of Rwanda. The following is a general Code of conduct to be inserted in the contract of contractors for civil works.

1. **Company Code of Conduct**

Company Code of Conduct

Implementing ESHS and OHS Standards

Preventing Gender Based Violence and Violence against Children

---

HNRB is committed to ensuring that the project is implemented in such a way which minimizes any negative impacts on the local environment, communities, and its workers. This shall be done by respecting the environmental, social, health and safety (ESHS) standards, and ensuring appropriate occupational health and safety (OHS) standards are met. The company is also committed to creating and maintaining an environment in which gender-based violence (GBV) and violence against children (VAC) have no place, and where they shall not be tolerated by any employee, associate, or representative of the company.

Therefore, in order to ensure that all those engaged in the project are aware of this commitment, the company (HNRB)commits to the following core principles and minimum standards of behavior that shall apply to all company employees, associates, and representatives including sub-contractors, without exception:

General

1. The company—and therefore all employees, associates, and representatives—commits to complying with all relevant national laws, rules and regulations and the World Bank Environmental and Social Standards which can read in the internet in this website:
    a. https://www.worldbank.org/en/projects-operations/environmental-and-social-framework
2. The contractor is responsible to comply with the requirements defined in ESMP Environmental and Social Technical Clauses (ESTC) which are both integral part of the contract.
3. The company commits to full implementing its 'Contractors Environmental and Social Management Plan' (C-ESMP) which will be prepared based on the ESIA/ESMP prepared by the government for the works.
4. The company commits to treating women, children (persons under the age of 18), and men with respect regardless of race, colour, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status. Acts of GBV and VAC are in violation of this commitment.
5. The company shall ensure that interactions with local community members are done with respect and non-discrimination.
6. Demeaning, threatening, harassing, abusive, culturally inappropriate, or sexually provocative language and behaviour are prohibited among all company employees, associates, and its representatives.
7. Respect to reasonable work instructions (including regarding environmental and social norms)
8. Protect and ensure proper use of property (for example, to prohibit theft, carelessness or waste)
9. Prohibit illegal activities by their workers such as: polluting the soil, rivers, wetlands, hunting, poaching wildlife, setting up fires, spilling diesel, oils in the soil, cutting trees without permit.

Health and Safety

10. The company shall ensure to hire professional in occupational health and safety to implement the ESMP and ESCT described in the bidding documents.
11. The company shall ensure that the project's occupational health and safety (OHS) management plan is effectively implemented, including wearing prescribed personal protective equipment, preventing avoidable accidents and reporting accidents of all type within less of 24 hours or conditions or practices in the project sites that pose a safety hazard or threaten the environment and the people.
12. The company will:
    a. Prohibit the use of alcohol during work activities.
    b. The company shall prohibit the use of illegal substances, at all times.
13. The company shall ensure that adequate eating, changing and sanitation facilities are available on site and at any worker accommodations provided by the contractor.
14. The company will obey labor, contracting and health and safety regulation in case of accidents, death and incapacity of workers (skilled or no skilled) and pay the compensation required by law.

Gender Based Violence and Violence against Children

15. Acts of GBV or VAC constitute gross misconduct and are therefore grounds for sanctions, which may include penalties and/or termination of employment. All forms of GBV and VAC, including grooming are unacceptable, regardless of whether they take place on the work site, the work site surroundings, at worker's camps or at worker's homes.
16. In addition to company sanctions, legal prosecution of those who commit acts of GBV or VAC shall be pursued if appropriate.
17. Sexual contact or activity with children under 18—including through digital media—is prohibited. Mistaken belief regarding the age of a child is not a defence. Consent from the child is also not a defence or excuse.
18. Sexual Harassment—for instance, making unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct, of a sexual nature, including subtle acts of such behavior, is prohibited. For example: Looking somebody up and down; kissing, howling or smacking sounds; hanging around somebody; whistling and catcalls; giving personal gifts; making comments about somebody's sex life; etc. is prohibited.
19. Sexual favours —for instance, making promises or favourable treatment dependent on sexual acts— or other forms of humiliating, degrading or exploitative behaviour are prohibited.
20. Unless there is full consent[31] by all parties involved in the sexual act, sexual interactions between the company's employees (at any level) and members of the communities surrounding the work-place are prohibited. This includes relationships involving the withholding/promise of actual provision of benefit (monetary or non-monetary) to community members in exchange for sex—such sexual activity is considered "non-consensual" within the scope of this Code.
21. All employees, including volunteers and sub-contractors are highly encouraged to report suspected or actual acts of GBV and/or VAC by a fellow worker, whether in the same company or not. Reports must be made in accordance with GBV and VAC Allegation Procedures.
22. Managers are required to report suspected or actual acts of GBV and/or VAC as they have a responsibility to uphold company commitments and hold their direct reports responsible.

Implementation

[31] **Consent** is defined as the informed choice underlying an individual's free and voluntary intention, acceptance or agreement to do something. No consent can be found when such acceptance or agreement is obtained through the use of threats, force or other forms of coercion, abduction, fraud, deception, or misrepresentation. In accordance with the United Nations Convention on the Rights of the Child, the World Bank considers that consent cannot be given by children under the age of 18, even in the event that national legislation of the country into which the Code of Conduct is introduced has a lower age. Mistaken belief regarding the age of the child and consent from the child is not a defense.

To ensure that the above principles are implemented effectively the company commits to ensuring that:

23. All managers sign the 'Manager's Code of Conduct' detailing their responsibilities for implementing the company's commitments and enforcing the responsibilities in the 'Individual Code of Conduct'.
24. All employees sign the project's 'Individual Code of Conduct' confirming their agreement to comply with ESHS and OHS standards, and not to engage in activities resulting in GBV or VAC.
25. Displaying the Company and Individual Codes of Conduct prominently and in clear view at workers' camps, offices, and in in public areas of the work-place. Examples of areas include waiting, rest and lobby areas of sites, canteen areas, health clinics.
26. Ensure that posted and distributed copies of the Company and Individual Codes of Conduct are translated into the appropriate language of use in the work site areas as well as for any international staff in their native language.
27. An appropriate person is nominated as the company's 'Focal Point' for addressing GBV and VAC issues, including representing the company on the GBV and VAC Compliance Team (GCCT) which is comprised of representatives from the client, contractor(s), the supervision consultant, and local service provider(s).
28. Ensuring that an effective GBV and VAC Action Plan is developed in consultation with the GCCT which includes as a minimum:
    a. **GBV and VAC Allegation Procedure** to report GBV and VAC issues through the project Grievance Redress Mechanism (GRM);
    b. **Accountability Measures** to protect confidentiality of all involved; and,
    c. **Response Protocol** applicable to GBV and VAC survivors and perpetrators.
29. That the company effectively implements the GBV and VAC Action Plan, providing feedback to the GCCT for improvements and updates as appropriate.
30. All employees attend an induction training course prior to commencing work on site to ensure they are familiar with the company's commitments to ESHS and OHS standards, and the project's GBV and VAC Codes of Conduct.
31. All employees attend a mandatory training course once a month for the duration of the contract starting from the first induction training prior to commencement of work to reinforce the understanding of the project's ESHS and OHS standards and the GBV and VAC Code of Conduct.

I do hereby acknowledge that I have read the foregoing Company Code of Conduct, and on behalf of the company agree to comply with the standards contained therein. I understand my role and responsibilities to support the project's OHS and ESHS standards, and to prevent and respond to GBV and VAC. I understand that any action inconsistent with this Company Code of Conduct or failure to take action mandated by this Company Code of Conduct may result in disciplinary action.

Company name: _____

Signature: _____

Printed Name: _____

Title: _____

Date: _____

2. Manager's Code of Conduct

Manager's Code of Conduct

Implementing ESHS and OHS Standards

Preventing Gender Based Violence and Violence Against Children

Managers at all levels have a responsibility to uphold the company's commitment to implementing the ESHS and OHS standards, and preventing and addressing GBV and VAC. This means that managers have an acute responsibility to create and maintain an environment that respects these standards and prevents GBV and VAC. Managers need to support and promote the implementation of the Company Code of Conduct. To this end, managers must adhere this Manager's Code of Conduct and also sign the Individual Code of Conduct. This commits them to supporting the implementation of the C-ESMP and the OHS Management Plan and developing systems that facilitate the implementation of the GBV and VAC Action Plan. They need to maintain a safe workplace, as well as a GBV-free and VAC-free environment at the workplace and in the local community. These responsibilities include but are not limited to:

Implementation

1. To ensure maximum effectiveness of the Company and Individual Codes of Conduct:
    a. Prominently displaying the Company and Individual Codes of Conduct in clear view at workers' camps, offices, and in in public areas of the work-place. Examples of areas include waiting, rest and lobby areas of sites, canteen areas, health clinics.
    b. Ensuring all posted and distributed copies of the Company and Individual Codes of Conduct are translated into the appropriate language of use in the work site areas as well as for any international staff in their native language.
2. Verbally and in writing explain the Company and Individual Codes of Conduct to all staff.
3. Ensure that:
    a. All direct reportees sign the 'Individual Code of Conduct', including acknowledgment that they have read and agree with the Code of Conduct.
    b. Staff lists and signed copies of the Individual Code of Conduct are provided to the OHS Manager, the GCCT, and the client.
    c. Participate in training and ensure that staff also participate as outlined below.
    d. Put in place a mechanism for staff to:
        i. report concerns on ESHS or OHS compliance; and,
        ii. confidentially report GBV or VAC incidents to the Grievance Redress Mechanism (GRM)
    e. Staff are encouraged to report suspected or actual ESHS, OHS, GBV or VAC issues, emphasizing the staff's responsibility to the Company and the country hosting their employment, and emphasizing the respect for confidentiality.
4. In compliance with applicable laws and to the best of your abilities, prevent perpetrators of sexual exploitation and abuse from being hired, re-hired or deployed. Use background and criminal reference checks for all employees.
5. Ensure that when engaging in partnership, sub-contractor or similar agreements, these agreements:
    a. Incorporate the ESHS, OHS, GBV and VAC Codes of Conduct as an attachment.
    b. Include the appropriate language requiring such contracting entities and individuals, and their employees and volunteers, to comply with the Individual Codes of Conduct.
    c. expressly state that the failure of those entities or individuals, as appropriate, to ensure compliance with the ESHS and OHS standards, take preventive measures against GBV and VAC, to investigate allegations thereof, or to take corrective actions when GBV or VAC has occurred, shall constitute grounds for sanctions and penalties in accordance with the Individual Codes of Conduct.

6. Provide support and resources to the GCCT to create and disseminate internal sensitization initiatives through the awareness-raising strategy under the GBV and VAC Action Plan.
7. Ensure that any GBV or VAC issue warranting police action is reported to the client and the World Bank immediately.
8. Ensure that any major ESHS or OHS incidents are reported to the client and the supervision engineer immediately.

Training

9. The managers are responsible to:
    a. Ensure that the OHS Management Plan is implemented, with suitable training required for all staff, including sub-contractors and suppliers; and,
    b. Ensure that staff have a suitable understanding of the C-ESMP and are trained as appropriate to implement the C-ESMP requirements.
10. All managers are required to attend an induction manager training course prior to commencing work on site to ensure that they are familiar with their roles and responsibilities in upholding the GBV and VAC elements of these Codes of Conduct. This training shall be separate from the induction training course required of all employees and shall provide managers with the necessary understanding and technical support needed to begin to develop the GBV and VAC Action Plan for addressing GBV and VAC issues.
11. Managers are required to attend and assist with the project facilitated monthly training courses for all employees. Managers shall be required to introduce the trainings and announce the self-evaluations, including collecting satisfaction surveys to evaluate training experiences and provide advice on improving the effectiveness of training.
12. Ensure that time is provided during work hours and that staff prior to commencing work on site attend the mandatory project facilitated induction training on:
    a. OHS and ESHS; and,
    b. GBV and VAC required of all employees.
13. During civil works, ensure that staff attend ongoing OHS and ESHS training, as well as the monthly mandatory refresher training course required of all employees to combat increased risk of GBV and VAC.

Response

14. Managers shall be required to take appropriate actions to address any ESHS or OHS incidents.
15. With regard to GBV and VAC:
    a. provide input to the GBV and VAC Allegation Procedures and Response Protocol developed by the GCCT as part of the final cleared GBV and VAC Action Plan.
    b. Once adopted by the Company, managers shall uphold the Accountability Measures set forth in the GBV and VAC Action Plan to maintain the confidentiality of all employees who report or (allegedly) perpetrate incidences of GBV and VAC (unless a breach of confidentiality is required to protect persons or property from serious harm or where required by law).
    c. If a manager develops concerns or suspicions regarding any form of GBV or VAC by one of his/her direct reportees, or by an employee working for another contractor on the same work site, s/he is required to report the case using the GRM.
    d. Once a sanction has been determined, the relevant manager(s) is/are expected to be personally responsible for ensuring that the measure is effectively enforced, within a maximum timeframe of 14 days from the date on which the decision to sanction was made
    e. If a manager has a conflict of interest due to personal or familial relationships with the survivor and/or perpetrator, he/she must notify the respective company and the GCCT. The Company shall be required to appoint another manager without a conflict of interest to respond to complaints.

16. Managers failing to address ESHS or OHS incidents or failing to report or comply with the GBV and VAC provisions may be subject to disciplinary measures, to be determined and enacted by the company's CEO, Managing Director or equivalent highest-ranking manager. Those measures may include:
    f. Informal warning.
    g. Formal warning.
    h. Additional Training.
    i. Loss of up to one week's salary.
    j. Suspension of employment (without payment of salary), for a minimum period of 1 month up to a maximum of 6 months.
    k. Termination of employment.
17. Ultimately, failure to effectively respond to ESHS, OHS GBV and VAC cases on the work site by the company's managers or CEO may provide grounds for legal actions by authorities.

I do hereby acknowledge that I have read the foregoing Manager's Code of Conduct, do agree to comply with the standards contained therein and understand my roles and responsibilities to prevent and respond to ESHS, OHS GBV and VAC requirements. I understand that any action inconsistent with this Manager's Code of Conduct or failure to take action mandated by this Manager's Code of Conduct may result in disciplinary action.

Signature: _____

Printed Name: _____

Title: _____

Date: _____

3- Code of Conduct to be signed by individual workers (skilled and unskilled, casual or no casual)

VCRP will comply with ESS2 and ESS4 and the Environmental, Social Health and Safety Guidelines of the WB (ESHS) and the Occupational Health and Safety (OHS) and Labor regulations of Rwanda. The following is Code of conduct to be inserted in the contract of workers for civil works.

3. Code of Conduct to be signed by individual workers (skilled and unskilled, casual or no casual)

Preventing Gender Based Violence (GBV) and Violence against Children (VAC)

I, _____, acknowledge that adhering to environmental, social health and safety (ESHS) standards, following the project's occupational health and safety (OHS) requirements, and preventing gender-based violence (GBV) and violence against children (VAC) is important. All forms of GBV or VAC are unacceptable, be it on the work site, the work site surroundings, at worker's camps, or the surrounding communities.

The company considers that failure to follow ESHS and OHS standards, or to partake in GBV or VAC activities, constitute acts of gross misconduct and are therefore grounds for sanctions, penalties or potential termination of employment. Prosecution of those who commit GBV or VAC may be pursued if appropriate.

I agree that while working on the project I will:

- Attend and actively partake in training courses related to ESHS, OHS, HIV/AIDS, GBV and VAC as requested by my employer.
- Shall wear my personal protective equipment (PPE), in the correct prescribed manner, at all times when at the work site or engaged in project related activities.
- Take all practical steps to implement the contractor's environmental and social management plan (CESMP).
- Implement the OHS Management Plan.
- Adhere to a zero-alcohol policy during work activities, and refrain from the use of illegal substances at all times.
- Consent to a police background check.
- Treat women, children (persons under the age of 18), and men with respect regardless of race, color, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status.
- Not use language or behavior towards women, children or men that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate.
- Not participate in sexual contact or activity with children—including grooming or contact through digital media. Mistaken belief regarding the age of a child is not a defense. Consent from the child is also not a defense or excuse.
- Not engage in sexual harassment—for instance, making unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct, of a sexual nature, including subtle acts of such behavior. Ex. Looking somebody up and down; kissing, howling or smacking sounds; hanging around somebody; whistling and catcalls; giving personal gifts; making comments about somebody's sex life; etc.
- Not engage in sexual favors—for instance, making promises or favorable treatment dependent on sexual acts—or other forms of humiliating, degrading or exploitative behavior.
- Unless there is the full consent[32] by all parties involved, I shall not have sexual interactions with members of the surrounding communities. This includes relationships involving the withholding or promise of actual provision of benefit (monetary or non-monetary) to community members in

[32] **Consent** is defined as the informed choice underlying an individual's free and voluntary intention, acceptance or agreement to do something. No consent can be found when such acceptance or agreement is obtained through the use of threats, force or other forms of coercion, abduction, fraud, deception, or misrepresentation. In accordance with the United Nations Convention on the Rights of the Child, the World Bank considers that consent cannot be given by children under the age of 18, even in the event that national legislation of the country into which the Code of Conduct is introduced has a lower age. Mistaken belief regarding the age of the child and consent from the child is not a defense.

exchange for sex—such sexual activity is considered "non-consensual" within the scope of this Code.

- Consider reporting through the GRM (Grievance Redress Mechanism) or to my manager any suspected or actual GBV or VAC by a fellow worker, whether employed by my employer or not, or any breaches of this Code of Conduct.

With regard to children under the age of 18:

- Wherever possible, ensure that another adult is present when working in the proximity of children.
- Not invite unaccompanied children unrelated to my family into my home, unless they are at immediate risk of injury or in physical danger.
- Not sleep close to unsupervised children unless absolutely necessary, in which case I must obtain my supervisor's permission, and ensure that another adult is present if possible.
- Use any computers, mobile phones, or video and digital cameras appropriately, and never to exploit or harass children or to access child pornography through any medium (see also "Use of children's images for work related purposes" below).
- Refrain from physical punishment or discipline of children.
- Refrain from hiring children for domestic or other labor which is inappropriate given their age or developmental stage, which interferes with their time available for education and recreational activities, or which places them at significant risk of injury.
- Comply with all relevant local legislation, including labor laws in relation to child labor.

Use of children's images for work related purposes

When photographing or filming a child for work related purposes, I must:

- Before photographing or filming a child, assess and endeavor to comply with local traditions or restrictions for reproducing personal images.
- Before photographing or filming a child, obtain informed consent from the child and a parent or guardian of the child. As part of this I must explain how the photograph or film shall be used.
- Ensure photographs, films, videos and DVDs present children in a dignified and respectful manner and not in a vulnerable or submissive manner. Children should be adequately clothed and not in poses that could be seen as sexually suggestive.
- Ensure images are honest representations of the context and the facts.
- Ensure file labels do not reveal identifying information about a child when sending images electronically.

Sanctions

I understand that if I breach this Individual Code of Conduct, my employer shall take disciplinary action which could include:

- Informal warning.
- Formal warning.
- Additional Training.
- Loss of up to one week's salary.
- Suspension of employment (without payment of salary), for a minimum period of 1 month up to a maximum of 6 months.
- Termination of employment.
- Report to the police if wanted.

I understand that it is my responsibility to ensure that the environmental, social, health and safety standards are met. That I shall adhere to the occupational health and safety management plan. That I shall avoid actions or behaviours that could be construed as GBV or VAC. Any such actions shall be a breach this Individual Code of Conduct. I do hereby acknowledge that I have read the foregoing Individual Code

of Conduct, do agree to comply with the standards contained therein and understand my roles and responsibilities to prevent and respond to ESHS, OHS, GBV and VAC issues. I understand that any action inconsistent with this Individual Code of Conduct or failure to take action mandated by this Individual Code of Conduct may result in disciplinary action and may affect my ongoing employment.

Signature: _____

Printed Name: _____

Title: _____

Date: _____

Contractor_____
Supervisor_____
Date_____

Annex 8: BMP matrices

Matrix 1: Mitigation measures and management controls

Biodiversity component	Potential Impacts	Sources of Impact	Management Measure	Performance Indicators	Timing	Responsibilities	Cost

Matrix 2: Monitoring

Biodiversity component	Objectives/targets	Methods	Location	Frequency	Costs

Annex 9: Attendance lists and photolog of consultations and FGDs VCRP

List of participants and stakeholder consultation meeting held at classic resort hotel in Musanze district.

Republic of Rwanda

RWANDA ENVIRONMENT MANAGEMENT AUTHORITY (REMA)

REMA

Attendance list: Environmental and Social Framework (ESF) Instruments for Volcanoes Climate Resilient Project (VCRP)

Number	Names/ Amazina	Position/ organisation or institution	E-mail and phone number	Gender	Signature
1.	Fidele Bingwa	Strategic Advisor/RWB	fidele.bingwa@rwb.rw	M	
2.	MUSHI MZIMANA	Ag - DG/RWB	jeanmarielabbey.mushugizimana@rwb.rw	M	
3.	MUSAFIRI Godfrey	River Flood Control Specialist Team leader	godfrey.musafiri@rwb.rw	M	
4.	NDAYAMBAJE Evode	Erosin Control Specialist/RWB	evode.ndayambaje@rwb.rw	M	
5.	BIGANZA Thierry	REMA/Env. Risk Mgt Specialist	tbiganza@rema.gov.rw	M	
6.	NDAYISABA Cyprien	MOE E&S Safeguard Expert	cndayisaba@environment.gov.rw	M	
7.	DAVID NDOLI RUTABINGWA	Environmentalist/ Eco-Excellency consultancy	david.ndoli7@gmail.com	M	
8.	Jotwé Roger SAMATA	Eco-excellency consultancy/ Environmentalist	Jotwasamata@gmail.com	M	
9.	KIMONYO Augustin	Consultant/Eco-Excellency	akimonyo@yahoo.com	M	
10.	J. Amour DUSABIMANA	consultant/Eco-Excellence	dusamoy@gmail.com	M	
11.	Samuel NSHUTI YAYEMA	Consultant/Eco-Excellency	nshutiyayema@gmail.com	M	
12.	RWIBUKA EMMANUEL	Consultant/Eco Excellence	emugiliza65@gmail.com	M	

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NDF Nordic Development Fund

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RWANDA ENVIRONMENT MANAGEMENT AUTHORITY (REMA)

Burera

Number	Names/ Amazina	Position/ organisation or institution	E-mail and phone number	Gender	Signature
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					

List of participants of the consultation meeting held in Burera district at Gahunga sector office

RWANDA ENVIRONMENT MANAGEMENT AUTHORITY (REMA)

Republic of Rwanda

REMA

Burera District | Gahunga Sector

Number	Names/ Amazina	Position/ organisation or institution	E-mail and phone number	Gender	Signature
46.	SONKA SILVIN	Team leader/ Eco-Excellence Consultancy	mapetable7@gmail.com / 0788358191	M	
47.	DAVID NDOLI	Environmentalist/Eco Excellence	david.ndoli7@gmail.com 0781485160	M	
48.	DUSABIMANA Jean d'Amour	Hydrologist /Eco Excellence	dusamou@gmail.com 0788333074	M	
49.	TUYIKOREZE Alekandre	District Environment officer	aletuyi81@gmail.com	M.	
50.	MUGIRANEZA Ignace	ES GAHUNGA Secteur	mugignace2016@gmail.com	M	
51.	Immaculée NIYITEGEKA	Forest officer	niyimmaculee1@gmail.com	F	
52.	MUGABUHAMYE Olivier	DASSO Coordinator	mugabolivier2019@gmail.com 0783524663	M	
53.	MUDACOGORA Faustin	Agronome	mudacogora7@gmail.com 0788773630	M	
54.	AMARIZA Vivine	MOE: community engagement & dvpt expert	amarizavivine@gmail.com	f	
55.	Shyirambere Joseph	SG-dor/ Consultant	shyirambere23@gmail.com	M	
56.	SIFA Seraphine	Guides Expert	Sifaseraphine@gmail.com	F	
57.	Richard Ngendahayo	Env. Specialist River Flood Control Specialist	0788306105 rngendahayo5@yahoo.com	m	
58.	MUSAFIRI Godfrey	Team Leader	godfrey.musafiri@rwb.rio 0785781877	m	

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RWANDA ENVIRONMENT MANAGEMENT AUTHORITY (REMA)

Meeting with Population in Burera District Gahunga Sector

Number	Names/ Amazina	Position/ organisation or institution	E-mail and phone number	Gender	Signature	Age
35.	Nyirabikari Gaterina	Nyamugo / Ancadats		F		70 year
36.	Mukandinda Veronique	Ancadats / umuturage		F		40 year
37.	Akamwiza Donatha	Married / umuturage		F		69 ans
38.	Ngirabatware Augustin	Married / umuturage	0785607448	M		63 ans
39.	Bugingo Mathias	Married / umuturage		M		67 ans
40.	Renzaho	Widowed / umuturage		F		60 years
41.	HABIMANA Jonas	Married / umuturage	0784707869	M		28 Pers
42.	HATEGEKIMANA Fidel	Married / umuturage	0782314672	M		46 Pers
43.	Sendegeya Emanuel	Married / umuturage	0783296697	M		69
44.	Ntawukomumabo Emirite	Married / umuturage	0785170474	M		56 pers
45.	Munyankuri J. Baptiste	Married / vice Secto	0787139154	M		67

RWANDA ENVIRONMENT MANAGEMENT AUTHORITY (REMA)

FGD in Burera district / Gahunga sector

Number	Names/ Amazina	Position/ organisation or institution	E-mail and phone number	Gender	Signature	Age
24.	Ngaramba Emmanuel	Married/umuturage		M		62yrs
25.	Semiteja Joseph	Marie d/umuturage	0789347396	M		48
26.	Munyambanza Cyp	Umuturage	0786422230	M		68
27.	Senzira Jovepo	Married/umuturage		M		60
28.	Munyambo J Baptiste	Married/Widowed	0784423346	M		79yrs
29.	Munyamasoko	Married/umuturage	0784617472	M		68yrs
30.	Kabwabuza Ethias	umuturage	0786593926	M		54yrs
31.						
32.						
33.						
34.						

Photolog of stakeholders and focused group discussions held in Burera district, Gahunga sector

List of participants of the consultation meeting held in Musanze district, Cyuve sector

Republic of Rwanda (REMA) People meetings in Musanze District / Cyuve sector

Number	Names/ Amazina	Position/ organisation or institution	E-mail and phone number	Gender	Signature	Age
35.	Ntirenganya Angelique	umuturage	No phone number	F		23
36.	Nsabimana Damascene	umuturage	0786149697	M		33
37.	Nsengiyumva Fabrice	umuturage	0785522806	M		17
38.	Hagenimana	umuturage	0782789988	F		25
39.	Manirakiza Celestin	umuturage	0785693958	M		37
40.	Nyirangirimana	umuturage	0783121986	F		25
41.	Manirarora Faustin	umuturage	0784321575	M		43
42.	Twizeyimana J. Paul	umuturage	0785595401	M		28
43.	Icyitegetse Rosette	umuturage	0789311975	F		46
44.	Akimanizanye Clementine	umuturage	0788647509	F		60
45.	Nyiraha bikimana Gerande	umuturage	Has no phone	F		60

Republic of Rwanda (REMA) People meetings Muhanga District / Cyuve sector

Number	Names/ Amazina	Position/ organisation or institution	E-mail and phone number	Gender	Signature	Age
35.	Mukangwiza Pelagie	Umuturage	N/A	F		57
36.	Nyirampabanize Beatrice	Umuturage	0781282775	F		41
37.	Febroni Mukabeyimana	Umuturage	N/A	F		58
38.	Nyiraruzza stephanie	umuturage	N/A	F		69
39.	Nyirampabanize Akalle	umuturage	N/A	F		58
40.	Nyirabihimana Leoni	umuturage	N/A	F		28
41.	Nyiraziramba Venancie	Umuturage	N/A	F		50
42.	Triphonie Mukeshimana	Umuturage	0785436240	F		>53
43.	KAGENGERA Seraphin	Umuturage	0783778619	F		43
44.	NTAMAHUNGIRO Bernard	Umuturage	N/A	F		55
45.	Mukamusoni Monique	Umuturage	0780315603	F		33

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Republic of Rwanda (REMA) Meetings in Musanze District / Cyuve sector

Number	Names/ Amazina	Position/ organisation or institution	E-mail and phone number	Gender	Signature	Age
35.	Stange Mbanzabamwa	Umuturage	N/A	F		40
36.	Nyiraderyambaje Etera	Umuturage	0786818053	F		95 46
37.	Nyirabarura Vestine	Umuturage	0784320559	F		
38.	Bahumanpeho Jacqueline	Umuturage	N/A	F		49
39.	Uzamubuda Jacqueline	Umuturage	0782533564	F		37
40.	Nizeyimana Liliane	Umuturage	0736066217	F		29
41.	Zaninka Jeanette	Umuturage	0785266357	F		62
42.	Twagirayezu	Umuturage	N/A	M		62
43.	Bagora Jovas	Umuturage	0785060556	M		60
44.	Nahimana Emmanuel	Umuturage	0785531071	M		62
45.	Ndimuyimana J.D.Dieu	Umuturage	0781504801	M		34

Republic of Rwanda (REMA) People meetings in Musanze district / Cyuve sector

Number	Names/ Amazina	Position/ organisation or institution	E-mail and phone number	Gender	Signature	Age
35.	Niyonsaba Beloniile	Umuturage	0784775857	F		33
36.	Nyirabyimana Belonille	umuturage	N/A	F		63
37.	Mukiziguminina Alphonsine	umuturage	0783294499	F		23
38.	Ngwageze Yusuf	umuturage	N/A	M		61
39.	Niyonsaba Jacqueline	umuturage	0785894347	F		50
40.	Nyirabarayiwa Beatrice	umuturage	N/A	F		79
41.	N. Karibwa Gaudence	umuturage	0789602243	F		45
42.	Kamuzigha Rose	umuturage	0782420018	F		39
43.	Munyanirembo Joseph	umuturage	0789508893	M		57
44.		~~Umuturage~~				
45.						

Republic of Rwanda (REMA) People meetings in Musanze district / Cyuve sector

Number	Names/ Amazina	Position/ organisation or institution	E-mail and phone number	Gender	Signature	Age
35.	NYIRAKAMANA Providence	Umuturage	0781626624	F		42
36.	KAYINAMURA Eldephonse	Umuturage	N/A —	M		70
37.	MUKAKALISA Clementine	Umuturage	0788223993	F		35
38.	KWIZERA Alphonse	Umuturage	0785640102	M		45
39.	HASANGIRUFITE Felicien	Umuturage	0785408852	M		67
40.	UWANYIRIGIRA Marie Louise	Umuturage	N/A	F		30
41.	NYIRANZABONIMPA Vestine	Umuturage	0789309531	F		53
42.	NYIRAMPAKANIYE Jacqueline	Umuturage	0784110861	F		47
43.	NYIRABUGIRIGIRI Jacqueline	Umuturage	0780517307	F		51
44.	MUSHIMYIMANA Orange	Umuturage	0790842828	F		20
45.	NTAGISANIMANA Emerance	Umuturage	0790714096	F		19

Republic of Rwanda (REMA) People meetings in Musanze District/Gure sector

Number	Names/ Amazina	Position/ organisation or institution	E-mail and phone number	Gender	Signature	years
35.	RWATAMBUGA Cyprien	Umuturage	078333G162	M		54
36.	SIBOMANA Feliciem	Umuturage	0784229729	M		28
37.	NYIRAHABIYAREMYE Clementine	Umuturage	0780875572	F		40
38.	ICYIMANIZANYE Immaculée	Umuturage	0786060702	F		24
39.	MUKANGANGO Petronille	Umuturage	0789576506	F		50
40.	HABIYAKARE Laurent	Umuturage	N/A	M		70
41.	UWIMANA Marie Josée	Umuturage	0786716130	F		40
42.	ABIZERA Lidivine	Umuturage	0725469738	F		20
43.	BYIRINGIRO Theogène	Umuturage	0782684560	M		26
44.	UWAMAHORO Claudine	Umuturage	0780260731	F		38
45.	MURWANASHYAKA Honeste	Umuturage	0786324635	M		33

Republic of Rwanda (REMA) People meetings in Musanze district / Cyuve sector

Number	Names/ Amazina	Position/ organisation or institution	E-mail and phone number	Gender	Signature	years
35.	MBONABUCYA Daphael	Umuturage	0785309591	M		60
36.	BUCYENSENGE Gabriel	Umuturage	0787433939	M		31
37.	NYIRANSHUBWIMANA Claudine	Umuturage	N/A	F		37
38.	NTAGWANIMANA Claudine	Umuturage	N/A	F		22
39.	IMANIZABAYO Solange	Umuturage	0792513818	F		29
40.	NIYOGUSHIMWA Daniel	Umuturage	0783750696	M		20
41.	HAVUGIMANA Adrien	Umuturage	0791924913	M		20
42.	UWUNDANE Diane	Umuturage	0791906959	F		19
43.	NTEZIRIZAZA Jean Paul	Umuturage	0781924536	M		28
44.	NZABONIMPA Abraham	Umuturage	0782105946	M		38
45.	NKURIKIYINKA Emmanuel	Umuturage	0787212190	M		45

Republic of Rwanda (REMA) People meetings in Musanze District/Cyuve Sector

Number	Names/ Amazina	Position/ organisation or institution	E-mail and phone number	Gender	Signature	Age
35.	NKAMIRABATANYUKWA Joel	Umuturage	0788224074	M		42
36.	NYIRAMPABANZI esperance	Umuturage	N/A	F		60
37.						
38.						
39.						
40.						
41.						
42.						
43.						
44.						
45.						

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Photolog of participants and public consultations meeting held in Musanze district, Cyuve sector

List of participants of the consultation meeting held in Nyabihu district Mukamira sector, Kanyove cell.

Republic of Rwanda (REMA)

NYABIHU district
MUKAMIRA Sector, kanyove cell

Number	Names/ Amazina	Position/ organisation or institution	E-mail and phone number	Gender	Signature	
35.	MUSABYIMANA Alliance	Umuturage	—	F		32
36.	INGABIRE Valentine	Umuturage	—	F		29
37.	BARIMUNGU Jean Damascene	Umuturage	0725224907	M		28
38.	NYIRANZABONIMPA Athalie	Umuturage	—	F		65
39.	MUNEZERO Gertilde	Umuturage	0781826985	F		31
40.	NYIRANSABAZI Diane	Umuturage	0784535354	F		31
41.	BITHRA Joseph	Umuturage	0780213904	M		49
42.						
43.						
44.						
45.						

Republic of Rwanda (REMA)

MYABIHU District
MUKAMIRA Sector, Kanyove Cell

Number	Names/ Amazina	Position/ organisation or institution	E-mail and phone number	Gender	Signature	
35.	UWAMAHORO Julatisque	Umuturage	-	M		20
36.	KWIZERA Placide	Umuturage	0760234506	M		20
37.	HABIMANA Alexis	Umuturage	0786214496	M		49
38.	TUYISHIME Deodonné	Umuturage	0785617838	M		38
39.	TWIBEKIMANA J. Bosco	Umuturage	0739864.9078	M		39
40.	Innocent NSABIMANA	Umuturage	0785012860	M		37 ans
41.	PHOCAS TUGIRAMAHIRWE	Umuturage	0788787316	M		42 ans
42.	BIMENYIMANA J. Pierre	Umuturage	0783864716	M		42
43.	MBARUSHIMANA Elisaphan	Umuturage	0787209401	M		40
44.	NSENGIMANA François	Umuturage	0782406444	M		41
45.	UWINEZA Verline	Umuturage	0786474001	F		29

Republic of Rwanda (REMA)

NYABIHU District
MUKAMIRA Sector, Icyapa Cell

Number	Names/ Amazina	Position/ organisation or institution	E-mail and phone number	Gender	Signature	
35.	KOFI Pierre	Umuturage	073362695	M		27
36.	MUKAMAKUZA Chantal	Umuturage	—	F		32
37.	MUKAMBWAMBUTSA Felicité	Umuturage	0784400449	F		66
38.	NYIRABAFUNGU Speciose	Umuturage	0783817896	F		60
39.	IYAMUREMYE Jean Claude	Umuturage	0783389334	M		45
40.	NSABIYERA Lea	Umuturage	0784352695	F		51
41.	NZABONIMPA Gaudence	Umuturage	—	F		51
42.	NYIRARUKUNDO Fabiadi	Umuturage	—	F		55
43.	NIRERE Clementine	Umuturage	—	F		27
44.	KURABUSENGE Rose	Umuturage	0792427000	F		30
45.	NYIRANSABIMANA Angelique	Umuturage	0783521021	F		46

Republic of Rwanda (REMA)

NYABIHU District
MUKAMIRA Sector, Kunyove cell

Number	Names/ Amazina	Position/ organisation or institution	E-mail and phone number	Gender	Signature	Age
35.	UMUTESI Diane	Umuturage	0791176631	F		24
36.	UMUHOZA Oricelle	Umuturage	0792336302	F		23
37.	MUTEZINKA Beatrice	Umuturage	0791016250	F		42
38.	TUYISHIME Epimaque	Umuturage	0781625489	M		34
39.	NTAMWIRINGIRA Leocadie	Umuturage	—	F	—	66
40.	NIYOYITA Christine	Umuturage	0782945195	F		21
41.	NDOLIMANA Emmanuel	Umuturage	0780393862	M		44
42.	NTEZIRYAYO Cyriaque	Umuturage	0787650450	M		30
43.	HABUMUGISHA Norbert	Umuturage	0784322026	M		24
44.	NIREMBERE Savio	Umuturage	0784030814	M		43
45.	NIYONSENGA Bernard	Umuturage	0785617792	M		38

Photolog of participants in public consultations meeting held in Nyabihu district, Mukamira sector, Kanyove cell

List of participants of the consultation meeting held at Ngororero district, Matyazo sector at Rubagabaga bridge

Republic of Rwanda (REMA) Public consultations in Ngororero district, Matyazo sector

Number	Names/ Amazina	Position/ organisation or institution	E-mail and phone number	Gender	Signature	
35.	NIHAWENIMANA Jean d'amour	UMUDUGUDU	0786042856	M		35
36.	MUKORERA Agnès	UMUDUGUDU	N/A	F		72
37.	MUKARESHYA Scholastique	UMUDUGUDU	0799345490	F		57
38.	NIYIRAGUHA Marie Jeanne	UMUDUGUDU	0799345490	F		38
39.	NYIRANSABA Claudine	UMUDUGUDU	0782973653	F		35
40.	MUKAMUSENGA Denise	UMUDUGUDU	0799345490	F		81
41.	AKIMANIMANA Stéphanie	UMUDUGUDU	0780083944	F		21
42.	UWIMANA Claisse	UMUDUGUDU	0790089826	F		83
43.	NYIRAMANA Marthe	UMUDUGUDU	N/A	F		30
44.	NDAGIJIMANA Joseph	UMUDUGUDU	0789789662	M		69
45.	NIYIRAKIZA Cyprien	UMUDUGUDU	0788833495	M		25

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Public consultations in Ngororero district
Matyazo sector

Date: 04 /05/2023

Participants during the Stakeholder/Community Engagement for the Volcanoes Climate Resilience project (VCRP)

Name of participant/ *Amazina*	Institution/*Aho ukora cyangwa aho ubarizwa*	~~Position/ Icyo ushinzwe~~ Gender	Contact. Tel./Email/*Numero ya telefoni*	Signature	Age
Safipin Hategekimana	Umuturage/ubuhinzi	M	0784318536		53
Habimana Innocent	umuturage/ubuhinzi	M	0789079343		44
Masabyimana Alphonse	Umuturage/Ubuhinzi	M	0785596995		57
Mutiyagu Alphonsine	Umuturage/Ubuhinzi	F	0780056571		60
Niyigaba Pacifique	Umuturage	M	0787207634		26
Nshimiyimana Vincent	umuturage	M	0787145508		35
Nzanjin D Emmanuel	Umuturage	M	N/A		65
Uwizeyimana Diane	Umuturage	F	N/A		19
Ndikolababeryo Innocent	umuturage	M	0783010309 D		30
Mukunzi David	umuturage	M	0787620359		29
Nzitabatuma Michel	Umuturage	M	0781030445		70
Mugiraneza Maria	Umuturage	F	0784517201		45
Nzabirinda Felicien	Umuturage	M	0790295853		35

NGORORERO District
MATYAZO Sector

Republic of Rwanda (REMA)

Number	Names/ Amazina	Position/ organisation or institution	E-mail and phone number	Gender	Signature	AGE
35.	BAZORANYIMANA Jean Damascene	UMUHINZI	0780379915	M		53
36.	NDAYAMBAJE Jerome	UMUHINZI	0788886531	M		38
37.	KANYAMANA Jean de Dieu	UMUHINZI	0781658886	M		48
38.	NDEREYIMANA Beatrice	UMUHINZI	0787381536	F		52
39.	MUTONYIMANA Marie Rose	UMUHINZI	0788686598	F		49
40.	NSHIKUBWAYO Fulgence	Agronome/ Nyabago	0788670424	M		52
41.	Alphonse Subveni	Electrician Operator (Plant Operator)	0782008303	M		31
42.	NTIBURINGIRWA Innocent	Ex. Secretary of BINAMA Cell/Matyazo	Inonatiburingirwa@gmail.com 0783553913	M		43
43.	MANIRAGABA Louben	Président wa COOPERATIVE	0783297746	M		53
44.	Ntezimbanda Thomas	Umuturage/Ubuhinzi	N/A	M		70
45.	Habegebimana J.Claude	Umunyonzi	0787380539	M		20

RWANDA ENVIRONMENT MANAGEMENT AUTHORITY (REMA)

NGORORERO District
MATYAZO Sector

Number	Names/ Amazina	Position/ organisation or institution	E-mail and phone number	Gender	Signature
68.	[illegible] Giniagne	Umuturage	0781307061	M	63
69.	NGOMANDUHIRU Alphonse	Umuturage	0780663242	M	63
70.	MUHAWENIMANA BOSCO	Umuturage	0788583048	M	64
71.	IZABAYO J. Baptiste	Umuturage	0788787113	M	34
72.	NYIRABAMANI Godeleva	Umuturage	0782777464	F	24

RWANDA ENVIRONMENT MANAGEMENT AUTHORITY (REMA) REMA Public consultations · Ngororero District MATYAZO Sector

Number	Names/ Amazina	Position/ organisation or institution	E-mail and phone number	Gender	Signature
57.	Uwamuriza Shadrack	Umuturage	0792557571	M	
58.	Habarurema Gilbert	Umuturage	0783878763	M	
59.	Oswald Nsanzumuhire	Teacher	0786391468	M	
60.	Bafanyage Gilbert	Umuturage	0782718919	M	
61.	Nyirazabimana Marie	Umuturage	0782485368	F	
62.	Mutabazwa J.Nepo	umuturage		M	
63.	Ntabangaimana silvaki	Umuturage	0782145348	M	
64.	Busengimana Evariste	Umuturage	0782089954	M	
65.	Bacumuriha Utopha	Umuturage	0780829353	M	
66.	Nyiraba Damascene	Umuturage	0792433177	M	
67.	Ndereyimana Gilbert	umuturage	0783461152	M	

Public consultations in Ngororero District
MATYAZO sector

Date: 04 / 07 /2023

Participants during the Stakeholder/Community Engagement for the Volcanoes Climate Resilience project (VCRP)

Name of participant/ *Amazina*	Institution/*Aho ukora cyangwa aho ubarizwa*	~~Position/ Icyo ushinzwe~~ GENDER	Contact. Tel./Email/*Numero ya telefoni*	Signature	
NIWAMARIYA Jacqueline	Umuturage	F	0780044120		50
NYAKARENYE BEATA	Umuturage	F	0788862553		33
GASHUMBA pierre J.	Umuturage	M	0785060695		28
NZEYIMANA MICHAEL	Umuturage	M	0788743392		27
MUKANYIRIGIRA LEA	Umuturage	F	0780167071		45
HAKIZIMANA Léonidas	Umuturage	F	0785177286		47
NKURUNZIZA Silas	Umuturage	M	0788963407		36
NZEYIMANA Sylvestre	Umuturage	M	0780044120		20
NIYONKURU Fidel	UMUNYONJI	M	0789697246		23

District : Nyamirero
Sector : Matyazo
Cell : Kabaretes & Kavumu

Date: 04 / 05 2023

Participants during the Stakeholder/Community Engagement for the Volcanoes Climate Resilience project (VCRP)

Name of participant/ *Amazina*	Institution/*Aho ukora cyangwa aho ubarizwa*	Position/ *Icyo ushinzwe*	Contact. Tel./Email/*Numero ya telefoni*	Signature	Age
Habiyaremye J. Damascene	Umuhinzi		0780491676		35
Habizimana J. Claude	Umuhinzi		0785591698		48
Bizimana J. Pierre	umuhinzi		0789123181		43
Ndorambaje J. Claude	Umuhinzi		0782241181		34

Photolog of participants in Ngororero district Matyazo sector in Kavumu and Kabaseke cell at Rubagabaga bridge.

Annex 10: Chance Find Procedure

Purpose of the chance find procedure

This chance find procedure is the proposed VCRP specific procedure outlining actions required if previously unknown heritage resources, particularly archaeological resources, are encountered during the project construction or operation. A Chance Find Procedure, as described in WB ESS6 and in line with Rwanda Cultural Heritage Policy, is a process that prevents chance finds from being disturbed until an assessment by a competent specialist is made and actions consistent with the requirements are implemented.

Scope of the chance find procedure

This procedure is applicable to all activities conducted by the personnel, including contractors, that have the potential to uncover a heritage item/site. The procedure details the actions to be taken when a previously unidentified and potential heritage item/site is found during construction activities. Procedure outlines the roles and responsibilities and the response times required from both project staff, and any relevant heritage authority.

Induction/Training

All personnel, especially those working on earth movements and excavations, are to be inducted on the identification of potential heritage items/sites and the relevant actions for them with regards to this procedure during the Project induction and regular toolbox talks.

Chance finds procedure

If any person discovers a physical cultural resource, such as (but not limited to) archaeological sites, historical sites, remains and objects, or a cemetery and/or individual graves during excavation or construction, the following steps shall be taken:

1. Stop all works in the vicinity of the find, until a solution is found for the preservation of these artifacts, or advice from the relevant authorities is obtained;
2. Immediately notify a foreman. The foreman will then notify the contractor and the project engineer (supervising firm);
3. Record details in Incident Report and take photos of the find;
4. Delineate the discovered site or area; secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be arranged until the responsible local authorities take over;
5. Preliminary evaluation of the findings by archaeologists. The archaeologist must make a rapid assessment of the site or find to determine its importance. Based on this assessment the appropriate strategy can be implemented. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage such as aesthetic, historic, scientific or research, social and economic values of the find;
6. Sites of minor significance (such as isolated or unclear features, and isolated finds) should be recorded immediately by the archaeologist, thus causing a minimum disruption to the work schedule of the Contractor. The results of all archaeological work must be reported to the PCU, once completed.
7. In case of significant find the PCU/MoE, (Ministry of Youth, in charge of culture and National Museum of Rwanda hereinafter referred to as Heritage team) should be informed immediately and in writing within 7 days from the find (good practice).
8. The onsite archaeologist provides the Heritage team with photos, other information as relevant for identification and assessment of the significance of heritage items.
9. The PCU and the team must investigate the fact within 2 weeks from the date of notification and provide a response in writing.

10. Decisions on how to handle the finding shall be taken by the responsible authorities. This could include changes in the layout (such as when finding an irremovable remain of cultural or archaeological importance) conservation, preservation, restoration and salvage;
11. Construction works could resume only after permission is granted from the responsible authorities.
12. In case no response is received within the 2 weeks period mentioned above, this is considered as authorisation to proceed with suspended construction works.

One of the main requirements of the procedure is record keeping. All finds must be registered. Photolog, copies of communication with decision making authorities, conclusions and recommendations/guidance, implementation reports – kept.

Additional information Management options for archaeological site

- **Site avoidance.** If the boundaries of the site have been delineated, attempts must be made to redesign the proposed development to avoid the site. (The fastest and most cost-effective management option)
- **Mitigation.** If it is not feasible to avoid the site through redesign, it will be necessary to sample it using a data collection program prior to its loss. This could include surface collection and/or excavation. (The most expensive and time-consuming management option.)
- **Site Protection.** It may be possible to protect the site through the installation of barriers during the time of the development and/or possibly for a longer term. This could include the erection of high visibility fencing around the site or covering the site area with a geotextile and then capping it with fill. The exact prescription would be site- specific.

Management of replicable and non-replicable heritage
Different approaches for the finds apply to replicable and non-replicable heritage.

Replicable heritage

Where tangible cultural heritage that is replicable[33] and if not critical is encountered, mitigation measures will be applied.

The mitigation hierarchy is as follows:

- Avoidance;
- Minimization of adverse impacts and implementation of restoration measures, in situ;
- Restoration of the functionality of the cultural heritage, in a different location;
- Permanent removal of historical and archaeological artifacts and structures ;
- Compensation of loss - where minimization of adverse impacts and restoration not feasible.

Non-replicable heritage

Most cultural heritage is best protected by in situ preservation, since removal is likely to result in irreparable damage or even destruction of the cultural heritage.

[33] Replicable cultural heritage is defined as tangible forms of cultural heritage that can themselves be moved to another location or that can be replaced by a similar structure or natural features to which the cultural values can be transferred by appropriate measures. Archaeological or historical sites may be considered replicable where the particular eras and cultural values they represent are well represented by other sites and/or structures.

Non Replicable cultural heritage[34] must not be removed unless all of the following conditions are met:

- There are no technically or financially feasible alternatives to removal;
- The overall benefits of the project conclusively outweigh the anticipated cultural heritage loss from removal; and

Any removal of cultural heritage must be conducted using the best available technique advised by relevant authority and supervised by archaeologist.

Human Remains Management Options

The handling of human remains believed to be archaeological in nature requires communication according to the same procedure described above.

There are two possible courses of action:

- **Avoid.** The development project is redesigned to completely avoid the found remains. An assessment should be made as to whether the remains may be affected by residual or accumulative impacts associated with the development, and properly addressed by a comprehensive management plan.
- **Exhumate.** Exhumation of the remains in a manner considered appropriate by decision makers. This will involve the predetermination of a site suitable for the reburial of the remains. Certain ceremonies or procedures may need to be followed before development activities can recommence in the area of the discovery.

EMERGENCY CONTACTS Ministry of Environment (MoE)

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info@environment.gov.rw

National Museum of Rwanda

(+250)784651051

info@genocidearchiverwanda.org.rw

[34] Nonreplicable cultural heritage may relate to the social, economic, cultural, environmental, and climatic conditions of past peoples, their evolving ecologies, adaptive strategies, and early forms of environmental management, where the (i) cultural heritage is unique or relatively unique for the period it represents, or (ii) cultural heritage is unique or relatively unique in linking several periods in the same site. Examples of non-replicable cultural heritage may include an ancient city or temple, or a site unique in the period that it represents.

Annex 11: Erosion risk per sector and district in the VCRP area

Table 1: Erosion risk per sectors in Burera District

Sector Name	Erosion risk				Grand Total	Sector land(ha)	Percentage (%)
	Extremely High	Very High	High	Moderate			
RUSARABUYE							
RUGENGABARI							
KINYABABA	243	696	1,149	1,005	3,093	4,504	69%
GITOVU	201	407	496	452	1,556	2,672	58%
GAHUNGA	182	377	398	580	1,537	2,893	53%
RUGARAMA	47	118	137	578	880	2,642	33%
KAGOGO	3	59	168	398	629	2,229	28%
CYANIKA	25	130	234	496	885	4,147	21%
KINONI	63	131	141	193	528	2,522	21%

Table 2: Erosion risk per sectors in Gakenke District

Sector Name	Erosion risk					Sector land(ha)	Percentage (%)
	Extremely High	Very High	High	Moderate	Grand Total		
KAMUBUGA	1,172	724	1,100	65	3,061	3,392	90%
RULI	408	1,218	1,588	947	4,161	4,666	89%
COKO	649	1,973	1,680	564	4,867	5,555	88%
MINAZI	267	926	1,488	1,104	3,785	4,724	80%
RUSHASHI	297	746	1,223	941	3,208	4,014	80%
KIVURUGA	117	774	715	675	2,280	3,121	73%
MATABA	194	560	871	754	2,380	3,316	72%
JANJA	391	852	552	390	2,184	3,053	72%
BUSENGO	313	691	820	731	2,555	3,821	67%
GAKENKE	210	541	860	1,118	2,729	4,116	66%
CYABINGO	4	39	316	1,230	1,590	2,415	66%
MUZO	499	1,015	647	509	2,669	4,662	57%
NEMBA	65	199	269	691	1,225	2,264	54%
KARAMBO	156	308	172	531	1,166	2,187	53%
MUGUNGA	27	52	289	797	1,165	2,913	40%
RUSASA		19	77	568	664	3,026	22%

Table 3: Erosion risk per sectors in Musanze District

Sector Name	Erosion risk						
	Extremely			Moderate	Grand		
GASHAKI	35	280	417	483	1,215	1,299	94%

REMERA	15	161	326	1,108	1,610	2,298	70%
GACACA	30	245	694	598	1,567	2,987	52%
KINIGI	460	1,182	787	1,576	4,005	8,105	49%
RWAZA	2	12	92	963	1,068	2,776	38%
NYANGE	61	252	661	1,092	2,065	5,432	38%
BUSOGO	19	112	188	432	751	2,006	37%
MUHOZA	14	91	218	450	773	2,134	36%
SHINGIRO	252	456	419	716	1,844	5,341	35%
GATARAGA	131	363	465	633	1,593	5,053	32%
MUSANZE	18	58	60	924	1,060	3,377	31%
NKOTSI	3	63	80	353	499	2,432	21%
KIMONYI	2	24	64	231	321	2,159	15%
CYUVE		13	23	424	459	3,377	14%
MUKO				48	48	1,940	2%

Table 4: Erosion risk per sectors in Ngororero District

Sector Name	**Erosion risk**					**District land(Ha)**	**Percentage (%)**
	Extremely High	**Very High**	**High**	**Moderate**	**Grand Total**		
MUHORORO	427	1,096	1,496	558	3,577	3,721	96%
BWIRA	640	1,165	1,351	532	3,688	3,862	95%
NDARO	1,372	2,027	1,306	410	5,115	5,516	93%
HINDIRO	77	155	783	2,209	3,223	3,500	92%
KABAYA	154	817	2,087	1,508	4,566	4,983	92%
SOVU	1,941	1,844	962	194	4,940	5,463	90%
KAGEYO	300	1,179	1,634	1,529	4,642	5,183	90%
GATUMBA	506	1,147	1,183	1,044	3,881	4,388	88%
KAVUMU	1,055	2,346	1,061	523	4,985	5,649	88%
NGORORERO	182	550	1,109	2,206	4,047	5,324	76%
MUHANDA	636	2,098	2,345	2,783	7,861	10,836	73%
MATYAZO	102	249	540	1,989	2,880	4,068	71%

Table 5: Erosion risk per sectors in Nyabihu District

Sector Name	Erosion risk					District land(Ha)	Percentage (%)
	Extremely High	Very High	High	Moderate	Grand Total		
RUREMBO	202	756	1034	1131	3123	4006	78%
JOMBA	52	406	804	1339	2600	3506	74%
RAMBURA	236	1064	1573	1325	4198	5726	73%
MURINGA	934	2151	1276	946	5307	7473	71%
KINTOBO	144	399	624	637	1804	2813	64%
KARAGO	114	441	993	795	2343	3679	64%

RUGERA	167	542	958	689	2355	4117	57%
SHYIRA	27	92	539	976	1635	3378	48%
MUKAMIRA	42	280	525	791	1638	3436	48%
JENDA	12	84	415	1224	1736	4814	36%
BIGOGWE	180	303	276	706	1464	4773	31%
KABATWA	93	342	454	612	1501	5235	29%

Table 6: Erosion risk per sectors in Rubavu District

Sector Name	Erosion risk					District land (Ha)	Percentage (%)
	Extremely High	Very High	High	Moderate	Grand Total		
BUGESHI	493	792	625	736	2,646	3,083	86%
KANAMA	851	669	356	308	2,184	4,363	50%
NYUNDO	35	255	445	710	1,444	3,114	46%
BUSASAMAN A							
MUDENDE	18	59	190	994	1,260	3,384	37%
NYAKILIBA	67	139	140	444	790	2,330	34%
KANZENZE	101	154	65	351	671	2,232	30%
NYAMYUMBA	19	47	131	471	669	2,344	29%
CYANZARWE	33	51	156	644	883	3,498	25%
RUGERERO	11	15	26	442	494	2,535	19%
GISENYI	9	30	25	119	182	1,117	16%
RUBAVU	6		5	306	317	2,642	12%

Table 7: Erosion risk per sectors in Rutsiro District

Sector Name	Erosion risk					District land (Ha)	Percentage (%)
	Extremely High	Very High	High	Moderate	Grand Total		
MANIHIRA	612	1697	1086	77	3472	3719	93%
RUSEBEYA	1832	2137	695	29	4692	5370	87%
MANIHIRA	612	1697	1086	77	3472	3719	93%
MURUNDA	526	1179	936	936	3576	4285	83%
MUKURA	1320	3400	2051	731	7503	9887	76%
NYABIRASI	1433	1680	826	2078	6017	9351	64%

Table 8: Erosion risk per sectors in Muhanga District

Sector Name	Erosion risk						Percentage (%)
	Extremely	Very	High	Mode- rate	Grand		
KABACUZI	1,206	2,132	3,144	687	7,170	7,505	96%
MUHANGA	1,450	2,939	1,017	206	5,612	6,252	90%
RONGI	710	1,694	2,124	1,632	6,160	6,931	89%
CYEZA	449	840	2,269	1,513	5,072	5,758	88%
KIYUMBA	524	1,654	2,835	1,360	6,373	7,277	88%
MUSHISHIRO	532	1,372	1,897	816	4,617	5,315	87%

KIBANGU	563	734	984	1,567	3,848	4,680	82%
RUGENDABARI	436	1,319	988	604	3,347	4,215	79%
NYAMABUYE	61	283	533	918	1,796	2,938	61%
SHYOGWE	13	25	341	716	1,095	3,748	29%