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Burundi – DRC - Rwanda
Ruzizi III Hydroelectric Power Project

Environmental & Social Impact Assessment

Vol. IV: Environmental and Social Management Plan (ESMP)

Prepared for

REL
Ruzizi III Energy Limited

Draft Final Report (version F)
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Making Sustainability Happen

ISSUE AND REVISION RECORD

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1 Introduction

1.1 Purpose of this Document

This document is the Environmental and Social Management Plan (ESMP) for the Ruzizi III Hydroelectric Power Project developed by Ruzizi III Energy Limited (REL). The purpose of the document is to set out the roles, responsibilities and actions for the avoidance, mitigation, compensation, and monitoring of the Project's environmental and social impacts.

1.2 Objectives of the ESMP

The overarching objective of the ESMP is to establish a delivery mechanism for the mitigation measures and commitments made in the ESIA. This is realised through attaining the following specific objectives:

- Describe the measures and actions to be implemented during the design, construction and operational phases of the project so as to eliminate or reduce key identified impacts to acceptable levels and to meet legal and other requirements with regards to environment and social management.
- Identify roles and responsibilities for the developer and the EPC Contactor.
- Identify the means by which environmental and social performance will be monitored, audited and reported.
- Present the timeframe for completing the actions.
- Establish responsibilities, timings, monitoring measures and a clearly set out audit and review programme to ensure compliance with the commitments and permit conditions.

For each activity or operation (by construction or operations phase) that could give rise to an impact, input from the ESIA is incorporated into the ESMP):

- Comprehensive listing of the mitigation measures to which the developer commits to.
- Designation of responsibility for ensuring implementation of the measures.
- Cost estimate for implementation of mitigation measures.
- Performance objective and the parameters that will be monitored to track how effectively actions and mitigation are implemented to meet this objective, including reporting and review procedures.
- Timing for implementation of the actions to ensure that the objectives of mitigation are met.

The ESMP contains other related plans, which link to or result from the issues and impacts identified and assessed in the ESIA. The document also includes a compressive and detailed monitoring plan covering the environmental and social variables to be monitored, the location and timing of sampling, the respective thresholds, and measures to be taken if thresholds are exceeded.

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1.3 Overview of the ESMP

The sections and subsections that comprise the ESMP can be summarised as follows:

- Section 1 – Introduction
  - Summary description of the Project.
  - Standards of Environmental and Social Performance
  - Summary of significant pre-mitigation impacts
- Section 2 – Organisational Roles and Responsibilities
  - Parties involved in the preparation and implementation of the ESMP
  - Tasks and responsibilities of the developer, owner's engineer, EPC Contractor and operating company
- Section 3 - Measures under the responsibility of the EPC Contractor
- Section 4 - Measures under the responsibility of the Developer
- Section 5 - Measures under the responsibility of the government agencies
- Section 6 - Budget and workplan

1.4 Summary Description of the Project

The Project comprises the construction and operation of a 206 MW HEPP on the Ruzizi River, downstream from the existing Ruzizi-I and -II hydroelectric schemes. The project includes a 7-km-long, 220 kV transmission line.

The river represents part of the border between Rwanda and DRC and project facilities and infrastructure will be installed on both the Rwanda and DRC riverbanks.

A rockfill embankment dam (51 m in height) will be constructed creating a small reservoir occupying 46 ha and inundating areas of agricultural land in both Rwanda and DRC. However, no dwellings or structures are impacted by the dam construction and reservoir impoundment.

Project components to be situated on the left bank (Rwanda) are as follows:

- Spillway.
- Bottom outlet.
- Two river diversion tunnels (used during construction, one of which is reused as the bottom outlet tunnel during operation).
- Power waterway components: water intake, 3.8 km headrace tunnel, penstock and an aboveground powerhouse.
- Permanent accommodation facilities.
- Access roads comprising completion of the existing road between Bugarama and existing bridge upstream of the powerhouse site, new road from the bridge to the dam site following the left bank of river.
- Temporary infrastructure for construction purposes including a borrow area, river diversion, worker accommodation facilities.

Project components to be situated on the right bank (DRC) are as follows:

- 220 kV substation (on the opposite side of the river to the powerhouse).
- 220 kV transmission line (7 km in length) from the 220 kV substation to the Kamanyola substation[1].

[1] The Kamonyola substation is not part of the Project, it will be developed by Energy of the Great Lakes (EGL)

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- 30 kV power line from the 220 kV substation to the dam site, following the dam access road.
- Permanent access roads and bridges comprising a dam access road following the right bank of the river from the outskirts of Kamanyola, and completion of the existing bridge upstream from the powerhouse site. The construction workers' accommodation camp adjacent to the 220 kV switchyard in DRC will continue to be used during operation as REL's DRC offices.
- Temporary infrastructure for construction purposes, including a bridge at the dam site, and storage areas near the river between the dam site and the 220 kV substation.

The Project has completed a Feasibility Study, and the detailed design and construction will be managed by an EPC Contractor in the next stage of the Project. Construction duration is estimated at 56 months, requiring an estimated workforce of 500-1,000 workers during the period of peak activities. On completion of the Project construction, the operation of the scheme will be handed over to an operating company that will be created or nominated at a later stage.

The Project will operate in a coordinated manner with the Ruzizi-I and -II hydroelectric schemes upstream which operate with periods of peak and off-peak flows. The Project's peak flows (150 m^3/s) are identical to the peak flows from Ruzizi-I and -II.

1.5 Standards of Environmental and Social Performance

The Project internal stakeholders (i.e. REL, EPC Contractor, Sub-contractors for construction or operation phases) will comply with all norms, standards, discharge and abstraction limit values defined in the national regulations of DRC and Rwanda.

The Project will also comply with the environmental and social policies of the potential Lenders, namely:

- African Development Bank Operational Safeguards (2013).
- European Investment Bank (EIB) Environmental and Social Standards (2022).
- International Finance Corporation (IFC) Environmental and Social Performance Standards (2012).
- World Bank's Environmental and Social Standards (2018).

REL will also apply - and require its subcontractors to comply with - Good International Practices while managing environmental, social and safety issues. The following documents will, among others, be referred to by REL as Good International Practices:

- IFC Good Practice Handbook on Environmental Flows for Hydropower Projects (2018).
- IFC Good Practice Note on Environmental, Health and Safety Approaches for Hydropower Projects (2018).
- IFC Good Practice Note: Managing Contractors' E&S Performance (2017).
- IFC Good Practice Handbook on the Use of Security Forces: Assessing and Managing Risks and Impacts - Guidance for the Private Sector in Emerging Markets (2017).
- World Bank Group Environmental, Health and Safety Standards for Electric Power Transmission and Distribution.
- World Bank Group Environmental, Health and Safety Standards for Construction Material Extraction.

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The Project activities will further comply with norms and standards, recommended by specialised international organisations affiliated to the United Nations, including:

- The IFC General Environmental, Health and Safety guidelines.
- The World Health Organization (WHO).
- The International Labour Organization (ILO).

1.6 Facilities & Activities Included in the ESMP Scope

The Project facilities and activities that are included in the scope of the ESIA/ESMP comprise the following:

- Construction and operation of the power production facilities comprising the dam, headrace tunnel, power waterways, powerhouse, 7-km-long 220 kV transmission line, access roads, and operators' village.
- Construction and operation of facilities required for construction including worksite and construction camp and worker accommodation camp.
- Reservoir impoundment.
- Impacts from operation of the facilities, including impacts from the creation of a 5.5-km-long dewatered reach of the Ruzizi River and downstream impacts from hydrological changes to the Ruzizi River caused by the Project.

Project facilities and activities that are not included in the scope of the ESIA/ESMP comprise quarries and borrow areas developed for the construction phase and Associated Facilities.

- Quarries and borrow areas are not included in the scope of the ESIA because the sitting will be defined at a later stage. REL have identified potential sites for quarries and borrow areas. However, it will be the EPC Contract that selects site locations, and they may correspond to sites identified by REL or alternative sites. The Management of Change Procedure (Section 4.2) provides the process for REL's review and approval of the sites proposed by the EPC Contractor so that there is avoidance or minimisation of environmental and social impacts. REL will engage an ESIA consultant to conduct the environmental and social impacts for the establishment and exploitation of the quarries and borrow areas and any necessary access roads. The ESIA and RAP will meet international standards and demonstrate alignment with lenders' E&S policies.
- Associated facilities are not included in the scope of this ESIA. The ESIAs and RAPs for the Kamanyola substation and transmission lines that transport electricity produced by the Project to Rwanda, DRC and Burundi are prepared by the developers of these projects. However, the projects to develop associated facilities are also receiving support from IFIs (AfDB, KfW, EIB) and as a consequence the ESIAs and RAPs shall also be prepared in in alignment with lenders' E&S policies.

1.7 Summary of Significant Impacts

Table 1 on the following page summarises the significant pre-mitigation environmental and social impacts.

Table 1 Summary of Environmental and Social Impacts and Risks and Mitigation

Receptor / Topic	Phase [a]	Impact / Risk [b]		Significance [c]	Mitigation
Climate Change Vulnerability	C / Op		R	N/A	> [M 1] Slope stability shall be monitored and if necessary, dam and reservoir bank protection features shall be constructed to protect structures from landslides. > [M 2] Hydro-meteorological data (temperature, precipitation, river flow) and sedimentation shall be monitored. > [M 3] Hydro-meteorological data (temperature, precipitation, river flow) and sedimentation shall be monitored. > [M 10] Good Practice measure to monitor Scope 1 and Scope 2 GHG emissions during construction and report the emissions in REL's annual environmental and social performance report and post on the Project's website. > [M 4] Consider the use of alternative energy sources such as solar energy. > [M 5] Project infrastructure shall be monitored for damage (gates and turbines) and electrical equipment failures and regular maintenance of facilities undertaken. > [M 6] A sediment management system shall be developed and implemented that includes provision for watershed management to reduce erosion, and dredging of the reservoir, if needed. > [M 7] Revegetation of the river basin should be considered to improve infiltration, reduce sedimentation and minimise flooding of infrastructure. > [M 8] Changes in the energy generation schedule, hourly or seasonally, resulting in a change in grid requirements shall be monitored. > [M 9] A data management system that makes provision for proper storage of data, proper monitoring and formatting of metadata, documenting the full history of the data (e.g., who took the data, when and how) and preservation of raw data shall be implemented and maintained. > [M 10] The Climate Risk Assessment shall be updated every 10 years as new data and projections become available, following the IHA Guidelines relevant at the time.
Greenhouse Gas Emissions	C	GHG emissions from construction <IFI threshold of 100,000 tonnes CO2e per annum which triggers need to monitor and publicly disclose GHG emissions	I	NS	> [M 11] Good Practice measure to monitor Scope 1 and Scope 2 GHG emissions during construction and report the emissions in REL's annual environmental and social performance report and post on the Project's website. > [M 12] The Project undertake a separate study to explore the opportunities to benefit from carbon credits.
	Op	GHG emissions from reservoir operation	I	NS	No measures proposed as the impact is not significant
Air quality, Dust and Odour	C	Emissions of air quality pollutants from fuel combustion at worksites	I	NS	> [M 13] The Contractor shall prepare and implement an Air Quality and Emissions Management Plan as part of the CESMP, which details measures to manage air emissions and dust. > [M 14] The Contractor shall use equipment and adopt construction and transport methods with air emissions that do not exceed threshold emission values specified in Rwanda and DRC regulations or IFC EHS Guidelines, whichever is the most stringent. > [M 15] The fleet of vehicles or equipment emitting combustion gases shall be maintained at the intervals and according to the methods specified by the manufacturer. The Contractor shall keep maintenance records.
	C	Dust emissions from land clearing and site preparation		S	
	C	Emissions of air quality pollutants and dust from construction related traffic		S	
	Op	Emissions of air quality pollutants from fixed point sources at the dam, powerhouse and operators' village	I	NS	> [M 16] Power generators at the operator's village will be designed to comply with IFC General EHS emission limit values and DRC/Rwanda emission limit values (whichever are the most stringent). Annual monitoring of the emissions will be performed to check conformity.

Table 1 Summary of Environmental and Social Impacts and Risks and Mitigation (*Cont.*)

	Phase [a]	Impact / Risk [b]		Significance [c]	Mitigation
Noise and Vibration	C	Noise from vegetation clearing and site preparation at worksites	I	S	> [M 17] The Contractor shall prepare and implement a Noise & Vibration Control and Monitoring Plan as part of the CESMP. > [M 18] Regular noise level monitoring will be performed during construction to demonstrate compliance with WHO noise guidelines and DRC and Rwanda noise level regulations. > [M 19] The Contractor shall use equipment and adopt construction and transport methods so as minimise noise levels and prevent exceeding threshold values recommended by the DRC/Rwanda regulations and WHO recommendations. > [M 20] Where communities are located close to worksites, access roads and public roads affected by construction traffic, the Contractor shall study, propose, implement and monitor the efficiency of all reasonable and practicable measures to minimize noise resulting from the activity and to minimize the acoustic nuisances to adjacent households during day and night. > [M 20] Noise barriers or acoustic shields shall be considered if works are close to sensitive receptors and installed if monitoring detects noise levels at residential areas that exceed WHO noise guidelines and DRC and Rwanda noise level regulations. > [M 21] Noise-intensive works such as piling, demolition, metalworking, and blasting (in quarries) will not be undertaken at night. > [M 23] The Contractor shall monitor the vibration level at buildings nearest to the Works during activities which could generate offset vibration effects. The Contractor shall prepare a pre-construction condition survey for all buildings located within 1 km of any blasting activities (including photographs of existing situation). The condition survey will be used to assess the effect of blasting on structures and the scope of any remediation works necessary to repair the effects of blasting.
	Op	Noise from operators' village (generators, compressors, sirens, alarms)	I	S	> [M 23] Noise modelling study for the operators' village, powerhouse and substation will be carried out during the design phase and noise prevention measures included in the design as necessary to ensure that noise levels at the site boundary complies with WHO noise guidelines and DRC and Rwanda noise level regulations. > [M 24] Noise level monitoring will be performed at the operator's village, powerhouse and substation during commissioning to check compliance with the owner's noise requirements. > [M 25] Periodic noise level monitoring will be performed during operation at the powerhouse, operators' camp and substation to check compliance with WHO noise guidelines and DRC and Rwanda noise level regulations. > [M 26] The transmission line and switchyard will be designed with features to minimise the corona affect.
		Noise from powerhouse operation	I	S	
		Noise from the 220 kV switchyard and 220 kV transmission line	I	S	
		Noise from Project-related road traffic	I	NS	
Soils, Groundwater and Surface Water	C	Topsoil removal and excavation during site preparation of worksites and roads	I	NS	> [M 27] A soil, slope stability and erosion control plan will be developed and implemented by the EPC Contract > [M 28] Construction site pollution prevention and protection plans, and measures will be developed and implemented for all worksites by the EPC Contractor. > [M 29] Groundwater at construction worksite will be monitored monthly during construction. > [M 30] Construction accommodation camps will be equipped with wastewater treatment facilities to ensure sanitary and domestic wastewater discharges are compliant with Burundi, DRC and Rwanda regulatory discharge limits and IFC EHS guideline emission limit values.
	C	Pollution of soils, groundwater and surface water from accidental spill and leaks of hazardous substances	I	S	

Table 1 Summary of Environmental and Social Impacts and Risks and Mitigation (*Cont.*)

	Phase [a]	Impact / Risk [b]		Significance [c]	Mitigation
Soils, Groundwater and Surface Water (cont.)	C	Alteration of Ruzizi River water quality from discharge of effluents and wastewaters from the construction workers' accommodation camp	I	S	> [M 31] The quality of wastewater discharges from construction worksites will be monitored to check conformity with discharge limit values. > [M 32] During construction, erosion mitigation measures will be employed to prevent soil erosion and fluvial erosion when undertaking works on bare soil and banks and when working in the river (EPC Contractor). > [M 33] Cofferdams and diversion tunnels used for construction works in the river will be designed to enable suspended sediment to be carried downstream while construction is taking place. > [M 34] During construction, worksite surface erosion and effectiveness of control measures will be monitored by taking weekly fixed-point photos of cleared areas. > [M 35] During the reservoir filling phase, bottom sluicing will be undertaken to maintain sediment throughflow as best possible and flows will be sufficient to transport the released sediment downstream to avoid siltation of instream habitats immediately downstream of the dam. > [M 36] Environmental performance of the EPC Contractor will be monitored to check conformity with Project standards and non-conformities will be managed through a non-conformity management process. > [M 37] The operators' accommodation camp will be equipped with a sanitary and domestic wastewater collection and treatment facilities to ensure discharges comply with regulatory discharge limit values and IFC EHS guideline emission limit values. > [M 38] Quality of wastewater discharges from the operators' accommodation camp will be monitored quarterly to check conformity with discharge limit values. > [M 39] A Pollution prevention and control plan for the operation phase will be developed and implemented. > [M 40] Facilities for the storage and handling of hazardous substances at the dam site, powerhouse and switchyard will be designed with spill prevention and protection measures.
	C	Increased sediment loads in the Ruzizi River from runoff from worksites and spoil disposal areas	I	S	
	C	Alteration of the Ruzizi River water quality from filling of the Ruzizi-III reservoir	I	S	
	Op	Alteration of the Ruzizi River water quality from discharge of wastewaters from the operators' village	I	S	
	Op	Alteration of reservoir water quality	I	S	> [M 41] Water quality impacts will be monitored and adaptively managed.
Hydrology	C	Temporary river diversion	I	NS	Measures included in the Project design
	C	Reservoir clearing	I	NS	Measures included in the Project design
	C	Reservoir filling	I	NS	Measures included in the Project design
	Op	Diversion of the river through the headrace tunnel, leaving a 5.5 km reach of the river left with reduced flow (9% MAF).	I	S	> [M 42] Implement monitoring of release from the bottom outlet using flow measurement / video evidence. Provide real-time open web portal to allow for stakeholder assessment of performance. > [M 43] Publish annual report of bottom outlet flow release data. > [M 44] Implement operational maintenance schedule to ensure full and correct functioning of bottom outlet monitoring & data publishing, to include level of service agreements made with key stakeholders (e.g., ABAKIR) and recommendations for adaptive management variations.
	Op	Normal powerhouse operation with peak and off-peak discharges	I	S	> [M 45] Assess requirements for improved hydrological modelling of upstream and tributary catchments to reduce uncertainty inherent in current broad-scale assessment. > [M 46] Assess requirements for improved hydrological and hydraulic characterisation of micro-/meso-scale habitat in hydropeaking reach to reduce uncertainty inherent in current broad-scale assessment. > [M 47] Implement monitoring of powerhouse tailrace flow and flow / water levels at selected locations in the hydropeaking reach (between the powerhouse tailrace and the Burundi border) using flow measurement / radar / video evidence. Provide real-time open web portal to allow for stakeholder assessment of performance. > [M 48] Publish annual report of powerhouse / hydropeaking reach flow data.

Table 1 Summary of Environmental and Social Impacts and Risks and Mitigation (*Cont.*)

	Phase [a]	Impact / Risk [b]		Significance [c]	Mitigation
					> [M 49] Implement operational maintenance schedule to ensure full and correct functioning of powerhouse tailrace / hydropeaking reach monitoring & data publishing, to include level of service agreements made with key stakeholders (e.g., ABAKIR) and recommendations for adaptive management variations.
Hydrology (cont.)		Sediment flushing operations	I	S	> [M 50] Develop, agree with key stakeholders (e;g., ABAKIR), and implement a Dewatered Reach Sediment Management Plan that explicitly evaluates associated ecological and social functioning in the dewatered and further downstream reaches (including, inter alia, sediment transport and floodplain inundation). > [M 51] Maintain regular, periodic releases from Ruzizi III reservoir (bottom outlet / spillway) to flush sediment in the dewatered reach. > [M 52] Implement monitoring of sedimentation in the dewatered reach (between the powerhouse tailrace and the Burundi border) using periodic sediment sampling / aerial (drone) survey. > [M 53] Publish annual report of sediment monitoring in the dewatered reach. > [M 54] Implement operational maintenance schedule to ensure full and correct functioning of Dewatered Reach Sediment Management Plan, to include level of service agreements made with key stakeholders (e.g., ABAKIR) and recommendations for adaptive management variations.
		Exceptional operating conditions	I	S	> [M 55] Develop, agree with key stakeholders (e.g., ABAKIR), and implement a Reservoir Operation Plan (exception operating conditions and flood risk management) that explicitly evaluates associated ecological and social functioning in the dewatered and further downstream reaches (including, inter alia, sediment transport and floodplain inundation). > [M 56] Publish annual report of Reservoir Operation Plan. > [M 57] Implement operational maintenance schedule to ensure full and correct functioning of the Reservoir Operation Plan, to include level of service agreements made with key stakeholders (e.g., ABAKIR) and recommendations for adaptive management variations.
Geo-morphology and Sediment Transport	C	Coffer dam and temporary river diversion causing reduced sediment loads in the downstream reach	I	S	> [M 33] Cofferdams and diversion tunnels used for construction works in the river will be designed to enable suspended sediment to be carried downstream while construction is taking place.
	C	Runoff from worksites increasing sediment loads in the river	I	S	> [M 32] During construction, erosion mitigation measures will be employed to prevent soil erosion and fluvial erosion when undertaking works on bare soil and banks and when working in the river (EPC Contractor). > [M 34] During construction, worksite surface erosion and effectiveness of control measures will be monitored by taking weekly fixed-point photos of cleared areas.
	C	Reservoir biomass /vegetation clearing causing increased sediment loads in the river	I	S	[M 32] During construction, erosion mitigation measures will be employed to prevent soil erosion and fluvial erosion when undertaking works on bare soil and banks and when working in the river (EPC Contractor).
	Op	Normal and exceptional operating conditions with diversion of the river through the headrace tunnel, leaving a reach of the river left dry and peak and off-peak discharges. Causing trapping sediment in the reservoir and reduced	I	S	> [M 58] Develop, agree with key stakeholders (e.g., other HEPP operators, ABAKIR), and implement Sediment Management Plan. > [M 59] Publish annual report of Sediment Management Plan operations. > [M 60] Implement operational maintenance schedule to ensure full and correct functioning of Sediment Management Plan, to include level of service agreements made with key stakeholders (e.g., other HEPP operators, ABAKIR) and recommendations for adaptive management variations.

Table 1 Summary of Environmental and Social Impacts and Risks and Mitigation (*Cont.*)

	Phase [a]	Impact / Risk [b]		Significance [c]	Mitigation
		sediment loads in the reach downstream from the dam			
Wastes	C	Excavation spoil (inert waste)	R	N/A	> [M 61] The EPC Contractor will prepare a Site Waste Management Plan as part of the CESMP in alignment with GIIP and the Employers E&S Requirements. > [M 62] The EPC Contractor will ensure that waste is segregated and stored on site according to GIIP, and a register of waste maintained. > [M 63] The EPC Contractor will identify accredited third-party waste management facilities for the management of waste, including facilities for reuse and recycling. The facilities will be audited by the EPC Contactor to ensure compliance with GIIP and E&S requirements of the environmental permit. > [M 64] Wastes that cannot be managed by offsite contractors will be managed by the EPC Contractor, and this may include construction of a landfill or installation of an incinerator. The design of these facilities will follow GIIP and environmental permits will be obtained. > [M 65] The EPC Contractor make all the necessary arrangements for transport of waste that is not managed on-site to accredited offsite waste management facilities. A waste tracking system shall be implemented (waste manifests) and compliance with the Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal. > [M 66] If quality permits, the EPC Contactors will reuse excavation spoil material, such as for concrete formation, backfilling, foundations and road construction. Excess spoil will be disposed of at designated and specially designed spoil disposal sites and the necessary permits from local authorities obtained by the EPC Contractor. > [M 67] The practice of disposing of inert spoil from road construction by side-casting is to be prohibited.
	C	Waste concrete (inert waste)	R	N/A	
	C	Iron and steel scrap and non-ferrous scrap (Non-hazardous waste)	R	N/A	
	C	General domestic waste, paper and cardboard, packaging, wood pallets, glass, plastic, tyres (Non-hazardous waste)	R	N/A	
	C	Oils and lubricants, oil contaminated rags, batteries, fluorescent tubes, paints and chemicals (Hazardous waste)	R	N/A	
	Op	Iron and steel scrap and non-ferrous scrap (Non-hazardous waste)	R	N/A	> [M 68] REL will conduct a waste management study to asses how to manage the domestic trash that accumulates in the Ruzizi III reservoir. REL will prepare a Waste Management Plan for the operation phase as part of the ESMP in alignment with GIIP and in coordination with local authorities and the operators of Ruzizi-I and -II. > [M 69] REL will ensure that waste is segregated and stored on site according to GIIP, and a register of waste maintained. > [M 70] REL will establish contracts with accredited third-party waste management facilities for the management of waste, including facilities for reuse and recycling and conduct regular audits to ensure compliance with GIIP and E&S requirements of the environmental permit. > [M 71] REL will make all the necessary arrangements for transport of waste that is not managed on-site to accredited offsite waste management facilities. A waste tracking system shall be implemented (waste manifests) and compliance with the Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal.
	Op	General domestic waste, paper and cardboard, packaging, pallets, glass, plastic, tires (Non-hazardous waste)	R	N/A	
	Op	Oils and lubricants, oil contaminated rags, batteries, fluorescent tubes, paints and chemicals (Hazardous waste)	R	N/A	

Table 1 Summary of Environmental and Social Impacts and Risks and Mitigation (*Cont.*)

	Phase [a]	Impact / Risk [b]		Significance [c]	Mitigation
Aquatic Habitats and Biodiversity	C	Increased sedimentation/ turbidity affecting fish and fish habitat	I	S	> [M 72] A riparian buffer zone of 50 m around riparian habitats will be maintained in all construction works areas to restrict erosion and sedimentation and rehabilitation, and alien plant control will be applied after construction to re-establish natural vegetation (EPC Contractor). > [M 73] Community land use activities will be regulated within the 50 m buffer zone such that no new agricultural clearance will be permitted whatsoever within 10 m of the riverbank in the project's area of influence (reservoir and dewatered reach). > [M 74]. Protect the riparian corridor through implementing measures to reduce erosion and sediment inputs into river courses through construction of gabions, embankments, and/or berms.
	Op	Development of bilharzia snails and blackflies and increased risk of development of waterborne diseases	R	N/A	> [M 75] Conduct monitoring of bilharzia host snails and blackflies, and prevalence of water borne diseases and identify control and management measures if required.
	Op	Project impacts on fish from altered flows and barrier to migration	I	S	> [M 76] Maintain a minimum flow of at least 10 m3/s at all times (including during reservoir filling) with video evidence shared with ABAKIR and other stakeholders; and release freshets of at least 50 m3/s over a few days on a biannual basis timed with rising river levels (volume to be confirmed through further modelling). > [M 77] Conduct fish monitoring and implement adaptive management based on results and disclose results to relevant institutions and lenders on a biannual basis. > [M 78] Implement and enforce a no fishing zone in dewatered reach and 1 km downstream of powerhouse and work with communities to improve sustainable fishing practices downstream of Bugarama. > [M 79] Implement fish monitoring to determine whether fish stranding occurs and determine additional mitigation if required (e.g. extended ramp down rates after each sub-daily peaking event to achieve a rate of water level drop of max. 3 cm/minute downstream of the powerhouse; or river engineering solutions to moderate flow fluctuations.
	Op	Altered flows on Rusizi National Park and Ramsar Site	I	NS	Mitigation and monitoring of flows, water quality and wastes are applicable to the lower Ruzizi River. Fish monitoring is required for the Rusizi River reaches within Rwanda but should be extended into Burundi should results indicate the potential for fish impacts downstream of the confluence of the Ruhwa River. No additional mitigation measures are specifically required for the Rusizi National Park.
Terrestrial Habitats and Biodiversity	C	Loss of natural habitat (dam, reservoir, powerplant, roads)	I	S	> [M 81] Construction work site planning shall seek to minimise impacts on vegetation and an Environmental Compliance Officer with ecological experience will oversee site clearance and ensure control measures are implemented (EPC Contractor). > [M 82] Construction site clearance activities will be implemented in a manner to minimise loss of vegetation by restricting footprints of vegetation removal, stockpiling and vehicle access (EPC Contractor). > [M 83] During construction, topsoil management will be implemented in accordance with a Topsoil Management Plan that defines the location, storage, size/shape and protection measures for topsoil stockpiles (EPC Contractor). > [M 84] Prepare and implement a Restoration and Rehabilitation Plan aimed at achieving no net loss of natural habitat in the reservoir sub-catchment area. Collect seed from native plants & propagate key species identified in the restoration plan in an off-site project nursery and implement progressive re-establishment of Natural Habitat wherever possible (EPC Contractor).

Table 1 Summary of Environmental and Social Impacts and Risks and Mitigation (*Cont.*)

	Phase [a]	Impact / Risk [b]		Significance [c]	Mitigation
Terrestrial Habitats and Biodiversity (cont.)	C	Loss of species of conservation concern (dam, reservoir, powerplant, roads, transmission line)	I	S	> [M 85] Conduct walk-through of construction area footprints prior to clearance to ensure no SCC present (low likelihood) (EPC Contractor) and micro-site infrastructure where possible if any SCC are found
	C	Disturbance of fauna from blasting (especially during breeding periods) (dam, reservoir, powerplant, roads)	I	S	> [M 86] Although few breeding raptors are likely to be present, conduct a walk-through bird survey in breeding season to confirm presence of breeding birds, especially raptors and restrict blasting to periods outside of breeding season (Dec-May) where possible (EPC Contractor).
	C	Introduction of invasive alien species (dam, reservoir, powerplant, roads)	I	NS	> [M 87] Develop and implement a Terrestrial Alien Invasive Plant Management, Monitoring and Control Plan for the HEPP and TL construction activities (EPC Contractor).
	C	Loss of natural habitat (transmission line)	I	S	> [M 88] Plan the location of pylons in degraded habitat wherever possible. > [M 89] Collect seed of typical natural grassland species for revegetating any cleared or damaged areas of Hillslope Grassland post-construction & propagate key species in off-site project nursery. > [M 90] Implement progressive re-establishment of Natural Habitat wherever possible in construction footprints.
	C	Loss of species of conservation concern (transmission line)	I	S	> [M 91] Conduct walk-through of the final confirmed pylon sites in Hillslope Grassland habitats to confirm presence of SCC to enable micro-siting of pylons or plant rescue if required.
	C	Introduction of invasive alien plan species (transmission line)	I	S	> [M 92] Implement terrestrial alien invasive plant management, monitoring and control measures along the TL wayleave and access routes during construction (EPC Contractor).
	C	Disturbance to birds (transmission line)	I	S	> [M 93] If possible, erect pylons and fit transmission lines between December and May, when few raptors are likely to be breeding.
	C	Loss of natural habitat during reservoir impoundment	I	S	> [M 94] Compile a Revegetation and Rehabilitation Plan aimed at achieving No Net Loss for the 41.8 ha of Largely Natural Habitat impacted by the Project. This should include restoration of degraded habitats in the reservoir sub-catchment above the full supply level and along the river course.. > [M 95] Implement restoration of priority habitats (Hillslope Grassland / Savannah) adjacent to the full supply level.
	C	Loss of species of conservation concern during reservoir impoundment	I	S	> [M 96] Conduct walk-through of areas of Hillslope Grassland / Savannah, Riparian Thicket and Hillslope Thicket that will be inundated by reservoir to confirm presence, and rescue any threatened or restricted-range species that are found and can be translocated to similar habitat adjacent to the full supply level (i.e. buffer zone).
	C	Loss of fauna through drowning during reservoir impoundment	I	S	> [M 97] Implement reservoir filling during lower flow, dry season periods or by regulating peaking flows from upstream hydropower plants in such a way to enable fauna (including smaller animals (e.g. snakes and other reptiles, rodents) to escape to higher ground.
	Op	Mortality of large birds during operation of the 220 kV transmission line	I	S	> [M 98] Plan the TL route along the hillslopes rather than along the hill crests, which are often followed by raptors on migration and where collision risk is higher. > [M 99] Install bird diverters and anti-perching devices (e.g. metal spikes) along the section of the TL route crossing Natural Habitat and where bird collisions with the conductors can occur.
	Op	Degradation of habitat through clearance of vegetation along wayleave	I	S	> [M 100] Avoid ongoing clearance of Natural Habitat along the wayleave, especially Hillslope Grassland / Savannah habitat on steep slopes unless necessary for safety reasons.

Table 1 Summary of Environmental and Social Impacts and Risks and Mitigation (*Cont.*)

	Phase [a]	Impact / Risk [b]		Significance [c]	Mitigation
Terrestrial Habitats and Biodiversity (cont.)	Op	Introduction or spread of invasive alien species	I	S	> [M 101] Implement a Terrestrial Alien Invasive Plant Management, Monitoring and Control Plan for the Operation Phase. > [M 102] Implement monitoring of erosion and rehabilitation / restoration success and implement additional measures if required to facilitate recovery of construction areas.
	Op	Impacts of Reservoir on Wildlife	R	S	> [M 103] Inform local communities of potential for increased risk of hippopotams and crocodiles in the reservoir and related safety concerns and need to protect wildlife, and monitor and record wildife presence in the reservoir. This should be done by community liaision officers and environmental staff of REL or outsourced to external ecological consultants or researchers.
	Op	Altered flows on downstream wildlife and Rusizi National Park	R	NS	No specific mitigation required.
Impacts on local communities' livelihoods	C	Land acquisition	I	S	> [M 104] Implementation of the Resettlement Action Plan > [M 105] Compensation of all affected lands and assets at full replacement costs > [M 106] Assistance to physical resettlement > [M 107] Livelihood Restoration Programme, including a transitional > [M 108] Specific assistance for affected vulnerable [M 109] Local Area Development Plan
	Op	Impact of alteration to flow conditions on fishing	I	NS	> [M 110] Monitoring of fisheries activities downstream of the dam to confirm the absence of any discernible change in fish catch because of the Project
Labour and Working Conditions	Op	Compliance with lender policies with regard to human resources policies and procedures	R	N/A	> [M 111] The Project's HR policy and labour management principles will align with Lenders' Policies and the labour laws of Burundi, DRC and Rwanda and be available in Kinyarwanda, English and French.
	Op	Compliance with lender policies with regard to employment	R	N/A	> [M 112] The Project will set local employment objectives and targets. > [M 113] The Project's local employment objectives will include specific targets for the employment of women. According to these targets, at least 15% of the total workforce (skilled and unskilled) will be female. > [M 114] The local Recruitment Policy will be communicated widely. > [M 115] Construction phase training programme will be implemented by the EPC Contractor.
	Op	Compliance with lender policies with regard to workers' organisations	R	N/A	> [M 116] Provisions regarding allowance of workers' organizations and collective bargaining will be included in the Project's HR policy.
	Op	Compliance with lender policies with regard to non-discrimination and equal opportunities	R	N/A	> [M 117] Provisions regarding non-discrimination and equal opportunities will be included in the Project's HR Policy.
	Op	Compliance with lender policies with regard to retrenchment	R	N/A	> [M 128] The EPC Contractor will prepare a detailed Demobilisation Plan and implement the plan at the end of the construction.
	Op	Compliance with lender policies with regard to workers grievance mechanism	R	N/A	> [M 118] Workers' grievance mechanism will be implemented and monitored during labour audits.
	Op	Compliance with lender policies with regard to protecting the workforce	R	N/A	> [M 119] Project's HR Policy and labour management principles will clearly state that there will be no forced labour and child labour.

Table 1 Summary of Environmental and Social Impacts and Risks and Mitigation (*Cont.*)

	Phase [a]	Impact / Risk [b]		Significance [c]	Mitigation
Labour and Working Conditions (cont.)	Op	Compliance with lender policies with regard to occupational health and safety	R	N/A	> [M 136] Operation phase occupational noise exposure management measures. > [M 137] Operation phase fire and explosion management measures in compliance with NFPA. > [M 134] General operation occupational health and safety measures: ESMS aligned with OSHAS 18001, Health and Safety Plan, Employee training. > [M 135] Operation phase hazardous substances management measures. > [M 136] Operation phase occupational noise exposure management measures. > [M 137] Operation phase fire and explosion management measures in compliance with NFPA.
	C	Compliance with lender policies with regard to workers engaged by third-parties	R	N/A	> [M 120] REL will review the EPC contractor's subcontractors' management procedures prior to the start of construction and organise and finance 6-monthly Integrated Environmental, Social, Health and Safey audits by an independent auditor of the EPC Contractor and its subcontractors' working practices to check compliance with the Project's HR Policy, Labour laws of Burundi, DRC and Rwanda, and Lenders' labour management requirements. > [M 129] General construction phase occupational health and safety management measures. > [M 130] Construction phase hazardous substances management plan. > [M 131] Construction phase noise, dust and vibration management measures. > [M 132] Construction phase fire and explosion management measures. > [M 133] Conduct a risk assessment for natural hazards for workers during construction.
	C/Op	Risk of gender-based violence for the project as a whole	R	N/A	> [M 113] The Project's local employment objectives will include specific targets for the employment of women. According to these targets, at least 15% of the total workforce (skilled and unskilled) will be female. > [M 117] Provisions regarding non-discrimination and equal opportunities will be included in the Project's HR Policy. > [M 121] The EPC will develop a gender-sensitive recruitment strategy and communicate it to the local communities > [M 122] REL will recruit two trained female Gender Officers (1 in Rwanda and 1 in DRC) to define and implement GBVH protocols. These protocols will apply to all Project workers, including contractors and sub-contractors. > [M 123] The EPC will develop and implement a workers' code of conduct, including GBVH policies, and mandatory training of all workers on sexual harassment and GBVH protocols > [M 124] The EPC contractor will develop an Occupational Health and Safety Management Plan which will gender and GBVH aspects, such as: gender-separate accommodation on camp, gender-separate lockable latrines and WASH facilities that are well-lit, conveniently located and easily accessible. > [M 125] The EPC will establish workers' safety committee which will include at least one trained female worker representative > [M 126] The Workers' grievance mechanism and Community grievance mechanism will channel all GBVH complaints and store them on a separate database. REL's Gender Officers will be responsible for handling and solving these complaints.
Community Health and Safety	C/Op	Community health and safety risks as a whole	R	N/A	> [M 130] Construction phase hazardous substances management plan. > [M 131] Construction phase noise, dust and vibration management measures. > [M 132] Construction phase fire and explosion management measures. > [M 133] Conduct a risk assessment for natural hazards for workers during construction. > [M 134] General operation occupational health and safety measures: ESMS aligned with OSHAS 18001, Health and Safety Plan, Employee training. > [M 135] Operation phase hazardous substances management measures. > [M 136] Operation phase occupational noise exposure management measures. > [M 137] Operation phase fire and explosion management measures in compliance with NFPA.

Table 1 Summary of Environmental and Social Impacts and Risks and Mitigation (*Cont.*)

	Phase [a]	Impact / Risk [b]		Significance [c]	Mitigation
					> [M 138] Coffer dam design criteria for seismic and hydraulic loading will follow ICOLD guidelines and take into account findings of detailed natural hazard risk assessments. > [M 139] Safety distances between onsite areas for storage and handling of hazardous substances and offsite residential areas. > [M 140] Control of access to worksites. > [M 141] Construction phase traffic management plan. > [M 142] Public disclosure of the construction phase traffic management plan. > [M 143] Local authorities given prior warning of the programmed arrival of heavy convoys. > [M 144] Traffic hazard awareness campaigns organised for communities including school children. > [M 146] Adherence to the Voluntary Principles on Security and Human Rights - and the International Code of Conduct for Private Security Service Providers including contractors and their subcontractors > [M 147] Security services providers personnel to be trained to comply with the Voluntary Principles on Human Rights and the International Code of Conduct for Private Security Service Providers > [M 148] Cooperation with local police forces > [M 149] Community health management measures included in the construction phase health and safety plan. > [M 150] Monitoring by REL of the implementation of the community health management measures by the EPC Contractor. > [M 151] Technical measures to avoid impacts on water quality including from wastewater discharges, runoff and tunnelling spoils. > [M 152] Disclosure of water monitoring results. > [M 153] Detailed design to include detailed seismic studies to complement the preliminary studies already performed and to confirm dam and coffer dam design criteria. > [M 154] Coffer dam and diversion tunnel flood management criteria and procedure in detailed design. > [M 155] Assessment of reservoir rim stability and analysis of hydraulic consequences. > [M 156] Carry out detailed landslide risk assessment and include dam, coffer dam and temporary construction facilities in the assessment and include the findings into the Project design.
		Community health and safety risks associated with Project induced in-migration	R	N/A	> [M 111] The Project's HR policy and labour management principles will align with Lenders' Policies and the labour laws of Burundi, DRC and Rwanda and be available in Kinyarwanda, English and French. > [M 112] The Project will set local employment objectives and targets. > [M 113] The Project's local employment objectives will include specific targets for the employment of women. According to these targets, at least 15% of the total workforce (skilled and unskilled) will be female. > [M 114] The local Recruitment Policy will be communicated widely. > [M 119] Project's HR Policy and labour management principles will clearly state that there will be no forced labour and child labour. > [M 122] REL will recruit two trained female Gender Officers (1 in Rwanda and 1 in DRC) to define and implement GBVH protocols. These protocols will apply to all Project workers, including contractors and sub-contractors. > [M 123] The EPC will develop and implement a workers' code of conduct, including GBVH policies, and mandatory training of all workers on sexual harassment and GBVH protocols > [M 141] Construction phase traffic management plan. > [M 142] Public disclosure of the construction phase traffic management plan. > [M 149] Community health management measures included in the construction phase health and safety plan.

Table 1 Summary of Environmental and Social Impacts and Risks and Mitigation (*Cont.*)

	Phase [a]	Impact / Risk [b]		Significance [c]	Mitigation
					> [M 150] Monitoring by REL of the implementation of the community health management measures by the EPC Contractor. > [M 146] Adherence to the Voluntary Principles on Security and Human Rights - and the International Code of Conduct for Private Security Service Providers including contractors and their subcontractors > [M 147] Security services providers personnel to be trained to comply with the Voluntary Principles on Human Rights and the International Code of Conduct for Private Security Service Providers > [M 148] Cooperation with local police forces > [M 157] Preparation and implementation of an Influx Management Strategy. > [M 158] REL Gender officers will prepare and implement a Community Outreach Programme on Gender-based violence and harassment, to disclose the Project's GBVH protocols and reporting processes. > [M 159] Monitoring on Project-induced in-migration around the reservoir during operation during the first years of operation > [M 160] Addressing potential negative social impacts of continued presence of project-induced influx during the first years of operation
Human rights	C/Op		R	N/A	Addressed through measures under separate headings as explained in the main text
Gender-specific risks and impacts	C/Op	Gender-specific risks and impacts	R	N/A	> [M 113] The Project's local employment objectives will include specific targets for the employment of women. According to these targets, at least 15% of the total workforce (skilled and unskilled) will be female. > [M 117] Provisions regarding non-discrimination and equal opportunities will be included in the Project's HR Policy. > [M 120] REL will review the EPC contractor's subcontractors' management procedures prior to the start of construction and organise and finance 6-monthly Integrated Environmental, Social, Health and Safey audits by an independent auditor of the EPC Contractor and its subcontractors' working practices to check compliance with the Project's HR Policy, Labour laws of Burundi, DRC and Rwanda, and Lenders' labour management requirements. > [M 121] The EPC will develop a gender-sensitive recruitment strategy and communicate it to the local communities > [M 122] REL will recruit two trained female Gender Officers (1 in Rwanda and 1 in DRC) to define and implement GBVH protocols. These protocols will apply to all Project workers, including contractors and sub-contractors. > [M 123] The EPC will develop and implement a workers' code of conduct, including GBVH policies, and mandatory training of all workers on sexual harassment and GBVH protocols > [M 124] The EPC contractor will develop an Occupational Health and Safety Management Plan which will gender and GBVH aspects, such as: gender-separate accommodation on camp, gender-separate lockable latrines and WASH facilities that are well-lit, conveniently located and easily accessible. > [M 125] The EPC will establish workers' safety committee which will include at least one trained female worker representative > [M 126] The Workers' grievance mechanism and Community grievance mechanism will channel all GBVH complaints and store them on a separate database. REL's Gender Officers will be responsible for handling and solving these complaints. > [M 158] REL Gender officers will prepare and implement a Community Outreach Programme on Gender-based violence and harassment, to disclose the Project's GBVH protocols and reporting processes.

Table 1 Summary of Environmental and Social Impacts and Risks and Mitigation (*Cont.*)

	Phase [a]	Impact / Risk [b]		Significance [c]	Mitigation
Cultural Heritage	C	Impacts from earthworks and physical construction	I	S	> [M 161] Compensation or moving of the graves and church located in the Project acquired land plots, as defined in the Resettlement Action Plan. > [M 162] Define and implement a Chance Find Procedure
	C	Construction activities generating noise, dust vibration	I	S	> See measures above for noise, dust and vibration > [M 163] All cultural heritage elements located adjacent to a construction site or the external boundaries of the future reservoir (within 30 m), will be protected from potential damages due to construction methods.
	C	Restriction of access	I	S	> [M 164] Consultation with communities using the 2 baptism sites and prayer site on the island close to the Project's sites and the payer site under the Transmission Line Right of way to assess if access to these sites could be impaired by the Project activities > [M 165] Commitment to not block accesses to places of worship throughout the construction phase as much as possible, taking into consideration safety issues. > [M 166] Where existing access cannot be maintained, provision of an alternative access route, subject to overriding health, safety, and security considerations
	Op	Restriction of access for safety reasons	I	S	> [M 167] Implement GIP for ensuring the disposal area do not represent any safety risk for the general public.
Ecosystem Services	C/Op	Ecosystem Services	I	S	Addressed through measures under separate headings as explained in the main text
Landscape and Visual Amenity	C/Op	Physical presence of structures represent a degradation of the land scape and visual amenity	I	NS	No measures proposed because the impact is not significant
Positive Impacts and benefits	C	Employment opportunities	I	S	> [M 112] The Project will set local employment objectives and targets. > [M 114] The local Recruitment Policy will be communicated widely. > [M 115] Construction phase training programme will be implemented by the EPC Contractor.
	Op	Enhancement of benefits	I	S	Local Area Development Plan

Notes

[a] C = Construction, Op = Operation

[b] I = Impact, R = Risk

[C] S = Significant, NS = Not Significant, N/A = Not Applicable (the case for risks)

2 Organisational Roles and Responsibilities

REL will take the full responsibility of the environmental & social management of the construction and operation of the Project components, including the hydropower, access road and 220 kV Transmission Line.

The necessary organisational structure that defines the roles, responsibilities and authority to implement the ESMS will be established, maintained and strengthened by REL (see Figure 2 - Organisational Chart in section 4.1). REL will allocate the necessary management, human and financial resources to ensure that the E&S policies, commitments and plans/procedures are successfully implemented. REL will also require the contractor to establish and maintain an organisational structure with defined roles and responsibilities.

The interfaces between the Project entities, lenders and government institutions and agencies are illustrated in the diagram provided in Figure 1 overleaf.

The contractor and their subcontractor will be responsible for implementing their management plans and procedures in line with relevant local and international requirements and this ESMS. REL will be responsible for overseeing and monitoring the performance of the contractor and ensuring compliance with requirements (see Vol. III – Annexes).

The three countries (Burundi, DRC and Rwanda) will be fully involved in the management of the Project E&S aspects mainly Ministry of Environment, Agriculture and Livestock (MEAE) in Burundi, the Ministry of the Environment and Sustainable Development (MEDD) in DRC and the Ministry of Environment in Rwanda. The three government ministries have established respective administrative entities that deal with environmental matters, namely Burundian Environmental Protection Office (OBPE) in Burundi, Congolese Environment Agency (ACE) and Rwanda Development Board (RDB) & Rwanda Environment Management Authority (REMA) in Rwanda. Local government institutions and civil society organisations (NGOs, CSOs) engaged in the management of environmental and social programs in the project area will also be involved.

The intergovernmental institution, *Energie des Grands Lacs* (EGL) with the responsibility to supervise the Project on behalf of the three countries will work with REL to coordinate the participation of the different stakeholders.

A Lenders Technical Advisor (LTA) shall also be jointly appointed by the lenders and REL. The LTA will play a key role in identifying and mitigating risks of the Project on behalf of the lenders and follow its progress and compliance when the Project starts construction up to early operation. The LTA scope shall include environmental and social aspects. For the E&S aspects, the LTA shall check the Project's compliance with the E&S loan commitments, relevant local laws, applicable IFC PS requirements, and any other environmental and social standards and guidelines required by the lenders. The LTA shall conduct periodic site visits and prepare written reports.

An Independent Panel of Experts (IPoE) on Dam Safety and an Independent Panel of Experts on Environmental and Social Safeguards (E&S IPoE) will be engaged

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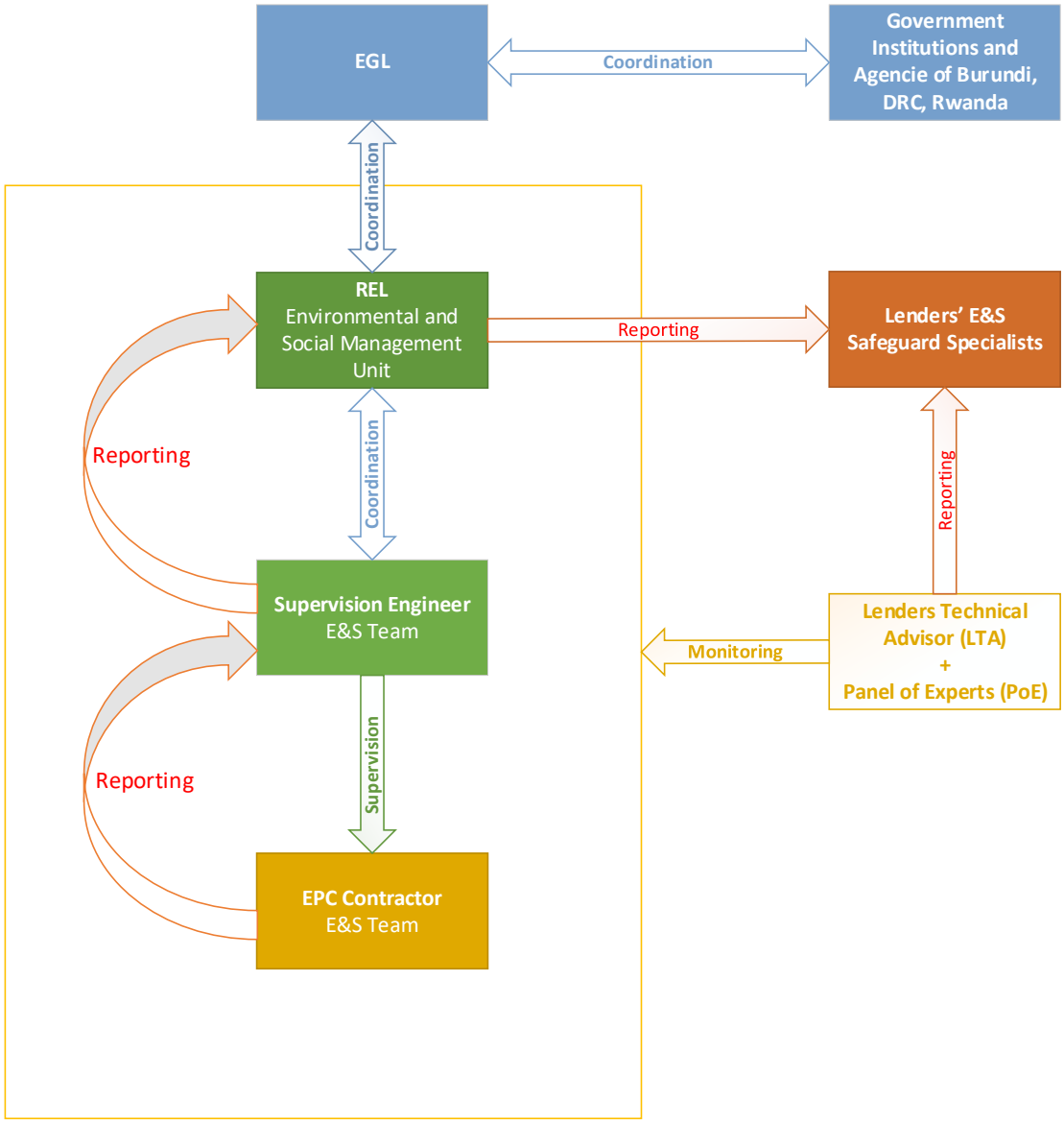
Figure 1 Interface Diagram - Project, Lenders and Government Institutions and Agencies



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2.1 Implementation of Mitigation Prior and During Construction

Although REL takes the overall responsibility for the implementation of E&S mitigation and compensation measures of the Project, REL delegates to the EPC Contractor the implementation of the E&S measures relating to the construction methods. This delegation is ruled by the Owner's Environmental and Social Requirements that will form part of the EPC Contract and that establish the objectives in terms of E&S performance for the construction methods. Effective implementation of these specifications will be supervised by REL.

In the present documents, the management actions that are under the responsibility of the EPC Contractor are tagged [CC] standing for Contractor Construction ESMP management actions.

Some environmental and social actions that do not relate to the construction methods will be initiated during the construction period. These actions result from the mitigation strategy of the long-term effects identified by the 2022 ESIA. Their implementation will be under the responsibility of REL. In the present document, the management actions that are under the responsibility of REL are tagged [OC] standing for Owner Construction ESMS management actions. Likewise, several E&S actions will have to be undertaken by governmental agencies during the construction period. They are tagged [GC] standing for Governments of DRC and Rwanda E&S management actions.

The EPC Contractor will develop a Construction ESMP and associated sub-plans or procedures. REL will review and approve the documents before the start of the works is authorized. The actual implementation of the measures defined in the in the Construction ESMP will be monitored by REL.

REL will establish the Owner's ESMS. The ESMS establishes the responsibilities, practices and resources necessary for implementing the Project-specific management plans covering the construction and/or the operation period.

REL will establish an Integrated Environmental, Social and Health and Safety Management System in compliance with ISO 14001 and ISO 45001:2018 or equivalent and recruits experienced Environmental and Social Specialist(s) as well an experienced and ISO 45001:2018 or equivalent certified Health and Safety Specialist.

The EPC Contractor shall also establish an Integrated Environmental, Social and Health and Safety Management System in compliance with ISO 14001 and ISO 45001:2018 or equivalent. The Contractor shall recruit an experienced Environmental Specialist and an experienced ISO 45001:2018 or equivalent certified Health and Safety Specialist. These specialists will be full time present at the construction sites during working hours.

The Owner's Engineer, Tractebel, representing REL shall be responsible for the quality and adequate implementation of the CESMP and Contractor OHS Plan. For this purpose, the Owner's Engineer shall also establish an Integrated Environmental, Social and Health and Safety Management System in compliance with ISO 14001 and ISO 45001:2018 or equivalent. The Owner's Engineer shall recruit an experienced Environmental Specialist and an experienced Social Specialist as well as an experienced and ISO 45001:2018 or equivalent certified Health and Safety Specialist. These specialists will need to be full time present at the construction sites during working hours.

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2.2 Implementation of Mitigation during Operation

The operation phase starts with the full commissioning of the turbine units at the powerhouse. At that stage, most works will have been taken over from the EPC Contractor by REL. Most E&S management measures will then be implemented by REL. They are tagged [OO] in this document, standing for Owner Operation ESMS management Actions. Some of the E&S measures, mostly monitoring, will also be implemented by the Governmental Agencies and they are tagged [GO] as for Governmental Agencies Operation E&S management Actions in the present document.

2.3 Documents Flow Chart

The tables below list the main documents that will be prepared by the EPC Contractor and REL as part of the ESMP implementation. The justification and the content of these documents are further described in the referred sections.

Table 2 Documents to be Prepared by the EPC Contractor

Document	Overview of what is required	Corresponding Section of ESMP
The Contractor shall prepare a specific Contractor Environmental and Social Management Plan (CESMP) in compliance with the project approved ESMP and ISO 14001 and an Occupational Health and Safety Plan (OHSP) in compliance with ISO 45001:2018 or equivalent		
CESMP – Part 1	E&S organization	3.1.2.
CESMP – Part 2	Environmental and Social Protection (site-specific): Environmental Impact and Risk Management Plan, Social Impact and Risk Management Plan, Stakeholder and Community Management Procedure	3.1.2.
CESMP – Part 3	Environmental and Social Procedures, including the following plans	
Biodiversity Awareness Program and biodiversity management sub-plan	Measures to protect biodiversity in areas adjacent to worksites	3.2.1
Environmental Flow	Measures to maintain the environmental flow during construction and which align with the EFlow Management Plan prepared by REL	3.3
Pollution Prevention and Control Plan	Measures to identify, collect and treat all effluents generated at worksites.	3.4.1
Site Waste Management Plan	Measures to identify, collect, transport and treat all waste produced on the Worksites.	3.5.1
Chemical Management Plan	Measures to manage handling and storage of hazardous substances.	3.6.1
Spill Contingency Plan	Measures to detect, manage and treat any spills of hazardous material at worksites.	3.6.5
Vegetation Clearing and Debris Management Plan	Measures to manage removal of above-ground biomass in reservoir area and at worksites.	3.7.1
Slope Stability and Erosion Control Plan	Measures to minimize vegetation clearing and control runoff transporting sediment.	3.8.5
Materials Management Plan	Measures to minimize the footprint, and impacts from transporting and stockpiling materials.	3.9.2
Spoil Disposal Management Plan	Measures to plan the design, opening and rehabilitation of spoil disposal areas.	3.9.3
Atmospheric Emissions and Dust Management Plan	Measures to manage air emissions and dust at worksites, along access roads and from aggregate stockpiles and storage areas.	3.10.1
Noise & Vibration Control Plan	Measures to minimise and manage noise and vibration impacts during construction.	3.11.1
Quarry and Borrow Area Management Plan	E&S management and monitoring measures for the quarry and borrow areas.	3.12.1

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Document	Overview of what is required	Corresponding Section of ESMP
Site Reinstatement Plan	Measures to be implemented at the end of the construction period to rehabilitate all temporary areas disturbed by the works.	3.13.1
Cultural Heritage and Chance Finds Procedure	Measures to manage physical cultural heritage encountered unexpectedly during the construction works.	3.14
Traffic Management Plan	Establish characteristic of Project vehicles & site machinery, predict Project traffic and identify measures to minimize the impacts and risks.	3.17.1
Emergency Response Plan	Measures to manage Common Hazards and Emergency Situations during construction, and Responses to circumstance that potentially indicates an increase in the likelihood of a dam failure hazard or downstream release hazard happening during reservoir filling.	3.18.9
Community Health and Safety and Security Plan including community awareness, stakeholder engagement, communication, grievance redress mechanism, influx management, security management, code of conduct	Measures to protect community health and safety during construction.	3.18
Flood Management Plan for the construction period	Control and mitigation measures of the consequences of floods at the dam sites in the event of floods larger than the minimum capacity.	3.18.7
Recruitment Policy and Local Skills Development Programme including local recruitment and working conditions, local procurement, influx management, labour management sub-plans	Describes the Contractor's recruitment procedures and employment management systems. Program to provide skills training to Local Residents with the objective of improving the productivity and skills of Personnel.	3.19.2
Workers Health and Safety Plan including COVID-19 Management and Bilharzia and Malaria Prevention, facilities and workers' accommodation sub-plans	Measures to protect the health and safety of workers during construction.	3.20.1.
Blasting Management Plan	Measures to protect the health and safety of workers during blasting.	3.20.7
Included in the Detailed Design		
Sediment Management Program / Catchment Management Plan	Measures to manage sediment that accumulates in the reservoir during operation, and based on sediment studies undertaken prior to and during construction	4.3.3.1 4.10.3
Biodiversity Monitoring Plan	Measures for the monitoring of fish species	4.9
Reforestation Plan	Compensation for the lost trees linked to the construction of the project facilities	4.9

Table 3 Documents to be Prepared by REL

Document	Overview of what is required	Corresponding Section of ESMP
Environmental & Social Management system	Policies and procedure to quality manage all activities included in the ESMP.	4.1.
Security Management Plan	Plan for the preparation and implementation of a Security and Human Rights risk assessment and Security Management plan for the construction and operations phases to ensure alignment with Voluntary Principles on Human Rights and the International Code of Conduct for Private Security Service Providers	3.20.8
Community Waterborne Disease Strategy	A prevention waterborne diseases strategy, based on the WHO guidelines for drinking water quality and the WHO prevention and control of schistosomiasis and soil-transmitted helminthiasis.	4.4

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Document	Overview of what is required	Corresponding Section of ESMP
Operational Risk Assessment and Public Safety Plan	Operational risk assessment to analyse public safety issues at the dam and powerhouse sites, as well as downstream of the dam and powerhouse to describe public awareness, warning devices and access restrictions, and operating procedures planned to mitigate the identified risks.	4.4
Emergency Preparedness Plan	Responses to circumstance that potentially indicates an increase in the likelihood of a dam failure or release	4.4
Influx Management Strategy	Describe the objective of the intervention with respect to project-induced in-migration and its impacts, how the intervention will help achieve the objective, the intended outcomes on in-migration, and the time frame within which these outcomes might be expected.	4.5
Reservoir Zoning Plan	Designate permissible and restricted activities around the reservoir taking into account links with other reservoir management requirements (in order to enhance catchment condition and minimise ecological and social threats to reservoir condition.	4.7
Alien Fish Management Plan	Prevent, monitor, and adaptively manage the potential introduction and increased spread of alien fish in the reservoir if it occurs.	4.8
Biodiversity Action Plan Framework	Identify and finance opportunities for enhanced protection of conservation areas with similar biodiversity features to achieve no net loss of biodiversity. Framework for actions to deliver net gain or no net loss including mitigation measures that fall outside the ambit of the EPC contractor. It covers the biodiversity mitigation requirements that will fall under the responsibility of REL until such time as responsibility for implementing the commitments are agreed and can be assigned to other government agencies or consultants for implementation.	4.9
Environmental Flow Management Plan	Ensure that the effects of flow alteration and loss of ecological and sediment connectivity will be minimized through operating procedures, sediment management, and coordination with key local stakeholders (other HEPPs and river basin management authorities.	4.10

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3 Measures Under the Responsibility of the EPC Contractor

3.1 Management Systems, Monitoring and Reporting

[CC- 1] The EPC Contractor shall also establish an Integrated Environmental, Social and Health and Safety Management System in compliance with ISO 14001 and ISO 45001:2018 or equivalent.

3.1.1 Resources Allocated to E&S Management

3.1.1.1 Human Resources

[CC- 2] The Human Resources (HR) requirements specified hereafter are the minimum resources required for E&S management by the Contractor. The staffing levels will be consistent with regulatory, Employer and Lender requirements. (see box overleaf).

[CC- 3] REL will, at reasonable intervals or when the Contractor's performance requires, audit the E&S performance of the Contractor.

[CC- 4] The Contractor shall appoint an experienced Environmental & Social Manager (E&S Manager) in charge of implementing the present measures under responsibility of the EPC Contractor. The E&S Manager shall, amongst other items: (i) Be able to speak, read and write English and French fluently, (ii) Hold a relevant University degree and significant experience of at least 10 years in designing and monitoring the implementation of E&S aspects on similar Projects, (iii) Be permanently based at Site for the full duration of the Works, (iv) Have the authority to suspend Works when necessary, and allocate all resources, Personnel and Equipment required to take any corrective actions, (v) Maintain close communication with the Employer's E&S Director.

[CC- 5] The Contractor shall appoint an Environmental & Social Supervisor (E&S Supervisor) for each shift for the Ruzizi III HEPP areas and the Transmission Line. Site E&S Supervisors represent the E&S Manager within Works areas. Their role is to ensure that the Works are carried out in accordance with the Contract and to record and notify the E&S Manager of any non-conformities.

[CC- 6] The Contractor shall appoint a Community Relation Supervisor (CR Supervisor) responsible for relations with external stakeholders for the Works. This may include local communities, administrative authorities, and representatives of economic activities located within one-hour travel from the Site for the tasks under their responsibility. The CR Supervisor shall, amongst other items: (i) Liaise closely with the Employer's Community Relations team and be responsible for resolving Contractor related grievances in a timely manner where the Contractor is responsible; (ii) Be based permanently at Site and must be fluent in Swahili, French and English; (iii) Have experience in community relation management obtained on similar Projects.

[CC- 7] The Contractor shall ensure relevant administrations and local authorities are informed of the existence of the CR Supervisor when required and provide them with the contact details.

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[CC- 8] The Contractor shall appoint an experienced Environmental & Social Expert (E&S Expert) as required to support the Environmental and Social Manager in areas where external expertise is required, as well as an experienced and ISO 45001:2018 or equivalent certified Health and Safety Specialist. These specialists will be full time present at the construction sites during working hours. The E&S Experts shall, amongst other items: (i) Have experience in delivering a similar Project, with similar Lender's E&S requirements, (ii) Examine the E&S implications of technical alternatives proposed during the design development.

[CC- 9] The Contractor's E&S team shall include a Cultural Heritage Monitor who will: (i) Train the relevant Contractor's Personnel on the Chance Finds Procedure, (ii) use their professional judgement and experience to determine where, and to what depth, they would need to be present to observe the works, (iii) Intervene when chance finds are discovered, (iv) Apply and report the Chance Finds Procedure, (v) Provide a watching brief whenever top soil is removed.

[CC- 10] The Contractor shall appoint an Employment Services Officer, with experience in vocational training and construction recruitment, and with the assistance of sufficient qualified support personnel, who together shall have defined roles, responsibility and authority for: (i) Implementing the Recruitment Policy, (ii) Administering and monitoring the Local Skills Development Programme; (iii) Identifying and fostering local employment opportunities; (iv) Preparing and posting notices and advertisements, and collect and screening applications either for direct recruitment or for eligibility to Local Skills Development Programme; (v) Advising job applicants on employment requirements and on terms and conditions of employment; (vi) Co-ordinating the Contractor's requirements in terms of skills and training needs; (vii) Assisting Local Residents in applying for and obtaining jobs related to the Project; (viii) Maintaining a database of Local Residents interested in employment or skills development activities; (ix) Maintaining statistics and records to compile and prepare reports on local recruitment and skills development programme indicators; (x) Arranging for appropriate skills testing of Local Residents; and (xi) Completing functions to ensure that the Local Skills Development Programme is properly administered.

Box 1 - Requirements for EPC Contractor's E&S team

The EPC Contractor will be required to allocate sufficient management, human and financial resources on an ongoing basis to implement all E&S policies, commitments and plans. Project owner and contractor E&S teams will jointly work in implementing the ESMS and ESMPs. The contractor will also be required to ensure that all contractor personnel are aware and capable of their responsibilities with regards to the ESMS. REL will require the contractor to appoint at the following personnel at the minimum:

- E&S Manager
- E&S Supervisor
- Community Relations Supervisor
- E&S expert(s)
- Safety Engineer
- Cultural Heritage monitor
- Employment Services Officer
- Laboratory technicians

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3.1.1.2 Monitoring equipment

[CC- 11] Portable equipment for water, air, soil, dust, sound and vibration monitoring shall be provided by the Contractor to perform at minimum the monitoring of the following parameters:

For water & wastewater: Probes for in situ measurement of temperature, pH, EC, turbidity, dissolved oxygen.

Air monitoring: Portable equipment for in situ measurement of particulate matters (PM), CO, CO_2.

Sound and vibration measurement: dB, peak particle velocity.

3.1.1.3 Data Management

[CC- 12] REL will develop a Project wide, integrated data management system to manage health, safety, environment and social aspects on the Project. The Contractor shall conform to this system, as directed by REL, which facilitates coherent and consistent reporting and data analysis.

[CC- 13] All health, safety, environment and social aspects shall be entered, in a timely manner, into this system, such as, but not limited to, reports, monitoring data, test results, data recording, grievances, incidents.

[CC- 14] The Employer shall offer initial training to the relevant Contractor's Personnel on the system.

3.1.2 Construction Environmental & Social Management Plan (CESMP)

3.1.2.1 Structure

[CC- 15] The Contractor shall deliver to REL for review a plan which defines the organisational and technical provisions required to satisfy the present measures under responsibility of the EPC Contractor: The Construction Environmental and Social Management Plan - CESMP.

[CC- 16] The CESMP will comprise of three parts: Part 1- Environmental and Social Organisation; Part 2- Environmental and Social Protection; Part 3- Environmental and Social Procedures.

[CC- 17] Part 1: Environmental and Social Organisation, is an umbrella document which includes the Contractor's Environmental Management System documentation: E&S Policy, Zone of Influence and Project Work areas, Document Map, Personnel organogram with reporting lines, Personnel roles and responsibilities, Resource mobilization, Inspection checklist, Inspection and auditing schedule, Change Management Procedure, Monitoring and Measuring Plan, Environmental Incident Reporting and Corrective Action Plan, Photo cataloguing Procedure, E&S Training Programme.

[CC- 18] Part 2: Site Environmental and Social Protection, is a site-specific overview of the identified impacts generated by the Project and the mitigation measures developed and implemented to manage these. It includes the Environmental and Social Impact and Risk Management Plans: Accurate delineation of site on 1/5 000^{e} topographical map relating the location of works and storage areas and access roads; sensitive locations and areas of concern (e.g. graveyards, water course); summary of potential adverse effects on local community and natural environment; proposed mitigation measures. Part 2 also includes the Stakeholder and Community Management procedure.

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[CC- 19] Part 3: Environmental and Social Procedures, comprises specific plans and procedures that describe exactly how E&S issues are to be controlled, managed and reported on. The Contractor shall prepare and implement E&S procedures detailing, for each of the aspects considered, the environmental best practices that it will implement to eliminate or reduce potential impacts on the natural or human environment resulting from the Works. The Contractor's E&S performance will be evaluated based on its capacity to implement the measures detailed in the procedures and the results obtained.

[CC- 20] Each Environmental and Social procedure in Part 3 shall include as a minimum: (i) Cross references to applicable legislation and Lender's standards and guidelines, (ii) Roles and responsibilities, (iii) Cross reference to other procedures, (iv) Identification of construction activities with potential risks in the field of concern, (v) Description of all or some of the mitigation measures proposed in Part 2 "Environmental and Social Protection", (vi) Implementation, monitoring and adaptive management process, (vii) Technical description or measurement / monitoring methods, (viii) Timeframe.

A Submission, Approval and Revision

[CC- 21] The Contractor shall submit the CESMP to REL within 30 days prior to the planned start of any construction activity for the Works. REL shall provide comments to the Contractor within 15 days after receiving the CESMP. If applicable, the Contractor shall submit the revised CESMP, integrating REL's comments, to REL for review within 7 days after receiving REL's comments.

[CC- 22] No construction activity for the Works shall commence prior to the CESMP being finalised except as authorized by REL. The commencement of Works in each area shall be authorised by the Employer only after non-objection of the related E&S procedures.

[CC- 23] During the Works, unless otherwise agreed with REL, the CESMP shall be updated by the Contractor every 6 months and reissued to REL for review. The revised version shall highlight the new elements incorporated in the CESMP. Any amendment to the law shall be clearly stated in the update.

3.1.3 Reporting, Monitoring, Training

3.1.3.1 Non-conformities

[CC- 24] The Contractor shall record all environmental incidents, non-conformities and non-compliances through the Project's environmental incident reporting procedure. The environmental incident reporting procedure shall be defined by REL and will utilise the same online software solution to manage the process as that used by REL. It is a systematic approach designed to identify, evaluate, investigate, correct and document environmental incidents, non-conformities and non-compliances during the Project.

[CC- 25] Environmental incidents will be evaluated and managed in the standard Tiers 1, 2 and 3 format, as defined in the environmental incident reporting procedure.

3.1.3.2 Ad-Hoc and Monthly Progress Reporting

[CC- 26] During the Works, in addition to the CESMP requirements, the Contractor will submit to REL ad-hoc, weekly and monthly progress reports, using the data reporting formats approved by REL.

[CC- 27] Ad-hoc reports will deal with a specific environmental and/or social issue as may be requested by REL.

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[CC- 28] Monthly progress report: (i) Summary of all E&S initiatives implemented in relation to the Works and specified key performance indicators; (ii) The results of monitoring analysis (drinking water, wastewater, storm-water, discharge from sedimentation ponds, air quality, dust, noise, light pollution etc.) carried out during the month; (iii) The status of environmental non-compliances and non-conformities opened or closed during the month; (iv) The status of community grievances opened or closed during the month; (v) Particular activities carried out during the last week and scheduled for the coming month; (vi) Status of E&S-related permit applications and approvals, and (vii) Any other information requested by the Employer relating to the Works.

3.1.3.3 Site Inspections

[CC- 29] The E&S Manager will carry out an E&S inspection of the Works on a weekly basis jointly with REL. The daily inspections of E&S and OHS shall be carried out daily by the Contractor's and owner's Engineer E&S and OHS specialists, who will be present at the construction sites during working hours. A checklist shall be in Part 2 of the CESMP.

[CC- 30] A detailed written report will be drafted by the Contractor for each weekly inspection, in a format approved by REL, addressing non-conformities detected and good practices. The report shall be submitted to REL within 3 days of the inspection.

[CC- 31] Non-conformities and good practices shall be documented and photographed, with relevant evidence explicitly indicating the location, date of inspection and a brief description of the non-conformities /good practice in question.

3.1.3.4 Monitoring

[CC- 32] The Contractor shall prepare a Monitoring and Measuring Plan that lists the regulatory and other monitoring requirements (including OHS), the relevant parameters, criteria to be measured, the periodicity. This plan will cross reference the Procedure that describes incident reporting and corrective action.

[CC- 33] Effluent Monitoring: see Annex C.

[CC- 34] Dust emission Monitoring: see Section 3.10.1

3.1.3.5 Staff Code of Conduct and Training

[CC- 35] The Contractor shall prepare and implement an E&S training programme for its Personnel and detail it in the CESMP (Part 2)

[CC- 36] Training for each role is identified through a comprehensive training and competency / skills matrix covering the training that will be required for each role.

[CC- 37] Training sessions are two-fold: induction sessions for starting the Works, and technical training as required in relation to the execution of the Works. The training activities are to be documented in the monthly progress report.

[CC- 38] Induction sessions are organised for each Personnel and shall cover as a minimum:

- Rules of procedure.
- Workers Code of Conduct and engagement with local community.
- Protection of biodiversity, including restrictions on harvesting, hunting and purchase of bushmeat.
- Protection of areas adjacent to the Site, including fire control measures.
- Waste Management.
- Risks relating to sexually transmitted diseases.
- Basic health: combating waterborne diseases and improving hygiene.

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- Asset damage procedure in the event of accident
- Relationship with the local communities.
- Regular tool-box-talks on relevant and topical issues including OHS, community health and safety and any other issues related to reported incidents.

3.1.3.6 Documentation of Worksite Conditions

[CC- 39] The Contractor shall document changes in condition of all Works areas from the start of Works until the issuance of the Taking-Over Certificate. Documentation shall comprise dated and geo-referenced colour photographs taken weekly from a constant angle and viewpoint.

[CC- 40] The Works areas condition shall be documented as a minimum for the following stages:

- Before any disturbance at the start of the Works.
- On completion of the Works

[CC- 41] The Contractor shall specify in each E&S procedures (i) the list of viewpoints to be used, (ii) areas to be photographed, and (iii) methods used for taking and archiving photographs. Adjacent areas (100 m from the perimeter of the Works area) are included in photographic documentation.

[CC- 42] Unless instructed otherwise by REL, structures to be buried will be photographed weekly until covered. As a minimum the structures are photographed twice for Works with duration of less than seven days, and at least once a week for Works with a longer duration.

[CC- 43] Photographs are to be archived in digital format and provided to REL on a monthly basis in format and medium approved by REL. The nomenclature of electronic files for photographs shall explicitly indicate the Works area, date and structure documented.

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3.2 Ecology

3.2.1 Ecological Clerk of Works

[CC- 44] The Contractor shall employ an ecologist (Ecological Clerk of Works) with appropriate ecological experience to be on Site for each shift during the vegetation clearing works.

[CC- 45] The Contractor shall ensure that there is a designated and trained snake handler on site at all times to collect and translocate any snakes to safe areas. Any snakes caught should be photographed and identified before release. A long-handled snake catching device and an anti-venom snake bite kit should be available at the workcamp.

[CC- 46] The Contractor shall monitor change in wildlife presence and inform local communities of the potential for increased risk of wildlife encounters during reservoir filling (e.g snakes moving out of reservoir after filling and hippopotamus and crocodile movements) and the need to avoid harming wildlife.

3.2.2 Biodiversity Awareness Plan and General Protection Measures

[CC- 47] The Contractor will prepare, execute and document a Biodiversity Awareness Plan for the Contractor's Personnel and train them accordingly, which reflects the requirements of this section. This shall be done through weekly toolbox talks, posters and specific focussed sessions.

CC- 48] The workers Code of Conduct shall include ecological protection measures such as restrictions on fires in non-designated areas; hunting, harassment, harvesting or other disturbance of natural resources and wildlife; speed control and traffic risks to animals; pollution prevention, and appropriate waste management etc.

[CC- 49] Unless instructed otherwise by REL, the Contractor shall use construction methods and means of protection that ensure minimizing the adverse effects on vegetation, soils, groundwater, biodiversity, natural drainage and the water quality in the areas adjacent to the Site for the entire duration of the Works.

[CC- 50] Adjacent areas not designated as Project land will be actively protected through demarcating work site boundaries on site development plans and on the ground to minimise risks of encroachment, including vehicle access and parking areas. Sites for construction facilities, spoil dumps and topsoil stockpiles will be sited on disturbed ground wherever possible.

[CC- 51] Burning of any material shall not be permitted unless agreed otherwise with REL in designated places.

CC- 52] A riparian buffer zone of 50 m around riparian habitats (including dewatered reach) will be maintained to restrict erosion and sedimentation of the water courses[2]. Rehabilitation and alien plant control will be applied after construction to re-establish natural vegetation (EPC Contractor).

[2] The creation of the 50-m-wide buffer zone will result in economic displacement as the affected land is mostly used for agriculture. However, the buffer zone has been included in the Project's Land Acquisition area as is included in the scope of the RAP so that households affected by the loss of agricultural land and access to ecosystem services will be identified and compensated.

3.2.3 Wildlife Protection

[CC- 53] Fishing and any other harvesting or injury to wildlife shall be strictly banned for the Contractor's Personnel.

[CC- 54] Deliberate killing or injuring of snakes will be forbidden. Any snakes found shall be removed by a trained snake handler and relocated to a safe area (away from settlement or areas of intense human use).

[CC- 55] All staff shall be made aware of the potential for hippo (and possibly crocodile) encounters and measures to protect themselves without injury to wildlife. If ongoing issues occur due to problem animals, conservation authorities shall be notified to assist with finding a solution.

[CC- 56] Excavations and trenches shall be covered or a means of egress (e.g. escape ramp) provided when left open for more than 48 hours to mitigate risk of injury or mortality of animals such as snakes, lizards, frogs and small mammals.

[CC- 57] Bird diverters shall be placed along sections of the transmission line which cross ridges or near raptor nesting sites (that may be confirmed during pre-construction walk through surveys).

3.2.4 Alien Invasive Plants

[CC- 58] The Contractor shall prepare Terrestrial Alien Invasive Plant Management, Monitoring and Control Plan documenting the measures to be taken to minimise risk of introduction and spread of alien plants along access roads, around quarry/borrow pit sites, and within the construction areas. The plan will include measures to address the following risks:

- Potential for earth excavating, bulldozing or trucks to carry and introduce alien plant matter to the project construction sites.
- Potential for fill material from quarries and borrow pits to be contaminated with alien plants and be introduced to construction sites.
- Potential for vegetation clearance and earth moving along access tracks and new or widened roads in areas with alien plants to create opportunities for spread and encroachment into adjacent habitats.
- Potential for alien plants to be spread during alien clearing and transport (e.g. on open trucks/trailers).

[CC- 59] The Ecological Clerk of Works will identify the range of alien invasive plants that may occur on the site and have an understanding of the risks and control measures required to manage them. An alien plant identification guide shall be prepared and distributed to contractors to aid in alien plant control.

[CC- 60] The EPC Contractor will be responsible for site monitoring throughout construction and for 1 year after completion (or for the full duration of the post-construction liability phase) and will include alien plant, erosion and sedimentation, and reinstatement of vegetation. Thereafter, alien monitoring will be continued by the Dam Operator until results confirm alien plant spread due to project activities are effectively managed.

[CC- 61] The EPC Contractor will conduct routine spray down and checks of vehicles entering the site (especially if used in areas heavily infested with alien plant species) and will complete a checklist to demonstrate compliance.

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[CC- 62] The EPC Contractor (or Ecological Clerk of Works) will conduct a drive through or walkover of the transmission line route, access roads, quarry areas and dam construction sites to confirm presence of alien invasive plants and will map and take coordinates of locations with high severity plant invasion. Alien plants at these sites should be promptly removed by hand (where possible) and immediately bagged or loaded onto enclosed or covered truck (to minimise risk of windblown seed) for removal to a designated waste site for incineration (where possible). This should be done prior to vegetation clearance for construction to limit the risk of spread and requirement for ongoing management control.

[CC- 63] Fill material contaminated with alien plant matter may only be used in areas where risk of alien plant spread is minimal, i.e. areas which will be paved or covered with impermeable surface.

[CC- 64] The EPC Contractor will conduct monthly checks of all construction footprints, along roadsides and at topsoil stockpiles to monitor the presence and spread of alien plant invasion. Any evidence of alien plants will be cleared and removed within 24 hours, with priority to clearance prior to plants producing seeds. Records of alien invasion and control measures implemented will be recorded on daily log or field sheets. Follow up checks will monitor regrowth in cleared construction sites.

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3.3 Environmental Flow

[CC- 65] Excepting the short reach between the cofferdam and bottom outlet, the Ruzizi River flow continuity will be maintained at all times during the construction period, including for the reservoir filling period.

[CC- 66] Implement a minimum of biannual releases of "freshets" for a few consecutive days at a time that shall be timed to coincide with seasonal natural increases in flow with the aim of facilitating migration as well as clearing accumulated sediment from the dewatered reach. The volume of freshets required should be determined through a further modelling study but are assumed to be a minimum of 50 m^3/s for a few days.

[CC- 67] Implement fish monitoring to determine whether fish stranding occurs and determine additional mitigation if required (e.g. extended ramp down rates after each sub-daily peaking event to achieve a rate of water level drop of .max. 3 cm/minute downstream of the powerhouse; or river engineering solutions to moderate flow fluctuations.

[CC- 68] The river flow immediately downstream of the bottom outlet should never be lower than the specified minimum flow regime (10 m^3/s).

[CC- 69] The cofferdam used for construction works in the river will be designed to enable bedload delivery to downstream reaches while construction is taking place

[CC- 70] The river diversion works and procedures will be designed, prepared and executed so that there is no interruption of river flow - or reduction greater than that allowed in [CC-68] - at any time during the construction period, including the placement and decommissioning of the cofferdam.

[CC- 71] Undertake monitoring of river flow and sediment load immediately downstream of the bottom outlet using sampling, flow measurement / video evidence; data to be available for real-time inspection via an open web portal.

[CC- 72] Undertake monitoring of sediment load downstream of worksites using sampling, video evidence; data to be available for real-time inspection via an open web portal.

[CC- 73] Publish annual report of river flow and sediment load monitoring data.

[CC- 74] Implement operational maintenance schedule to ensure full and correct functioning of river flow and sediment monitoring & data publishing, to include level of service agreements made with key stakeholders (e.g., REL, ABAKIR) and recommendations for adaptive management variations.

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3.4 Pollution Prevention and Control

3.4.1 Pollution Prevention and Control Plan

Effluents consist of liquid discharges, including infiltration, transporting a pollutant (dissolved, colloidal or particles).

[CC- 75] The Contractor shall prepare and implement a Pollution Prevention and Control Plan (PPCP) as part of the CESMP. The plan shall detail all Site-specific measures the Contractor will implement during the Works to identify, collect and treat effluents generated on Site from the Works.

The plan describes the prevention or minimisation of pollution using working practices and abatement systems and will be the support for documenting and reporting sources of pollution, the means by which the pollution is controlled and monitoring performed. The PPCP will include the following:

- Site layout plan.
- Summary of the flow of raw materials, energy requirements and substances produced.
- Identification of discharge, emission or release points and an assessment of the environmental concerns associated with the discharge, emission or releases.
- Description of the systems or working practices that are in place to avoid or reduce the discharges, emissions or releases.
- Nature, quantity and sources of all emissions, discharges and releases from the facilities, including (a) atmospheric emissions, (b) dust emissions, (c) liquid effluents, (d) noise, and (e) solid waste.
- Definition of the responsibilities and resources, tools and methods to be used for measuring, recording and reporting releases, emissions and discharges.
- Description of design considerations, systems, procedures and working practices for the prevention of accidental releases and spills.
- The PPCP will be regularly updated and linked to the environmental monitoring system.

[CC- 76] Pollution is the introduction of substances or energy into the environment, resulting in deleterious effects of such a nature as to endanger human health, harm living resources and ecosystems, and impair or interfere with amenities and other legitimate uses of the environment.

[CC- 77] No effluent is discharged by the Contractor, or the Contractor's activities, into water courses or soils without prior treatment and without monitoring of the treatment's performance to guarantee the absence of pollution.

[CC- 78] The Contractor shall primarily focus on pollution prevention. For all activities involving chemicals on Site, a source - pathway - receptor assessment will be carried out by the Contractor and documented, and measures identified to prevent harmful substances entering the pathway at source. Measures also shall define the actions to be followed to prevent discharge to the environment in the event that harmful substances do end up in the pathway.

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3.4.2 Prevention of Pollution from Wastewater

[CC- 79] The Contractor shall provide, install and maintain sewage treatment plants or other treatment process for disposal of sewage from all houses, offices, camps and other buildings constructed by the Contractor.

[CC- 80] The system shall comply with the relevant statutory requirements and international standards.

[CC- 81] Sewage treatment plants will be sufficient for the number of resident personnel.

[CC- 82] Black water and grey water will be treated separately, unless the sewage treatment plant is capable of processing both waste streams.

[CC- 83] Oil separators shall be used for canteens unless the sewage treatment plant is capable of processing the waste.

3.4.3 Prevention of Pollution from Worksite Runoff and Tunnel Seepage Water

3.4.3.1 Principles

[CC- 84] Runoff consists of the rainwater flow on the surface or the soil and from other technical surfaces at Site. Runoff will be considered as an effluent unless demonstrated otherwise, as documented and substantiated by the Contractor and approved by REL.

[CC- 85] All areas with generators, hydrocarbon storage tanks and refuelling stations shall have impervious surfaces with secondary containment and shall be drained and equipped with an oil separator.

[CC- 86] Runoff from workshops, parking areas and garages shall be drained and equipped with oil removal treatment to prevent pollution.

[CC- 87] Effluent from batching activities and cleaning of concrete trucks shall be collected in settlement ponds and treated in line with international good practice. This treatment will be subject to detailed study submitted to REL for approval prior to start of the batching plant operation, in advance enough to allow mobilization of the appropriate treatment equipment.

[CC- 88] Sludge resulting from the maintenance of oil separators, batching plant settlement ponds and tunnel water settlement ponds are considered as hazardous waste and shall be disposed of in line with the Waste Management Plan.

[CC- 89] Drainage flows shall not be allowed to discharge onto agricultural land, wetlands or community water supplies.

3.4.3.2 Tunnel Seepage Waters

[CC- 90] The Contractor shall ensure that all water in the underground works, whether flowing into the Works from natural ground water sources or as a result of the construction operations is confined to defined flow channels and is so prevented from spreading over the whole floor of the excavated areas.

[CC- 91] The Contractor shall furnish, install, calibrate, operate, and maintain throughout the underground works accepted measuring devices for measuring the quantity of water introduced into the Works such that the net amount of ground water removed may be ascertained.

[CC- 92] All water discharged from the underground works shall be discharged into settlement ponds before release into natural waterways unless clean water is piped separately to waste.

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[CC- 93] Mitigation to avoid cement contamination of tunnel waters will be defined and included in the CESMP. Mitigation to treat any tunnel waters contaminated with cement (including shotcrete) will be defined and approved prior to any tunnelling works commencing.

3.4.3.3 Settlement Ponds

[CC- 94] The Contractor shall construct, operate and maintain settlement ponds with sufficient capacity for their purpose, with suitable oil traps and acid dosing to reduce pH at each point where contaminated water is discharged from the Works.

[CC- 95] Ponds shall be designed in order to ensure compliance with DRC/Rwanda standards and good international practices for total suspended solids loads in discharges.

[CC- 96] All contaminated water runoff from work areas and excavations shall be discharged into settlement ponds, to remove oil, sand, silt, cementitious materials and other suspended matter. The outflow from each settlement pond shall be arranged to prevent any floating oil from leaving the pond irrespective of the volume of water entering the pond.

[CC- 97] Trucks used for the transport of cement or concrete shall not be cleaned near streams but only in areas draining directly to settlement ponds.

[CC- 98] Ponds shall be constructed using any suitable materials and shall be watertight. They shall be sub-divided to enable sections to be cleaned while other sections are in operation.

[CC- 99] Natural ground water and stormwater from areas outside the immediate area or the Contractor's activities must be prevented from flowing into the ponds. In this regard, it is particularly important to ensure that any diversion berms or drains protecting ponds constructed below ground are adequately maintained.

[CC- 100] Separate settlement ponds shall be constructed to collect surface water runoff from spoil areas.

[CC- 101] Settlement ponds are to be located at a distance >50 m from the banks of the Ruzizi River.

3.4.4 Monitoring of Discharges

3.4.4.1 Monitoring Requirements of the PPCP

[CC- 102] The PPCP prepared by the Contractor will provide the location and characteristics (flow, expected quality, discharge frequency) of all liquid discharges to the natural environment caused by the Contractor's activities.

[CC- 103] The Contractor shall carry out the monitoring of the discharges in alignment with the PPCP, best industry practices and apply the ambient water quality standards presented in the World Bank Group General Environmental, Health and Safety Guidelines. Monitoring equipment will comply with the relevant ISO standards.

[CC- 104] The PPCP shall detail the discharge monitoring plan including, but not limited to, the following: Location of monitoring sites; frequency of monitoring, parameters monitored, analytical methods, structure of the database for recoding results and compliance values.

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3.4.4.2 Monitoring

[CC- 105] The monitoring stations shall include the discharge stream and the receiving environment, i.e. surface water 5 m and 10 m downstream from the discharge point to check for dilution effects. Surface water quality upstream from discharge points shall also be monitored. This will enable the degree of alteration to the quality of the water body caused by the discharge to be measured.

[CC- 106] The physical and chemical monitoring parameters are those that are listed in the Rwanda/DRC environmental regulations, or if these do not exist, the parameters are based on the recommendations of specialised international organisations. The parameters shall have prior approval from REL.

[CC- 107] As a minimum, the following quality indicators shall be monitored to check compliance with Project standards (World Bank Group EHS Guideline values and national standards – with the most stringent values for each parameter applicable):

- Organic pollution: BOD5, nitrates, phosphates, particularly for effluents from living areas and sanitation systems.
- Oils and grease, particularly for drainage water from mechanical activities, hazardous products storage (hydrocarbons), and wastewater from food preparation/consumption areas.
- Suspended matter, in drainage water from anti-erosion activity areas and settlement ponds.
- Suspended matter and pH at the outlet of batching area settlement ponds.
- Bacterial pollution: Presence of faecal and total coliform in drinking water storage and distribution network.
- Groundwater pollution in relation to landfill sites: BOD5, COD, ammoniac nitrogen, nitrates, chlorine, zinc, chromium, lead, mercury.
- For all samples, the following parameters shall be measured in situ: temperature, pH, electrical conductivity, turbidity, dissolved oxygen.

[CC- 108] The Contractor shall regularly monitor the discharges from the following operations and facilities:

- Treated effluent from wastewater treatment plants (lagoons, septic tanks).
- Tunnel seepage water.
- Settlement ponds related to batching plants activities and crusher plants.
- Settlement ponds related to stormwater at sites considered particularly sensitive.
- Drainage water from workshop sites, hazardous products storage sites and food preparation/ consumption areas.
- River work sites, with monitoring of the solids content of water upstream and downstream of the works.
- Monitoring wells drilled for landfill control.

[CC- 109] Monitoring shall be performed according to a variable frequency from weekly to monthly, depending on sites, activities involved and sensitivity of the receiving environment (see monitoring programme provided in Annex C).

[CC- 110] In the event of an incident or non-conformity monitoring will take place on a daily basis until the results indicate that the pre-incident condition has been achieved.

[CC- 111] The Contractor shall submit a discharge monitoring report on a monthly basis, as part of the monthly progress report, including documentation for the following for each discharge point:

- Average flow rates of discharge.
- Discharge frequencies and durations over the month.
- The physical and chemical quality of the discharge.

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3.5 Waste Management

3.5.1 Site Waste Management Plan

[CC- 112] The Contractor is responsible for identifying, collecting, segregating, transporting, disposing and treating all waste produced during the Works at Site, and trash from upstream that is carried by the river and which accumulates in the reservoir or at the dam site during construction works and reservoir filling.

[CC- 113] The Contractor shall prepare and implement a Site Waste Management Plan (WMP) as part of the CESMP. The plan shall detail all Site-specific measures the Contractor will implement during the Works to identify, collect, transport and treat all waste produced on Site.

[CC- 114] The plan shall be submitted not less than 30 days prior to mobilization to the Site.

[CC- 115] The plan shall follow the waste management hierarchy as specified in the EU Waste Management Framework and that considers prevention, recycling & reuse, treatment and disposal.

3.5.2 Segregation and Register of Waste

[CC- 116] The Contractor shall establish a secure centralised waste segregation and management area of sufficient size and to international standards before Works commence.

[CC- 117] All waste shall be segregated into different waste streams.

[CC- 118] The Contractor shall establish and maintain a waste register which is at the disposal of REL.

[CC- 119] This register shall initially record all anticipated types of waste generated by the project, its EU waste code, the quantity and treatment, i.e. reuse, recycling, disposal options.

[CC- 120] This register shall subsequently record all actual waste management operations including production, collection, temporary storage, transport, and treatment. The following aspects are to be documented in this register: (i) Type of waste; (ii) Waste quantities; (iii) Waste code; (iv) Name and address of the third-party waste transporters and waste management facilities receiving waste or parties taking possession of the substances no longer considered as waste; (v) Name and address of waste transport contractors; (vi) Actual waste treatment.

[CC- 121] The Contractor shall keep detailed records of the waste manifests for the collection, transport, treatment and/or elimination of waste.

[CC- 122] The Contractor shall implement specific waste management practices adapted to the level of danger for human health or the natural environment. Three waste categories are identified the Site and in tracking documents:

- Hazardous waste: any waste with one or several dangerous properties as listed in Table 4.
- Non-hazardous waste: any waste with no properties rendering it hazardous. Non-hazardous waste contaminated by hazardous material will be considered as hazardous waste, unless indicated otherwise by REL.
- Inert waste: any waste unaffected by any significant physical, chemical or biological modifications, which does not decompose, burn or produce any physical or chemical reaction, is not biodegradable and does not damage any substance with which it comes into contact in a manner likely to cause damage to the environment or human health.

[CC- 123] Waste shall be categorised and stored separately prior to removal from the Site, depending on the level of danger, phase (liquid, solid or gas), the waste management solution to be applied and its potential in terms of recycling or reuse.

Table 4- Properties Rendering a Product Hazardous

Property	Description
Explosive	Substances and preparations which could explode in the presence of a flame or which are more sensitive to impacts and friction than dinitrobenzene.
Combustive	Substances and preparations which, when in contact with other substances, particularly inflammable substances, undergo strongly exothermic reactions.
Easily inflammable	Substances and preparations (i) in liquid phase (including extremely inflammable liquids), with a flash point below 21°C, or which can heat up to the extent of spontaneous combustion in ambient air; or (ii) in solid phase, which can burst into flames easily in the brief presence of a source of inflammation and which will continue to burn after the removal of the source of inflammation or (iii) in gaseous phase, which are inflammable in air at normal pressure; or (iv) - which, when in contact with moist air or water, produce dangerous quantities of gases which are easily inflammable.
Inflammable	Liquid substances and preparations, with a flash point equal to or above 21°C and less than or equal to 55°C.
Irritant	Non-corrosive substances and preparations which, when in immediate, extended or repeated contact with the skin and mucosa, can cause inflammation.
Harmful	Substances and preparations which, in case of inhaling, swallowing or cutaneous penetration, can lead to risks of limited severity.
Toxic	Substances and preparations (including highly toxic substances and preparations), which, in case of inhaling, swallowing or cutaneous penetration, can lead to serious, acute or chronic risks, and even death.
Carcinogenic	Substances and preparations which, in case of inhaling, swallowing or cutaneous penetration, can lead to or increase the frequency of cancer.
Corrosive	Substances and preparations which, in case of contact with living tissues, can destroy the latter.
Infectious	Substances containing viable micro-organisms or their toxins, for which it is known or we have good reasons to believe that they cause disease in humans or other living organisms.
Harmful to reproduction function	substances and preparations which, in case of inhaling, swallowing or cutaneous penetration, can induce or increase the frequency of undesirable non-hereditary effects in offspring or have a negative effect on reproductive functions and abilities.
Mutagenic	Substances and preparations which, in case of inhaling, swallowing or cutaneous penetration, can lead to hereditary genetic disorders or increase the frequency of these disorders.
React with water	Substances and preparations which, in case of contact with water, air or an acid, release a toxic or highly toxic gas.
Sensitizing	Substances and preparations which, in case of inhaling or cutaneous penetration, can lead to a hypersensitisation, so that renewed exposure to the substance or preparation will cause characteristic harmful effects. This property can only be considered if test methods are available.
Ecotoxic	Substances and preparations with inherent or potential immediate or deferred risks for one or several environmental components.
Dangerous for the environment	Substances and preparations which are likely, after elimination, to lead to another substance, by any means, e.g. a lixiviation product, with one of the above characteristics.

3.5.3 Recycling

[CC- 124] The Contractor shall assess the availability of local services for local recycling and re-use and effectively implements available local recycling or re-use options for waste.

[CC- 125] The Contractor shall engage a qualified company for the collection and the recycling of recyclable materials. Recyclable wastes are to be removed from their temporary storage location on a regular basis, not less frequently than every two months.

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3.5.4 Temporary Storage of waste

[CC- 126] Waste shall be collected from each area at the same rate that it is produced and is to be placed in temporary locations meeting the following criteria: (i) Located at a distance of over 100 m from any natural sensitive area and over 500 m from any socioeconomic sensitive area (school, market, healthcare centre, water well or catchment area), with the exception of waste storage areas in camps; (ii) Protected from moving machinery and vehicles, but easy to access for regular collection; (iii) Protected from the possibility of landslides; (iv) Located on a flat impervious surface to prevent infiltrations; (v) Under cover for non-inert waste; (vi) Stored in containers of the appropriate size, tightness and level of resistance depending on the danger and phase (solid, liquid, gas) of the waste; (vii) Liquid wastes storage is equipped with secondary retention with a volume at least 110% of the largest container; (viii) Hazardous waste stored pursuant to approved practices.

[CC- 127] Duration of storage in temporary location (time between two collections) is logged into the waste register for each temporary waste storage location.

[CC- 128] The Contractor shall implement measures for protecting waste storage areas from animals.

[CC- 129] Waste is removed from the Site and transported to recycling, treatment and waste management facilities on a regular basis. The frequency of removal shall guarantee:

- No overflow from containers or windblown waste.
- No unpleasant odour or emissions which are dangerous for human health.
- No proliferation of insects, rodents, dogs or other animals which are harmful or dangerous for human health or which predate on small mammals and birds.
- Regular cleaning of containers and surfaces on which they are located (ensuring drainage of any cleaning chemicals to a bunded area and avoidance of soil or water contamination).

[CC- 130] Unless otherwise instructed by REL, waste incineration is prohibited at Site. Exceptions are medical waste, unless instructed to the contrary by REL.

[CC- 131] The use of third-party waste management services is subject to a documented prior audit of the treatment, storage and recycling facilities by the Contractor, to guarantee the conformity with the provisions of this Section. A copy of the audit report shall be provided to REL.

[CC- 132] The provisions applicable to the Contractor regarding waste management also apply to any third-party waste management contractors. REL reserves the right to inspect third party waste management facilities of such contractors and prohibit the Contractor from using the facilities if the facilities do not comply with the specified requirements.

3.5.5 Non-Hazardous Waste Management

[CC- 133] Non-hazardous waste may be either disposed of in municipal landfill or the Contractor may develop its own landfill sites, subject to approval by authorities and the Employer. If the EPC Contractor uses municipal landfill, this landfill will be subject to a documented audit which demonstrates that the quantity and type of wastes brought by the EPC Contractor does not raise an incremental risk for the environment and community which cannot be handled by the present management of the municipal landfill. If the project develops its own landfill then the following specifications apply.

[CC- 134] Non-contaminated inert waste is removed and can be disposed of to landfill with unused backfill material. The location, capacity and environmental protection measures, particularly for water courses, implemented by the EPC Contractor or Subcontractor, will comply with the provisions of this Section 3.

[CC- 135] Non-hazardous waste that cannot be recycled is disposed to landfill, and shall comply with the following criteria:

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- The landfill is located away from sensitive receptors.
- The bottom of the landfill is not closer than 2 m above the highest seasonal level of the water table.
- The landfill is fully fenced, and its access controlled at all times.
- Walls and base of landfill cells are made impervious by a geo-membrane at least 2.5 mm thick with welded seams, or by a layer of compacted clay with a minimum thickness of 0.5 m and a permeability factor less than 10^{-7} cm/s.
- Drained for the recovery of leachates.
- Leachates are treated prior to release in the environment, either by aerobic/anaerobic lagooning treatment or transfer to any other treatment facility.
- Treated leachate BOD5 shall not be higher than 50 mg/l.
- Each landfill cell is surrounded by an external peripheral drainage to minimize drainage water inflow.
- Regularly compacted and covered by soil to limit odours and the proliferation of insects and rodents.
- When a landfill cell has reached full capacity, vents are installed to evacuate gases, and the landfill covered by a geo-membrane with a minimum thickness of 1 mm, or a 30-cm layer of compacted clay, and a top layer of 1.5 m of topsoil, which is revegetated.
- At least two piezometers joining the underlying aquifer are installed by the Contractor, one upstream of the landfill and the second downstream, assuming the general direction of the underground water flow. These piezometers allow regular monitoring of the water table depth next to the landfill and regular sampling of underground water for quality analysis and detection of any pollution from the landfill, should it happen.
- The facility is sized to accommodate the domestic waste production during the construction period as well as the waste production of the Operator's housing during the first 5 years of operation of the Project.

3.5.6 Hazardous Waste Management

[CC- 136] The Contractor may engage a specialised Subcontractor to manage hazardous waste, who is accredited in DRC or Rwanda for this activity.

[CC- 137] In the absence of an existing waste management solutions for hazardous waste, the Contractor takes the following action:

- Medical waste is incinerated in a specific facility constructed and accredited for this purpose
- Used oil, hydrocarbons, lubricants, paints, solvents and batteries are transported in drums to waste management facilities. Sludge from settling tanks/ponds, septic tanks or oily water skimmers will also be managed in the same way.
- Contaminated soils from construction/demolition will be treated, stabilised and disposed to landfill.
- Prior approval from REL is required before implementing waste management solutions on any other hazardous waste.
- The Contractor shall provide documentation on the hazardous waste landfilled at sites other than accredited third-party waste management facilities. The documentation shall include a plan showing the location of landfill sites. The document is to be provided to local authorities whose jurisdiction covers the landfill sites.

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3.6 Management of Hazardous Substance

3.6.1 Hazardous Substance Handling and Storage Management Plan

[CC- 138] A substance is considered dangerous if one or several of its properties render it hazardous (see Table 4).

[CC- 139] The Contractor shall prepare and implement a Hazardous Substance Handling and Storage Management Plan, in accordance with the provisions detailed below. The plan shall include the material safety data sheets (MSDS) of all chemicals used. The plan shall detail all Site-specific measures the Contractor will implement during the construction phase to identify and manage hazardous substances planned for use on Site.

[CC- 140] The procurement policy shall ensure and document that any alternative to hazardous substances shall be considered where possible following the standard mitigation hierarchy.

3.6.2 Transport and Handling

[CC- 141] The Contractor shall obtain all necessary authorisations and/or licenses for the storage and use of dangerous substances from local authorities. A copy of the authorisations shall be submitted to REL.

[CC- 142] For each dangerous substance used, the Contractor will implement the recommendations described (i) in the MSDS, and (ii) by the Globally Harmonized System of Classification and Labelling of Chemicals established by the United Nations for hazardous chemicals.

[CC- 143] All handling or transferring of hazardous substances is to be performed on impervious surfaces equipped with spill retention.

[CC- 144] Copies of MSDS are to be kept on at the work areas and made available to personnel. These shall be in English, French and Swahili if available. The Contractor shall submit to REL copies of all MSDS.

3.6.3 Storage of Hazardous Substances

[CC- 145] Storage areas shall be designed and equipped by the Contractor based, not only on the chemical and physical properties of the products, but also on the types of containers stored, the number of people requiring access, and the quantities of the substance used. The size of areas allocated for storage will be calculated based on the volume of the hazardous material that will be on site during peak construction for the relevant activity.

[CC- 146] The Contractor shall plan for the storage and management of hazardous waste.

[CC- 147] Safety distances between onsite areas for storage and handling of hazardous substances and offsite residential areas will conform with best industry practices.

[CC- 148] Storage areas for hazardous substances shall adhere to strict rules, which will be regularly checked by the E&S Manager. The rules include the following as a minimum:

- Access to the storage area is limited to trained and authorised individuals equipped with the appropriate personal protective equipment.
- An inventory is maintained up to date and all in/out movements of hazardous product are registered.
- MSDS must be available for all stored hazardous substances, and the substances must be clearly labelled.

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- A strict and methodical storage system is implemented (storage plan posted, large or heavy packaging may not be stored at heights, equipment and tools may not be stored in the hazardous substance storage room).
- Compliance with product expiry dates and implementation of a disposal procedure for substances which are not needed, or which have expired.
- Entrances, exits and access to emergency equipment are kept clear at all times.
- Storage areas for hazardous substances are clearly identified with warning signs at the entrance. The Contractor displays the storage plan (location of the different products, maximum inventory), a summary of labelling system and information on chemical incompatibilities in English and Swahili languages.
- Chemicals which could react together (leading to explosions, fire, projections or the emission of dangerous gases) are physically separated.
- Products that react violently with water are stored so as to prevent contact with water, even in the event of flooding.
- Inflammable products are stored separately in a dedicated area with adequate ventilation at all times.

[CC- 149] Buildings used to store large quantities of hazardous substances are to be isolated from other buildings to avoid the spreading of fire. Such buildings are to be constructed using solid and non-combustible building materials and are to be equipped with evacuation systems and the appropriate firefighting equipment. Access to the buildings shall be clear, allowing for rapid evacuation in the event of an accident. The electrical systems shall be reduced to the essential minimum, and access points shall be equipped with adequate lighting (300 lux as minimum).

[CC- 150] All storage areas for hazardous substances are to be equipped with secondary retentions to retain any spill or leakage from one of the containers stored. The secondary retention volume is defined as a minimum of 110% of the volume of the largest container stored on the site taking into consideration the volume occupied by the stored containers. Secondary containment bunds are to be maintained empty of rainwater.

[CC- 151] Tanks are to be equipped with level detectors and safety systems to prevent overfilling.

[CC- 152] Suitable absorbents (neutralising and non-combustible) are to be made available in the storage area to clean up any spills and leaks. Polluted soils are to be removed and managed as hazardous waste.

[CC- 153] The Contractor shall maintain the storage area at a suitable temperature for hazardous substances to prevent overpressure and bursting of containers.

[CC- 154] Runoff from worksite areas where hazardous materials are stored or handled is to be collected and routed to an oil-water separator for separation of hydrocarbons before discharge of runoff to the natural environment.

3.6.4 Refuelling

[CC- 155] Refuelling of Project vehicles and plants shall be to the extent possible at dedicated refuelling stations equipped with impervious platforms.

[CC- 156] Refuelling shall be included in the Pollution Prevention and Control Plan.

[CC- 157] Refuelling of machinery outside the refuelling stations is performed using a dedicated equipment to minimize risks of leakage and soil contamination. Portable retention equipment shall be used systematically to collect any accidental spill.

[CC- 158] Refuelling shall be in line with best industry practice.

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3.6.5 Spill Contingency Plan

[CC- 159] Prior to mobilization on Site, the Contractor shall prepare, submit and implement a Spill Contingency Plan demonstrating its capability and state of readiness for responding and taking appropriate action in the event of a hazardous substance spill.

[CC- 160] The Plan includes the following:

- Flow chart of response organization.
- Action Plan: Potential spill sizes and sources for each hazardous material on site, potential environmental or social impacts of spill (include worst case scenario), procedures (including alternative action in case of impeding environmental conditions).
- Procedures for initial actions.
- Spill reporting procedures.
- Procedures for containing and controlling the spill e.g. on land, water, snow, ice, etc.
- Procedures for transferring, storing, and managing spill-related wastes.
- Procedures for restoring affected areas.
- Resources available for responding to spills: On-site resources e.g. spill kits, booms, sorbent materials, earth moving equipment; and Off-site resources e.g. contact numbers for deployment and time estimate.
- Training Program: Outline of training program, training schedule and record keeping.

[CC- 161] The locations of adequate and suitable spill response kits shall be identified in the Site Environmental Protection Plans (Part 2 of CESMP) based on the locations of potentially polluting works.

[CC- 162] All generators and other power-generating equipment used during construction shall have secondary containment.

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3.7 Management of Vegetation Clearing

3.7.1 Vegetation Clearing and Debris Management Plan

[CC- 163] The Contractor shall prepare, submit and implement a Vegetation Clearing and Debris Management Plan prior to the start of construction at Site which will provide an overview of clearing activities on each of the construction sites. It will include links to the Terrestrial Alien Invasive Plant Management, Monitoring and Control Plan to minimise risk of alien plant spread during vegetation clearance activities.

[CC- 164] Prior to site clearance, the Contractor shall conduct a site-based survey, map sensitive habitats and large trees (>30 cm DBH (height and diameter at breast height)) to prioritise their avoidance during detailed design, where possible. Any areas or trees that are to be retained shall be marked using tape or fencing to prevent accidental bulldozing. The site surveys will inform the revegetation requirements as part of the Site decommissioning and reinstatement activities.

[CC- 165] Specific agreement from REL is to be obtained prior to any clearing works.

[CC- 166] Burning of wood and debris is not permitted without explicit, written approval by REL.

[CC- 167] The plan shall include as a minimum: dam site, reservoir, quarries, borrow areas, powerhouses, disposal areas, access roads, rehabilitated and new/rehabilitated road(s) and power supply lines. For each of the clearing sites, the plan shall describe:

- Areas to be cleared in hectares, with details on area where stumps are removed and areas where stumps are retained.
- Clearing schedule taking into account constraints on bird nesting periods.
- Methods of clearing.
- Location and layout of lay-down areas, including laydown areas.
- Management of waterborne woody debris entering in the reservoir during the Works (accumulating against the upstream cofferdams) and during the reservoir filling period (approach for collection, evacuation and disposal).

[CC- 168] The Vegetation Clearing and Debris Management Plan will also describe the measures taken by the Contractor to re-use the rapidly-degradable biomass, non-commercial non-rapidly biodegradable biomass and top soil extracted within the reservoir areas for reinstatement of construction sites located outside the reservoir area (e.g. mulching and chipping, and creation of wood briquettes).

[CC- 169] Potential for providing wood resources to nearby communities shall be considered and arranged. Stockpiles of wood resources shall be set aside for community collection in a designated place that takes into account restrictions on public access to the construction sites.

[CC- 170] The number, type and size (DBH) of trees cut for the Hydropower Plant and the Transmission Line shall be recorded.

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3.7.2 Clearing Method for Dam and Transmission Line Construction

[CC- 171] Vegetation clearance shall comply with regulatory requirements in DRC and Rwanda.

[CC- 172] Vegetation clearing using chemicals is not permitted.

[CC- 173] Vegetation clearing using a bulldozer is not permitted in zones less than 5 m from areas designated as sensitive by REL (e.g. seasonal wetlands or river channels), where only manual clearing is authorised. Sensitive areas will be delineated prior to commencing works using appropriate means (e.g. stakes / security tape).

[CC- 174] Unless otherwise authorized by REL, burning vegetation is not permitted. If permitted, any vegetation burning associated with biomass removal would be conducted according to the legal framework and in accordance with a Smoke Management Plan, submitted to REL for review with community representatives prior to any burning activities. This plan would (i) identify smoke sensitivity zones (populated areas), (ii) schedule the annual burn programme, (iii) identify sensitive time periods, (iv) determine set-back distances, firebreak needs and specify burn procedures (Debris pile construction and seasoning, Pre-burn protocols, Light-up procedures including venting forecasts, Ignition criteria and smoke release periods, Burn operator training, Post-burn protocols).

[CC- 175] Tree felling, included in the Vegetation Clearing and Debris Management Plan, shall avoid nesting periods for birds, where possible. The Vegetation Clearing and Debris Management Plan shall clearly specify the schedule and the methodology involved, and to be approved by REL prior to commencing the Works. Thereafter, deviations from the Plan will be subject to the Employer's approval.

[CC- 176] The Contractor shall employ an ecologist or suitably qualified Ecological Clerk of Works to be on Site during this work. His/her role will be to ensure compliance with minimum vegetation clearance; observe risks to or from wildlife or enable search and rescue of any wildlife encountered; observe presence of alien invasive plants and control measures; as well as other compliance measure related to use of fire, herbicides, waste, and contractor staff behaviour.

[CC- 177] Areas cleared prior to undertaking earthworks shall be shown on a plan with a minimum scale of 1/10,000. Plans are to be submitted to REL for validation prior to starting clearing works.

[CC- 178] The Contractor shall physically demarcate zones to be cleared using a method approved by REL.

[CC- 179] Where possible large woody trees with diameter >30cm in the servitude or access route shall be retained where possible while maintaining safety clearance. The characteristics (location, species, diameter at breast height) of trees to be retained (not cut down) are to be defined by the Contractor in coordination with REL. Such trees are to be marked with paint and protected against clearing machinery using a method approved by REL. Prior to clearance, the Contractor's Ecological Clerk of Works shall perform a walk over to identify and mark potential trees to be retained where possible.

[CC- 180] If any bat roost is suspected to be in a felled tree, the tree is to be left in situ overnight to allow relocation of bats, and the Ecologist or Ecological Clerk of Works and REL informed immediately. Follow up checks should be conducted to confirm if such trees are still in use by bats.

[CC- 181] Clearing shall be undertaken without or causing minimal damage to adjacent non-cleared areas. Topsoil is to be stored within the cleared areas at the edge of the cleared zone or an otherwise agreed location in disturbed areas. Clearing shall be undertaken working from the edge of the zone inwards.

[CC- 182] For salvageable wood:

- During clearing, the Contractor shall stockpile separately: (i) tree trunks with a diameter greater than 80 mm (ii) protected trees according to the laws and (iii) trunks with a smaller diameter, branches, leaves, stumps and roots. A stockpile area shall be located along the

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main access road to the dam site in an area where community members are permitted to collect.

- Unless instructed otherwise by REL when validating the plans or unless specified otherwise in the regulations of DRC and Rwanda, the trunks of trees exceeding the diameter defined by REL shall be transported and stored at a location at the edge of the cleared areas as instructed by REL.
- The Contractor shall provide security at the wood storage areas to prevent theft.

[CC- 183] For other wood, the Contractor shall mulch woody material that is defined as having no economic value. The mulch material shall be stockpiled in a laydown area outside of the reservoir inundation zone for use during site rehabilitation. Any other green waste shall be removed to spoil areas for disposal.

3.7.3 Floating Debris

[CC- 184] Reservoir filling will result in the collection of vegetation (and other waste) debris in the impoundment. Access to collect and evacuate floating debris upstream of the dam during reservoir's first impoundment and operation shall be designed, built and operational prior to reservoir filling.

[CC- 185] Prior to reservoir filling, laydown areas shall be made available downstream of the dam to dispose of floating debris which is removed from the reservoir during operation.

[CC- 186] Floating debris shall be collected and removed from the reservoir after reservoir filling. Economically valuable timber shall be recovered and stockpiled for transfer according to regulations of DRC and Rwanda. Non-economic timber and woody debris shall be mulched and stored in stockpiles.

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3.8 Soil and Erosion Control

3.8.1 Soil, Slope Stability and Erosion Control Plan

[CC- 187] The Contractor shall plan earthworks and optimise the management of space to ensure that all cleared surfaces and areas exposed to soil erosion are minimised across the Site.

[CC- 188] The Contractor shall prepare and implement a Soil, Slope Stability and Erosion Control Plan, as part of the CESMP, that details all Site-specific measures to minimize vegetation clearing and to prevent erosion site erosion from affecting adjacent areas. Temporary and permanent erosion control techniques shall be described and consideration given to landslide potential. Suitable drainage design is to be submitted to REL for approval before the Contractor commences the Works.

[CC- 189] Unless authorized otherwise by REL, side casting of any material during the Works is not permitted. This includes construction of access roads on steep slopes where side-casting of spoil can extend significant distance downslope.

3.8.2 Topsoil

[CC- 190] Unless indicated otherwise by REL or specified in the relevant permits, the top 20 cm of the soil will be considered as topsoil.

[CC- 191] After vegetation clearing, all topsoil from Temporary or Permanent Works areas excluding reservoir area shall be removed and safely stored separately from other excavation spoil and shall be clearly indicated on Site by appropriate signs. The height of stockpiles shall be proposed in the E&S procedures and shall be limited to 2 m for topsoil to minimise compaction and loss of seed bank. Topsoil stockpiles shall be sloped to minimise runoff and prevent soil erosion and loss and protected from trampling or on-site vehicles.

[CC- 192] Topsoil from the reservoir shall be removed to the extent that may be required for landscaping and site rehabilitation works.

[CC- 193] Topsoil storage areas shall be monitored to ensure there is no compaction, waterlogging, erosion, damage from vehicle access or growth / spread of alien plants. If necessary, a geotextile shall be used to cover topsoil stockpiles to protect them from wind or water erosion.

3.8.3 Stormwater Drainage

[CC- 194] The gradient of sites shall allow the collection and drainage of rainwater from the entire surface area to one or several discharge points. No pools of water should be created. The Pollution Prevention and Control Plan shall include water run-off and siltation issues and prevention through the creation of stabilised embankments; use of silt fences (see below) and geotextiles; and measures to restrict water velocity in drainage channels.

[CC- 195] The drainage network is to be inspected regularly against damage caused by scouring, gullying of sediment deposit, channel obstruction and loss of vegetation cover.

[CC- 196] Rainwater from vehicle parking areas, machinery areas and workshops shall be subject to treatment with oil separators.

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3.8.4 Silt Fences

[CC- 197] The Contractor shall install silt fences to slow the flow of water and control sediment transport during road construction works and at the boundaries of the main excavations as well as top soil stockpiles. Silt fences shall be required for lands with (i) a gradient of more than 20%, (ii) where land is disturbed by the Works and exposed to sheet erosion, and (iii) the surfaces are susceptible to silt erosion.

[CC- 198] Silt fences shall be installed on the slope or at the base of the slope to protect the natural drainage system from sediment accumulation at levels higher than the natural situation. These barriers shall comply with the following principles:

- Made with geotextiles or straw bales or any other means approved by REL.
- Silt fences are installed following contour lines.
- Deployed before the start of the Works and removal of topsoil. Silt fences can be used for the physical demarcation of working areas.
- Installed, cleaned, maintained and replaced according to manufacturer recommendations.
- Drainage surface area does not exceed 1,000 m² per 30 m of barrier. The length of the slope behind the barrier is less than 30 m, and is not used for flows in excess of 30 l/s.
- The extremities of the fence are directed up the slope.
- Supporting posts must not be more than 2 m apart and must be sunk at least 75 cm into the ground.
- Along the length of the fence, upstream of the posts, a 20 cm wide trench 30 cm deep is excavated to bury the bottom part of the geotextile used for the fence. It must follow the sides of the trench, and must permit an 80 cm width of the geotextile to be buried.
- If a large amount of sediment accumulates, the bottom part of the fence must be reinforced by a grille which must also be partly buried.
- The fence is inspected every week and the sediment is removed when it reaches 1/3 of the height of the fence.

3.8.5 Erosion Control on Steep Slopes

[CC- 199] Erosion control on steep slopes subject to gully erosion shall be carried out by appropriate erosion control best industry practices. This issue is frequently observed along slopes of major excavations or spoil areas. These measures shall rely on (i) storm-water control design (peripheral drainage), (ii) design of the slope (including berms), (iii) run-off control by revegetation and (iv) stabilisation of sensitive areas by hard engineering methods.

[CC- 200] Erosion control techniques to be considered shall be fully described in the Soil, Slope Stability and Erosion Control Plan, to be prepared by the Contractor and approved by REL, which will include both temporary and permanent erosion control measures.

[CC- 201] The effectiveness of erosion control measures will be the subject of a monitoring programme.

3.8.5.1 In-River Works

[CC- 202] In-river construction works are to be planned by the Contractor in order to avoid major discharge of sediments or pollution in the river stream to the extent practicable.

[CC- 203] No unnecessary infrastructure or activities shall be permitted within 50 m of a water course and there will be no fuel or chemicals storage within 100 m.

[CC- 204] The Contractor shall detail its methodology regarding sedimentation control in the E&S procedures for (i) river diversion works, (ii) dam site and cofferdam construction (iii) tailrace channel and (iv) any other in-river works.

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3.9 Materials Management & Spoil Disposal Management

3.9.1 General principles

[CC- 205] Land acquisition and compensation and impact assessment measures as per RPF

[CC- 206] Material excavated at the Site will be re-used as far as their geotechnical properties allow as construction material (after screening or for unselected fill material) in order to minimize the volume being disposed. The issues here shall be dealt with in the Material Handling and Storage Management Plan.

[CC- 207] Spoil generated will be classified according to its geotechnical characteristics and engineering properties.

[CC- 208] It is the responsibility of the Contractor to determine if the chemical and geotechnical properties of excavated material meet relevant specifications for future end use such that they do not cause harm to human health or the environment. This includes the effect that the excavated materials may have on the environment where they are to be reused. Biological factors e.g. presence of invasive species or noxious weeds, as well as the effects of any radioactivity should also be considered. Measures based on a suitable risk assessment should be taken such that there is no adverse effect or risk to humans, animals, or ecosystems. This includes impacts on water, air, plants or other soils.

[CC- 209] The contamination of groundwater shall be prevented and considered in executing the spoil disposal. Groundwater protection is to be considered in the Material Management Plan and all the related Project decisions made regarding the suitability for the reuse of the excavated soils and materials.

3.9.2 Materials Management Plan

[CC- 210] The Contractor shall prepare and submit a Materials Management Plan that documents how excavated soils and materials are to be handled. This Plan, subject to formal amendments, must be implemented throughout the execution of the Project.

[CC- 211] The Contractor shall prepare and attach to the Materials Management Plan:

- A materials flow chart showing the origin and final destination of materials (topsoil, sand, aggregates, rocks, quarry run, spoil) used during the Works. Consolidation/compaction must be considered in the mass balance calculations.
- A location plan for the sites and a plan of the sites which identifies where different materials are to be excavated from, stockpile locations (if applicable), where materials are to be treated (if applicable) and where materials are to be reused.
- A schematic of proposed materials movement and an estimate of the Project traffic generated by the movements from source to destination, during daily and night-time.
- The materials flow chart shall highlight what are the quantities of topsoil required for the reinstatement of temporary facilities at end of the construction period, and from what site this topsoil will be taken for the reinstatement work.

[CC- 212] The Materials Management Plan must be prepared and submitted prior to movement of excavated soils and materials, and provides the following information:

- Details of Contractor's Personnel involved with implementation of the Materials Management Plan.
- Description of the excavated materials in terms of potential reuses and relative quantities involved by categories of materials, with a breakdown for each site.

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- Specification for use of materials against which proposed materials will be assessed based on an appropriate risk evaluation or risk assessment at the place excavated materials will be used.
- Where and, if appropriate, how excavated materials will be stored or temporarily stockpiled for reuse.
- The intended final destination and reuse of excavated soils and materials, with clear distinction between (i) excavated soil and materials reused for construction purposes and (ii) excavated soils and material that is surplus to requirements or unsuitable for reuse in fill and embankments.
- How excavated soils and materials are to be tracked to monitor materials movements, including include transfer of loads on Site into stockpiles awaiting use (as appropriate) and final placement.
- The contingency arrangements that must be put in place.

[CC- 213] Shortage of topsoil must be anticipated for the reinstatement of temporary facilities. The Material Flow Chart will indicate how the topsoil and vegetation taken from the reservoir areas below full supply level and from the other material storage areas will be re-used to rehabilitate temporary facilities outside of the reservoir areas.

3.9.3 Spoil Disposal Management Plan

[CC- 214] Spoil is defined as any earthen material that is surplus to requirements or unsuitable for reuse in fill and embankments (such as unsuitable rock and soil material) or material that represents a geochemistry hazard.

[CC- 215] The Contractor shall prepare and implement a Spoil Disposal Management Plan, as part of the CESMP, that details all measures the Contractor will implement during the Works to minimize the footprint, adverse socio-economic impacts and ecological effects, and to ensure long-term stability and control erosion while stockpiling the material excavated from the Site.

[CC- 216] The Spoil Disposal Management Plan shall cover the Works but be prepared and implemented for each of the four main work areas (dam area, powerhouse/penstock, switchyard, quarries, transmission line route, access roads). It shall cover the management of all spoil generated on the Works.

[CC- 217] The plan shall include the following:

- Spoil types.
- Spoil strategy to: (a) Minimize the amount of spoil generated, (b) Maximise the beneficial reuse of spoil on Site and off Site based on its classification, (c) Manage the excavation, storage, transport reuse and disposal of spoil to minimise impacts and meet other environmental or social requirements.
- Spoil generating activities.
- Volumes and sources of spoil per work area.
- Spoil classification, e.g. virgin excavated natural material, inert fill, potentially contaminated material.
- Locations of spoil disposal, off Site storage and re-use sites.
- Transportation of spoil.
- Storage of spoil.
- Potential E&S adverse impacts.
- Management measures and mitigation strategies.
- Long-term maintenance requirements.

[CC- 218] For each proposed Spoil Disposal Area, the Contractor shall perform the required site investigations and engineering studies demonstrating:

- Mass stability and prevention of mass movement during and after construction.

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- Drainage control to ensure safe transfer of flood waters.
- Maintaining of river or streams flood capacity.
- Toe reinforcement and angle of slope for each material type.

[CC- 219] The spoil disposal area design must be in accordance with requirements of DRC and Rwanda and approval from the government must be received prior to the start of disposal activities.

[CC- 220] Spoil generated during construction of roads shall not disposed of using side casting.

[CC- 221] The Site rehabilitation and revegetation activities of spoil areas will also need to align with spoil permit requirements in DRC and Rwanda and Lenders E&S policies

3.9.4 Non-Waste Spoil

[CC- 222] Subject to the Environmental Permit conditions, disused quarry areas and borrow areas shall be filled in with excavated material to minimize the opening of new areas for disposal purposes.

[CC- 223] Before starting operation on the disposal area, a site drainage system shall be put in place that satisfies the requirements in the Contract.

[CC- 224] Unless instructed otherwise by REL, to ensure stability and resistance to rainwater runoff erosion, spoils disposal areas shall not exceed a height of 6 m, with a maximum slope of 3:2 (H:V). The slope is to be intercepted at a height of 3 m by a berm at least 2 m wide with a peripheral drainage ditch and also header drains where appropriate.

[CC- 225] For permanent spoils disposal areas, the stockpile is to be shaped and compacted every 30 cm to ensure long-term stability. Should such stable dispositions not be satisfied by the Contractor for any technical reason (for example limited availability of land), the Contractor shall produce a complete design of the spoil disposal supported by appropriate method statement related to drainage, slope stability, spoils compaction, and ultimate reinstatement and revegetation and obtain the approval of REL prior to any works on the spoil disposal area.

[CC- 226] The drainage system shall be lined (rockfill, concrete) at all points where run-off will concentrate and along vertical ditches. Culverts shall be designed through spoil disposal areas where necessary and open culverts shall be considered where there is a risk of blockage. If closed culverts are used these shall be subject to regular maintenance.

[CC- 227] The slopes of any permanent spoil disposal shall be vegetated in parallel with the progress of the disposal. For example, when constructing the first berm, the slope between ground level and this first berm shall be immediately covered by preserved topsoil to favour natural vegetation of the slope.

[CC- 228] Temporary disposal areas in place for more than 60 days are to be protected against runoff erosion by (i) revegetation using fast growing grass species, either by direct seeding or by hydro-seeding, or (ii) using other natural anti-erosion cover, such as geo-jute matting, with prior approval from REL. Geo-jute is preferable as an anti-erosion measure.

3.9.5 Treatment Prior to Reuse

[CC- 229] Other excavated materials may not have the required characteristics for reuse without first being treated. These excavated soils and materials may require further biological, chemical, physical or combination of these treatments that will need to be carried out. These treatment activities should be technically appropriate and in compliance with any required local regulatory requirements or approvals prior to reuse or final disposal.

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[CC- 230] Sludge from sediment ponds needed to treat tunnel waters may fall into this category. These ponds will generate large quantities of very fine sediments which are likely be mixed with concrete waters. Any proposed disposal of sediment pond sludge will have to be approved by REL prior to disposal.

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3.10 Management of Atmospheric Emissions and Dust

3.10.1 Air Quality and Emissions Plan

[CC- 231] Emissions refer to any discharge into the air of solid substances, aerosols, gases, radiation, or energy, whether point sources (e.g. incineration stack) or diffuse (e.g. fugitive dust emissions from road used by trucks). They shall also include Greenhouse Gas (GHG) emissions from fuel combustion.

[CC- 232] The Contractor shall prepare and implement an Air Quality and Emissions Management Plan as part of the CESMP. The plan shall detail measures the Contractor will implement during the Works to identify and manage the source of air emissions and dust production resulting from the construction activities including, but not limited to, traffic along the access roads. The plan will also include specific measures to monitor, and report GHG emissions (using fuel consumption as a basis), and reduction of the GHG emissions in compliance with the Lenders E&S standards and proportionate to the potential impacts referring to greenhouse gas emissions.

[CC- 233] The Contractor shall use equipment and adopt construction and transport methods with atmospheric emissions that are not in excess of the threshold emission values specified in the Laws of DRC and Rwanda or the IFC General Environment, Health and Safety Guidelines, whichever is the most stringent.

[CC- 234] The Contractor shall document the maintenance records for the Contractor's Equipment. The records will be in English and will be at the disposal of REL. The fleet of vehicles or equipment emitting combustion gases shall be maintained at the intervals and according to the methods specified by the manufacturer.

3.10.2 Dust-Reduction Measures

[CC- 235] The Contractor shall implement dust-reduction measures on the Site and along roads used by Project vehicles.

[CC- 236] On unpaved roads used by the Contractor's Equipment:

- The Contractor shall take action to abate fugitive dust emissions generated by vehicles or mobile equipment in residential areas, crops located adjacent to roads, and on roads within the Site.
- The abatement measures shall include but are not limited to: (i) the regular spray of water or any other non-hazardous dust suppression agents to maintain humidity of the road and the cohesion of fine particles; (ii) Reduction of vehicle speed in and near sensitive receptor areas; (iii) Covering loaded haulage lorries; (iv) Use of magnesium chloride on the road.

[CC- 237] The Contractor shall describe in the CESMP the road sections designated for the application of dust suppression measures and the methods and frequencies programmed.

[CC- 238] When storage, transport and handling of bulk materials are in the open air and exposed to the wind, the Contractor shall implement the necessary dust abatement measures, including one or several of the following techniques: humidification of the surface, covering of the surface, and/or vegetation of the surface.

[CC- 239] Used engine oil for dust abatement on non-surfaced roads is strictly forbidden.

[CC- 240] Dust emission is to be monitored by the Contractor on a regular basis within the Works and along sensitive sections of roads in accordance with the Contract.

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3.11 Management of Noise and Vibration

3.11.1 Noise & Vibration Control Plan

[CC- 241] The Contractor shall prepare and implement a Noise & Vibration Control Plan as part of the CESMP.

[CC- 242] The Contractor shall use Equipment and adopt construction and transport methods so as not to generate noise levels in excess of threshold values recommended by the regulations in DRC and Rwanda and WHO.

3.11.2 Noise & Vibration Control During Construction

[CC- 243] Where communities are located close to worksites, camps, access roads and public roads affected by construction traffic, the Contractor shall study, propose, implement and monitor the efficiency of, all reasonable and practicable measures to minimize noise resulting from the activity and to minimize the acoustic nuisances to adjacent households during day and night.

[CC- 244] Noise barriers or acoustic shields shall be considered if Works are close to sensitive receptors.

[CC- 245] If and when required by REL, the Contractor shall provide all details on noise-generating equipment and facilities planned to be used or installed in the Works during the construction period and the operation phase. For the construction period, this includes all Plant and Equipment to be used during the Works.

[CC- 246] Noise-intensive works such as piling, demolition, metalworking, and blasting (in quarries) will not be undertaken at night

[CC- 247] The Contractor shall monitor the vibration level at buildings nearest to the Works during activities which could generate offset vibration effects. The Contractor shall prepare a pre-construction condition survey for all buildings located within 1 km of any blasting activities. The condition survey will be used to assess the effect of blasting on structures and the scope of any remediation works necessary to repair the effects of blasting.

[CC- 248] The Works noise levels shall comply with local and international norms and standards and must under no circumstances expose anyone to intensities higher than 80 dBA without proper ear protection.

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3.12 Quarry and Borrow Area Management

3.12.1 Quarry and Borrow Area Management Plan

[CC- 249] The Contractor shall prepare and implement a Quarry and Borrow Area Management Plan for areas to be exploited for rockfill material, aggregates and rip rap material as well as for the other borrow area (sand, gravel, laterite clay) that details all the E&S measures to be implemented for the operation of these sites.

[CC- 250] For each quarry and borrow area site, the Quarry and Borrow Area Management Plan shall include the following considerations:

- A plan showing the extent to the area to be developed.
- A method statement defining the proposed working methods.
- The proposed access and haulage routes between the quarry/borrow area and the destination for the extracted material.
- A justification for the quantities of material to be extracted, an estimate of the waste materials to be generated and disposal details for such waste materials.
- Details of the measures taken to minimize the quarry area and its visual impact on the surrounding area.
- Details of the measures to be taken for the long-term reinstatement of the quarry and borrow areas. These shall include re-establishment of vegetation, restoration of natural water courses, avoidance of flooding of the excavated areas, achievement of stable slopes, and avoidance of features which would otherwise constitute a risk to health and safety or a source of environmental pollution.
- Measures which are recommended to minimize the significance of each identified impact.
- Quarry faces and excavations shall be made safe, and buildings, plant, equipment and debris and miscellaneous stockpiles of material shall be removed from the areas.
- Contour and level quarry surfaces to prevent ponding of water to reduce risk of drowning and water borne disease.

3.12.2 Principles

[CC- 251] In order to avoid damages to habitats and reduce landscape effects, the Contractor will make all efforts, and document these efforts, to avoid and if not possible to minimize, encroachment of the quarry and borrow areas above the two reservoir full supply levels.

[CC- 252] Materials, other than waste materials, extracted from quarrying operations under the Project shall be used exclusively for the Works.

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3.13 Site Reinstatement

3.13.1 Site Reinstatement Plan

[CC- 253] Unless instructed otherwise by REL, the Contractor shall reinstate all areas disturbed by the Works, prior to the issuance of the Taking-Over Certificate.

[CC- 254] The Contractor shall prepare and implement a Site Reinstatement Plan as part of the CESMP.

3.13.2 General Principles

[CC- 255] All Temporary Works are to be removed unless instructed otherwise by REL.

[CC- 256] After removal of buildings, structures and rubble, the Contractor shall return the Site to the original or better condition, according to the following provisions:

- A detailed survey of the Site is carried out before any earthworks commence. This survey must record all details of the Site that will need to be restored, including landscape configuration, vegetation mapping of the areas to be lost and characterising them with a floristic species list with abundances, as they will have to be restored post-construction.
- Land is contoured to ensure that run-off water drains without eroding soil or stagnating in pools. Unless instructed otherwise by REL, the gradients of restored sites (including access roads used for construction) must be similar to the adjacent undisturbed land.
- Reinstated sites do not represent hazards for people: Areas near steep drops are indicated with permanent signs; Holes are refilled; Sharp or unstable items are rendered inoffensive; Reinforced steel bars which are protruding and no longer needed for construction are removed.

[CC- 257] Public roads that have been damaged by the Project trucks, which are not flooded by the reservoir, not relocated or renovated by the Project, will be repaired and improved post construction.

3.13.3 Landscaping and Revegetation

[CC- 258] The Contractor shall undertake landscaping and revegetation of areas disturbed by the Works including power station sites, road excavation and fill slopes, and Temporary Works.

[CC- 259] Reinstatement work shall be in two parts:

- Technical reinstatement, involving landscaping, slope modelling, decompaction, terracing, permanent erosion control and drainage schemes.
- Biological reinstatement which involves the spreading of topsoil and seeding/planting the area appropriately with native species.

[CC- 260] Topsoil and soft biomass set aside from the reservoir area during initial earthworks shall be re-used for rehabilitation of construction sites located outside the reservoir area.

[CC- 261] Topsoil set aside during initial earthworks shall be evenly spread over areas which have been levelled or where ruts have been cut into compacted areas. The surface of compacted soils on Worksites is to be loosened by scarifying (using rakes or other acceptable methods).

[CC- 262] Revegetation works shall be planned in advance to ensure sustainable reinstatement and described accordingly in the CESMP: methods, plant species to be used and their origins, activity schedule.

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[CC- 263] Prior approval by REL is required regarding the origin of seeds and plants proposed by the Contractor. The species used for revegetation must be of local provenance and suitable for the local environmental and climatic conditions and selected according to the specific rehabilitation programme: stabilisation of backfill, landscaping, drainage, prevention of erosion.

[CC- 264] In the Temporary Works areas, excluding dam access roads, spoil disposal areas, borrow areas and quarry areas, the Contractor shall replace any portions of removed woodland with similar species of tree, if practicable, but otherwise it shall revegetate these areas with suitable native species.

[CC- 265] Trees planted shall be two year old pot grown trees procured in Rwanda or DRC. Consideration shall be given to establishing a plant nursery early in construction to grow plants for rehabilitation and as a community outreach project.

[CC- 266] Land, which was not woodland, including spoil disposal areas, borrow areas, and quarry areas, prior to the Works shall be revegetated suitable for pastureland grass. Revegetation is not required for areas below reservoir or in river areas.

[CC- 267] A stabilization matrix such as geo-jute shall be installed by the Contactor prior to seeding with pasture species or hay shall collected and spread on the ground.

[CC- 268] The Contractor shall demonstrate that the species selected for revegetation are not classified as invasive species for the local region, in compliance with national invasive species list, as applicable.

[CC- 269] Revegetation shall be undertaken throughout the duration of the Works and is not limited to the reinstatement of Works areas at the end of the Works.

[CC- 270] Biological reinstatement shall be subject to a detailed monitoring programme that records the effectiveness of vegetation establishment.

[CC- 271] The measures under this Section 3.13.3 apply to the side casting of spoil material generated during the excavation works if side-casting has been authorized by REL.

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3.14 Cultural Heritage & Chance Find Procedure

3.14.1 Chance Find Procedure

[CC- 272] Chance find is defined as physical cultural heritage encountered unexpectedly during the Works.

[CC- 273] The Contractor shall prepare and implement a Cultural Heritage and Chance Finds Procedure as part of the CESMP. Such chance finds procedure shall include notification of relevant competent bodies in DRC and Rwanda of found objects or sites:

- Alerting Project Personnel to the possibility of chance finds being discovered.
- Securing the area of finds to avoid any further disturbance or destruction.
- Reporting to REL.

[CC- 274] The Contactor shall not disturb any chance finds until an assessment by a designated and qualified specialist is made and actions consistent with legislation in DRC and Rwanda are identified.

[CC- 275] The Contractor shall train the relevant Personnel on the Cultural Heritage and Chance Finds Procedure and document the participation to this training. Training is to be carried out by the Contractor's archaeologist.

[CC- 276] The Contractor shall define who will be responsible for monitoring excavations at all Works sites in order to determine who needs to be trained to this Procedure and document this measure.

[CC- 277] The E&S Manager shall observe all trained staff after the training to ensure that they are complying with the procedures. An electronic log is to be kept by the archaeologist for all excavations signing off that no finds were identified.

3.14.2 Protection of Living Cultural Heritage Sites

[CC- 278] All cultural heritage elements located adjacent to a construction site or the external boundaries of the future reservoir (within 30 m), will be protected from potential damages due to construction methods.

[CC- 279] Consultation with communities using the 2 baptism sites and prayer site on the island close to the Project's sites and the payer site under the Transmission Line Right of way to assess if access to these sites could be impaired by the Project activities

[CC- 280] Commitment to not block accesses to places of worship throughout the construction phase as much as possible, taking into consideration safety issues.

[CC- 281] Where existing access cannot be maintained, provision of an alternative access route, subject to overriding health, safety, and security considerations

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3.15 Management of Community Grievances

[CC- 282] The Contractor shall use the Community Grievance Procedure as set up by REL (defined in REL Stakeholder Engagement Plan). This is designed to record all grievances coming from local communities and other stakeholders (not Workers, whose grievances are managed in a separate system).

[CC- 283] REL shall decide whether the resolution of the grievance is the responsibility of the Contractor or Employer.

[CC- 284] Contractor shall maintain a register – Compensation Register – which records the amount of compensation spent for grievance resolution.

3.16 Management of Land Acquisition

[CC- 285] REL is responsible in defining land requirements on time and with appropriate level of detail to allow land registration and land acquisition by REL.

[CC- 286] The Contractor shall not utilize land without following REL procedure for land acquisition.

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3.17 Traffic Management

3.17.1 Traffic Management Plan

[CC- 287] The Contractor shall prepare and implement a Traffic Management Plan as part of the CESMP, with a target of zero accidents. The Contractor shall define the characteristics of all the Contractor's Equipment, and identify the main movements envisaged, in the CESMP.

[CC- 288] The Contractor shall perform a pre-condition survey and video of all roads to be used by the Project before the start of any Works, including above ground crossing of utilities and culverts.

[CC- 289] The pre-condition survey shall be signed-off by the OE (and relevant local authorities as appropriate) as directed by the Employer, prior to Works commencing.

[CC- 290] The Contractor shall include the itineraries used by the Contractor's Equipment during transit along main public roads (e.g. through Bugarama in Rwanda and Kamanyola in DRC) and between the different Sites for information of REL.

[CC- 291] A swept path analysis is to be performed and available to demonstrate that the planned itineraries can accommodate the movement of largest and longest vehicles intended to be mobilized by the Contractor and its Subcontractors, without causing damage to assets and property, particularly for sites where room for vehicle manoeuvres is limited such as crossing of villages.

3.17.2 Public Information on Project Traffic

[CC- 292] The Contractor shall inform the administrative authorities of areas crossed by the Contractor's vehicles, of the itinerary and characteristics (frequency of passing, size and weight of trucks, materials carried) of the Contractor's fleet of vehicles.

[CC- 293] The Contractor shall establish and document a procedure to avoid obstruction of local traffic due to Project vehicles during normal operations and in case of accident or heavy vehicle breakdown.

[CC- 294] Announcement to the community will be made in advance of heavy and wide loads convoys following a procedure (method of information, target groups, timing) to be approved by the Employer.

3.17.3 Traffic Safety

[CC- 295] The Contractor shall take action to limit and check the speed of all the Contractor's Equipment.

[CC- 296] The maximum speed of the Contractor's Equipment shall comply with the lowest of the following: the speed limit defined according to the country regulations or the following limit:

- 30 km/h within the Site and in villages or hamlets.
- 80 km/h on unpaved roads outside of towns, villages, hamlets and camps.

[CC- 297] Actual speed limit should be adopted in accordance with local road conditions (including sensitive community areas), but which does not exceed the above-stated values. The Contractor shall identify speed limits along roads to be used including lower limits for sensitive areas (e.g. close to schools).

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[CC- 298] Actions to limit and check the speed of all vehicles and machinery used to execute the works will be implemented, including on-board GPS trackers. Traffic marshals will be affected at key locations in the villages.

[CC- 299] Except for exceptional conditions, heavy vehicles (i.e. with a GVWR of more than 3.5 tons) will not use public roads at night between 22:00 and 06:00. Project's heavy vehicles (i.e. with a GVWR of more than 3.5 tons) will be forbidden to circulate in the villages at times when pupils go to school or come back from school.

[CC- 300] In coordination with the competent authorities in DRC and Rwanda, the Contractor shall provide and install signs and mirrors (on sharp bends) for the fleet of vehicles along public roads used by the Project, when public signs and mirrors are inadequate.

[CC- 301] Seat belts shall be worn at all times. Drivers shall not be permitted to use mobile phones while vehicles are in motion, unless wireless hands free is used in accordance with the law.

[CC- 302] The Contractor shall provide each of its drivers with a map at the appropriate scale of the roads authorised for the execution of the works, clearly indicating the maximum speeds authorised, and ensures their understanding.

[CC- 303] Actions to limit and check the speed of all vehicles and machinery used to execute the Works shall be implemented by the Contractor, including on-board GPS trackers.

[CC- 304] Flag men/women shall be utilized at key locations in the villages crossed by the Contractor's Equipment – preferrable women.

[CC- 305] It is strictly prohibited to transport people, animals, equipment or products other than those associated with the Project, required for the Works, and the management of Sites, on board any of the Contractor's Equipment. No workers should be transported on the back of trucks or pickups, they should be inside the cabins using seatbelts.

[CC- 306] The Contractor shall ensure vehicles used to carry materials which could be projected (sand, crushed material, aggregates, selected materials) on public roads have a means to ensure the material is contained e.g. covered with a tarpaulin (or similar), not completely filling the vehicles etc.

[CC- 307] There will be zero tolerance for driving under the influence of drink and the Traffic Management Plan will document the implementation of control measures. Mechanisms to screen drivers are to be introduced and controls documented.

[CC- 308] The Contractor monitors and documents accident trends and revises its control measures to reflect trends with objective of reducing the likelihood and consequence/severity of accidents to project and third-party property (including livestock) and people.

[CC- 309] The Contractor shall carry out regular inspections along the roads used by Equipment to ensure compliance with the Contract. The Contractor shall record these inspections and the results and transmit a summary of checks carried out for the previous month to REL in the monthly progress report.

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3.18 Management of Community Health and Safety

3.18.1 Support to Community Safety Planning

[CC- 310] REL shall be informed of any injury to people, or damage to property of individuals, within 3 hours of the event, regardless of the value.

[CC- 311] The Contractor shall support REL in the preparation and implementation of a Community Safety Plan, which shall include regular community meetings on:

- Safety and construction hazards.
- Announcement in advance of heavy construction activities.
- Progress of construction works / construction activities planned.
- Restriction of access to Works sites.
- Awareness campaigns on traffic related risks, including school children.

3.18.2 Support to Community Health Planning

[CC- 312] The presence of Contractor's Personnel could increase communicable diseases (including COVID-19 and STDs, including HIV/AIDS). The Contractor shall support REL in the preparation and implementation of a Community Health Plan that governs:

- The coordination with local health authorities.
- Community awareness raising campaigns on health (including COVID-19 and HIV/AIDS) issues via posters, leaflets, through health clinics, and community meetings.
- The monitoring of implementation of Personnel's health specifications by Subcontractors.

[CC- 313] The Contractor shall carry out health awareness campaigns and community interactions with all Personnel.

[CC- 314] Community awareness raising campaigns on health issues shall be implemented with the medical staff mobilized by the Contractor in camps.

[CC- 315] The Contractor shall plan and implement measures required to minimize light pollution such as directional floodlights during the Works.

3.18.3 Reservoir Filling Plan

[CC- 316] The Contractor shall prepare and implement a Reservoir Filling Plan one year prior to start of the filling of the Ruzizi III reservoir, covering a risk and safety analysis, management of vegetation clearing, the filling and the water level, management of floating debris, monitoring concept and procedure during the reservoir impounding, detailed operation and procedure of the safety facilities, reservoir triggered seismicity monitoring and mitigation measures in case of triggered seismicity.

[CC- 317] The Contractor shall, subject to REL approval, install sufficient seismographs to monitor seismic activities and demonstrate absence of reservoir triggered seismicity during reservoir filling and the first year of operation.

[CC- 318] The Contractor shall collect and dispose all debris accumulated as a result of the reservoir impoundments during the construction phase.

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3.18.4 Access Restrictions

[CC- 319] During the Works, the Contractor shall organize access restrictions and control to working sites and warning signs for local communities, tourists or crossing of herders and herds.

[CC- 320] During the Works, the Contractor shall organize control of access newly installed by the Contractor for construction purpose (excluding the public roads rehabilitated or relocated as part of the Project), preventing use of unauthorized vehicles.

[CC- 321] Access restrictions to riverbed immediately downstream of the dam and the plunge pool and warnings signs about spillage, risk of fall from height and drowning, are to be installed for the construction and operation phases.

3.18.5 Maintaining Access

[CC- 322] Safe access to existing paths, cultivated lands or intangible cultural heritage sites which are away from the Work areas and which could be blocked by temporary facilities such as construction camp or site installations will be maintained by the Contractor in consultation with the local communities.

[CC- 323] Where the public could be exposed to danger by any of the Works, the Contractor shall, as appropriate, provide suitable flagmen, barriers and/or warning signs in Swahili, French and English. The Contractor shall provide alternative safe access routes together with viewpoints and parking areas.

3.18.6 Public Safety Booms, Alarms, and Signage

[CC- 324] The requirements below shall be implemented at the time of impounding the dams, and the design shall be subject to approval by REL.

[CC- 325] Signage and audible alarms shall be provided by the Contractor to notify the public of potential hazards at the dam and powerhouse sites. Signage shall be consistent with the recommendations of the Canadian Dam Association Bulletin “Guidelines for Public Safety Around Dams”, 2011 and shall comply with relevant regulations in DRC and Rwanda.

[CC- 326] A boom shall be installed upstream of the dam to retain floating debris. Arrangements shall be made for removal of debris from the end of the boom (see Section 3.5).

[CC- 327] Signage shall be used at the boom, dam site, spillway discharge channel, and powerhouse sites. Signage shall alert the public concerning the site ownership, no-trespass areas, hazardous zones, and public use areas. Signs shall present a message consistent with the degree of risk to the public.

[CC- 328] In relation to future management of floating aquatic weeds in the reservoir (if they were to occur), design the floating booms or other containment fences to i) prevent intake of aquatic weeds into turbines; and ii) divert some floating masses of aquatic weed that enter the reservoir in areas where they can be mechanically collected.

[CC- 329] Audible alarms shall be provided at the spillways and powerhouse tailrace areas. The alarms shall provide warnings in advance of any increase in the flow rate from the facilities. The alarms shall be designed to give an advance warning with a delay period before the start of the flow release.

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3.18.7 Flood Management

[CC- 330] The Contractor shall prepare a Flood Management Plan for control and mitigation of the consequences of floods at the dam site in the event of floods larger than the minimum capacity. The flood management plan must be consistent with the Emergency Preparedness Plan. The Contractor may opt to increase the design capacity of the diversion channel and cofferdams or may opt to use active flood control measures such as sequencing of construction according to flood seasonality, localized temporary flood diversion works, temporary overtopping of structures during floods, or other such measures as may be effective to comply with the requirement [CC- 331].

[CC- 331] River flow for the dam site works at the Ruzizi III dam shall be managed using a combination of diversion channel and cofferdams, which shall be defined as the artificial flood produced by the Ruzizi I facility functioning at its maximum operating capacity with one bottom gate opened plus the 20-year return period flood of the intermediate catchment between Ruzizi-I and -II (i.e. 452 m^3/s).

[CC- 332] The Contractor shall design, implement, and operate a flood flow forecast for the river basin to anticipate high flood events during the construction.

[CC- 333] In the event a flood event is forecast with peak flow at the dam or powerhouse sites greater than the diversion works design flood criteria, the Contractor shall take actions necessary to minimize the effect of the flood, removal of goods that could be damaged, or other appropriate measures prior to and after the onset of the flood peak.

3.18.8 Groundwater Levels

[CC- 334] Groundwater levels used in analysis and design will be based on actual measurements from boreholes or instruments in the vicinity of the structures.

[CC- 335] Where piezometric levels are anticipated to be affected by construction and future operation of the Works, seepage analysis shall be performed to determine the appropriate piezometric conditions.

[CC- 336] The description of hydrogeological conditions will include both local and regional characteristics. In particular, aquifers, their possible interaction, confined/unconfined aquifers and water barriers as well as the flow conditions and the connection to water at the surface shall be described (Groundwater levels; Permeability; Type of circulation and type of aquifer; Direction and velocity of water flow; Hydraulic conductivity; Transmissivity; Water chemistry; Pore pressure, hydraulic head, gradient; Location of springs and wells with registration of field parameters; Storage capacity of rocks and soils; Recharge – discharge area, water balance).

3.18.9 Emergency Response Plan

[CC- 337] The Contractor shall prepare and implement an Emergency Response Plan (ERP) as part of the CESMP.

[CC- 338] The Contractor shall assist REL in conducting the required public consultations on the ERP during the main Works.

[CC- 339] The ERP will be structured into two sub-plans: (a) ERP during construction for Common Hazards and Emergency Situations; and (b) ERP during construction for Cofferdam and Dam Break.

PUBLIC DISCLOSURE AUTHORIZED

3.18.9.1 Common Hazards & Emergency Situations

[CC- 340] The ERP for Common Hazards and Emergency Situations during construction will be structured as such:

- Identification of potential emergencies based on hazard assessment.
- Procedures to respond to the identified emergency situations.
- Procedures to shut down equipment.
- Procedures to contain and limit pollution.
- Procedures for decontamination.
- Procedures for rescue and evacuation, including a designated meeting place outside the facility.
- Location of alarms and schedule of maintenance.
- List and location of equipment, facilities and personnel responsible for responding to the emergency (fire-fighting equipment, spill response equipment, personal protection equipment for the emergency response teams, first aid kits and stations).
- Protocols for the use of the emergency equipment and facilities.
- Schedule for periodic inspection, testing and maintenance of emergency equipment.
- Clear identification of evacuation routes and meeting points.
- Schedule of trainings (drills), including with local emergency response services (e.g. fire fighters).
- Procedures for emergency drills.
- Emergency contacts and communication protocols, including with affected communities when necessary, and procedures for interaction with the government authorities.
- Procedures for periodic review and update of emergency response plans.

[CC- 341] The ERP for Common Hazards and Emergency Situations during the Works will be prepared and submitted to REL for approval not later than four months prior to Commencement Date.

3.18.9.2 Cofferdam and Dam Break During Construction

[CC- 342] The ERP for cofferdam and dam break during construction will be structured as such:

- Purpose
- Project information.
- Flood studies and inundation maps.
- Emergency detection, evaluation and classification.
- Notification flowcharts.
- Evacuation table.
- Roles and responsibilities.
- Emergency alert system.

PUBLIC DISCLOSURE AUTHORIZED

3.19 Local Recruitment and Skills Development

[CC- 343] "Local Resident" means a person who is registered as living in

- Murya and Nyenji Cells in Nzahaha Sector or Nyange, Pera and Ryankana Cells in Bugarama Sector in Rwanda,
- In Kamanyola Groupement, Ngweshge sous-groupement or Karhongo Groupement, Ishamba Sous-groupement in DRC.

3.19.1 Recruitment Targets

[CC- 344] The Contractor shall ensure that, at any time, that nationals from DRC, Rwanda and Burundi shall be employed to the greatest reasonable extent, taking into account the availability of such citizens with the required skills by the Contractor.

[CC- 345] The Contractor shall use its reasonable efforts to maximise employment of Local Resident women.

[CC- 346] Definitions of skills/semi-skilled/unskilled labour are as defined by the ILO, described in ISCO 08 "Volume I - International Standard Classification of Occupation – Structure, group definitions and correspondence tables". Definition of the four ISCO Skills levels shall correspond as follows:

- Unskilled occupations = ISCO Skill Level 1
- Semi-skilled occupations = ISCO Skill Level 2
- Skilled occupations = ISCO Skill Level 3 and 4

3.19.2 Recruitment Policy

[CC- 347] Within 30 days after the start of the Works, the Contractor shall submit a Recruitment Policy, for acceptance by REL, which describes the Contractor's recruitment procedures and employment management systems (the "Recruitment Policy"). The Recruitment Policy shall comply with legislation in DRC and Rwanda and the international guidelines, and based on principles related to transparency, non-discrimination, fair treatment and equal opportunity.

[CC- 348] No more than 50 personnel shall be employed or contracted by the Contractor or its subcontractors at Site without an approved Recruitment Policy in place.

[CC- 349] The content of the Recruitment Policy shall include the following:

- Statement of commitment to meeting Labour Laws of DRC, Burundi and Rwanda (including ILO conventions) and international guidelines with regards to recruitment and labour management, including non-discrimination and equal opportunities.
- Description of measures to be implemented by the Contractor to enhance availability of employment opportunities to Local Residents.
- Description of local recruitment process and job application procedure to be disclosed in Kinyarwanda, Swahili, English and French.
- Description of measures to ensure transparency of recruitment process and measures to ensure equal opportunities for all local people subject to appropriate skills.
- Description of measures to encourage women to participate in recruitment opportunities.
- Description of the disciplinary and dismissal process.

[CC- 350] The Contractor shall advertise all job vacancies locally.

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[CC- 351] The Recruitment Policy shall form an integral part of the Contractor's organization and overall management system. The structure, responsibility, practices, processes and resources for implementing recruitment policies, objectives and target shall be coordinated with operations, quality assurance, and occupational health.

[CC- 352] The Contractor shall not accept from any applicant or Personnel any amount of money or in-kind gift to secure a job on the Project. The Contractor shall cover all recruitment and processing fees, costs, and expenses, including those associated with travel for interviews and skill testing or securing identity cards, police checks, or medical examinations. The Contractor shall not require candidates or Personnel to participate in any form of forced or mandatory savings in order to recoup employment costs associated with recruitment or other services.

[CC- 353] The Contractor shall adhere to the requirements of the Labour Code. The Contractor shall be required to obtain signed consent from a parent or guardian to employ workers who are 16 to 18 years of age. No worker under 18 years of age shall be involved in any hazardous work. The Contractor shall maintain records to demonstrate that it has checked the age of its own, and subcontracted employees demonstrating this commitment is met.

[CC- 354] The Contractor shall require their Subcontractors to adhere to their Recruitment Policy via the use of contractual clauses.

[CC- 355] The EPC will develop a gender-sensitive recruitment strategy and communicate it to the local communities

3.19.3 Local Skills Development Programme

[CC- 356] The Contractor shall prepare and implement a program to provide skills training to Local Residents with the objective of improving the productivity and skills of Personnel (the "Local Skills Development Program").

[CC- 357] The program shall be open to Personnel designated by the Contractor but shall not involve fewer than 500 persons (250 in Rwanda and 250 in DRC) who shall receive training as required to suit the Project employment forecast.

3.19.4 Recruitment Process

[CC- 358] The Contractor shall develop and provide to REL for approval a description of their recruitment processes. This process shall be managed by the Contractor's Employment Services Officer and linked to the Local Skills Development Programme.

[CC- 359] The recruitment process shall as a minimum have the following steps:

- Initial screening of application against general job requirements based on practical experience and education.
- Skills assessment and/or interview (skill tests must be directly related to the position and shall be measurable against objective criteria).
- Employment confirmed via written contract stating working conditions and terms of employment.
- Induction – this shall be standard company practice and shall be separate to the Local Skills Development Programme.

[CC- 360] The Contractor shall review all applicants from Local Residents who apply for advertised positions and where their existing qualifications do not allow for their direct employment, identify their eligibility to enter into the Local Skills Development Programme.

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[CC- 361] One week after the start of the construction works, the Contractor shall establish a local employment office Kamanyola (DRC) and Bugarama (Rwanda) and Rugombo (Burundi), at locations approved by REL.

[CC- 362] A representative of the Contractor is to be present in these offices at least two mornings each week, from one week after the start of the construction works to a date approved by REL.

[CC- 363] The Contractor shall provide information on job vacancies with required qualifications, duration, location etc. as required to allow local employment candidates to submit applications.

[CC- 364] Candidates interested in recruitment shall submit applications to the Employment Services Officer.

[CC- 365] A transparent screening process shall be implemented by the Contractor to decide whether applicants are directly employed, invited to participate in the Local Skills Development Programme, or if they are not eligible for either.

[CC- 366] The screening process shall be similar to that taken for direct recruitment and include assessment of where people are from (whether they can be considered a Local Resident), their level of education, any certifications or credentials, and their previous job experience.

[CC- 367] Candidates with certificates shall still have to undergo a skills assessment for job opportunities. If skills are found to be not up to standard, the candidate may be invited to take part in the Local Skills Development Programme.

[CC- 368] The Worker's Contract should be signed by the worker and explained. Salary paid should be in agreement with the salary stated in the contract. Subtractions should be explained (for instance subtraction for social security payments).

3.19.5 Human Resources Policy

[CC- 369] Within 30 days after the start of the Early Works, the Contractor shall develop and provide to REL for approval a written policy outlining Personnel employment conditions and rights, Personnel relationships, conduct, and grievance mechanism (the "Human Resources Policy"). The Human Resources Policy shall comply with legislation in DRC and Rwanda and the international guidelines. The Contractor shall provide this policy for approval by REL.

[CC- 370] No more than 50 Personnel shall be employed or contracted by the Contractor or its subcontractors at Site without an approved Human Resources Policy in place.

[CC- 371] The Contractor's Human Resources Policy shall include the following:

- Entitlement to and payment of wages; permissible wage deductions.
- Payment of wages by electronic bank transfers.
- Methods to limit employee turnover for employees who complete their full contracted period of employment.
- Overtime payments; hours of work and any legal maximums.
- Entitlement to leave for holidays, vacation, illness, injury, and maternity and other reasons.
- Entitlement to benefits.
- The Personnels" right to form and join workers' organizations of their choosing without any interference or employment consequences and to bargain collectively with the Contractor.
- Disciplinary and termination procedures and rights.
- Conditions of work.
- Occupational safety, hygiene and emergency preparedness.
- Non-discrimination and equal opportunities
- Gender-based violence and harassment preventive measures (through policy, monitoring, grievance mechanisms etc), including sexual harassment and bullying/intimidation.

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- Arrangements to provide a safe working environment for women, with adequate segregation/facilities.
- Promotion requirements and procedures.
- Internet usage.
- Alcohol and other substance use.
- Workers' code of conduct.
- Template employment contract for Personnel.
- Workers' grievance mechanism.

[CC- 372] The Personnel code of conduct and labour grievance plan shall be displayed clearly at Works sites in Kinyarwanda, English, French and Swahili.

[CC- 373] The Contractor shall be responsible for holding a toolbox talk at least every six months on labour rights, the Project's commitment to upholding labour rights, the general terms and conditions reflected in their Human Resource Policy and the labour grievance procedure.

[CC- 374] The Contractor shall provide all Personnel with written contracts, in the chosen language of the Personnel, with a verbal explanation stating the terms and conditions of service, the voluntary nature of employment, the freedom to leave (including the appropriate procedures) and any penalties that may be associated with a departure or cessation of work.

[CC- 375] Direct hire Personnel shall receive standard company induction training and undergo a probation period as legally required and stated in the written contract.

[CC- 376] The Contractor shall provide all Personnel with a signed certificate at the end of their employment stating how long they have been employed, what role they have been employed in, and what training they have received, in English, French and/or Swahili as specified by the Personnel.

[CC- 377] Where practicable, the Contractor shall provide transport to employees located along routes used for transport of camp-resident employees to work sites. Depending on the level of employment from other villages, the Contractor in good faith may elect to implement additional transport from collection points where appropriate to mitigate traffic impacts and project-induced in-migration.

[CC- 378] The Contractor shall require their Subcontractors to adhere to their Human Resources Policy via the use of contractual clauses.

3.19.6 Workers Grievance Mechanism

[CC- 379] Personnel will have a right to be part of a collective bargaining organisation.

[CC- 380] A Personnel's grievance mechanism shall be established and defined in the Human Resource Policy including a reasonable timeframe for treating and responding to grievances for staff. This timeframe shall be communicated to all employees during training on the grievance mechanism. The Contractor shall monitor the average timeframe for responding to grievance to check compliance.

[CC- 381] The Personnel's grievance mechanism shall be explained to Personnel as part of their formal induction and signage, in Kinyarwanda, English, French and Swahili, shall be placed in communal areas around Site providing details of the mechanism and how grievances can be made.

[CC- 382] Personnel shall be able to raise their grievance by referring to a Personnel's representative or by filing a form and posting it in the complaint boxes located in key locations across the Site or online, without fear of reprisal.

[CC- 383] The Contractor shall register and track the grievances in a Personnel's grievance database. A formal response to each grievance shall be provided and recorded in the database. The Contractor will utilise the same online software solution to manage the process as that used by REL.

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[CC- 384] A formal response to each grievance shall be provided and recorded in the database. The Contractor shall transmit the grievance resolution to the Personnel and document the resolution and the Personnel's acceptance.

[CC- 385] The Personnel s' grievance mechanism shall be available to all Personnel, regardless of whether they are direct employees or employees of subcontractors.

[CC- 386] The Workers' grievance mechanism will include a separate channel for handling GBVH complaints, involving REL Gender officers.

3.19.7 Demobilisation Plan

[CC- 387] Twenty-four months prior to the Commercial Operations Date, the Contractor shall prepare and submit to REL for approval a Demobilisation Plan to anticipate significant job losses resulting from the Project's transition from construction to operation.

[CC- 388] The plan will be prepared and implemented in line with national law and Good International practice and based on the principles of non-discrimination and will reflect the Project's consultation with employees and their organizations, and eventually with the appropriate governmental agencies.

[CC- 389] This plan should include:

- The reasons why job losses are necessary.
- The timescale and when notice of employment contract end will be given.
- What jobs are likely to be maintained during the operation phase and how best employees would be selected for the transition between construction and operation.
- How broader community impact issues are to be addressed.
- The consultation process proposed with the workforce and the local authorities.

3.19.8 Reporting on Local Content

[CC- 390] The Contractor shall include as part of monthly progress reporting on recruitment the following information:

- The total working hours of local, national, and international staff employed and their role which is to be broken down in accordance with skill base.
- Number and level of international posts for which local and national staff are trained and hired.
- Percentage of full time equivalent (FTE) employees in DRC and Rwanda -registered companies who are national and of that, the percentage of local and/or national staff who are in management or supervisory positions.
- Number and type of new alliances, partnerships and joint ventures with national firms to execute contract and transfer technology.
- Number, type and duration of outreach activities and procedures for maximising the direct hiring of citizens of Burundi, DRC and Rwanda.

[CC- 391] Labour reporting should be disaggregated by age, gender and skill level (See section 3.19.1 for definition of skill levels).

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3.20 Management of Occupational Health & Safety

3.20.1 Occupational Health and Safety Plan

[CC- 392] The Contractor is responsible for the Health and Safety of all persons on the Site and all appropriate precautions shall be made to prevent accidents and personal injuries. Within 60 days following the start of the Early Works, the Contractor shall submit an Occupational Health and Safety (OHS) Plan for the approval of REL.

[CC- 393] The OHS Plan shall include, but not limited to, the following.

- Scope and objectives
- Strategy for OHS
- Roles and responsibilities
- Legal requirements and standards
- Identification of hazards, risk assessment and working procedures
- Measures to ensure workers health, safety and security
- Training of staff
- Coordination, monitoring, inspections, audits

Reporting

[CC- 394] The OHS Plan will include the prevention and protection measures with regard to worker accommodation camps, food, water supply, sanitation, camp hygiene, first aid posts, medical offers, explosives and security which are provided in subsections 3.20.2 -3.20.8.

It will include the measures with regard to the following hazards set out elsewhere in this ESMP: hazardous substances (section 3.6), air emissions and dust (section 3.10), noise (section 3.11).

[CC- 395] The OHS Plan will include measures to ensure that the fire and explosion risks are at acceptable levels in accordance with DRC and Rwanda health and safety regulations and IFC General EHS guidelines. These are expected to include (but not be limited to) the following:

- Facilities will be designed in alignment with DRC and Rwanda safety standards and IFC General EHS guidelines.
- A risk assessment will be carried out in alignment with GIIP.
- Accidental event consequence calculation will be undertaken to confirm adequacy of safety distances.
- Facilities will be equipped with high integrity safety prevention and protection systems.
- Facilities will be equipped with emergency alarm systems.
- Facilities will be equipped with human and material resources for emergency response – including mobile and fixed fire-fighting equipment, ambulances, medical facilities, and medical staff.
- An emergency response to fire and explosion events will be included in the construction work's Emergency Preparedness Plan.
- Regular emergency response exercises will be organised.
- Regular fire & explosion safety audits will be undertaken by REL as part of the works supervision

[CC- 396] The OHS Plan will include prevention and protection measures with regard to the following general work site hazards:

- Electrical hazards: use of mobile power generators, electrical equipment.
- Mechanical hazards: present with (but not limited to) the use of fixed and mobile mechanical equipment for the construction of dam, buildings, infrastructure and mechanical hydraulic systems.

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- Confined spaces: Workers involved in tunnelling will be working in confined spaces where there are risks of asphyxiation and rock falls.
- Deep and fast flowing water: there are risks associated with working on or near water such as the rivers or reservoirs for the workers constructing dams, weirs, other headworks facilities and tunnel outlet structures.
- Trips and falls: a general hazard that is present in general terms during construction work.
- Working at heights: this is a general hazard that is present in general terms during construction work.
- Extreme temperatures: the project area is subject to hot weather.

[CC- 397] The OHS Plan will include prevention and protection measures with regard to natural hazards, including (i) risks of rock fall at the accommodation camps or at the worksites, (ii) landslips whilst working in proximity to areas of potential land instability

Conduct a risk assessment for natural hazards for workers during construction, on all worksites, including construction camps: (i) identification of natural hazards to workers during construction, for each worksite, including the construction camps, and (ii) definition of natural hazards mitigation measures for each worksite, including the construction camps

[CC- 398] The Contractor shall comply with the OHS provisions included in the IFC Environmental, Health, and Safety (EHS) Guidelines. The OHS Plan shall be in compliance with ISO 45001:2018 or equivalent. The Health and Safety Specialists should be experienced and certified in ISO 45001:2018 or equivalent. The IFC guideline provisions shall be read as obligations. Additional requirements are described in the following paragraphs.

[CC- 399] The OHS Plan will include measures related to gender and Gender-Based Violence and Harassment aspects, such as: separate gender accommodation for workers in the camp; separate, lockable latrines; WASH facilities that are well-lit and conveniently located and easily accessible

[CC- 400] The Contractor shall implement an OHS Policy which shall be in force throughout the duration of the Contract. The OHS Plan shall include but not be limited to:

- Key Performance Indicators (KPI) for the OHS program. KPI for safety shall include, but not be limited to, zero loss of life, zero disabling injuries, and minimization of lost time events.
- The duties of the Safety Officer and his deputy including the proportion of their working time to be spent on health and safety duties.
- The duties of the Medical Officer in respected of health and safety matters including periodic inspection of all Work areas.
- Notification, investigation and recording of accidents.
- Arrangements for disseminating information concerning sexually transmitted diseases.
- Code of practice to be used to ensure healthy and safe working conditions and the management of hazardous conditions.
- The arrangements for disseminating information, training and supervision to Personnel to ensure the codes of practices are conformed with. This shall include but not be limited to safety rules on Site, emergency response procedures or evacuation, skills requiring a Permit to Work, first aid training and transporting the injured.

[CC- 401] The Code of Practice shall be based on a recognised standard and shall be of no less a standard than that of Safety and Health in Building and Civil Engineering Work of the International Labour Office (Geneva) and the safety practices prescribed by the International Tunnelling Association (ITA).

[CC- 402] The Contractor shall establish, subject to approval of REL, an effective training program in OHS, first aid, and other services required to satisfy his obligations.

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[CC- 403] Risks to Project workers from potential natural hazard events such as flood, rockfall, landslide and seismic events will be minimised at the accommodation camps and work sites. The Contractor will perform and document a risk assessment which (i) identifies all natural hazards with potential effects on accommodation camps and work sites, (ii) defines structural and non-structural risk reduction measures (avoidance, monitoring, protection, emergency response), and (iii) predicts and mitigates where necessary any potential adverse effects of the proposed risk reduction measures on community.

[CC- 404] The EPC will establish workers' safety committee which will include at least one trained female worker representative

3.20.2 Construction Camps

[CC- 405] The Contractor shall be responsible for the design, provision, construction, operation, and maintenance of all accommodation and related facilities required for his labour. Such facilities shall conform as a minimum with the provisions specified thereafter.

[CC- 406] Contractor's Personnel not originating from the local communities shall be accommodated in the Contractor construction camps or other suitable accommodation.

[CC- 407] The accommodation provided for the Contractor's Personnel in a camp or an alternative structure outside of the Works area will comply with the provisions of the 2009 guidance note by IFC and the EBRD on Workers' accommodation: processes and standards.

[CC- 408] Unless specified otherwise by REL, Personnel shall be housed in rooms with flooring of a hard and impervious material. Separate housing facilities shall be provided for male and female personnel.

[CC- 409] The dedicated area per Personnel shall not be less than 4 m^2, and the ceiling shall not be lower than 2.20 m. Each Personnel shall be allocated a closet or locker volume for the storage of personal belongings. There shall be no crowding in rooms or sharing of bedding. Room occupancy should be in compliance with international standards.

[CC- 410] A separate bed shall be provided for each Personnel.

[CC- 411] Rooms shall be lit and equipped with power sockets, beds and windows fitted with insect screens.

[CC- 412] Night-time noise levels to which Personnel are exposed shall comply with the limits recommended by the World Health Organization.

[CC- 413] Sanitary and toilet facilities shall be designed to provide workers with adequate privacy, partitions and lockable doors. Sanitary and toilet facilities shall not be shared between men and women.

[CC- 414] Toilet facilities shall be well lit and well ventilated. Each toilet equipped with flush system shall be connected to an individual or collective wastewater treatment system. Dry pit latrines are prohibited in the camps.

[CC- 415] On Works areas, the Contractor shall provide the necessary toilet facilities.

[CC- 416] Sanitary areas (all showers, sinks, urinals, toilets etc.) shall be cleaned and disinfected by the Contractor's cleaning service at least once every 24 hours. Cleaning operations shall be documented.

[CC- 417] The canteen, kitchen and kitchen utensils shall be cleaned after each meal service.

[CC- 418] Fire extinguishers shall be made available in each building at clearly identified locations, and fires are strictly forbidden outside of the cooking area. Gas bottles for the kitchen to be stored outside in a well-ventilated place.

[CC- 419] The Contractor shall construct and maintain a Personnel's leisure area in each camp.

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3.20.3 Food

[CC- 420] The Contractor shall provide meals in a canteen area and according to a food supply system at all Works areas.

[CC- 421] Food supplies for the meals of the Contractor's Personnel shall exclude any meat obtained from hunting or poaching in DRC or Rwanda.

[CC- 422] The Contractor shall define and implement actions to guarantee (i) the quality and quantities of food, (ii) compliance with health rules when preparing meals, (iii) fitting out and servicing premises and equipment, both in the kitchen and food storage areas.

[CC- 423] The Contractor shall inspect and document the cleanliness of food transport vehicles, temperature control and the cold chain, as well as best before dates, and take the necessary corrective actions. The temperatures of chillers shall be checked regularly.

[CC- 424] The Contractor shall check that health requirements are met for food storage conditions in the kitchen or other locations, food cooking times and temperatures, and the conditions in which prepared products are left prior to consumption, to ensure no health risks. Prepared food shall be eaten or thrown away, no food remains are reused.

[CC- 425] The Contractor shall recruit trained canteen personnel and ensure that supervisors monitor compliance with sanitary instructions. The Contractor shall ensure that canteen personnel have means of ensuring compliance with health rules (changing rooms, linen, hand washers, the condition of flooring and paint, and the existence of a cleaning plan).

[CC- 426] The officer responsible for hygiene shall audit all Works areas every 3 months, and document the results, to assure hygienic conditions under which meals are prepared and food conserved. The results of this audit shall be provided to REL.

[CC- 427] The Contractor shall inform the Contractor's Personnel concerning appropriate behaviour for workplace hygiene. The Contractor shall regularly reiterate the importance of hygiene, document these reminders, and ensure that the information is understood, easy to apply and scrupulously complied with.

[CC- 428] The Contractor shall provide three free meals daily to all Personnel accommodated in the camps or in Contractor arranged accommodation. Food will be culturally appropriate.

[CC- 429] The Contractor shall provide in the canteen camps lunch meals per shift to local employees who are not accommodated in the camps and who are living in nearby villages.

[CC- 430] Where a catering service is provided, catering staff must be competent and experienced, medically examined, certified as fit for catering work, and trained in food hygiene.

[CC- 431] Food transport, storage, cooking and waste disposal shall be subject to the approval of the health authorities and in accordance with the Contractor's Health and Safety Policy.

[CC- 432] Where Personnel's own food is consumed, facilities shall be provided for washing hands and storage of waste or refuse. For Personnel who do not take their meals in a formal canteen on the Site, the Contractor shall establish adequate and suitably located covered eating facilities, which provide protection from the elements. Such facilities shall have hardened floors and shall be provided with tables and seating for the relevant number of people as well as potable water supply, washing facilities, toilets and sufficient refuse bins in order to maintain the Site in a neat and sanitary condition. Each such facility shall be properly cleaned after every meal.

3.20.4 Water supply

[CC- 433] The Contractor shall provide, operate and maintain a sufficient potable water supply during the duration of the Contract to his own facilities. The quality of the potable water shall comply with relevant World Health Organization (WHO) quality criteria.

PUBLIC DISCLOSURE AUTHORIZED

[CC- 434] The Contractor shall provide, operate, maintain for the duration of the construction activities an industrial water supply and distribution network to suit his requirements.

[CC- 435] The Contractor shall arrange his potable and industrial water supply system so as not to interfere with any other water supply facilities.

[CC- 436] Regardless of the means of supply of drinking water selected and approved, the quality of the drinking water provided is to be tested on a regular basis.

3.20.5 Sanitation and Cleaning

[CC- 437] The Contractor shall ensure that the Site and all facilities for which he is responsible are maintained in a clean and sanitary condition at all times. The sanitation services shall comply with the regulations of the health authorities concerned. They shall also be located conveniently to all points where the Works is in progress.

[CC- 438] The sanitation services shall include:

- Metal dust bins or equivalent plastic refuse bins with lids shall be provided by the Contractor for all buildings and refuse shall be collected and removed from all facilities on the Site and Works area periodically to avoid overflow of waste, but at least twice per week. Refuse from food preparation and eating areas shall be collected and removed daily.
- Cleaning of streets and of drains shall be carried out sufficiently frequently to maintain the Site and Works areas in a neat and tidy condition.
- The Contractor shall execute a programme to control the incidence of noxious pests and vermin on the Site and Works area. Use of residual pesticides will not be accepted.

3.20.6 Health

3.20.6.1 First Aid Posts and Ambulances

[CC- 439] Unless instructed otherwise by REL, for Work areas with more than 25 workers present at any one time and where it is not possible to reach a hospital or a medical clinic within a period of 30 minutes, by land and in normal conditions, the Contractor sets up a first aid post.

[CC- 440] First aid stations at or close to the areas of the Site where most of the Works is being carried out.

[CC- 441] The first aid posts shall be equipped with medical supplies and staffed during all the Works by competent medical orderlies who shall have direct phone communication with a medical clinic, and shall be assisted as required by the Contractor's Personnel with first aid qualification.

[CC- 442] One ambulance or vehicle accepted as such by the relevant Government Medical Officer of Health and approved by REL will normally be stationed close to the first aid posts.

3.20.6.2 Medical Officers

[CC- 443] The Contractor shall designate one or more qualified medical doctor at the dam and powerhouse sites (the "Medical Officers").

[CC- 411] The Medical Officers shall be qualified medical doctors experienced in construction projects who will supervise the first aid facilities and manage implementation of the Health and Safety Policy defined by the Contractor.

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[CC- 444] The Medical Officer shall have had at least 5 years professional "hands on" experience for international site services, be registered as a medical practitioner and be adequately experienced in medicine, surgery and obstetrics. The qualifications for the Medical Officers shall be from well qualified and well-recognized institutions.

[CC- 445] The Medical Officer is to be at Site at all times, working full-time during normal day-shift hours. The Medical Officer is to be on-call when more than 20 workers are working simultaneously outside of normal day-shift hours.

[CC- 446] The Medical Officer shall be ready to supply medical and surgical services at short notice on request. The Contractor shall install a means of rapidly summoning the doctors to the site of an accident or fire.

[CC- 447] Helicopter pads or clear areas shall be provided near the main Works areas and the Contractor shall make arrangements whenever necessary to transfer serious cases to suitable hospitals or clinics.

3.20.6.3 First aid and Rescue Teams

[CC- 448] The Contractor shall provide and maintain adequate boxes of first aid materials together with stretchers at prominently marked locations within 100 m of each working site on the surface and underground or as required by REL.

[CC- 449] The Contractor shall institute and operate a basic first aid training programme to ensure that each foreman or work crew leader is trained in first aid and possesses a recognized certificate to that effect within 3 months after his/her appointment.

[CC- 450] The Contractor shall make available, train and equip sufficiently suitable experienced workmen to staff a rescue team for each shift of the works

[CC- 451] At an early stage of the Works, the Contractor shall undertake the organisation, equipping and training of rescue teams. These teams shall be trained in underground rescue work and general first aid work and shall be kept to full strength and in an efficient state of training.

[CC- 452] The Contractor shall make arrangements to ensure prompt intervention by the designated team in case of emergency.

[CC- 453] The Contractor shall provide and keep in good working order sufficient air testing, breathing, and other necessary apparatus and basic medical equipment for use during emergency operations, which facilities shall be available to all personnel on the Site, no matter by whom employed.

3.20.6.4 Emergencies

[CC- 454] The Contractor shall make a plan acceptable to REL for dealing with emergencies at the Site, the Contractor's Works areas and during transportation. The plan shall include proposals for first aid, transporting accident victims to hospital, first aid education for his Personnel, dealing with fires, etc. Such plans shall provide for all types of weather and working conditions which will be encountered at the Site and the Contractor's Works areas.

[CC- 455] In case of an accident/incident connected with the execution of the Project, the Contractor shall immediately notify REL of the accident/ incident and shall provide full details of the circumstances and events regarding the accident/incident.

[CC- 456] All personnel present at Site and Work areas, including the Contractor's Personnel, other contractors and REL, must never be refused medical assistance, under the pretext that they are not directly employed by the Contractor.

[CC- 457] The Contractor may however define a unit rate cost per medical act for personnel, other than its own and RELs' Personnel (including their dependents resident or visiting on Site), display this rate in the healthcare centre and forward the information to REL.

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[CC- 458] In the event of accident or serious illness, trained medical personnel available and equipped with the necessary material, medicines and consumables to provide first aid for the patient, stabilise their condition, until the patient is: either treated or discharged, or hospitalized at the camp or in a larger hospital, or evacuated to a medical centre which is well equipped for intensive care, if necessary.

[CC- 459] The Contractor is responsible for the sanitary repatriation of Personnel in the event of a serious injury or illness. The Contractor will take out the necessary insurance to cover the cost of the sanitary repatriation of its Personnel.

[CC- 460] The Contractor shall institute and operate a medical screening and examination system for prospective employees. The screening system shall be established and monitored in consultation with REL, other relevant agencies, and international practice.

3.20.7 Safety

3.20.7.1 Safety Officers

[CC- 461] The Contractor shall appoint a full-time Safety Officer, dedicated exclusively to safety management, and at least one Deputy Safety Officer who shall be responsible for ensuring compliance with the Health and Safety Policy. The Safety Officer should be experienced with at least 10 years' experience and ISO 45001:2018 or equivalent certified. This Safety Officer should be full time present at the construction sites during working hours. A Permit-to-Work System should be established for dangerous and high-risk jobs.

[CC- 462] The Safety Officer or one of his/her deputies shall be available on a 24 h/day, 7 days/week basis and shall carry out regular and random checks of all parts of the Site and Works areas where work is taking place.

[CC- 463] The number of Deputy Safety Officers shall be determined to suit the level of activity at the Site so as to ensure that sufficient checks are made to assure a safe working environment.

[CC- 464] Particular attention shall be given by the Safety Officer to aspects such as lighting, handrails and safety nets (especially around all dangerous openings), access stairs and ladders, toe plates, underground ventilation, blasting procedures, removal of construction rubble, orderly storing, fire safety, stacking of construction Materials and Plant, proper installation of services and general cleanliness.

[CC- 465] In addition, the Safety Officer shall accompany REL on weekly safety inspections, or other frequency advised by REL depending on Project requirements, of the Works and shall take due account of his requirements concerning matters of safety. The Contractor shall document the findings from the inspection and submit to REL for review within 3 days of the inspection.

3.20.7.2 Personnel Protective Equipment

[CC- 466] Accepted safety helmets, high visibility vests, and safety footwear shall be worn by all persons at all times on Site and Works areas. Suitable protective clothing, footwear, waterproofs, gloves, safety glasses, ear protectors, etc. appropriate to the work being undertaken, shall be issued to and worn by all workmen.

[CC- 467] The Contractor shall provide all such clothing and equipment free of charge to its Personnel.

[CC- 468] A risk assessment will be conducted to determine what Personnel Protective equipment is required for what job function and/or area of site.

[CC- 469] The Contractor shall provide training in the use of PPE and conduct such safety awareness programmes and campaigns as may be necessary, including the use of prominent and strategically placed posters, audio-visual methods, etc.

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3.20.7.3 Storage & Use of Explosives

[CC- 470] The Contractor shall prepare and implement a Blasting Management Plan in accordance with the provisions detailed below. The plan shall (i) provide guidance for the preparation of task specific blasting plans, (ii) ensure a safe and risk-controlled plan to explosive blasting and (iii) ensure blasts do not harm people in the area. The plan will map the blasting areas and sensitive receivers located within 1 kilometre of any blasting activities, including residential areas and cultural heritage sites. It will describe (i) how explosive materials will be transported and stored, (ii) the pre-blasting precautions such as notification to occupants of the closest residences, signs, inspections of sensitive sites, (iii) handling of explosive materials, (iv) drilling and loading operations, (v) site clearance and post-blast reoccupation.

[CC- 471] Blasting will be permitted only when proper precautions are taken for the protection of persons, the Works, and property, with written permission form the relevant local authorities.

[CC- 472] Explosives shall be stored, transported, handled and used in accordance with the best practice and in accordance with the provision of the Laws. The Contractor shall comply with all special rules and regulation that may be made by the authorities having jurisdiction regarding construction and storage in magazines, precautions on blasting and the like.

[CC- 473] Transportation, storage and handling of explosive shall be performed according to the rules and regulations in DRC and Rwanda and relevant international standards. The necessary provisions so as not to harm personnel, third parties and the works will be taken during the construction activities.

[CC- 474] Explosives and detonators shall not be transported in the same vehicle.

[CC- 475] Explosives shall be stored in suitable magazines in accepted location. Detonators shall be kept in a separate magazine.

[CC- 476] The magazine shall be plainly marked with large letters EXPLOSIVES-DANGEROUS in Swahili, French and English and shall be locked and guarded at all times. Keys to unlock the magazines shall be kept only by magazine keepers.

[CC- 477] Each magazine shall have around it a cleared area suitably barricaded with a security fence.

[CC- 478] Each magazine keeper shall be competent, trustworthy, and familiar with the handling, transportation, care, and storage of explosive and detonators, and shall be responsible for maintaining the cleared area around the magazine. No magazine keeper shall be allowed to work more than 8 hours in any 24-hour period and shall not be required or allowed to perform any other duty that will interfere with his/her duties as a magazine keeper.

[CC- 479] Warning of Blasting: The Contractor shall install and operate a siren of sufficient volume to be easily heard above the general Works noise from all points within a radius of 1.0 km of surface blasts. A photographic pre-blasting survey should be carried out to avoid later complaints of local people.

[CC- 480] Hand operated sirens will only be accepted in areas of restricted access such as tunnel headings where access is fully controlled.

3.20.7.4 Fire and Explosion

[CC- 481] The Contractor shall implement measures to ensure that the fire and explosion risks are at acceptable levels in accordance with Good International practice. These include (but are not limited to) the following:

- Facilities are designed in alignment with safety standards applicable in DRC and Rwanda and Good International practice.
- Risk assessments are carried out in alignment with Good International practice.
- Accidental event consequence calculations are undertaken to confirm adequacy of safety distances.

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- Facilities are equipped with: (i) Integrity safety prevention and protection systems; (ii) Emergency alarm systems; (iii) Human and material resources for emergency response – including mobile and fixed fire-fighting equipment, ambulances, medical facilities, and medical staff.

[CC- 482] The Contractor shall take all reasonable precautions against outbreaks of fire and ensure that an adequate number of persons trained in the use of firefighting equipment are available in each section of the Works area on each shift.

[CC- 483] The Contractor shall provide and maintain at the Site and Works area a firefighting service including a motor driven vehicle equipped with a water tank, portable pumps, suction and delivery hoses with suitable couplings together with other equipment, appliances, tools and shall staff and administer this service.

[CC- 484] The Contractor shall provide fire suitable and sufficient extinguishers at all Work areas.

[CC- 485] Labour shall be provided with training in firefighting.

[CC- 486] The firefighting service shall be available on a 24 h/day, 7 days/week basis and the Contractor shall install and maintain a warning system to ensure that the firefighting teams and equipment can be concentrated on any fire in the shortest possible time.

[CC- 487] No open fires will be permitted in the Works area or elsewhere within the Contractor's control. Grass and other vegetation in the vicinity of all buildings shall be cut at regular intervals to reduce fire hazards. Adequate fire breaks shall be cut and maintained within the Site and Works area.

[CC- 488] In the event of a fire, the Contractor shall mobilise all nearby Personnel and Equipment, and shall do everything possible to extinguish the outbreak.

3.20.7.5 Emergency Response Drill

[CC- 489] The Contractor shall organize and document an emergency drill program which provides the following information:

- Frequency of the drills, not less than one quarterly exercise for all Personnel.
- Organization of the drills: location, participants, equipment required.
- Scenarios to be performed depending on the emergency event: flood, fire, truck accident, seriously wounded person, major chemical spill, etc.
- Format of the drill report, follow up organization and improvement of the emergency procedure based on the results of the drill.

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3.20.8 Security

[CC- 490] The Contractor shall institute and operate an effective security system on a 24 h/day, 7 days/ week basis at all the Works areas, including housing areas.

[CC- 491] The Contractor shall co-operate with the local Police on all matters relating to security of the Works and persons entering the Site. Such a system shall include identification procedures for all persons, vehicles, etc., entering and leaving.

[CC- 492] The Contractor will coordinate with the local police on matters related to security risks related to Project-induced in-migration

[CC- 493] The Contractor shall prevent firearms being brought on to Site.

[CC- 494] The Contractor shall institute emergency evacuation procedures at each Works area, including tunnel workfaces.

3.21 Management of Primary Suppliers

Primary suppliers are those suppliers who, on an ongoing basis, provide directly to the project goods or materials essential for the core functions of the project. Core functions of a project constitute those production and/or service processes essential for a specific project activity without which the project cannot continue.

Goods and materials essential for the core functions of the project are assessed to be construction materials for the project construction and food supplies for construction workers.

[CC- 495] The Contractor shall ensure that Primary Suppliers meet the requirements of REL's supply chain policy, which aligns with the requirements of World Bank ESS2: Labour and Working Conditions, EIB ESS 8 – Labour Rights and ESS6: Biodiversity Conservation and Sustainable Management of Living Natural resources. Particular attention will be made to risk of child labour, forced labour, human rights, safety and impacts on biodiversity.

3.22 Emergency Preparedness and Response

[CC- 496] The Contractor shall prepare and implement an Emergency Response Plan (ERP) as part of the Construction ESMP.

[CC- 497] The Contractor shall assist REL in conducting the required public consultations on the ERP during the main Works.

[CC- 498] The ERP will be structured into two sub-plans: (a) ERP during construction for Common Hazards and Emergency Situations; and (b) ERP during construction for Cofferdam and Dam Break.

3.22.1.1 Common Hazards & Emergency Situations

[CC- 499] The EPP for Common Hazards and Emergency Situations during construction will be structured as such:

- Identification of potential emergencies based on hazard assessment.
- Procedures to respond to the identified emergency situations.
- Procedures to shut down equipment.
- Procedures to contain and limit pollution.
- Procedures for decontamination.
- Procedures for rescue and evacuation, including a designated meeting place outside the facility.
- Location of alarms and schedule of maintenance.
- List and location of Equipment, facilities and Personnel responsible for responding to the emergency (fire-fighting equipment, spill response equipment, personal protection equipment for the emergency response teams, first aid kits and stations).
- Protocols for the use of the emergency equipment and facilities.
- Schedule for periodic inspection, testing and maintenance of emergency equipment.
- Clear identification of evacuation routes and meeting points.
- Schedule of trainings (drills), including with local emergency response services (e.g. fire fighters).
- Procedures for emergency drills.
- Emergency contacts and communication protocols, including with affected communities when necessary, and procedures for interaction with the government authorities.

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- Procedures for periodic review and update of emergency response plans.

[CC- 500] The EPR for Common Hazards and Emergency Situations during the Works will be prepared and submitted to REL for approval not later than four months prior to Commencement Date.

3.22.1.2 Cofferdam and Dam Break during Construction

[CC- 501] The ERP for cofferdam and dam break during construction will be structured as such:

- Purpose
- Project information.
- Flood studies and inundation maps.
- Emergency detection, evaluation and classification.
- Notification flowcharts.
- Evacuation table.
- Roles and responsibilities.
- Emergency alert system.

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4 Measures Under the Responsibility of REL

4.1 Environmental and Social Management System

4.1.1 Objective

The Environmental and Social Management System (ESMS) will provide a structure and integrate the rules and objectives into REL management and business operations, through clearly, repeatable defined processes. The ESMS objective is that systems, processes, staff and resources are available when required for the effective implementation of the ESMP in accordance with national regulation and Lenders' environmental & social policies.

4.1.2 Components, Timing and Responsibilities

A management system is comprised of trained, committed people routinely following procedures. REL's ESMS will be structured into three main components:

- ESMS 1- System Development: Documented company policies and Health, Safety, Environmental & Community (HSEC) procedures will be established to implement management actions committed in this ESMP and to ensure continuity when people in the organization change.
- ESMS 2 - System implementation: Trained, committed people will routinely follow these procedures. Records are maintained to demonstrate implementation.
- ESMS 3 - Environmental and Social Technical Assistance: effective support to REL is provided during construction and the first years of operation for the implementation of the ESMP measures.

The 3 components will be developed during the detailed design stage and implemented in full during the main construction period and the operation phase.

The ESMS development and implementation will be REL's responsibility and the day-to-day management of the ESMS will be executed by REL employees.

The ESMS established by REL for the construction period will be consistent with ISO 14001 2015 and integrated with ISO 45001 standard. The ESMS established by REL for the operation period will be ISO 14001 certified and fully integrated with ISO 9001 and ISO 45001 standards, within one year after commissioning.

4.1.3 Management Actions Prior to and during Construction

Although not part of E&S management, REL will explore opportunities for carbon credits.

4.1.3.1 ESMS 1- System Development

[OC- 1] Policies and Procedures

- Develop a set of environmental & social policies to (i) summarize the commitments made by REL to manage the E&S risks and (ii) establish the expectations for conduct in all related aspects of the Project implementation. The following issues will be covered: Environmental Protection, Community Health and Safety, Labour and Working Conditions (including a Human Resources Policy in alignment with national, Lenders, ILO requirements as well as the principles of the SA 8000 standard) and supply chain management (including Primary Suppliers) to ensure compliance with World Bank ESS2: Labour and Working Conditions). The policies will commit to adherence to the Voluntary Principles on Security and Human Rights and the International Code of Conduct for Private Security Service Providers - including contractors and their subcontractors.
- In support to the E&S policies, develop and document a set of internal procedures, including but not limited to, the following topics:
  - Roles and responsibilities of the Project personnel. The roles required to implement the ESMP and to establish and maintain the ESMS are outlined in [OC- 5] below for REL and in Section 3.1.1 for the EPC Contractor. These roles need to be reviewed and incorporated into organizational structures for the various phases of the early works and main construction period.
  - Coordination and responsibilities between REL's E&S team and REL Owners' Engineer for the review of CESMP documents as well as any changes in design and procedures.
  - Policies and strategies, e.g. Code of Conduct, Environmental, Social Policies, Community Investment, Waste Management.
  - Procedures, e.g. Project's environmental incident reporting & investigation, Grievance, Documentation and record keeping, Security & Human Rights, Progress activity reporting.
  - Registers: Commitments, Communication, Stakeholder, Permits, Legal.
  - Database: Photos, Environmental incidents, Social Grievances, Assets inventory & compensation, GIS, monitoring results, safety accidents.

[OC- 2] Conduct complementary E&S studies after disclosure

- Identify potential risks of child labour, forced labour, serious safety issues and risk of impacts on natural habitat in relation to primary suppliers.
- Conduct the complementary E&S studies that have been committed to in the ESIA.
- Post on the REL website the approved documents.

[OC- 3] Compliance Execution Plan

- Prepare a Compliance Execution Plan for the construction period. It will detail: (i) the conditions required by the Environmental Authorities through the Environmental Permit obligations, (ii) the E&S Management actions committed through the present ESMP, including the necessary coordination with the Governmental Agencies in charge of third party management actions (see Section 5), (iii) the Lenders covenants attached to the financing agreements, and (iv) the relevant E&S national regulation framework and possible changes.
- Conflicts between the national and international plan requirements will be identified and a process for addressing both sets of requirements identified.
- The Compliance Execution Plan will be prepared and implemented by the Environmental Compliance Manager. It will indicate (i) the persons within REL or the EPC Contractor who owns the compliance requirement, (ii) the methods to be used to comply with the

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requirement and where appropriate, performance standards and criteria to be satisfied, and (iii) whether the associated activities will be executed by the company's own employees, or by others acting on its behalf. The Compliance Execution Plan will then be further scheduled in Annual Work Plans as provisioned through Management Action [OC-4] below.

4.1.3.2 ESMS 2.- System Implementation

[OC- 4] Annual Work Plan and resource scheduling • End of each year, prepare an Annual Work Plan for the execution of the ESMP Management Actions by REL for the coming year. Links Construction Activities with the environmental and social Management Actions. • Allocate responsibilities within the Environmental and Social team for each activity and specify the estimated effort required for each of the team member to achieve these activities. Where sub-contractors are to be involved, specify the time and effort required to contract and supervise and specify who owns the management of their contract. • List the milestones for all planned deliverables and meetings.
[OC- 5] Mobilize human resources: Team and training • Describe individual responsibilities for each of the ESMP measures under the responsibility of REL (see box below). • Source the material resources required. • Work with the Health and Safety Director to prepare and implement a Security and Human Rights risk assessment and develop a Security Management plan (internal, not to be publicly disclosed) for the construction and operations phases.
[OC- 6] Gender Officers • REL will recruit 2 trained female Gender Officers to define and implement GBVH protocols (1 in Rwanda and 1 in DRC). These protocols will apply to Project workers (including contractors and sub-contractors), and the EPC will have to implement them. • REL Gender officers will prepare and implement a Community Outreach Programme on Gender-based violence and harassment, to disclose the Project's GBVH protocols and reporting processes. • REL Gender officers will establish a separate Workers grievance channel to handle workers grievances related to Gender-based violence and harassment

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Box 2 - Roles and Responsibilities within the Project E&S Management Unit

The unit will consist of an E&S manager who is responsible for overseeing compliance with both applicable local law and regulations and international standards for E&S management including labour management. The unit will include an environment team headed by a biodiversity monitoring expert who will lead the environmental and ecological monitoring as well as other biodiversity and conservation initiatives. A social expert will lead a team who will be in charge of the resettlement and compensation, livelihood and social development, and stakeholder engagement. Subteam leaders and field staff, including a community development officer and a liaison officer, will comprise the environment and social teams of the unit.

The E&S manager will play central role in the review and update of the ESMS prior to the start of site mobilization and construction. The E&S manager will work closely with the HSSE manager under Project Owner's EPC contractor organization; initially for development of various project management plans in alignment; and later for implementation of the requirements under the plans. While the site based HSSE manager is responsible for monitoring day to day implementation of environmental and labour management measures, the E&S manager, who may be based at the country office, will arrange regular site visits to conduct inspections and/or audits and to provide training sessions to strengthen the capacity of site teams on relevant topics. The E&S manager will discuss major E&S risks with corporate/sponsors' E&S management when identified and share learnings across similar projects where possible.

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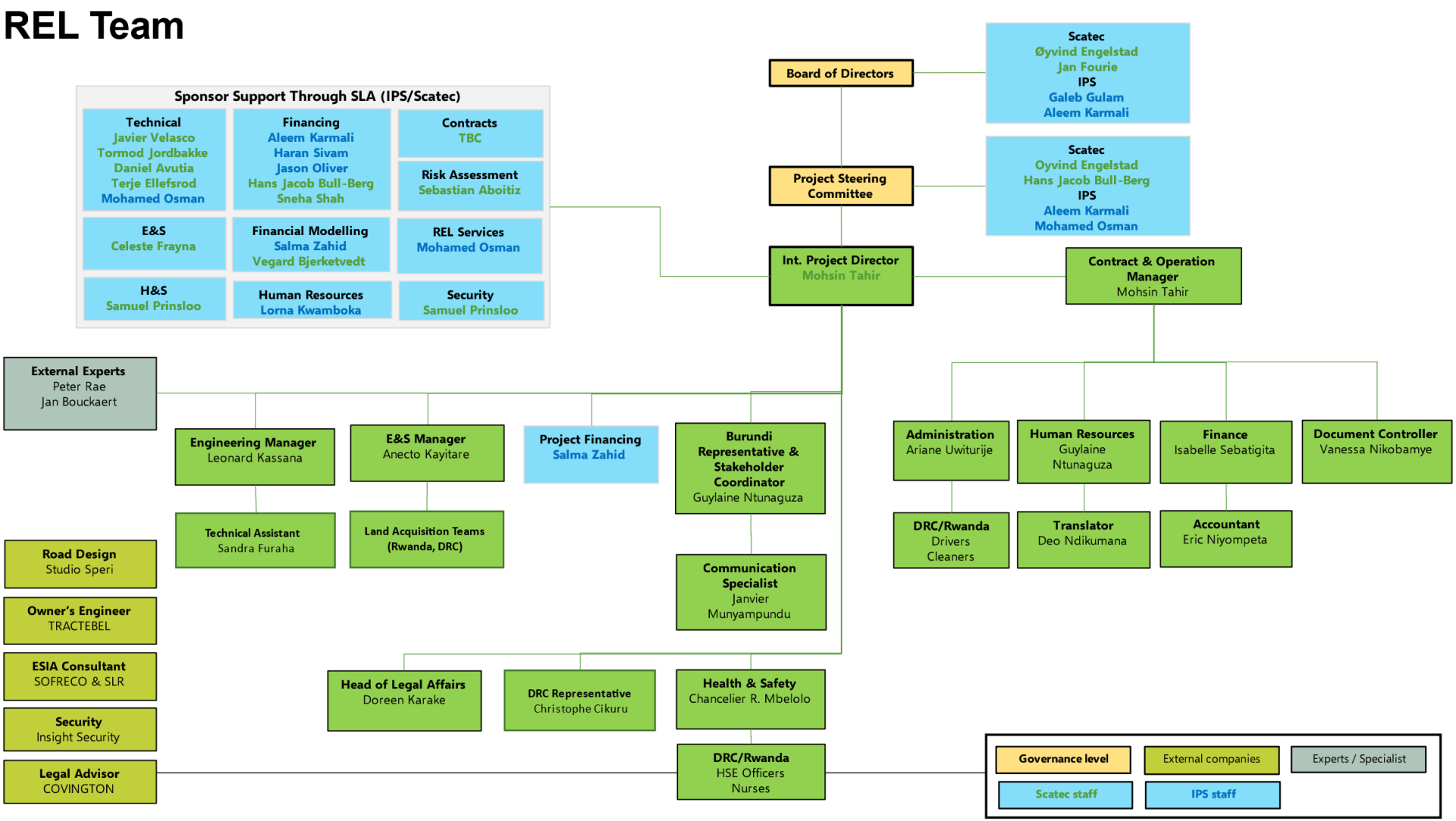
Figure 2 Indicative Outline Organisation of REL Environmental and Social Team



[OC- 7] Support planning and implementation of measures which are under the responsibility of government agencies and third-parties

- For activities listed in Section 5 (measures under the responsibility of government agencies), play a proactive role in triggering coordination meetings, offering legal support as applicable, and facilitating exchange of information.

- **[OC- 8] Implement mitigation and monitoring measures with regard to Cumulative Impacts**
- Implement the mitigation and monitoring measures listed in Vol. II - Main ESIA, Chapter 12 Cumulative Impact Assessment:
- Conduct ESIA, RAP and CIA for the Project's quarries and borrow area sites once selected by the EPC Contractor, and approved by REL
- Share monitoring data on the Project's impacts on hydrology, sediment and fish with ABAKIR and Rusizi National Park Authorities.
- Coordinate with ABAKIR and Rusizi National Park Authorities with regard to management of cumulative impacts, (i) provide information on a regular basis regarding Project activities, hydropeaking operating regime, sediment flushing operations, anticipated impacts and monitoring programme along the Ruzizi River and at the Rusizi National Park, (ii) establish communication channels for incident reporting, so that REL can inform ABAKIR and park authorities of any incidents that have a bearing on the Ruzizi River and National Park, and vice versa.
- Coordination with Developers of Projects within the Ruzizi III Project Area of Influence: (i) identification of projects and project developers in the Ruzizi III Project's area of influence that have spatial and temporary overlap with the Ruzizi III Project's quarries and borrow areas (as part of the quarries and borrow area CIA), (ii) monitor development of any new projects not identified in the ESIA/CIA, which may have cumulative impacts with the Ruzizi III Project, (iii) put in place channels of communication to coordinate with the project develops, to inform developers on a regular basis of the Ruzizi III Project activities, anticipated impacts and monitoring programme, and establish communication channels for incident reporting, so that REL can inform project developers of any incidents that have a bearing on the their project's and vice versa.
- Coordination with Developers of Associated Facilities: Nominate a focal point who will coordinate as necessary with the developers of the transmission line projects and the lenders with regard to the ESIAs for the Associated Facilities. REL shall keep track of ESIA progress and as a stakeholder in the transmission line projects shall review the ESIAs (including the CIAs) as part of their risk management process.
- Coordination with Third Parties to Manage Cascade Impacts. A Cascade Management Plan is expected to be prepared by EGL. REL will coordinate with EGL and their consultants to facilitate the exchanges of information necessary to establish the Cascade Management Plan. REL will inform the Cascade Management Plan of environmental and social constraints specific to the Ruzizi-III Project that need to be taken into consideration when establishing operating schedules. REL will participate in defining a coordinated and optimised schedule of operation.

[OC- 9] Prepare the transition, between construction to operation to maximise local content

- One year before the first powerhouse commissioning, start identifying personnel from Burundi, DRC and Rwanda with potential to take on operating responsibilities.
- Prepare job descriptions for the future operation staff.
- Provide specific training for the future operation staff.
- Monitor progress through monthly update of work programme.

[OC- 10] Execution and monitoring of the Annual Work plan activities

[OC- 11] Progress Activity Reporting and Communication

- As defined in Section 4.11, prepare the progress activity reports on environmental and social performance:
  - Six-monthly Environmental & Social Performance report in Swahili, Kinyarwanda, French and English on the Project's web site and Public Information Centres.

4.1.3.3 ESMS 3.- Environmental and Social Technical Assistance

Some projects refer to this as an Owner's Engineer – E&S Advisory Support

[OC- 12] Recruit an international environmental and social technical assistance

- Prepare terms of reference for, and retain the services of, a qualified E&S consultancy firm which will provide a technical environmental and social assistance to REL E&S department for the construction period and the first year of operation.
- The services will include:
  - an international E&S expert, with experience in implementing ESMPs for large dams in Africa, who will support REL's E&S department first in REL's headquarters during the detailed design stage, then regularly onsite during construction.
  - a Biodiversity expert and a Livelihood Restoration Expert, who will support REL's E&S department on a fly-in fly out basis when required.

[OC- 13] Assist the E&S Department for the implementation of the ESMP

- The international E&S technical assistance will assist REL E&S department in the following activities:
  - Writing the ESMS procedures.
  - Preparation of the scope of work for third parties required for the development of the detailed management plans.
  - Assistance in the selection and engagement of the third parties.
  - Implementation of the monitoring activities, with procurement of material resources for tasks undertaken directly by REL or for outsourcing for specialist surveys.
  - Preparation of annual work plan and resource scheduling.
  - Liaison with the Owners' Engineer for the environmental supervision of the EPC Contractor and relation with communities during construction.
  - Implementation of the RAP activities which are under REL responsibilities.
  - Coordination of the stakeholder engagement process, setting up and management of the grievance redress mechanism.
  - Liaison with the governmental agencies involved in the ESMP monitoring. Liaison with local authorities.
  - Preparation of the six-monthly E&S performance reports disclosed to the Public and the six-monthly E&S Compliance report for the Lenders.
  - Training sessions of the REL E&S officers on all the above so that internal capacity in E&S management is strengthened.

[OC- 14] Independent Panel of Experts on Environmental and Social Safeguards

- An Independent Panel of Experts on environment and social safeguards will be appointed.
- The panel will be required to review the ESIA, ESMP and RPF and all aspects of environmental social management.

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4.1.4 Management Actions during Operation

4.1.4.1 ESMS 1 - System Development

[OO- 1] Policies and Procedures • In support to the E&S policies, as for the construction phase, develop and document a set of internal procedures for the operation phase, including but not limited to, the following topics: Organizational Structure and Responsibility; Communication; ESMS Documentation; Documents control; Monitoring and Measurement; Reporting requirements; Management of the grievance mechanism; Human Resources Policy in alignment with national, Lenders Policies and ILO requirements, as well as adhering to the principles of the SA 8000 standard. • Emergency Preparedness and Response. • Reservoir and Powerhouse Operating Procedures prepared by REL, in relation to the bottom outlets opening, the turbines daily operations, and the reservoir lowering, integration of (i) water quality issues, (ii) environmental flow, (iii) downstream public safety, (iv) river habitat protection, (vi) coordination with Ruzizi-I and -II HEPP operators. • Waste management: (i) identification of all solid and liquid wastes produced by the various installations (volumes, nature, frequency, and collection period) including green wastes such as floating debris in the reservoir, (ii) creation of waste registers and tracking systems from collection to disposal, (iii) establish/document the agreement with the municipal waste collection organisation.
[OO- 2] Compliance Execution Plan • Prepare a Compliance Execution Plan for the operation period. It will detail: (i) the conditions required by the Environmental Authorities through the Environmental Permits obligations, (ii) the E&S Management actions committed through the present ESMP, (iii) the Lenders covenants attached to the financing agreements for the operation phase and (iv) the relevant E&S national regulation framework (e.g. water quality effluents) and possible changes. • Indicate (i) the persons within REL with responsibility for compliance, (ii) the methods to be used to comply with the requirement and where appropriate, performance standards and criteria to be satisfied, and (iii) whether the associated activities will be executed by the company's own employees, or by others acting on its behalf.
[OO- 3] ISO 14001 and ISO 45001 certification • Prepare the procedures required for ISO 45001 accreditation and organise accreditation within the first year of operation. • Prepare the procedures required for ISO 14001 accreditation and organise accreditation within the first year of operation. • Develop a Health and Safety Plan addressing the health and safety hazards during operations. • Include in the Health and Safety Plan: (i) Management measures for chemicals and hazardous materials, similar to that for construction though adapted for smaller inventories and fewer materials; (ii) Specific measures related to the management of noise, e.g. high-performance hearing protection devices for operators and procedures for enforcement, regular equipment noise monitoring and maintenance program. • Undertake regular health and safety risk assessments, monitor the implementation of the Health and Safety Plan and provide health and safety trainings to its employees during operation.

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4.1.4.2 ESMS 2 - System Implementation

[OO- 4] Annual Work plan, resource scheduling and mobilization

- As for the Construction period, end of each year, prepare Annual Work Plan for the execution of the ESMP Management Actions by REL for the coming year and allocate responsibilities and effort within the Environmental and Social team for each activity, including sub-contractors.
- Undertake regular health and safety risk assessments, monitor the implementation of the Health and Safety Plan and provide health and safety trainings to REL employees during operation.
- Ensure hazardous material is transported to the site by licensed transport contractors in compliance with DRC, Rwanda and EU transport regulations.

[OO- 5] Progress Activity Reporting and Communication

- As defined throughout this ESMP, prepare the progress activity reports on environmental and social performance:
  - Six-monthly Environmental & Social Performance report to larger public during the first three years and then on an annual basis, posted on the Project's web site (available in both French and English).

4.1.4.3 ESMS 3 - Environmental and Social Technical Assistance

[OC- 15] Assist the E&S Department for the implementation of the ESMP for the operation phase

- The international E&S technical assistance will assist REL E&S department in the following activities during the first year of operation:
  - Revise and update the ESMP building on the lessons learnt from the construction period. Adjust the management actions to the baseline situation post commissioning as well as to REL organization at that time.
  - Preparation of the scope of work for third parties required for the implementation of the operation phase management plans.
  - Implementation of the operation phase monitoring.
  - Preparation of annual work plan and resource scheduling.
  - Coordination of the stakeholder engagement process, setting up and management of the grievance redress mechanism.
  - Liaison with the governmental agencies involved in the ESMP monitoring. Liaison with local authorities.
  - Preparation of the six-monthly E&S Performance reports disclosed to the Public and the six-monthly E&S Compliance report for the Lenders.
  - Training sessions of the REL E&S officers on all the above so that internal capacity in E&S management is strengthened.

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4.1.5 Performance Indicators

Component	Performance indicators
ESMS 1- System Development	• Availability and relevance of policies and procedures. • GIS-based database available: software, computer, dedicated staff. • Availability and completeness of the Compliance Execution Plan.
ESMS 2.- System Implementation	• Annual Work Plans available in December during operations. • Staff available on time and with the right experience and profile at the beginning of the construction period: Training and Human Resources records, showing CV and appropriate qualifications. • Progress Activity Reports prepared on time and covering most E&S issues.
ESMS 3 - Environmental and Social Technical Assistance:	• Effective mobilization of international E&S specialist to assist REL's E&S Department in the ESMP implementation during construction and the first year of operation. • Six-monthly E&S Performance reports disclosed to the Public and the Six-monthly E&S Compliance report for the Lenders available on time and as per recommended content.

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4.2 Management of Change Procedure (MCP)

4.2.1 Objective

The ESIA have been prepared based on the 2022 feasibility study design information. As is typical for such a large HEPP, further design development or refinement may be undertaken. In particular, the location of quarries and borrow areas are yet to be decided and will be selected by the EPC Contractor. Changes in design may be of a purely technical nature with little environmental or social relevance. Other changes in design may fall within the areas and issues already covered by the ESIA.

Potential changes can be triggered at various stages of the Project implementation (e.g. Detailed Design, Construction, Operation) and by various stakeholders (Owners, Designers, Lenders, Community). They could include:

- Detailed design refinement after the present document has been disclosed, due to detailed topographic or geotechnical information or Lenders' requirements.
- Detailed design development submitted by the Design team of the EPC Contractor in advance of the construction activities and approved by REL.
- Results of further field surveys and monitoring.
- Comments or concerns submitted by community or the Lenders as long as the basic design is refined, or the detailed design is developed.
- Changes in regulations or comments by regulatory bodies.
- Operating & Maintenance procedures prepared by the EPC Contractor and refined by the future operator.
- Operating mode that differs from the assumptions or the commitments considered in the ESIA.

Regardless of the trigger source, potential changes in design will be formally processed through the Management of Change Procedure (MCP). In this regard, the MCP objective will be:

- Changes in design or operating procedures which occur during construction or operation are systematically screened to detect any environmental or social implications that were not addressed in the 2022 ESIA and that would require additional mitigation strategy and public disclosure, as required.

4.2.2 Components, Timing and Responsibilities

Three main components form the present plan:

- MCP 1 - Screening
- MCP 2 - Assessment and approvals
- MCP 3 - Public disclosure

Implementation of these three components will start during the detailed design period and will continue during the main construction phase and throughout operation.

REL has the overall responsibility for the management of the MCP. During the early works and the construction period, the Owners Engineer and the EPC Contractor will play a key role in the implementation of the MCP. The Owners Engineer will be involved in the initial screening and in the notification of variation orders when and if required to execute the additional mitigation measures. The EPC Contractor will conduct the environmental and social assessment required to inform the potential implications of changes in design and will execute the approved mitigation measures. In addition of the internal stakeholders (REL, Owners Engineer, EPC

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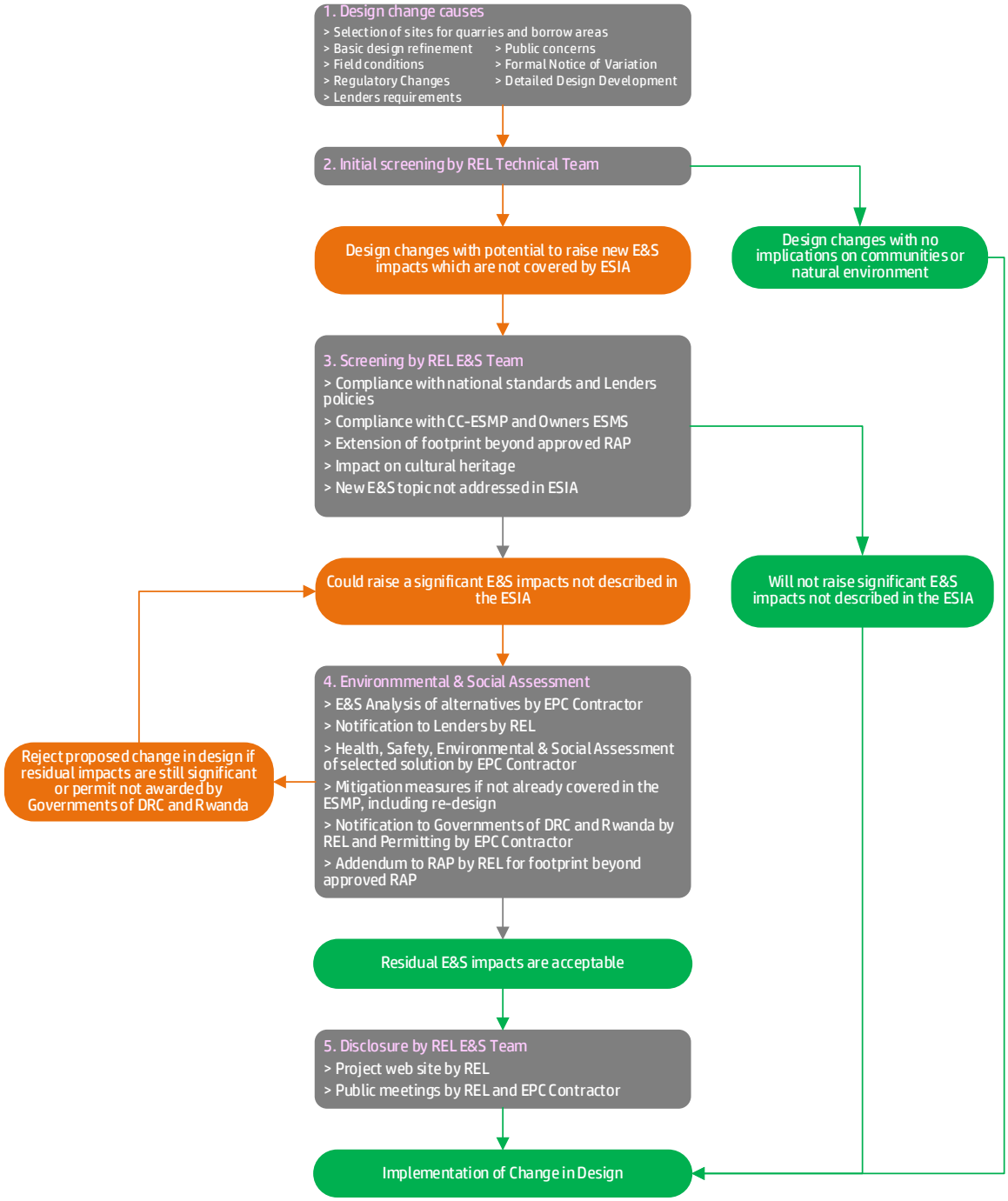
Contractor), changes could also be required by the Lenders, Governments of DRC and Rwanda, or the Community.

Figure 3 Change Management Process



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4.2.3 Management Actions during Construction

4.2.3.1 MCP1 - Screening

[OC- 16] – Formalize and coordinate MCP with EPC Contractor and Owners Engineer • Meet with OE and EPC Contractor to (i) describe the MCP procedure, and (ii) formalize the screening responsibilities and log in accordance with EPC Contract and this ESMP. • Organize and document weekly meetings in Kigali (Rwanda) or on site during the detailed design period, then fortnightly meetings on site or in Kigali to list all changes detected in the previous period, decide on way forward and track progresses on agreed E&S assessment or mitigation actions. • Populate and inform the MCP log as required
[OC- 17] – Initial Screening by REL Technical Team • Require the Owners Engineer to (i) screen any changes submitted by the EPC Contractor through the Document Management Software used by EPC / REL / Owners Engineer to transmit, record, track and approve all documents prepared and submitted by the EPC Contractor and (ii) provide a preliminary opinion to REL E&S team on changes which could result in environmental or social impacts not addressed in the ESIA. • Coordinate with Owners Engineer to discuss any changes required by third party (Lenders, Governments of DRC and Rwanda, Communities) and to agree on way forward to materialize these changes or to justify rejection.
[OC- 18] – Screening by REL E&S Team and decision on way forward • Examine the technical documents (drawing, method statement, technical note, Feasibility Study, risk assessment) provided by the EPC Contractor or the Owners Engineer to understand features of the proposed change which could influence the E&S examination, e.g. location and land requirements, permanent facility or temporary installation, nuisances to adjacent community (traffic, noise, vibration, light, dust) during construction and operation, safety aspects (blasting, traffic accidents, landslips), erosion and sedimentation from runoff, earthworks required for construction, long-term maintenance requirements. • Using an E&S topics screening matrix, provide an opinion on compliance of the proposed change with: (i) Lenders E&S policies, (ii) Good Industry Practice including IFC Environmental, Health, and Safety Guidelines, (iii) National regulation and permitting requirements, (iv) E&S specifications of the EPC Contract, (v) E&S commitments made in this ESMP, (v) Required level of consultation with communities. • If no significant E&S implications are identified as compared to the issues addressed in the ESIA, log the screening results and the design change will be further evaluated on the basis of technical, cost and other non-E&S criteria. Otherwise, notify the OE of (i) the likely significance of potential impacts and (ii) the level of detail of the environmental and social assessment required to avoid or mitigate the predicted adverse effects prior to approval. • Document all decisions and populate the MCP log accordingly.

4.2.3.2 MCP2.- Assessment and Approvals

[OC- 19] – Agree on responsibilities for E&S Assessment • Establish who will implement the studies identified by REL E&S team as required for the E&S assessment of the proposed change. • Involve the Owners Engineer to establish contractual implications and arrangements for the EPC Contractor. • Meet the OE and the EPC Contractor to explain and agree on the way forward for the Environmental and Social assessment. • Prepare a detailed activity schedule showing planned studies and decisions, as well as interactions between activities - Include Governments of DRC and Rwanda permitting

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requirements, as applicable- Define the critical path - Communicate with REL Planning Controller to ensure feasibility within overall construction schedule or to amend accordingly.

- Report to the Lenders to inform on the proposed change, result of the E&S screening and agreed strategy prior to approval.
- Notify Governments of DRC and Rwanda of all material design changes where these could affect the terms of permits already issued, and for all design changes, carry out a review of existing permits to determine whether these could be affected.

[OC- 20] – Environmental and Social Analysis of technical alternatives

- Describe the technical alternatives examined by the Design Team while studying the proposed change: location/alignment, layout, technology, construction method, operation mode, access.
- Document how the E&S aspects were taken into account in complement of the technical and economic aspects:
  - List what aspects of the community and/or the natural environment could be affected (e.g. health, safety, livelihoods, biodiversity, cultural heritage, water resource) and describe how each technical alternative would induce adverse effects on these aspects
  - Demonstrate that the mitigation hierarchy was applied in the ranking of alternatives: avoid (resettlement, encroachment into sensitive habitat or productive land/assets), minimize and mitigate (footprint, working hours, construction method, re-design, rehabilitation, public consent) or compensate (land acquisition, temporary loss of access to productive assets).
  - Justify the selection of the preferred technical solution. If the selected solution does not avoid or minimize adverse E&S effects, demonstrate this could not be achieved without exceeding excessive cost.
- Report to Lenders on technical alternative selected for further environmental and social assessment.

[OC- 21] – Environmental and Social Assessment of selected technical solution

- Establish the need for (i) site specific surveys and (ii) technical studies to inform the E&S assessment of the selected solutions.
- Coordinate with Owners Engineer and EPC Contractor (if in charge of the E&S risk assessment) to ensure that these needs are being addressed through their E&S risk assessment - If a third-party consultant performs the E&S assessment, prepare the scope of work and procure the studies.
- Review the E&S assessment and verify (i) robustness of the baseline description, (ii) relevance of the impact assessment, (iii) effectiveness of the proposed mitigation strategy and (iv) level of public consultation undertaken while designing the mitigation strategy.
- Approve or require improvements.
- When the E&S assessment is prepared under the form of an EIA study submitted to Governments of DRC and Rwanda for permitting, verify compliance with the Lenders E&S standards, whatever is Governments of DRC and Rwanda approval status.
- Coordinate with the Owners Engineer to ensure that the proposed mitigation measures are actually and timely implemented in the field.
- Submit the environmental & social assessment report(s) to the Lenders

[OC- 22] – Addenda to ESMP

- If the selected Change In Design requires environmental and social measures which are not covered by the present ESMP, prepare an addendum to the ESMP to address specific mitigation measures or management plans.
- As this is likely to be the case for the first sediment release operation, ensure appropriate scope of work for an ESMP is included in the agreement with the consulting firm or the contractor in charge of the E&S assessment of this component.

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• Submit the addenda to the ESMP to the Lenders and disclose on REL's website.
[OC- 23] – Addenda to the RAP • As applicable, conduct the land surveys required and the necessary consultations to update the RAP for the area affected by the proposed change in design. • Using the result of the RAP investigations, coordinate with EPC Contractor to minimize impacts on livelihoods. • Submit the addenda to the RAP to the Lenders before payment of compensation and actual land take. • Disclose on REL's website. • Pay compensations, formalize the land take and access to land.

4.2.3.3 MCP3 - Public Disclosure

[OC- 24] – Public disclosure • Organize public meeting and provide details on construction schedule, predicted impacts and mitigation measures. • Post the relevant documentation on REL's website.

4.2.4 Management Actions during Operation

4.2.4.1 MCP1 - Screening

[OO- 6] – Update of this ESMP for the Operation period • During the last year of the construction period, revise and update the present ESMP taking into account the environmental / social / technical / political / internal situation at that time and the lessons learnt in terms of implementation to date. • Refine budgets, implementation schedules and human resources assessment. • Share with Lenders and disclose the updated ESMP on the REL's website prior to the start of operation
[OO- 7] – Screening by REL E&S Team and decision on way forward • Examine any changes proposed by the operator for the operation phase compared to the assumptions and commitments included in the ESIA and ESMP: (i) review of technical documents to understand features of the proposed change which could influence the E&S examination, (ii) provide an opinion on compliance of the proposed change with Lenders E&S policies and Good Industry Practices. • If material E&S implications are identified as compared to the issues addressed in the ESIA, inform the operator and the Lenders of the likely significance of potential impacts and the level of detail of the Environmental and Social assessment required to avoid or mitigate the predicted adverse effects prior to approval. • Document all decisions and populate the MCP log accordingly.

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4.2.4.2 MCP2.- Assessment and Approvals

[OO- 8] – Environmental and Social Analysis of technical alternatives • As for the construction period, describe the technical alternatives examined by the operator while studying the proposed change(s) and document how the E&S aspects were taken into account in complement of the technical and economic aspects. • Justify the selection of the preferred technical solution. If the selected solution does not avoid or minimize adverse E&S effects, demonstrate this could not be achieved without exceeding excessive cost. • Report to Lenders on technical alternative selected for further Environmental and Social Assessment
[OO- 9] – Environmental and Social Assessment of selected technical solution • Establish the need for (i) site specific surveys and (ii) technical studies to inform the E&S assessment of the selected solutions. • Prepare the Scope of Work for the E&S assessment, procure and mobilize the consultants. • Review the E&S assessment and submit the environmental & social assessment report to the Lenders.

4.2.4.3 MCP3 - Public Disclosure

[OO- 10] – Public disclosure • Organize public meeting(s) and provide details on implementation schedule, predicted impacts and mitigation measures • Post the relevant documentation on REL's website.

4.2.5 Performance Indicators

Component	Performance indicators
MCP 1 - Screening	• MCP log available and populated with changes in design
MCP 2 - Assessment and approvals	• Analysis of Alternatives reports available and relevant. • E&S assessment reports compliant with Lenders E&S standards • Permits timely obtained from Governments of DRC and Rwanda
MCP 3 - Public disclosure	• Availability of E&S assessment report on REL's website prior to start of implementation of the design change.

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4.3 Detailed Design and Environmental and Social Surveillance of Construction Works

4.3.1 Objective

Section 3 describes the environmental and social management actions under the responsibilities of the EPC Contractor. These measures require detailed planning and supervision to ensure timely and effective execution, with the following specific objective:

- Construction methods do not incur adverse or non-compensated effects on communities, vegetation, soils, groundwater, biodiversity, natural drainage and water quality in areas adjacent to Worksites for the entire duration of the works.

4.3.2 Components, Timing and Responsibilities

The following components form the present plan:

- SURV 1- Review of sediment management programme
- SURV 2- Review of detailed design to check alignment with ESIA
- SURV 3- Environmental supervision of construction methods
- SURV 4 – Management of third-party labour risks

REL will be responsible for the management and supervision of the EPC Contract execution. REL is therefore the primary implementing body for the management actions described below.

4.3.3 Management during Pre-Construction

4.3.3.1 SURV 1– River Engineering Feasibility Studies & Sediment Management Programme

[OC- 25] Feasibility Studies for River Engineering Works • Include in the Owner's Engineer scope of work: > Undertake feasibility studies for river engineering works to enhance environmental flow conditions (see Section 4.10). The works could include river engineering to attenuate the rate of change of water level.
[OC- 26] Sediment Management Programme > The sedimentation management programme shall be defined by the Contractor on the basis of the latest best international standards (such as ICOLD, IHA) and verified through numerical (Computational Fluid Dynamics 2D/3D models) and then through physical hydraulic models. An overview of methods for controlling reservoir sediment is provided in Box 3. > The sediment management programme shall build upon the sediment management strategy that has been prepared as part of the 2022 Feasibility Study. The strategy is provided in Box 4. > The sediment transport modelling not later than two years before the first impoundment of the reservoir. > The modelling shall not be limited to the reservoir, but it should also cover the reach of the Ruzizi River from the Project dam to a point downstream where there are no significant impacts on geomorphology. The objectives will be to: (i) define the method (sluicing, venting, flushing; with or without lowering of the reservoir), frequency, flow rate and duration of each sediment release operation, during normal

operation, and (ii) predict the potential effects on sediment deposition downstream of the dam (magnitude, location).

> The proposed sediment venting/sluicing/flushing flow rates will be designed and implemented such as that no unnatural activation of the floodplain occurs and that community safety issues are planned and managed according to good international practices.

Box 3 – Methods for Controlling Reservoir Sediment

Upstream sediment management approaches

- *Catchment Erosion Control*: Measures involves schemes such as afforestation or reforestation, alteration of agricultural practices to reduce erosion. However, although these methods offer a number of benefits, they are not effective over periods of engineering or economic interest (Mahmood, September 1987).
- *Upstream sediment traps:* Low dams located just upstream of reservoirs can function as traps for mostly coarse sediment. These should be designed for easy access by heavy equipment, so that the trapped material can be easily excavated and either used for commercial aggregate or trucked to the downstream river channel for sediment augmentation. However, the cost of such structures is often greater than the cost of increasing the volume of the reservoir.
- *Sediment bypassing or warping:* Involves diverting sediment-laden water onto agricultural land to permit deposition of suspended sediments and to improve soil fertility. However, handling large volumes of inflowing sediment, bypassing the full length of the reservoir and in locating areas for sediment disposal make this approach difficult.

Reduction of reservoir sediment deposition

Sluicing: Comprises operating the reservoir at a lower level during the flood season to facilitate sufficient sediment transport capacity through the reservoir. The principal objective is to reduce trapping of incoming sediment rather than to remove previously deposited sediment. Sluicing requires relatively large capacity outlets on the dam.

Density current venting: Turbidity or density currents form when inflowing water with high sediment concentrations form a distinct, higher density current that flows along the bottom of the reservoir toward the dam without mixing with the overlying, lower density (clearer) waters. Venting can remove fine sediment but not the coarser sediment fraction.

Methods that increase or recover reservoir volume.

- *Flushing:* Flushing focuses on scouring and re-suspending sediment and transporting it downstream. It can involve the complete emptying of the reservoir (empty or drawdown flushing), or it may require less drawdown (pressure flushing).
- *Drawdown or empty flushing:* To be successful, the ratio of reservoir storage to mean annual flow should not exceed 4%. This is because with larger storage the reservoir cannot be easily drawn down and because flushing flows need to pass through a low-level outlet without appreciable backwater. The Ruzizi III reservoir meets the conditions for effective drawdown flushing.
- *Pressure flushing (a variant on drawdown flushing)*: the objective is to remove sediment directly upstream to the dam to keep intakes operational (rather than drawing the reservoir down so that it is acting like a river in carrying its sediment load). The reservoir level is not lowered, but outlets are opened to remove sediments a short distance upstream of the outlet, creating a cone-shaped area of scour just upstream of the outlet. However, the scale of sediment removal by this technique is much smaller than with drawdown flushing; pressure flushing serves to reduce sediment concentrations to the intake and thereby reduce abrasion of hydraulic structures. To maintain or restore reservoir capacity, pressure flushing is not an effective technique.
- *Dredging and excavation of accumulated sediments*: Sediment can be removed using hydraulic suction pumps on barges with intakes. However, dredging is expensive and so is most often used to remove sediment from specific areas near dam intakes. If dredged sediment cannot be delivered to the downstream channel, the cost of dredging will become even higher and the economic comparison with the cost of replacement of storage even more unfavourable. If a reservoir is completely drawn down, mechanical removal can be employed using scrapers, dump trucks and other heavy equipment to removed accumulated sediments. While still costly, mechanical removal is commonly less expensive than hydraulic dredging and can remove coarser sediments if the reservoir is drawn down far enough to expose the coarser sediment. This approach is best adapted to reservoirs that remain dry for parts of the year.
- *Dam raising*: The raising of a dam might be cost-effective in the short-term, but does not provide a long-term solution to the sedimentation problem. Related problems with dam raising are: socio-economic and political issues related to resettling of people, increased water losses due to evaporation and seepage, dam safety aspects which could lead to raising costs, impacts to land use.

The technical, economic and environmental feasibility of the above measures depends on site specific factors such as the availability of suitable bottom outlet facilities, surplus water available for flushing, the characteristics of the sediments and the reservoir basin, the purpose of storage and water demand, consequences of flushing/dredged sediment disposal, consequences of control measures interfering with the reservoir operation, environmental impact and institutional-political limitations (ICOLD, 1999). All of these methods have been tried to some extent and, generally, none of them will provide a complete mitigation (Mahmood, September 1987).

Source: Tractebel, 2022b

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Box 4 – Sediment Management Strategy for the Ruzizi III Reservoir

The 2022 Feasibility Study included a sediment management strategy with possible sediment management methods. These potential methods are outlined below.

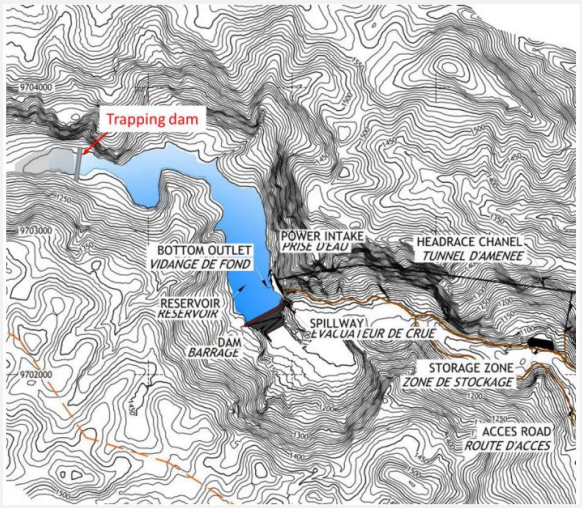
Sluicing/flushing operations

A controlled release of the sediment-laden flood waters at the start of the rainy season while the reservoir is held at the minimum operation level, by opening the bottom outlet, would allow inflowing sediment to be routed downstream without deposition in the reservoir. These operations will not prevent reservoir sedimentation at the beginning of the reservoir life. However, after an initial loss of storage capacity, the sluicing/flushing operations can help to maintain the capacity of the reservoir and stabilise reservoir sedimentation. The volume of the reservoir is very small in comparison with the mean interannual inflow, and the Ruzizi River slope is significant. Consequently, the flushing/sluicing operations may have an effective impact on the sedimentation process.

The development of sluicing/flushing operations require the following:

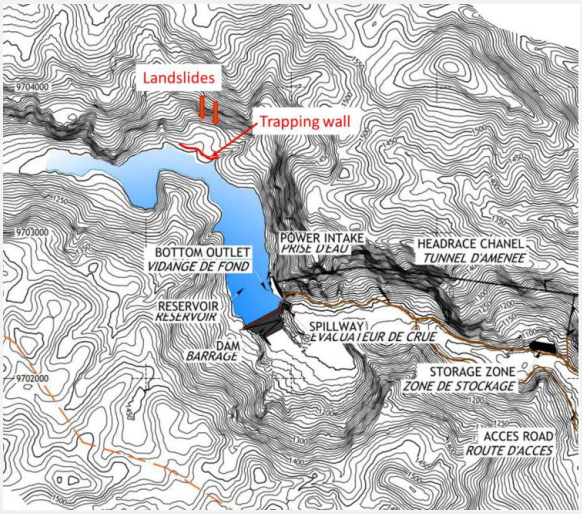
- Installation of a gauging station or staff gauges to monitor the flow rate of the main right bank tributary of the Ruzizi River. The monitoring is to identify the occurrence of a significant flood and schedule the openings of the bottom outlet when a discharge threshold is surpassed. The sluicing operations are more effective at the beginning of a flood and this period should be identified.
- Tests to optimise durations of the bottom outlet openings to ensure that the sediment concentration evacuated is significant without significant downstream impact on aquatic ecology.
- Establish a sluicing/flushing operating procedure after the period of tests with the objective of conducting sluicing/flushing operation once a year or every two years.

Upstream Sediment Trap: This approach would be relatively expensive and would require coordination with the Ruzizi IV project so that the Ruzizi IV access road can be shared with the Ruzizi III Project. The approximative dimensions of the sediment trap dam are as follows; height: 4 m, length: 120 m, volume of the trap: ~ 70,000 m^3. The sediment trap will be designed to trap the equivalent of the interannual average accumulated sediments that would otherwise be trapped in the Ruzizi III reservoir. It will be required to remove trapped sediment from the trap and transport it to a suitable location after each important flood. The access road can be constructed in continuity of the access road to Ruzizi III dam with a possible routing on the right bank of the Ruzizi River if the dam crest is accessible for vehicles.



Control Landslide Contribution

The approach comprises constructing a wall or earth berm on the alluvial fan at the base of the landslide area to prevent landslides entering the reservoir. It is expected that the alluvial fan will slow the velocity of the landslide and a brutal arrival in the reservoir should not occur. The estimated length of the wall is ~200 m and the structure must be able to resist the forces generated by the landslide.



Empty Flushing

Empty flushing can be included in the sluicing/flushing operations plan.

Conclusion

If the sluicing/flushing/empty flushing plan cannot be clearly defined, the trapping dam can be an efficient alternative. The landslide protection structure will also contribute to the prevention of landslide entering the reservoir and causing a wave to be generated that represents a dam safety risk.

Source: Tractebel, 2022b

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4.3.4 Management during Construction

4.3.4.1 SURV 2- Review of detailed design to check alignment with ESIA

[OC- 27] Verify appropriateness of proposed detailed design with intended purpose

- Verify that the detailed design proposed by the EPC Contractor does not materially change the assumptions made in the ESIA and associated mitigation strategies, from an environmental and social point of view.
- If not, trigger an internal management review.

4.3.4.2 SURV 3- Environmental Supervision of Construction Methods

[OC- 28] Review and approval the CESMP preparation.

- Confirm mobilization of resources allocated to Health, Safety, Environment and Community management as per contract requirements: management staff, logistics, monitoring equipment.
- Require timely submission of CESMP specific planning documents as described in Section 3.1.2 prior to the start of site preparation works, particularly for works that would result in vegetation clearing and/or excavation.
- Check compliance of management plans with the Environmental, Social, Health and Safety specifications of the EPC Contract, in terms of structure, content and mapping documents.
- Verify that the footprint of disposal areas and borrow areas required for the dams' construction purpose remains within the reservoir full supply level. If not feasible, document that alternatives were examined before authorizing potential disposal and quarry areas outside/above the reservoir full supply level.
- Require timely revision of CESMP specific planning documents as and when required.

[OC- 29] Landscaping, limited use of shotcrete for slopes stabilisation, architectural commitments

- Review construction method statements for slopes stabilization of excavated areas above the dam, switchyard, powerhouse, and more generally where slope stabilisation would be required, with the EPC Contractor.
- Where necessary, examine the economic and technical feasibility of environmentally-friendly alternatives to the use of shotcrete/concrete (vegetation, stone walls).

[OC- 30] Environmental permitting

- Verify that all environmental permits and notifications, whether legal permits or compliance with Lenders' policies, are obtained prior to the start of the works on site.

[OC- 31] Stakeholder Engagement Measures

- Ensure the provisions of the Stakeholder Engagement Plan, which are under the responsibility of the EPC Contractor, are timely and relevantly carried out:
  - Local Recruitment Policy disclosed in villages
  - Traffic Management Plan presented to Community Consultation Councils.
  - Workers' grievance mechanism.
- Communication on perceived-as-risky construction methods, e.g. use of explosives.

[OC- 32] Site inspection and environmental coordination meetings

- Organize weekly inspection of the different work sites jointly by the E&S Manager of the EPC Contractor.
- Review the weekly report using a standard inspection form submitted by the EPC Contractor (see Section 3.1.3). This information sheet will check all the environmental and social specifications imposed on the EPC contractor item by item, giving an immediate

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overview, during each inspection, of potential cases of non-conformity (photo illustrations before/after non-conformity). • Organize formal monthly environmental coordination meetings (i.e. separated from technical activity progress meetings) on site with the Site Management of the EPC Contractor and REL. • Review how the EPC Contractor's grievance mechanism(s) is functioning and comply with the objectives defined in Section 3.19.6.
[OC- 33] Environment Incident Reporting & Investigation management • Share the Environment Incident Reporting & Investigation developed as part of the ESMS (See Section 4.1) with EPC Contractor and agree on required coordination and non-conformities management as provisioned in Section 3.1.3. • Record all environmental non-conformity detected by the EPC Contractor staff or REL staff in a standard record form to be filled in by the observer, including photographs, and submitted to REL. This process will follow the EPC Contract provisions and will be adapted to the severity of the situation (see Environmental Incident Reporting and Corrective Action Plan, which will describe the management of non-conformities and how these are resolved and closed, in Section 3.1.2). • If the solution proposed by the EPC Contractor is acceptable, non-conformities are closed after checking that the measure has been effectively and successfully implemented on site.
[OC- 34] Environmental monitoring carried out by the EPC Contractor • Collect monthly results of the environmental and social monitoring carried out by the EPC Contractor for effluent quality, air quality, noise and vibration, ground water close to landfill, alien plant clearance and control measures, or jobs offered to local population, whether from REL or the EPC Contractor.
[OC- 35] Site Rehabilitation Planning and execution • Review the EPC Contractor Site Rehabilitation Management Plan to ensure consistency with Environmental Permits requirements. • Selection of seeds and species planned to be used for site rehabilitation in accordance with agreed long-term use of reinstated area: fodder species for future pastures, erosion control. • Preparation of tree nursery scheduled 2 years ahead of reinstatement activity, location and quantities in accordance with (i) intended replanting schedule, (ii) socio-economic approach discussed with REL social team, and (iii) after-care work plan.

4.3.4.3 SURV 4- Management of Third-Party Labour Risks

[OC- 36] Management of Third-Party Labour Risks • REL shall require that the Contractor ensures that Primary Suppliers meet the requirements of REL's supply chain policy, which aligns with the requirements of World Bank ESS2: Labour and Working Conditions, and EIB ESS 8 – Labour Rights. Particular attention will be made to risk of child labour, forced labour, human rights, and safety. • REL shall assess the labour risks associated with the primary suppliers of goods and materials essential to the core functions of the project. If the risk assessment identifies the presence or a significant risk of child labour, forced labour or sexual exploitation or abuse at the primary supplier, or when risks are known or have been reported in lower tiers of the supply chain, REL shall require that the EPC Contractor shall resort to a primary supplier that can prove it is compliant with WB and EIB's Standards.

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4.3.5 Performance Indicators

Component	Performance indicators
SURV 2- Review of detailed design to check alignment with ESIA	• Monthly progress reports showing effective review of proposed detailed design by the E&S Team • Existing safe access to the reservoir planned as part of the works.
SURV 3- Environmental supervision of construction methods	• Approved alternative method statement proposed to replace/limit the use of shotcrete/concrete protection above the main project components. • CESMP plans submitted according to contractual provisions. Approval letters from REL. • Land-take drawings, method statements, environmental permits if required and/or agreement with affected stakeholders, for infrastructures not covered by the Environmental Permit (2016 EIA) or the revised RAP of the 2021 Complementary E&S studies. • Local recruitment policies and offices opened as per EPC Contract specifications • Minutes of public information meetings on traffic management and construction methods. Attendance sheets. • Weekly Environmental Inspection Sheets; Up-to-date, fully populated Non-Conformities register • Monthly report of monitoring activities (water quality, air & noise, local jobs). • Availability of tree nursery(ies) two years prior to first replanting activities.
SURV 4- Management of Third-Party Labour Risks	• REL's EPC Contractor labour requirement regarding third-parties and primary suppliers included in contractual documents • Labour risk assessment completed

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4.4 Community Health and Safety

4.4.1 Objective

The purpose of the Community Health and Safety Plan (CHS) is to document hazards and their associated risks and to outline risk reduction measures to be implemented by the Project during construction and operation.

The term "community" does not refer to the EPC Contractor's workers or other sub-contractors working for REL. Health and Safety practices for these workers are managed in accordance with the requirements of Section 3.20. Likewise, the present plan does not refer to the health and safety issues relating to the EPC Contractor's construction method.

This CHS plan addresses:

- Health of, and hazards to, the public that may be present around and downstream of the reservoir and along the transmission line. This includes disease vectors promoted by slow-moving water conditions that would otherwise not thrive in faster flowing unregulated rivers (such as mosquitoes that cause malaria or snails that cause schistosomiasis).
- Safety control measures that are employed to protect the public.

4.4.2 Components, Timing and Responsibilities

This plan comprises three components, CHS1. and CHS2. are applicable throughout the range of normal operating conditions. CHS3. addresses situations outside of the range of normal operations and very unlikely to occur (e.g. risk of dam failure, unanticipated opening of the bottom outlet) which call for emergency protocols.

- CHS 1.- Construction Health & Safety
- CHS 2.- Community health and safety around and downstream of the reservoir
- CHS 3.- Emergency Preparedness Plan

The CHS activities will be implemented during both the construction phase, including the reservoir filling, and the operation phase. REL has the overall responsibility of the CHS implementation, however the EPC Contractor will contribute to some of the management actions, as provisioned in Section 3.18.

4.4.3 Management Actions during Construction

A **CHS1.- Construction Health & Safety**

[OC- 37] Community Health Awareness Campaign

- Consult with local health authorities and describe planned workers influx during the construction period: gender balance, number of persons, accommodation strategy, likely interactions with local communities, associated health issues (e.g. communicable diseases).
- Work with the local health authorities to plan and conduct the awareness campaign. Agree on the most appropriate strategy to best convey health messages (how and who): Find out (i) how people learn and to whom they listen, (ii) what would motivate the intended audience and what is important to them. Assess the relevance of providing support to existing or new local programmes such as community health awareness, sexually transmitted disease awareness.

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• In the case of concurrent construction periods with other neighbouring large infrastructure projects, coordinate with the developer(s) to ensure effective management of community health and safety. • Finalize the preparation of a plan for the community health awareness campaigns based on local health authorities' consultations. • Provide the draft plan to the representatives of local communities for review, receive and consolidate comments and consider them in the revision to this plan. Disclose locally.
[OC- 38] Sexually Transmitted Diseases • Recruit and finance an NGO specialized in community health and STP prevention to undertake the following actions: • Develop a Project Community communicable disease strategy that considers HIV and Sexually Transmitted Infections and is integrated with the EPC Contractor HIV policy and program in the workplace. • Develop an effective interface with community / traditional leaders as well as local authorities to report any increase in high-risk sexual behaviour from elements of the workforce and development of commercial sex-work in communities especially linked the Project workforce. • Implement health service planning and strengthening to ensure adequate health service capacity for STD diagnosis and management in the Project Area.
[OC- 39] Noise, dust and air quality monitoring around construction camps, in villages crossed by project trucks during construction and in the vicinity of the permanent facilities during operation • Undertake noise and air quality monitoring pre-construction, to establish baseline conditions in the vicinity of the worksites, along project roads to be used during construction and in the vicinity of the permanent facilities, namely the dam and powerhouse and operators' village. • Review the proposed noise, dust and light monitoring (permanent set-up during construction) plan prepared by the EPC Contractor. Ensure dust and noise monitoring stations proposed by the EPC Contractor are located in relevant places and numbers including in villages crossed by the Project's trucks during the main construction period. • Assess the effectiveness of mitigation measures implemented by the EPC Contractor (See Section 3.10 and 3.11) to limit the nuisances relating to noise, vibration, dust emissions and light pollution for (i) the construction camp and technical facilities, and (ii) villages crossed by Project's trucks. • Establish a noise, dust and light measuring protocol independent from the resources mobilized by the EPC Contractor. • Establish the baseline of background and ambient noise levels at the nearest occupied off-Worksite receptor area. Parameters monitored are noise levels LAeq (15 minute) during day/evening time; LAeq (15 minute) and LA1 (1 minute) night-time. Replicable survey techniques will be required, using set survey points as well as standardised survey techniques. Applicable standards are Australian Standards AS 1055: Acoustics - Description and Measurement of Environmental Noise. • Acquire the specialized equipment (sound level meters, hand-held dust disposition and soiling monitors) and implement the required noise level and dust emissions measuring during the construction period. • Should the need be confirmed by the noise monitoring results, implement traffic restriction during night-time (from 22pm to 7am).
[OC- 40] Pre-construction condition survey for buildings close to the road used by the project trucks • Conduct a pre-construction condition survey for all buildings located within 50 m from either side of the public roads identified as being used by the Project trucks on a daily basis in the EPC Contractor's traffic management plan.

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• Use the condition survey to assess the potential effect of vibrations generated by truck traffic on houses and the scope of any remediation works necessary to repair the effects of such vibrations.
[OC- 41] Traffic management at sensitive locations • Identify, map and register sensitive locations along the public roads to be used by the Project trucks and share this information with the EPC Contractor. Locations can be sensitive to traffic for safety reasons (e.g. accidents) or health reasons (e.g. emissions, noise). • Verify that the EPC Contactor installs specific traffic signs close to these areas and that dust abatement measures, as well as speed limits and other applicable traffic management measures (e.g. flag men near schools), are effectively and timely implemented throughout the construction period. • If the construction phase of other projects requiring significant road use in the Project area is concurrent with the Project construction, coordinate with local authorities with regard to the use of the roads used by the Project. • Engage with schoolteachers of each community crossed by the Project's trucks and discuss most appropriate strategy to best convey traffic safety messages. Mobilise the Health and Safety officers in REL and EPC Contractor teams, to prepare and give a talk in each school on traffic hazards. Start lectures the first year of construction and repeat annually until last year of construction.
[OC- 42] Engagement on community safety during reservoir clearing operations • In vegetation clearing operations, tree cutting, falling tree limbs, moving cables, rolling logs, heavy equipment do represent safety hazards for workers first. As the reservoir areas extends over a large area, access to vegetation clearing sites during construction (pre-reservoir filling) will be more difficult to control and to restrict than for construction sites. Local residents are used to walking around the future reservoir area; Review the safety measures planned by the EPC Contractor to avoid accident during vegetation clearing and transportation operations. • Engage the local community to describe the measures planned by the EPC Contractor as part of the Reservoir Vegetation Clearing Plan. Present the plan for the establishment of safety buffer zone around felling operations as long as the clearing operations progress: physical delineation on the ground and warning signs, control during cutting operations. • Engage the community representatives and agree on the best way to convey safety messages relating to vegetation clearing. Include these messages into the traffic safety briefs provided to schools as part of [OC- 41].
[OC- 43] Reservoir Triggered Seismicity monitoring post reservoir filling • The impact assessment predicted a low risk of occurrence of reservoir triggered seismicity, using the ICOLD criteria analysis (hydraulic height of the dam lower than 100 m, volume of reservoir water smaller than 500 Mm^3). To confirm this assumption, the Project will install seismographs to monitor seismic activities and demonstrate absence of reservoir triggered seismicity during reservoir filling and the first year of operation (See Section 3.18.3).

B **CHS2.- Community Health and Safety Around and Downstream of the Reservoir**

[OC- 44] Develop and disclose a Community Waterborne Disease Strategy • Prepare terms of reference for, and retain the services of, a qualified NGO specialized in Community Health to develop a detailed Community Waterborne Disease Strategy and assist in execution and monitoring. • Develop a strategy for the prevention of waterborne diseases in collaboration with the Health and Social Welfare Department of the Rusizi District (Rwanda) and Karhongo and Kamanyola groupements (DRC). It will be based on the WHO guidelines for drinking water quality and the WHO prevention and control of schistosomiasis and soil-transmitted helminthiasis and based on guiding principles indicated in the below management actions.

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- The implementation of the Community Waterborne Disease Strategy, which is not necessarily administered by the medical sub-sector, should target primarily preventative rather than curative actions, with the optimal balance decided on a case-by-case basis. It should complement the existing general health infrastructure and should not be considered as a substitute for the existing health care system.
- Devise an ongoing monitoring plan as part of the Socioeconomic Household monitoring activities (see Section 4.11 so that efficacy of prescriptions can be evaluated.

[OC- 45] Raise awareness within communities about waterborne diseases

- Design a booklet in collaboration with the Health and Social Welfare Departments of the Rusizi District (Rwanda) and Karhongo and Kamanyola groupements (DRC) to summarize the main key prevention measures for waterborne diseases as promoted by the creation of the Ruzizi III reservoir.
- Starting one year before reservoir filling, organise every year:
  - Workshops in villages and located around the reservoir, in collaboration with the local health centres to disseminate the prevention waterborne diseases strategy among the local communities. Distribute the booklet to the communities during the workshops.
  - Engage with primary and secondary schools to propose school-based interventions on key prevention measures for waterborne diseases. Execute the school-based health awareness program.

[OC- 46] Complement the other management plans with waterborne disease prevention measures

- Ensure the Reservoir Zoning and Fisheries Plan developed as part of this ESM [OC- 47] Complement MP (see Section 4.7) includes provisions for:
  - installation of (i) bilharzia information signs at critical places along the reservoir shore, and (ii) simple infrastructure such as jetties, to reduce water contact for specific target groups (fisherman, women, children) at the end of the first reservoir filling;
  - sustaining population of natural predators of disease vectors, prevent eutrophication and excessive growth of problematic organisms such as toxic cyanobacteria and aquatic weeds.
- Ensure that the aquatic biomonitoring activities (see Section 4.11) include regular control of the presence and number of snails (*genera Bulinus* and *Biomphalaria*) carrying schistosomiasis in the reservoir and at downstream monitoring sites.

[OC- 48] Support and work with local health centres

- Establish a MoU with the relevant public health authority to assist the local health centres and dispensaries (to be done as part of the Local Area Development Plan initiatives.
- Establish the baseline for the prevalence of malaria and schistosomiasis by consulting the records at local health centres located in the communities near the reservoir.
- Engage the local health centres to discuss how to enforce the integration of the schistosomiasis as a potential waterborne disease in diagnostic procedures, treatment, drug supply systems and in regular health information systems.
- Evaluate in-kind services proposed by other control programs in the project area to maximize beneficial effects, particularly distribution of malaria home packs including treated mosquitos' nets.

[OC- 49] Operational Risk Assessment and Public Safety Plan

- Retain the services of qualified persons to perform an operational risk assessment and prepare a Public Safety Plan to document how REL assessed, and will manage, public safety issues at the dam site.
- Perform the operational risk assessment as per the 2011 Canadian Dam Association's Guidelines for Public Safety Around Dams: (i) review of draft operating procedures, (ii) site interviews and stakeholder consultation, (iii) hydraulic assessment to simulate which represent worst-case scenario where the public may have interaction downstream of the dam, (iv) Establish boundaries of site components (reservoir area, dam structure, plunge

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pool, powerhouse and tailrace, downstream areas) were hazards are known to be created as direct result of the dams' operation or their presence, (v) identify existing and potential future public activities within each component, (vi) identify key potential hazards within each component that the public may be exposed, (vii) define control measures, both operational and physical, to mitigate risks specific to each activity identified in step (v), (viii) estimate the maximum reasonable public safety incident likelihood rating for the activity and associated hazards, assign incident consequence rating, determine risk rating and assign risk level.

- After the risks are assessed in detail, prepare a draft Public Safety Plan and confirm the decisions made during basic design on the most appropriate means to mitigate the risks and further described in [OC- 50] to [OC- 52] management actions below. The draft Public Safety Plan will describe (i) site plans showing hydropower facilities, hazardous zones and physical control measures, (ii) roles and responsibilities, (iii) summary of aforementioned risk rating and supporting studies like the hydraulic assessments, (iv) summary of control measures for the dam site, (v) operational procedures, (vi) public education initiatives, and (vii) maintenance and monitoring procedures for control measures that are in place.
- Provide the districts and the relevant governmental agencies for review 6 months prior to commissioning of the powerhouse.
- Receive and consolidate comments on the draft plan were received from government agencies and consider them in the revision to this plan.

[OC- 50] Education and information: public awareness

- As for the other community awareness activities (e.g. health and traffic– see [OC- 37]) planned by the Project, engage with local authorities to define the best way to convey public safety messages relating to the dam operation.
- Structure the public awareness into two components: (1) general awareness raising about hazards associated with the Ruzizi III dam. It will be addressed through generic advertising strategies, which include broadcast media messages, brochures, posters and other educational materials directed to target audience such as the population of local villages located along the Ruzizi River, including schools; and (2) specific education regarding the hazards associated with the dewatered reach downstream from the dam. It will include informing residents of the villages and informing local enforcement authorities of no-trespass areas and dangerous or no-boating areas.
- Establish an annual work plan for the public awareness programme and start first activities one year prior to the start of operations.

[OC- 51] Warning devices and access restrictions

- Audible devices: sirens will be used to warn of sudden changes in the rate of flow in tailwater/plunge pool areas of the Ruzizi III dam in conjunction with spillway or bottom outlet opening. The sirens will be effective for the full length of the dangerous areas (to be defined by the Operational Risk Assessment).
- Signage in at least two languages (Swahili, French): the dam site will have adequate danger and warning signs located so that persons entering an area from any directions will see one or more signs. Two categories of signs will be used: warning signs (against potential hazards) and danger signs (for dangerous zones). A regular sign inspection program will be developed and documented to ensure that all signs are maintained in good condition. Signs will be inspected after severe weather or flood conditions.
- Fences and barricades, together with signs and locked gates, will be installed to prevent public access to hazardous areas, such as dam, powerhouse, and switchyard, or wing walls where the side slopes present a hazard. Uniformed guards and watchmen will be employed, as required, at the dam to enforce regulations and warning signs and minimize trespassing.

[OC- 52] Operating procedures and practices

- If the Operational Risk Assessment (see [OC- 49]) concludes into a risk for water users or community downstream of the dam due to sudden release that cannot be effectively mitigated through education / information, warning and access restrictions, Project

operating procedures will be adapted to improve safety conditions. This may include altering ramping rates for generating units to reduce sudden increases in tailwater levels. • Pre-spill site surveillance: include in operating procedures requirements for visual observations prior to spill operations or bottom outlet opening in addition of the sirens.
[OC- 53] Steep or unstable slopes around the facilities or the reservoir • Estimate 5-year reservoir shore erosion line, which will represent a conservatively located line beyond which the security of residents can be reasonably assured. This erosion does not threaten life as the rate is generally slow, and erosion can often be controlled by protective works; impact lines may be produced for the cases of protected and unprotected shoreline. • Prior to reservoir filling, establish the shoreline erosion monitoring baseline using drone surveys (See [OC- 125]), review and adjust as required, the estimated reservoir erosion line based on actual erosion measured at the baseline locations.
[OC- 54] Permanent Hydro-meteorological monitoring system upstream of the Ruzizi III reservoir • Implement a permanent hydro-meteorological monitoring system upstream of the Ruzizi III reservoir dam to anticipate floods and manage the reservoir level and associated spillage in manner which is safe for the downstream communities.

C **CHS3.- Emergency Preparedness Plan**

[OC- 55] Appoint an Independent Panel of Experts for dam safety • An Independent Panel of Experts for dam safety will be appointed. • The panel will be required to review the design and all aspects of the work, including flood hydrology, hydraulics, seismology, geology, concrete technology and turbines designed to operate in sediment laden water
[OC- 56] Develop the Emergency Preparedness Plan (see **Box** 5**)** • Determine and identify conditions that represent emergency situations for the dam. The conditions are to include those that indicate an imminent emergency situation or result in significant changes in releases or outflows from dam during floods. Specify the actions to be taken and by whom under what circumstances. • Identify areas that would be potentially impacted by emergency events. • Early consultation by, or on behalf of, REL with relevant stakeholders. • Identify response actions to be taken by dam personnel in response to potential emergencies or significant changes in releases or outflows from dam during floods. • Identify any necessary resources, special tools, equipment, keys and indicate where they can be located if required in an emergency. • List and prioritise all persons and entities (including contact details) involved in the notification process and the roles and responsibilities assigned to them (a flow chart will be used). • Identify primary and secondary communication systems, both internal (between persons at the dam) and external (between dam personnel and outside entities or persons). • Consult with all parties (including emergency management agencies if any) included in the notification list, to review the draft ERP. Make any necessary revisions as a result of consultation process. • Disseminate the ERP to those who have responsibilities under the ERP. The mapping of the areas potentially inundated by a dam break will be communicated to the local authorities for inclusion in their Emergency Planning documents, and a summary of the Dam Break Analysis will be disclosed to the local communities.
[OC- 57] Training and Exercises • Specify, procure and install at key locations warning systems recommended in the ERP: early warning systems such as sirens, warning signs across/along access to/the Ruzizi River.

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- Document the process

Box 5 – Emergency Preparedness Plan Contents

Part I – Introduction

1. General Information
2. Relevant Section of Operation and Maintenance Plan
3. Alert Levels Leading to Implementation of EPP

Part II – Emergency Preparedness Plan

Dam Safety Emergency Plan

1. Roles and Responsibilities
2. Emergency Identification, Evaluation and Classification Alert Levels
3. Inundation Maps
4. Preventive Measures
5. Evacuation Routes and Meeting Points
6. Response During Periods of Darkness
7. Response During Adverse Weather
8. Equipment and Facilities Required to Respond to Emergency
9. Emergency Action Plan Framework
10. Procedures for Period Review and Update
11. Training and Awareness

Disaster Plans

1. Responsibilities
2. Notification Procedures
3. Warning Systems

The EPP is provided in Annex E.

4.4.4 Management Actions during Operation

A **CHS2.- Community Health and Safety Around and Downstream of Reservoir**

[OO- 11] Monitor the prevalence of malaria and bilharzia in communities around and downstream of the reservoir

- Monitor the evolution of the prevalence of malaria and schistosomiasis on a quarterly basis during the first 5 years following the reservoir filling, by consulting the records at local health centres located in the communities near the reservoir.
- Should the targeted health centres lack of parasitological diagnosis resources, consider supplying WHO-recommended rapid diagnostic tests for malaria and schistosomiasis during the first 5 years of operation.
- Report on baseline and trends in six-monthly integrated monitoring reports. For schistosomiasis, establish correlation between trends and presence/absence of snails (*genera Bulinus* and *Biomphalaria*) carrying schistosomiasis in the reservoir and at downstream monitoring sites.

[OO- 12] Execute the Community Waterborne Disease Strategy

- Undertake the required community and school-based awareness-raising activities about new risk of waterborne diseases relating to the creation of the Project reservoir during the first 5 years following the reservoir filling. At the conclusion of this initial period, examine the relevance of any additional community awareness-raising activities based on the outcome of the monitoring of the prevalence of malaria and schistosomiasis.

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• Verify, and if applicable maintain, the good state and condition of bilharzia information signs installed by the Project to reduce water contact for specific target groups. • Implement the support decided in the community waterborne disease strategy for the local health centres and dispensaries in terms of (i) rehabilitation of infrastructure (in link with the Community Investment Plan), (ii) diagnosis, (iii) treatment and access to medication, and (iv) information system.
[OO- 13] Warning devices, access to reservoir • A regular sign inspection program will be developed and documented to ensure that all signs are maintained in good condition. Signs will be inspected after severe weather or flood conditions. • Along the reservoir, establish at least one boat-launch site, complete with parking, and accessible via the new dam access road. • If feasible, establish at least one public viewpoint at the Ruzizi III dam site on the reservoir rim on the left bank. This viewpoint will give visitors an opportunity to watch construction activities, and then the reservoir, from a safe distance. It should include the following features: a project viewing area, sign shelter with interpretative content, paved parking for vehicles.
[OO- 14] Operating procedures and practices • Implement the spillage and bottom outlet operating procedures and practices defined as a result of the operational risk assessment made during construction. • Review operating procedures every year as and if they may affect public safety and propose any necessary improvements, consistent with good public safety practices and the primary purposes of the Project. • Implement GIP for ensuring the disposal areas do not represent any safety risk for the general public.
[OO- 15] Coordination with upstream hydropower operators • As part of the necessary coordination with the upstream hydropower operators, include community safety issues and appropriate information and education measures relating to any variations of river flow due to the Ruzizi cascade operation (e.g. sediment management, flood management).

B **CHS3.- Emergency Preparedness Plan**

[OO- 16] Reviewing the ERP • Every year: Update all references and contact details to relevant entities in the ERP, amend the ERP to address (i) relevant legislative amendments, (ii) changes to the disaster management plan of in the relevant jurisdiction in Burundi, DRC and Rwanda, (iii) deficiencies identified in the ERP up to that time or to improve the efficiency and the effectiveness of the ERP. • Once reviewed, REL will give the relevant authorities a notice stating whether or not REL proposes an amendment of the plan because of the review; and if REL proposes an amendment, a copy of the plan including the proposed amendment
[OO- 17] Emergency Event Reporting • Prepare an emergency event report and submitted to local authorities within 30 business days after the end of an event. An emergency event ends (i) if the event is a dam failure hazard that has happened, when REL reasonably considers the hazard no longer poses a risk to the dam; or (ii) if the event is a downstream release hazard that has happened, when REL reasonably considers the hazard no longer poses a risk to the safety of persons or property.
[OO- 18] Early Warning Systems, Training and Exercise • Implement the annual training activities included in the ERP for the operational staff at dam and powerhouse in the incident management process, including detection,

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evaluation, notification, and appropriate response actions during all emergency level determinations.

- Implement the exercise programme proposed in the ERP.
- Every year, implement the public awareness measures that are proposed in the ERP with populations or local community representatives to explain the proximity of the dam, how people will be informed in case of an emergency, and the actions people should take during an emergency.
- This exercise will also focus on operation-related risks and will be an opportunity for people to report near misses in order to help improve the safety around the hydropower installations.

4.4.5 Performance Indicators

Component	Performance indicators
CHS1.- Construction Health & Safety	• Number, location and timing, attendance of community health awareness activities. • Number, location and timing, attendance of traffic awareness activities. • Installation and records of seismographs to monitor reservoir induced seismicity
CHS 2.- Community health and safety around and downstream of the reservoir	• Availability of specific community safety measures for reservoir vegetation clearing. • Availability and relevance of the Operational Risk Assessment and Public Safety Plan • Number, location and timing, attendance of public safety awareness activities relating to dam and powerhouse operation (spillage, hydropeaking). • Availability of signs, sirens, fences at the right locations on time prior to risk materialisation. • Existence of public dam viewpoints. • Operating procedures include measures on ramping rates and bottom outlet opening to prevent sudden increases in downstream reaches if and as recommend by the operational risk assessment. • Availability of additional geotechnical studies on slope stability above reservoir level and effective implementation of engineering or land management measures as recommended by these additional studies.
CHS3.- Emergency Preparedness Plan	• Availability of a detailed ERP • Effective training and exercise activities for operational staff.

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4.5 Influx Management

4.5.1 Objective

Project-induced in-migration may occur in the Project area during the construction period, which is the phase with high demand for labour, goods and services. Should project-induced in-migration effectively occur, it could result in adverse effects for communities located close to the construction camps. The ESIA recommends that a management strategy should be developed for the construction period.

Project-induced in-migration will be composed of an influx of four groups of people:

- Labour force: the EPC Contractor labour force and associated needs for good and services, will not be fully supplied locally, although the Project has set up notable local employment targets (See Section 3.19.1). Part of the labour force will be brought in from outside the area.
- Returning family, extended family members and former residents – seeking improved living conditions and employment or opportunities to provide goods and services to the Project or local population.
- Camp followers - who are entrepreneurs arriving to capture business opportunities associated with the construction labour of the Project.
- Opportunistic migrants, Unskilled, semi-skilled or skilled people seeking direct or indirect employment or entrepreneurial opportunities.

Influxes could have adverse effects on local communities and on natural resources around the reservoir area and consequently an Influx Management Strategy will be prepared, with the following objectives:

- Review of the existing operational responsibilities and management plans.
- Integration of the selected influx management interventions into existing management plans.
- Monitoring and evaluation to assess their effectiveness.

4.5.2 Components, Timing and Responsibilities

Three components form the present program:

- INF 1.- Planning and Monitoring
- INF 2.- Anticipating and managing Project-induced In-migration
- INF 3.- Addressing potential negative impacts

These components will be implemented during the construction and operation period.

REL, as the Project Owner, is responsible for planning and executing all measures. However, management actions relating to interaction between workers and communities will be executed by the EPC Contractor. Likewise, REL will cooperate with sectoral government agencies if development of infrastructure and utilities are required to address adverse effects of increased migration into the project area.

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4.5.3 Management Actions during Construction

A **INF1.- Planning and Monitoring**

[OC- 58] Finalize the Influx Management Strategy

- Review the detailed RAP, SEP, Local Area Development Plan Programme and the Community Health Awareness campaign (prepared by REL), review the Recruitment Policy and Local Skills Development Programme, as well as the Workers Health and Safety Plan (prepared by the EPC Contractor). Summarize how the in-migration dimension has been included into existing plans and assess the need for planning and implementation of new programs.
- Select and define existing and new interventions based on guiding principles indicated in the below management actions. Describe the objective of the intervention with respect to project-induced in-migration and its impacts, how the intervention will help achieve the objective, the intended outcomes on in-migration, and the time frame within which these outcomes might be expected.
- Consult with local authorities in the villages close to construction camp (in Rwanda Gatebe, Kabuzunu villages and Nyagahanga villages and Bugano, Kafunda and Nachihembe villages in DRC) as described in [OC- 59] below, present the proposed interventions with respect to project-induced in-migration and its impacts, agree on the most appropriate initiatives to best anticipate and minimize project-induced in-migration inflow and potential adverse effects.
- Provide the draft strategy to the representatives of local communities for review, receive and consolidate comments and consider them in the revision to this strategy. Disclose locally.

[OC- 59] Stakeholder engagement

- Prior to the start of the main construction activities, engage local authorities in Rwanda and DRC to (i) inform on the scale of labour influx and potential associated job seekers influx, (ii) build awareness and understanding on in-migration and its impacts, (iii) discuss respective roles and responsibilities in management.
- Establish an influx management forum with village authorities (in Rwanda Gatebe, Kabuzunu villages and Nyagahanga villages and Bugano, Kafunda and Nachihembe villages in DRC) to ensure awareness of monitoring and evaluation data and opens the door for further stakeholder engagement.
- Ensure the Grievance Redress Mechanism established for the Project is sensitive to issues relating to interactions with workers and/or job seekers raised by community members.

[OC- 60] Integration of selected influx management interventions into existing plans

- Incorporate new interventions vis-à-vis project-induced in-migration and its impacts which are under the responsibility of the EPC Contractor into the EPC contract, if applicable.
- Revise existing management plans developed by REL and include new interventions vis-à-vis project-induced in-migration, if applicable.
- As part of [OC- 28], review the content of construction environmental and social management plans submitted by the EPC Contractor relating to labour management and supervise effective implementation of measures relating to labour force in-migration and interaction with local community.

[OC- 61] Development of an agreed monitoring framework and response plan

- In preparation of the monitoring activities relating to project-induced in-migration (see Section 4.11), develop the monitoring framework to document anonymously the number of newcomers who migrates into the communities close to the construction camp (in Rwanda Gatebe, Kabuzunu villages and Nyagahanga villages and Bugano, Kafunda and Nachihembe villages in DRC)) during the construction phase:
  - Using the official census data at village level, as well as the data on population resulting from the surveys and engagement activities conducted with community

and households in 2022, establish the baseline on population prior to the start of main construction activities.

- Work with the local authorities to define the most appropriate and efficient approach to estimate the number of persons which migrate into their community (e.g. local registration, school attendance).
- Use the sequential drone photography surveys (see [OC- 125]) to document the absence or geographical extent of any influx (houses and fields) that may be occurring.

B **INF2.- Anticipating and managing Project-induced In-migration**

[OC- 62] Minimizing in-migration of speculative job seekers

- Workforce recruitment policy and management:
  - Reduce labour influx by tapping into the local workforce (See Section 3.19.1), with definition of "local," the type of evidence required to demonstrate local status, and the establishment of accepted verifiable criteria to demonstrate local status.
  - Contractor to hire workers through recruitment offices and avoid hiring "at the gate" to discourage spontaneous influx of job seekers.
- Planning worker housing: On-site housing minimizes workforce-host community interactions, reduces pressure on existing infrastructure, services, and utilities and avoid increased pressure on accommodation and rents. Verify that the capacity of the construction camp can accommodate most of the workforce —including sub-contractors— and associated support staff. Verify that worker transportation services are provided daily to non-camp-resident employees, as applicable.

[OC- 63] Minimizing risk of social conflicts between non-local workers and local community

- Provision of information regarding Worker Code of Conduct, including Gender-based Violence and Harassment prevention, in the worker's language(s) to guide staff interaction with local communities.
- Provision of cultural awareness training for workers regarding engagement with local community.
- Provision of substance abuse prevention and management programs.
- Provision of services in the workers' camp to reduce the need for workers to use local community facilities.

[OC- 64] Planning infrastructure, services, and utilities

- Avoid increased burden on public service:
  - Workers' camp to include wastewater disposal and septic systems.
  - Identification of authorized water supply source and prohibition of use from other community sources.
- Information campaigns on STDs among the workers and local community.
- Assess the current capacity of local collective infrastructure, services, and utilities (Water supply, sanitation, waste management, power supply, firewood) against predicted population increases during construction, to allow strategic planning and resource allocation decisions.

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C **INF3.- Addressing Potential Negative Impacts**

[OC- 65] Ensuring effective delivery of project benefits • Review the existing Local Area Development Plan Initiatives in the context of local project-induced in-migration during construction. • Clarify beneficiaries to avoid tension between original inhabitants and newcomers, and help "original inhabitants" take advantage of community investment activities while not excluding new arrivals entirely.
[OC- 66] Security Interaction in the Community • Communicating and forewarn local community of the likely consequences of unrestricted in-migration. • Meet regularly the village authorities (in Rwanda Gatebe, Kabuzunu villages and Nyagahanga villages and Bugano, Kafunda and Nachihembe villages in DRC), to share information, manage expectations, defuse frustrations, and channel disputes toward resolution.
[OC- 67] Addressing the potential negative social impacts of project-induced in-migration • If need be, work together with local authorities to develop mechanisms to share responsibility for development of infrastructure and utilities – Alternatively promote alternative, simple, low-maintenance technologies that meet key needs. • Organize health promotion and disease prevention campaigns for community health awareness). • Legacy issues associated with in-migration are associated with economic decline and out-migration. The project will develop and disseminate construction workers demobilisation plans well in advance of end of construction that informs about workforce reduction associated to construction completion.

4.5.4 Management Actions during Operation

A **INF2.- Anticipating and managing Project-induced In-migration**

[OC- 68] Anticipating potential influx of fishers close to the newly created reservoir • The assumption is that project-induced in-migration could happen during the operation (fishers attracted by the fishing potential of the newly created reservoir). This will be monitored as part of the E&S monitoring programme defined in Section 4.11 (see MON 8.- Project-induced in-migration) • Should any significant Project-induced in-migration happen during the first years of operation around the reservoir, and should this in-migration cause negative impacts, the measures defined in INF3.- Addressing Potential Negative Impacts below will be applied.

B **INF3.- Addressing Potential Negative Impacts**

[OC- 69] Ensuring effective delivery of project benefits • Review the LDP initiatives in the context of local project-induced influx from construction. • Clarify beneficiaries to avoid tension between original inhabitants and newcomers, and help "original inhabitants" take advantage of community investment activities while not excluding new arrivals entirely.
[OC- 70] Security Interaction in the Community • Continue regular meetings with village authorities set up during construction, to share information, manage expectations, defuse frustrations, and channel disputes toward resolution.

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[OC- 71] Addressing the potential negative social impacts of continued presence of project-induced influx

- If people from project-induced influx remain within the communities located close to the Project facilities, work together with local authorities to develop mechanisms to share responsibility for development of infrastructure and utilities – As required, promote alternative, simple, low-maintenance technologies that meet key needs.
- Organize health promotion and disease prevention campaigns for community health awareness.

4.5.5 Performance Indicators

Component	Performance indicators
INF 1.- Planning and Monitoring	• The Influx Management strategy is available, discussed with local authority and disclosed locally. • Monitoring framework is available and monitoring indicators are defined and documented.
INF 2.- Anticipating and managing Project-induced In-migration	• Capacity of the camp match the peak workforce estimate • Grievances relating to issues between workers and communities are limited in number and severity.
INF 3.- Addressing potential negative impacts	• LADP initiatives includes an in-migration dimension • Effective and regular organization of Community Security Forum • If in-migration is observed, availability of temporary infrastructure and utilities that meet key needs.

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4.6 Framework for Historically Marginalised People Development Plan

4.6.1 Rationale and Objectives

The Project carried out quantitative and qualitative studies in the Project area in 2022. The presence of Historically Marginalised People (HMP) in the study area was identified during the qualitative survey. The ESIA establishes that the World Bank ESS7 and IFC PS7 are triggered. Therefore, the Project shall develop and implement a Historically Marginalised People Development Plan to (i) identify and assess specific HMP vulnerabilities with regards to Project impacts, (ii) avoid, minimise and mitigate any specific Project impact on HMP and ensure they are not disproportionately affected, (iii) ensure HMP are informed and consulted in a culturally appropriate way, and (iv) HMP can access benefits and positive opportunities from the Project.

The Historically Marginalised People Development Plan (HMPDP) will cover the social groups more commonly known as Batwa in DRC and Historically Marginalised People in Rwanda. The terminology of Historically Marginalised has been chosen due to the discriminatory character of the term 'Batwa' in Rwanda.

This section aims to outline the following:

- Lay out the principles which will be followed for the identification of adverse impacts on HMP and the provision of avoidance and mitigation measures.
- Lay out the principles and a provisional plan for the participation and consultation of HMP, including the development of a culturally appropriate system for raising grievances and provide feedback to the Project.
- Lay out the principles which will be followed to ensure that HMP will have access to the same development opportunities and Project benefits provided to mainstream Rwandan society.

4.6.1.1 Context

A Historically Marginalised People in Rwanda

The Bansangwa Inyana N'amateka, also known as Historically Marginalised People (HMP), make up around 0.4% of the population of Rwanda and were the original inhabitants of the country's forests. They were hunter-gatherer forest dwellers whose livelihoods relied on natural resources. However, they faced marginalization and land grabbing throughout the 20th century, which was further exacerbated by government policies in the 1960s. Many HMP were expelled from forests and displaced from their ancestral lands. It is estimated that about one-third of the community was killed during the genocide, leaving a population of approximately 33,000. Despite laws prohibiting ethnic identification, the Rwandan Constitution recognizes HMP as a vulnerable group. The HMP community accepts the term "Bansangwa Inyana N'amateka" but rejects the label "Batwa" due to its discriminatory and politically inappropriate nature. Due to their displacement from ancestral lands, many cultural traditions of the HMP have been lost. However, in the project area, some cultural practices and traditional arts still endure. The HMP are known for their musical, performing, singing, and dancing abilities. Although the HMP do not have a traditional language other than Kinyarwanda, it has been reported that they have a particular intonation. Fallen into poverty, landlessness, and discrimination after their forced displacement from ancestral lands, in the project area, HMP are landless, living as tenants or squatters on others' lands. They engage in limited agricultural activities during the rainy season, such as nyiragabura farming or maintaining small gardens near their houses or on others' fields. However, their primary source of income is occasional daily labor for smallholders. They work for other Rwandans, providing labor for which they receive a pay of around 1,000 Francs per day. Some of them also receive a Vision Umurenge Program allowance of 1,000-1,200 francs

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per day for public works, although the payments are not regular. Historically, the HMP community was known for their pottery-making skills. However, as clay marshes were converted into farmland in the 1980s and pottery making became economically unviable in the 1990s, the practice declined. In the project area, the community used to access clay quarries on the banks of the Ruzizi River, but they were evicted ten years ago as part of government programs. The HMP families in Murya Cell used to make pottery to exchange for food, but since a cooperative took over the land where they obtained clay, they have been unable to continue this activity. Currently, the clay quarries are located 2 to 3 hours away from the homes of the community, and access is sometimes restricted by landlords. Efforts have been made to ensure the HMP's access to clay, such as the purchase of land with a clay quarry by the NGO Caritas, although the specific location is not provided. Gathering activities, such as collecting wild plants for personal consumption, are rarely practiced by the community. When they do gather, it is usually on the fields of the farmers they work for. The HMP also face challenges in accessing education and healthcare services, leading to higher school dropout rates and a reliance on traditional medicine.

B Batwa People in DRC

The Batwa community in the study area, identified during a 2022 qualitative survey, represents almost 1% of the population in the DRC. They were historically hunter-gatherer indigenous communities living in the mountainous forests but were displaced from their ancestral lands due to demographic expansion and forced expulsions for the creation of protected areas, notably the Kahuzi-Biega National Park. Displacements caused by political conflict and violence further affected the Batwa, especially in the Ruzizi Plain, where they are amongst the most exposed to forced enrollment in armed groups and violence, including sexual violence against women. The Batwa are legally protected under the law on the Promotion and Protection of Indigenous Pygmy People, which recognizes their customs and rights, including access to justice, land, resources, and participation in decision-making processes. In terms of self-identification, different naming practices exist within the community. The Batwa are scattered in various settlements such as Ruguengue in Kamanyola and Nyangezi, Ruduha, Nachirongwe, and Bujenjere in Karhongo. Fallen into poverty, landlessness, and discrimination after their forced displacement, the Batwa in the study area face a continuous depletion of forest resources and limited land ownership. While gathering activities and pottery, which hold cultural significance, are still practiced, they have declined rapidly in certain areas, such as Kamanyola, and are no longer widely engaged in. The Batwa primarily rely on occasional agricultural labor in the rainy season and gathering activities in the dry seasons, including the collection of wild resources like honey and medicinal plants. These resources are mainly gathered in specific locations, such as farming fields and fallow lands. However, access to these resources can be challenging, requiring permission from landowners. Unfortunately, many cultural practices have been lost after the displacement from ancestral lands, posing additional challenges to the preservation of the Batwa's rich heritage and identity. Livelihood challenges, limited access to education, and healthcare further compound the Batwa's struggles in the study area.

4.6.1.2 Applicable Framework

A National Legislation

Since the genocide, Rwanda has adopted a policy of national reconciliation which prohibits ethnic identification. Laws against ethnic divisionism were passed in 2001 (Law n°47/2001 of 18 December 2001 on the Prevention, Suppression and Punishment of the Crime of Discrimination and Sectarism) and are enshrined in the 2003 Constitutions. However, Article 80 of the Constitution recognises HMP as an umbrella term covering different vulnerable groups, including communities of pygmies which have been dispossessed from their ancestral lands and have since been living as a marginalised community in mainstream society.

In DRC, Law No. 22/030 was established in July 2022 to promote and protect the rights of indigenous Pygmy peoples. The law recognizes Pygmy communities as hunter-gatherer groups with distinct cultural identities and lifestyles and seeks to incorporate international standards into national law. It covers various aspects, including civil and political rights, economic and

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social rights, environmental protection, land rights, and participation in decision-making processes. Additionally, the law mandates the creation of development plans, policies for indigenous women and children, and a special fund for the protection and promotion of Pygmy rights. While significant progress has been made, challenges remain in implementing and enforcing these laws, particularly regarding land rights and access to natural resources. The DRC is undergoing further legislative reviews and policy developments to strengthen the legal protection and recognition of indigenous Pygmy peoples and address these challenges.

B International Standards

In 2023, an anthropological study conducted for the Project concluded that the 'Twa' social group, known as 'Batwa' in DRC and 'Historically Marginalised People (HMP)' in Rwanda, qualifies as Indigenous according to SP 7, WB ESS 7, AfDB OS 1 and EIB ESS 7. As per the standards, the following criteria are met:

- **Self-identification as members of a distinct indigenous social and cultural group and recognition of this identity by others** – The communities recognise themselves and are identified as belonging to a social group separate to mainstream society. In Rwanda, identification with ethnic labels is outlawed. However, the community identifies itself and is identified as Historically Maginalised People (HMP), a term coined by the Rwandan administration.
- **Collective attachment to geographically distinct habitats**, ancestral territories, or areas of seasonal use or occupation, as well as to the natural resources in these areas – The Batwas and HMP have lost attachment to their ancestral forests after decades of forced displacements. However, attachment to clay quarries and areas for wild plant and honey harvesting remains important.
- Customary cultural, economic, social, or political institutions that are distinct or separate from those of the mainstream society or culture – The Batwas and HMP both engage in collecting and selling wild products, such as honey, medicinal plants, and straw. HMP specializes in pottery production, while this tradition has been lost in DRC. Both communities live together and do not integrate with mainstream society, maintaining a sense of unity. They face discrimination and derogatory labelling and are identified as living in extreme poverty. They have unique dances and songs, some of which are forgotten, and maintain distinct practices related to birth and death.
- A distinct language or dialect, often different from the official language or languages of the country or region in which they reside – Although it is reported that the communities have specific words and intonation, the communities are not characterised by a specific language. It is possible that traditional languages got lost due to the communities' displacement and integration into mainstream society.

Although the Lenders' standards on indigenous people are triggered, the requirements for Free and Prior Informed Consent (FPIC) are not met for the following reasons:

- The Project will not affect and / or relocate indigenous people from lands and natural resources subject to traditional ownership or under customary use – The Batwas and HMP have been dispossessed of all collective, historical and customary property with forced displacements from ancestral forests. Consequently, both communities do not have any traditional rights over the lands which they use and / or inhabit in the Project area.
- The Project will not have a significant impact on cultural heritage that is essential to the communities' identity and / or to the cultural, ceremonial or spiritual aspects of the lives of indigenous people – Most of the communities' cultural heritage has been lost due to their forced displacement from ancestral forests. The Project will not impact the communities' remaining cultural heritage, which is limited to a small number of dances and performances.

In compliance with ESS 7 (para. 10-12) and PS 7 (para. 8-10), REL will develop an Historically Marginalised People Development Plan (HMPDP) which will include the following:

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- **Identification of adverse impacts on indigenous people** – an impact assessment process will be required to (i) identify all communities of indigenous people which may be affected by the project and (ii) the nature and degree of the expected impacts, including impact on tangible and intangible cultural heritage elements and ecosystem services.
- **Provision of avoidance and mitigation measures** - it should be proven that adverse impacts are or have been avoided where possible. Measures should be proposed to minimise, restore and / or compensate for impacts which cannot be avoided. These proposed actions will be developed in consultation with the affected communities and will be contained in a timebound plan. The determination, delivery and distribution of compensation measures or other benefit measures will take account of the customs of these communities.
- **Participation and consultation of indigenous people** - specific provisions for stakeholder engagement will be made, including (i) an analysis of stakeholders, (ii) a timebound plan including disclosure of information, consultation and participation activities, and (iii) a grievance mechanism which is culturally appropriate and accessible to affected indigenous peoples and which takes into account the availability of customary dispute settlement mechanisms. Representatives of indigenous people as well as affected indigenous people will have to be included in this process.
- **Creation of positive opportunities for development** – suitable development opportunities should be identified to reflect the goals and preferences of the Indigenous People, including improving their standards of living and livelihoods.

4.6.1.3 Area covered by the HMPDP

The HMPDP will not be limited to the HMP affected by the Project's land acquisition process. It will target all HMP communities in the immediate vicinity of the Project footprints. The areas to be targeted by the HMPDP are listed in the following table and Figure 4. Communities of HMP living in these areas will be targeted by the HMPDP pending on consultations and extended indirect impact assessment. HMP communities living close to the actual project footprint will be prioritized and receive most of the support. At the time of writing, no Project component was located in Burundi, and no significant downstream impacts in Burundi was anticipated. The Project may however chose to use some quarries or borrow areas in Burundi. If this is the case, then the HMPDP will include the areas where these quarries or borrow areas will be located in Burundi.

Table 5 Areas to be covered by the HMPDP

Country	Province	District (Rwanda) Territory (DRC)	Sector (Rwanda) Groupement (DRC)	Cells (Rwanda) Sous-Groupements (DRC)
Rwanda	Western	Rusizi	Nzahaha	Murya
				Nyenji
			Bugarama	Nyange
				Pera
				Ryankana
DRC	Sud-Kivu	Walungu	Kamanyola	Ngweshge
			Karhongo Groupement	Ishamba

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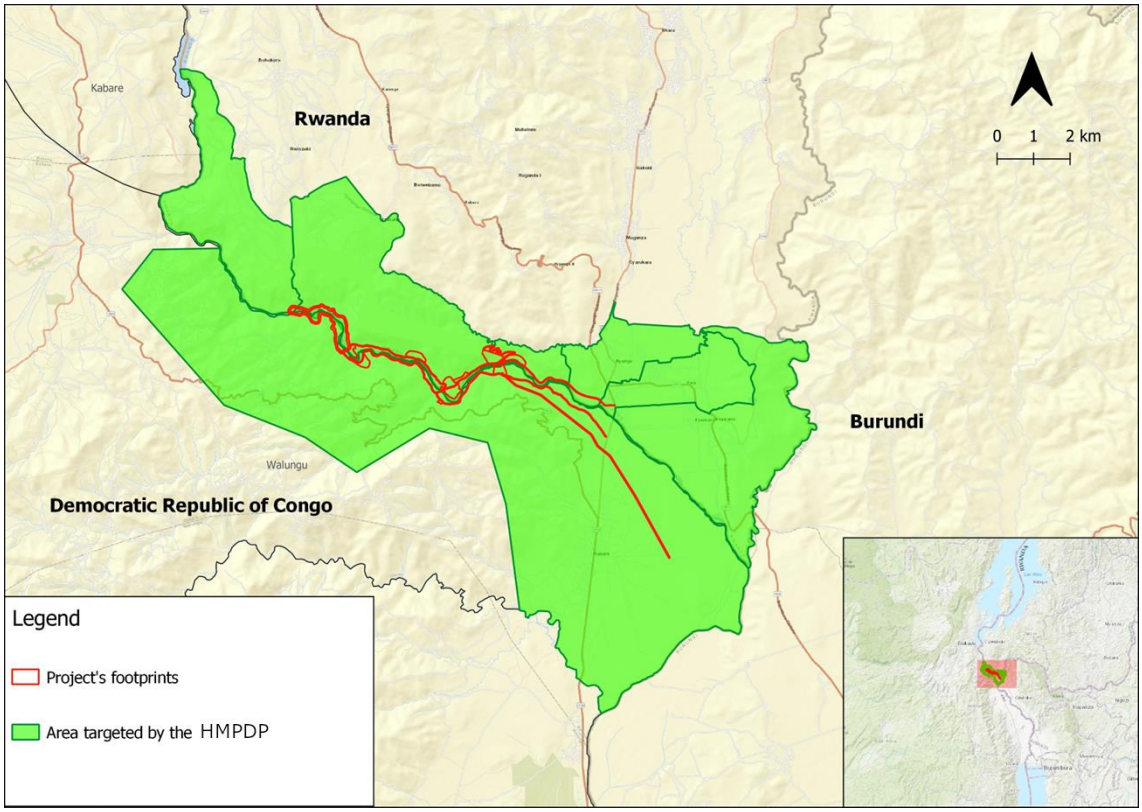
Figure 4 – Areas covered by the HMPDP



4.6.2 Components, Timing and Responsibilities

REL will finance, prepare and implement the Historically Marginalised People Development Plan (HMPDP) (see Box 6).

The HMPDP will be developed before the start of the construction, using qualified specialist and through culturally appropriate consultations with HMP.

If necessary, the RAP (including RAP(s) for quarries and borrow areas) will be updated to be harmonized with the HMPDP.

REL will then implement the HMPDP at the start of the construction. It is envisaged that the HMPDP will cover the first 3 years of operation.

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Box 6 – Structure and Contents of the HMPDP

The IP plan should be structured as below:

1. Introduction: An overview of the Plan as well as its purpose and scope.
2. Project Description.
3. Legal and Institutional Frameworks: A review of the relevant legal and international standards, codes, and guidelines that have formed the basis of the Plan.
4. Profile of Affected Indigenous Peoples: An overview of the baseline information necessary for productive and respectful engagement, respecting Indigenous rights and minimizing impacts.
5. Environmental and Social Impact Summary: An overview of the ESIA conclusion with particular focus on impacts of Indigenous livelihoods.
6. Indigenous Engagement process: A presentation of the method and procedures for identifying Indigenous stakeholders and the appropriate engagement process for each community as well as engagement activities undertaken to date.
7. Grievance Mechanism: Presentation of a high-level approach to grievance management.
8. Monitoring, Evaluation, and Reporting: Principles and guidelines for devising and implementing monitoring, evaluation and reporting activities linked to the Plan.
9. Implementation Arrangements: A description of the institutional setting and respective responsibilities of actors, key management, and monitoring actions to be completed, and budget for implementation of this Plan.

4.6.3 Management Action Before Construction

A HMPDP 1.- Targeted Social Assessment

[OC- 72] Targeted Social Assessment

REL will recruit qualified specialist to perform a targeted social assessment on HMP in the Project area. The objective of this assessment will be to understand the relative vulnerabilities of the HMP and how the Project may affect them. The targeted social assessment will include the following activities:

- Review the legal and institutional framework applicable to HMP in the Project area.
- Provide detailed baseline information on the demographic, social, cultural and political characteristics of HM communities in the Project area, including tangible and intangible cultural heritage elements and ecosystem services.
- Assess, in meaningful consultation with HMP, the potential adverse and positive impacts of the Project. The impacts assessed will include at least:
  - Identification of the number of HMP which will be physically and economically displaced.
  - Definition of a Wider Study Area where HMP may be indirectly affected by the Project (loss of labour opportunities, cultural heritage impacts, loss of natural resources) and estimate the number of HMP impacted.
  - Identification of the areas used by HMP for forest product collection, honey harvesting, clay collection and any other activity aimed at self-consumption or sale.
  - Identification of the areas / structures used by HMP for praying, schooling and health services.
  - Assessment of HMP perceptions of the Project and its potential impact on their social, economic and cultural status.

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- Identify and recommend, based on meaningful consultation with the affected communities, the measures necessary to avoid adverse impacts or, should these measures be impossible, identify measures to minimise, mitigate, and / or compensate for these impacts.

B HMPDP 2.- Historically Marginalised People Development Plan (HMPDP)

[OC- 73] Definition of Measures to avoid or mitigate impacts on HMP

Drawing upon the results of the targeted social impact assessment, the HMPDP summarise the Targeted social impact assessment and will define measures to avoid, minimize, mitigate, or compensate HMP for any potential adverse impacts that were identified in the social assessment, and steps for implementing them.

[OC- 74] Definition of HMP Access to Project Benefits and Development Opportunities

The Project will ensure that HMP receive culturally appropriate benefits and opportunities for development under the Project. The Project will develop a plan to provide both (i) equal opportunities for HMP to access Project benefits in the same way as non-HMP and (ii) development opportunities to improve the community's livelihoods and lifestyle. The overall objective is to ensure that the Project will provide a sustainable improvement to the living conditions of HMP by facilitating their integration within the community while preserving their unique culture at the same time.

The Project will carry out specific consultations with HMP in Rwanda as well as DRC to develop these measures and will develop them into a time-bound programme. At minima, the activities below should be considered:

- Training HMP to ensure on the application process and promoting job posts amongst HM communities, to ensure that they are given equal opportunities for employment.
- Assisting HMP who claim certain plots to acquire formal rights to land.
- Increase HMP's ability to make the most of natural resources (clay, medicinal plants, other) by carrying out a participatory natural resource management workshop with the community.
- Providing school equipment and payment of school fees.
- Provision of free medical check-ups and medical equipment.
- Rehabilitating educational and health facilities.
- Identifying in collaboration available land for communal use, in collaboration with local authorities.
- Providing one bicycle per HM household.

Specific indicators will be provided for each activity, as well as a monitoring schedule.

[OC- 75] Definition of HMP Participation and Consultation Programme

The HMPDP will outline principles for the participation and consultation of HMP, laying out the following:

- Identify key HM stakeholders.
- Describe the consultation and participation activities which have already been carried out with HMP to date, summarising the views and concerns expressed by the HMP consulted.
- Outline how the Project's Grievance Redress Mechanism (GRM) and Gender-based Violence (GBV) Reporting Mechanism will be made available, accessible and culturally appropriate for HMP.
- Develop a culturally appropriate and gender-sensitive process for meaningful consultation and disclosure each stage of the Project, taking the impact assessment process and baseline information into consideration. At minima, the program will include the activities below:

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- Consultation with HMP to identify potential impacts on the community as part of the preparation of the HMPDP.
- Consultation with HMP in the affected area to establish effective measures for development and impact mitigation.
- Presentation of the Project's objectives, footprint, schedule and expected impacts.
- Presentation of the Project's GRM and GBV reporting system.
- Establishment of specific HM Resettlement Committees for grievances raised by HMP.
- Disclosure of the HMPDP.
- Disclosure of compensation payment arrangements to physically and economically displaced HMP.
- Provision of the entitlements planned for in the HMPDP.

The HMPDP will define accessible procedures appropriate to the project to address grievances by the affected HMP arising from project implementation

[OC- 76] Monitoring and Budgeting

The HMPDP will include a program for monitoring the implementation of the plan. At minima, six-monthly reports will be prepared throughout the implementation of the plan during construction, and annually during the first 3 years of operation. These monitoring reports will be sent to the Lenders.

At the end of the HMPDP, REL will refine the budget as necessary, based on the conclusion of the targeted social impact assessment and the measures defined in the HMPDP.

4.6.4 Management Actions During Construction

A HMPDP 2.- Historically Marginalised People Development Plan (HMPDP)

[OC- 77] Implementation of the HMPDP

REL will implement the measures and consultation framework defined in the HMPDP at the start of the construction and throughout construction.

[OC- 78] Monitoring of the HMPDP

REL will prepare and submit to Lenders 6-monthly monitoring reports as defined in the HMPDP throughout construction.

4.6.5 Management Actions During Operation

A HMPDP 2.- Historically Marginalised People Development Plan (HMPDP)

[OO- 19] Implementation of the HMPDP

It is envisaged that the HMPDP will extend to the first 3 years of operation.

[OO- 20] Monitoring of the HMPDP

REL will prepare and submit to Lenders annual monitoring reports as defined in the HMPDP during the first 3 years of operation.

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4.6.6 Performance Indicators

Component	Performance indicators
HMPDP 1.- Targeted Social Assessment	• The Targeted Social Impact Assessment on HMP is available, including meaningful consultations with HMP • The Targeted Social Impact Assessment identifies and assesses the specific vulnerabilities of HMP with regards to the Project impacts.
HMPDP 2.- Historically Marginalised People Development Plan (HMPDP)	• The Historically Marginalised People Development Plan (HMPDP) is available before the start of construction. • The HMPDP is implemented when construction starts • HMPDP monitoring reports are prepared and available on a 6-monthly basis.

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4.7 Reservoir Zoning

4.7.1 Rationale and Objectives

Reservoir zoning is recommended to designate areas for permissible activities and to consider access in case of the need for removal of aquatic weeds and floating rubbish, and areas for temporary storage of removed aquatic weeds and rubbish. The specific objective are as follows:

- A reservoir zoning plan shall designate permissible and restricted activities within the 50 m buffer zone around the reservoir taking into account links with other reservoir management requirements in order to enhance catchment condition and minimise ecological and social threats to reservoir condition. The baseline land use of the buffer zone is agriculture, but there are no people living in the buffer zone. The Project's land acquisition includes the buffer zone, and the scope of the RAP will include the economic displacement and loss of access to ecosystem services caused by the creation of the buffer zone.

4.7.2 Components, Timing and Responsibilities

The reservoir zoning plan will be developed by REL during the construction phase with inputs from relevant institutions and stakeholders on different land and reservoir use activities. Implementation will start during construction. It will continue during the operation phase with most of the actions being undertaken in the first years following the reservoir filling.

4.7.3 Management Actions during Construction

A RZF 1.- Reservoir Zoning

[OC- 79] Compile a Reservoir Zoning Plan

- Prepare detailed terms of reference for, and retain the services of, a qualified person to develop a detailed Reservoir Zoning Plan and assist in execution and monitoring.
- Prepare a Reservoir Zoning Plan based on guiding principles indicated in the below management actions.
- Consult, receive and consolidate comments on the draft plan from relevant government agencies and main reservoir institutional stakeholders, local communities and government agencies responsible for fisheries and wildlife protection.

[OC- 80] Define and designate areas for permissible activities

- Define and designate areas for permittable activities including the designation of specific and defined access points to the reservoir for specific uses and which will be within the 50 m reservoir buffer zone included in the Project's land acquisition. Fencing may be required in certain areas to restrict access between the designated points where there is a high risk of unrestricted use.
- Defined activities and areas to be included in a reservoir zoning plan include:
  - Water abstraction points for irrigation pumps or domestic uses.
  - Boat access.
  - Designated cattle watering points to avoid vegetation degradation and shoreline erosion.
  - Fishing activities including collection, storage and transport points (linked to reservoir fisheries management plan – see below).
  - Access for aquatic weed dredging and removal and deposition sites for aquatic weed (prior to transport and removal).

- Wildlife protection zones if applicable, and management of hippopotamus and crocodiles if they become established.

- Restrictions around the reservoir to be included in the reservoir plan include:
  - No settlement and land clearance for crop cultivation within 50 m of the reservoir full supply level.

4.7.4 Management Actions during Operation

A **RZF 1.- Reservoir Zoning**

[OO- 21] Implement the Reservoir Zoning Plan and monitor compliance

- Implement the Reservoir Zoning Plan and monitor compliance with zoned restrictions to confirm the requirement for additional management measures such as fencing.
- The following checks will be required on a regular basis, some of which link to other management and monitoring measures in this ESMP:
  - Compliance with buffer restrictions.
  - Natural vegetation restoration around full supply level and requirements for intervention.
  - Erosion and sedimentation points and potential control measures.
  - Encroachment into wildlife protection zones (if applicable).

[OO- 22] Reservoir Zoning Plan Signage

- Compile and place large sign boards at access points to the reservoir showing the reservoir zoning plan and listing restrictions on access and land use.
- Provide copies of the Reservoir Zoning Plan and posters to be erected at offices of local authorities.

[OO- 23] Updates of Reservoir Zoning Plan

- Amend the Reservoir Zoning Plan if required to cater for necessary changes required to optimise reservoir use potential without compromising on reservoir integrity and ability to support fisheries and wildlife.
- This may include incorporating findings of the Reservoir Fisheries Management Plan or amendments thereof.

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4.8 Alien Invasive Plant Species Management

4.8.1 Objective

The plan covers alien invasive plants. Management of invasive alien fish species are included in the Fisheries Management Programme described in Section 4.13.

The specific objective of the plan is:

- Alien invasive species management measures under this component are aimed at enhancing the ecological integrity of the reservoir and protecting indigenous fish biodiversity while striving to support a productive and sustainable fishery. Management measures for the control of aquatic hyacinth are planned as a precautionary measure.

Aquatic hyacinth (*Pentederia crassipes*) is present in the Ruzizi River and may develop in the Project reservoir causing operational and environmental problems. Therefore, measures to control water hyacinth are proposed as a precautionary measure.

If aquatic weeds develop in the reservoir, management would be required to prevent lowering of dissolved oxygen levels; enhance fisheries productivity; maintain fish diversity (especially survival of sensitive indigenous species); and reduce the risk of establishment of bilharzia snails and associated risk of bilharzia in the area. Management and control can be achieved through a combination of routine mechanical dredging and disposal and possibly introduction of biological control weevils. Design measures (e.g. floating booms / barriers) to restrict intake of aquatic hyacinth into the turbines will also be required. Disposal and options for reuse of collected weed (e.g. as a fertiliser) will need to be given close attention. The location of the aquatic weed access and facilities, and disposal sites will need to be included in the Reservoir Zoning Plan.

4.8.2 Management Actions during Pre-Construction and Construction

[OC- 81] Installation of protection measures for aquatic weed protection of power intake structures

- Incorporate barriers such as floating booms or containment fences to i) prevent intake of aquatic weeds into turbines, and ii) divert some floating masses of aquatic weed that enter the reservoir in areas where they can be mechanically collected.
- This shall be included in dam design and EPC Contractor requirements. See [CC- 328].

[OC- 82] Develop an Alien Invasive Species Management Plan

- Appoint a qualified person, with experience in latest approaches in alien species management in reservoirs, to develop a detailed Alien Invasive Species Management Plan and assist in execution and monitoring. The plan will need to build on past experience with aquatic weed management in the region by working with institutions previously or currently involved with initiatives.
- The Plan should aim for early intervention (immediately after filling) and build upon and take into account the following:
  - Past and current experience of HEPP operators in the region.
  - New approaches to managing removal and disposal/reuse of aquatic weeds.
  - Results of previous and ongoing initiatives in the region to reduce the scale of the problem and relevance to the Ruzizi III reservoir. This will need to consider the timescales for effectiveness and potential complications for HEPP operation. It is likely that a combination of mechanical harvesting and biocontrol may be most cost effective.
  - Risks, options and solutions for stockpiling, loading, transporting, disposal methods, and options for reusing the removed weed for beneficial purposes (e.g. fertilisers).

- Requirements and associated costs for manpower; dredging equipment; transportation and disposal.
- Monitoring requirements including key performance indicators and thresholds that trigger implementation of different control measures (e.g. threshold extent of weed coverage that initiates a requirement to implement dredging).

[OC- 83] Stakeholder engagement on integrated weed management plan

- Consult the following stakeholders to obtain inputs to the plan and agree relevant control measures:
  - Relevant government agencies responsible for aspects of catchment management.
  - Upstream hydropower projects for coordinated management of aquatic weeds to minimise floating masses entering the reservoir.

[OC- 84] Avoid use of chemical herbicides for weed control

- Options for aquatic weed control shall avoid application of chemical herbicides.

[OC- 85] Manual removal of aquatic hyacinth

- Spread of water hyacinth shall be removed manually if appropriate.

[OC- 86] Biological control of aquatic weeds

- Evaluation of biological control will need to consider the time scales for likely effectiveness (which is likely to take at least 3 years before hyacinth exhibits signs of reduction). This will need to consider the risk of hyacinth with biocontrol agents getting washed out of the reservoir during floods and the need for routine re-releases of weevils.
- Plan for the potential for decomposing hyacinth that may sink in the reservoir and the risk of:
  - Clogging of turbine intakes and the efficiency of booms and screens to protect turbines.
  - Emissions of hydrogen sulphide and reduced oxygen levels.
  - Associated risks to aquatic habitat and fish communities.
- Implementation of biocontrol measures for water hyacinth will include consideration of the following:
  - Sourcing stock of biocontrol agents, most likely to be *Neochetina* weevils.
  - Establishing of weevil raising facilities to breed weevils in sufficient numbers during construction phase.
  - Training of staff.
  - Trials for release of weevils and checks of their effectiveness as planning for the operational phase.

[OC- 87] Mechanical removal of aquatic hyacinth

- Investigate, budget and plan for the eventual need for mechanical dredging or harvesting on a routine basis. This will require planning for the purchase (if and when needed) of a dredger/harvester, possibly barge and support equipment (bulldozer and truck) to harvest, stockpile, dry and transport aquatic weed to a designated site for deposition or processing for reuse.
- If and when aquatic weed develops in the reservoir it shall be removed from the reservoir and prevented from settling in the lake in order to avoid degradation of water quality and impacts on fish.
- Plan access of the dredger/harvester in/out of the reservoir. Areas for aquatic weed management shall be designated on the Reservoir Zoning Plan.
- Plan and designate areas for drying harvested aquatic weed (i.e. on barge and/or paved area) and transport of weed on paved roads to minimise spread along vehicle access routes. A paved laydown area near the side of the reservoir may be required where aquatic weed can be spread and dried prior to transport. Harvested weed is heavy when full of water and drying can reduce its weight and volume. Water drainage from drying areas shall plan to be conveyed to an evaporation pond where any new weeds can be removed.

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- Planning for deposition of weed will need to consider suitable areas that balance transport costs and avoidance of ecological degradation.

[OC- 88] Feasibility of options for disposal and reuse of aquatic hyacinth

- Aquatic weed management will be based on a need for continuous improvement and implementation of sustainable methods for disposal and reuse that keeps pace with innovation in the field. Disposal options should strive to minimise landfill disposal and use of natural habitats where possible and to seek opportunities for re-use for fertilisers / soil enhancement if feasible.
- Undertake a feasibility study to explore options for re-use of harvested aquatic weed. This will require:
  - Recruit experts in aquatic hyacinth management
  - Investigate options for re-use of aquatic weeds. This will take into consideration the potential for use in animal *fodder*, soil enhancement, and biogas and should explore the opportunities, constraints and costs of each option in the context of other hyacinth control measures in the region and economies of scale. Where appropriate, visits to places where re-use has proved viable is recommended to verify costs and methods involved.
  - Engage district stakeholders to verify potential reuse of water hyacinth.
  - Propose and recommend viable options for disposal/reuse, balancing transport costs with benefits of reuse (including non-tangible benefits of using hyacinth for catchment improvement / soil restoration)
  - Plan for implementation of any feasible options, where found to be viable.

4.8.3 Management Actions during Operation

[OO- 24] Implement the Alien Invasive Aquatic Weed Management Plan

- as per defined requirements, timing or phasing of activities specified in the plan.

[OO- 25] Alien aquatic weed management contracts

- Removal, transport and disposal, and dedicated equipment and resources will be secured and in place to manage aquatic weeds from the start of operation (immediately after reservoir filling).
- This includes facilities for stockpiling aquatic weed in a designated area of sufficient size to accommodate the material to be removed) and paved transportation routes to minimise spread.

[OO- 26] Biological control of aquatic weeds

- Implementation of biocontrol measures during the operation phase will include the following if appropriate:
  - Release of weevils by trained staff.
  - Monitoring of biocontrol effectiveness reflected by rate and extent of decline in hyacinth.
  - Adaptive management based on monitoring results, possibly including additional raising and release of more weevils periodically.

[OO- 27] Mechanical removal of aquatic hyacinth

- Implement mechanical dredging or harvesting of aquatic weed commencing during reservoir filling and continuing from the start of operation to ensure more effective reduction in weed growth.
- Aquatic weed harvested shall be removed from the reservoir and prevented from settling in the lake in order to avoid degradation of water quality (e.g. decreased dissolved oxygen or increased phosphate, nitrogen or ammonia) and impacts on fish.
- Access of the dredger/harvester in/out of the dam shall prioritise access on the right bank to minimise disturbance to the area around the fish pass.

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- Designate and create a paved laydown area near the side of the reservoir where aquatic weed can be spread and dried prior to transport. Harvested weed is heavy when full of water and drying can reduce its weight and volume. Water from drying areas shall be drained to an evaporation pond where new weeds can be removed.
- Transport of aquatic weed shall be safely conveyed on a paved road to minimise spread.
- Deposition of weed will need to consider suitable areas

[OO- 28] Disposal and reuse of aquatic hyacinth

- Implement sustainable options for disposal and / or reuse of aquatic hyacinth based on findings and outcome of the feasibility study.
- Re-use options, where viable, can significantly reduce landfill requirements.

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4.9 Biodiversity Action Plan Framework

4.9.1.1 Rationale and Objectives

A Rationale

A Biodiversity Action Plan (BAP) is a requirement for projects located in critical habitat and often for projects in high value natural habitats. As per IFC (2019) the BAP is required to describe the actions and rationale for how the mitigation strategy will achieve net gain for residual impacts on critical habitat qualifying features or no net loss for natural habitat impacts; the approach for how the mitigation hierarchy will be followed, and the roles and responsibilities for internal staff and external partners.

Biodiversity monitoring requirements specific to the Ruzizi HEPP are documented in Section 4.12.3 together with other linked biophysical monitoring requirements for water quality, hydrology and sediment. It includes aquatic biomonitoring (macroinvertebrates and fish) and invasive species monitoring for the Ruzizi HEPP construction and operation phases.

This framework BAP outlines measures to minimise impacts on key biodiversity features and to compensate for residual adverse impacts, including mitigation measures that fall outside the responsibility of the EPC contractor. It covers the biodiversity mitigation requirements that will fall under the responsibility of REL until such time as responsibility for implementing the commitments are agreed and can be assigned to other government agencies or consultants for implementation. These measures will need to be detailed in an updated BAP following further investigations, including fish monitoring, and engagement with community and conservation stakeholders. As such, the proposed options presented to compensate for impacts of the Ruzizi HEPP are conceptual and based on the team's understanding of the baseline environment and Project. Conservation stakeholders in Rwanda, DRC or Burundi have not been consulted on the options proposed here, and these will need to be presented and discussed to determine the optimal investment in biodiversity enhancement measures. The measures proposed here are considered feasible and sufficient to achieve a no net loss or net gain, commensurate with the project risks.

B Objectives and Principles for Compensation for Natural and Critical Habitats

The objectives and key principles for achieving no net loss (or net gain) of biodiversity for impacts on natural and critical habitats are derived from principles and guidance set out by the World Bank Biodiversity Offsets User Guide. When applied to the current situation any biodiversity protection or enhancement measures should be based on the following:

- Achieving additional conservation outcomes: additionality is an important tenet of offsets aimed at meeting no net loss or net gain requirements whereby the conservation gains are additional to the gains that would have been achieved through existing or planned conservation initiatives. In other words, any applied compensation measures should seek improved conservation that is over and above the measures already underway or planned in an area. It should also not result in replacement of funding already allocated or budgeted for conservation areas. An offset could for example support protection of buffer zones or movement corridors between conservation areas where no such intervention was planned. Possible interventions could also support management measures to avert loss from ongoing human activities e.g. support alternative land use practices resulting in reduced pressures on natural habitats or support measures to reduce fishing pressures.
- "In kind" or 'Like-for-Like' Compensation/Offset: Habitats identified for improved protection should be similar or the same as those affected by the project. In some cases, it is justifiable to protect different habitats to those impacted by a project if it can be demonstrated that these are of higher conservation value and under-protected in the landscape (i.e a trade-up). For instance, it may be justifiable to improve protection

of fewer hectares of forest habitat in exchange for more hectares of other habitats of lower conservation importance.

- Proximity to Project Site: Habitats for protection should be located in close proximity as possible to the affected areas, preferably in the same catchment or sub-catchment but outside the area of direct project influence.
- Same country and outside transboundary influences: Interventions should also be located within the same country or countries as the project causing the impact and outside of the influence of external factors that are beyond the control of those responsible for implementation. For instance, identifying offset implementation measures may not be achievable if threats from other developmental activities (e.g. mining or hydropower) may undermine the success of the interventions taken.
- Prioritisation of areas with overlapping biodiversity features: Selected sites for conservation intervention should strive to identify areas containing the same overlapping mix of habitats and species in a single area where possible. For instance, an area may host a similar mix of terrestrial habitats of woodland and grassland to compensate for terrestrial habitat loss. As for conservation planning prioritisation, a goal for identifying suitable offset sites should try to identify areas of congruent biodiversity in a discrete area to facilitate more effective management.
- Application of multipliers: Where a country does not have a defined set of multipliers for different habitat types to inform the size of offset required, a reasonable multiplier should be applied taking into consideration the need to be confident of achieving no net loss and the uncertainties and time lag involved between the project's impacts and the offset achieving its objectives. Proposed multipliers are outlined below as the basis for further discussion and agreement with stakeholders.

4.9.1.2 Natural and Critical Habitats and Priority Biodiversity Features

This section provides a brief summary of information provided in the Baseline and Critical Habitat Assessment (CHA) of the ESIA (Chapter 7 and 9). The reader is referred to that chapter for further information on the CHA findings and to Chapter 11 of the ESIA for more detail on the assessment of project impacts on aquatic and terrestrial biodiversity.

A Aquatic Biodiversity

The Ruzizi River is assessed as modified habitat due to the low diversity of macroinvertebrates and presence of species of low sensitivity which is attributable to the long history of hydropeaking from upstream hydropower plants and water quality pollution. However, the Ruzizi River is expected to contain low abundance of two species of threatened Chiloglanis rock catlets (*Chiloglanis asymetricaudalis* (EN) and *C. ruziziensis* (CR)) which live in rapids and riffles in the riverbed rocks and cobbles. They have been confirmed at the confluence of the Ruzizi River in the Rubyiro and Ruhwa tributaries amongst others. While they appear to be more abundant in tributaries, this may be an artefact of sampling due to the difficulty of conducting fish surveys in the mainstem Ruzizi River due to deep and fast-flowing water. Fishermen have confirmed that it is occasionally caught in the Ruzizi River, but they are expected to be rare in the mainstem.

In addition, several migratory fish species have been confirmed in the Ruzizi River – mostly *Labeobarbus* species. Three of these (*Labeobarbus leleupanus*, *L. caudovittatus*, and *Acanopoeta tanganicae*) would qualify for critical habitat (see Chapter 9) at Ruzizi Basin scale but are not assessed as critical habitat qualifying species for the smaller defined migratory EAAA covering the length of the Ruzizi mainstem river. Nonetheless, impacts on these species need to be taken into account and mitigated. It must be stressed that there is limited fish data that provides a good understanding of the fish distribution and migratory behaviour patterns and much of the data is historical data (pre-mid-1980s). For instance, recent surveys have not confirmed *L. leleupanus* and *A. tanganicae* in the Middle to Upper Ruzizi River reaches where they were previously recorded, and it is likely that they are rare.

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The Ruzizi III HPP and its hydropeaking operation will pose a barrier to fish migration and will flood rapids used for fish spawning. The Project will marginally change the downstream flow variation as an incremental impact in the context of the existing hydropeaking operation of the upstream Ruzizi I and II HPPs. No fish pass or other measures to assist fish migration are proposed as they are not considered viable in the context of the high dam wall of 51 m and the presence of two existing HEPPs and one further planned HPP immediately upstream of Ruzizi III HPP which will effectively create four barriers across the cascade. With construction of Ruzizi III HPP, a total length of 31 km of the Upper to Middle Shire will restrict fish migration across the cascade of rapids. This will leave approximately 124 km free of obstruction downstream to Lake Tanganyika of which about 4-5 km comprises rapids and riffles between the Ruzizi III HPP and the Ruhwa confluence Measures to monitor and mitigate potential impacts on fish are proposed elsewhere in the ESMP, mainly related to Environmental Flow Management (Section 4.10), which includes a requirement to maintain 9% minimum flow in the bypassed reach and to periodically release freshets of 50 m^3 to maintain the river channel. A number of other mitigation measures set out in this ESMP will also improve aquatic ecosystem quality for fish. These include measures proposed for Management of Reservoir Trash (Section 4.11); Reservoir Fisheries Management (Section 4.13); Reservoir Zoning (Section 4.7); and Alien Invasive Species Management (Section 4.8). In addition, measures proposed in this BAP to compensate the loss of 'largely' natural habitat and impacts on threatened and migratory fish, in particular, will also indirectly improve aquatic ecosystem integrity.

Fish monitoring and adaptive management is a fundamental requirement of the ESMP to confirm actual impacts on fish and, if required, to modify ramp down rates to minimise risk of fish stranding. Other compensation requirements for impacts on fish are proposed as part of this BAP to reduce fishing pressures and facilitate survival of migratory fish.

B Terrestrial Biodiversity

While there is the potential for threatened terrestrial flora and avian fauna species in the Project AoI, no priority terrestrial biodiversity features were confirmed through field surveys, and none qualify for critical habitat. The majority of habitats in the Project AoI is assessed as modified habitat with most native vegetation widely converted to a mosaic of agriculture with a variety of alien species and a history of timber use for charcoal making and other uses. Of the total estimated 153 ha affected by the project, only a small proportion of the terrestrial habitats comprise 'largely' natural habitats, mostly Hillslope Grassland/Savannah (18 ha).

In addition, the final routing of the transmission line and construction access roads should be able to minimise the loss of natural hillslope grassland habitat. This includes some of the 5.5 ha of Hillslope Grassland/Savannah within the transmission line wayleave and approximately 10 ha of the same habitat in the other infrastructure areas. Therefore, the final residual footprint may be smaller than the 18 ha quantified in this ESIA.

Based on the 'worst case' calculations to date, the project is required to compensate for the 'loss' of 18 ha of 'largely' natural terrestrial habitat with the aim of achieving no net loss. The following sections of this framework BAP sets out potential options for achieving this as a basis for further investigation and confirmation of viability.

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C Summary of Natural and Critical Habitat Features, Impacts and Project Requirement

A summary of biodiversity features assessed to quality for natural habitat and potential critical habitat, expected residual impact and requirement to achieve no net loss or net gain are set out below.

Table 6- Summary of Alignment of Mitigation Measures against Mitigation Hierarchy

Biodiversity Feature	Residual Impact	NNL/NG Requirement
Natural Habitat		
Hillslope Grassland / Savanna	Loss of ~ 18.3 ha in project footprint	NNL
Critical Habitat		
Chiloglanis asymetricaudalis (EN)	10 km of river impacted by Project footprint. Minor loss of potential *Chiloglanis* habitat (3 km reservoir & 7 km dewatered reach). Note: most records in tributaries of Ruzizi River.	NG
Chiloglanis ruziziensis (CR)		NG
Migratory fish species *(*Labeobarbus* species)	Barrier to fish migration with reduced access to Middle Ruzizi rapids by approximately 18 km.	NNL
Rusizi National Park (Critical Habitat located 88-130 km downstream in Burundi)	No residual impact from flow alteration or fish	NNL
Nyungwe National Park (Critical Habitat located 20 km upstream Rubyiro River, in Rwanda)	No residual impact	NNL

*River is assessed as modified habitat, but some migratory fish are Critical Habitat for Ruzizi Basin and assigned a NNL target

4.9.2 Components, Timing and Responsibilities

This framework Biodiversity Action Plan will be further developed by REL during the detailed design and construction phases with inputs from relevant institutions and stakeholders on different aspects of the plan. Implementation of certain aspects will start during pre-construction. It will continue during the construction and operation phases with most of the actions being implemented in the first years following the reservoir filling.

4.9.3 Management Actions during Pre-Construction & Construction

4.9.3.1 BAP 1. Protection of Birds Against Collision and Electrocution on Transmission Lines

A Introduction

The project will construct a 7-km-long transmission line between the Ruzizi III HPP and Kamanyola Substation. Additional transmission lines will be constructed as associated infrastructure which will be assessed separate to this ESIA. Transmission lines a pose a risk of electrocution and bird collision, especially where they cross ridges and stream / river corridors likely used by birds as preferential flight paths. The proposed transmission line route is aligned across grassed ridges intersected by stream corridors associated with the Ngomo escarpment on the DRC side of the Ruzizi River where it leaves the Ruzizi III HPP. It is essential that bird protection measures are installed during construction as retrofitting is very expensive.

Cliff-nesting birds such as lanner falcons and rock kestrels were recorded during transmission line surveys, but it is also possible that other more threatened raptors such as Bateleur or Martial Eagles may occur occasionally in the area.

B Mitigation Measures

[OC- 89] Conduct pre-construction bird survey to confirm presence of any nest sites of collision prone birds along the transmission line route.
[OC- 90] Install bird diverters and anti-electrocution devices on the Project transmission lines. This includes the following measures on the first 2.5 km of transmission line (closest to the Ruzizi HPP) and on any lines that cross the Ruzizi River:

- Bird diverters with a minimum of 10 m spacing.
- Anti-electrocution devices on all pylons.
  Consult Martin *et al* 2022 for reference[3].

4.9.3.2 BAP 2. Sub-Catchment Management to Protect and Restore Terrestrial Natural Habitats and Biodiversity

A Introduction

The project is expected to have a residual loss of approximately 18 ha of hillslope grassland/savannah habitat that is assessed to qualify for natural habitat, some of which could potentially be avoided through careful siting of infrastructure. No threatened species were confirmed in this habitat type. An additional 24 ha of degraded and modified habitat comprising fragmented patches of riparian thicket, wetland and hillslope thicket types will also be impacted. The area of habitat loss should be confirmed during detailed design.

The approximate 18 ha of natural habitat lost to the project can be adequately compensated through rehabilitation of land within the 50 m buffer zone[4] acquired around the reservoir (29 ha). It is believed a no net loss of natural habitat can be achieved through restoration of 36 ha of land, based on a 1:2 ha ratio (i.e. 2 ha restored for every 1 ha of natural habitat impacted).

The calculations do not take into account habitat quality metrics which may need to be considered when evaluating options in the landscape to achieve improved habitat protection to demonstrate no net loss is achieved. This can only be determined when habitat condition in the target areas for biodiversity enhancement or conservation investment can be assessed and compared with the habitat condition of terrestrial habitats to be lost in the Ruzizi HEPP area.

Given the significant land use pressures on available land for cultivation and wood supply by local communities, the expropriation area is the land where habitat restoration is most likely to be achievable and under the direct control of the Project. This strip round the reservoir and dewatered reach would also serve to reduce sediment inputs with potential benefits for fish. Depending on the size of land required for construction facilities and the portions that need to be acquired for the Project, there may be additional potential to restore unused parcels as well as some land used for temporary infrastructure after construction.

Land in the expropriation zone and temporary footprints can be restored by replanting indigenous trees and shrubs and removing invasive plants including crops where appropriate. A plant nursery can be established with local communities to improve livelihoods through job creation, provide training and skills, and potentially provide a long-term opportunity for habitat restoration during project operation.

B Mitigation and Compensation Measures

[OC- 91] Map site sensitivity and plan detailed design to avoid habitats of higher sensitivity

- Conduct site walk over of all construction footprints to map habitats of higher sensitivity.

[3] Martin *et al* 2022 Wildlife and powerlines: Guidelines for preventing and mitigating wildlife mortality associated with electricity distribution networks. Eds. Martin, J.M., Lopez JRG., Sousa HC., and Barrios V. Report for IUCN.
[4] The creation of the 50-m-wide buffer zone will result in economic displacement as the affected land is mostly used for agriculture. However, the buffer zone has been included in the Project's Land Acquisition area as is included in the scope of the RAP so that households affected by the loss of agricultural land and access to ecosystem services will be identified and compensated.

- Plan detailed design to avoid mapped areas / sites of higher sensitivity, where feasible
- Physically demarcate areas where no clearing will be permitted.
- Retain any trees >30 cm dbh where feasible.
- Quantify residual habitat losses based on detailed design plan and updated site mapping.
- Confirm habitat condition metrics in the construction and reservoir footprint and around the margins of the reservoir and dewatered reach to confirm the quantum of habitat to be restored in the sub-catchment.

[OC- 92] Consult community and conservation stakeholders on options for habitat enhancement measures. This includes:

- Engagement with local communities using the land around the reservoir and dewatered reach to discuss:
- Feasible options and measures to improve habitat quality.
- Interest and planning for establishing a plant nursery.
- Engagement with conservation stakeholders / NGOs working on catchment initiatives to discuss:
- Ongoing activities and their success and failures to understand options for sub-catchment improvement.
- Opportunities for NGOs to support the Ruzizi III HPP in implementation of sub-catchment habitat improvement with local community members.

[OC- 93] Conduct alien clearing during the early stage of construction in the buffer zone and in areas that can be set aside and implement alien monitoring and control on ongoing basis as per Section 4.8.

[OC- 94] Conduct site walkovers before clearance to search for any animals present, and implement animal rescue of any wildlife encountered especially threatened species. Measures include:

- Rescue and translocation of any snakes, pangolin or primates encountered by qualified staff.
- No snakes or fauna should be killed when encountered and community members shall not be notified of any encounters or translocations to avoid persecution.
- Contact warden or ranges of nearby conservation areas to assist with animal rescue and translocation, prioritising relocation to nearby reserves with suitable habitat.
- Develop and document any encounters or translocations in a wildlife tracker.
- Document encounters with hippo, crocodiles or other scarce wildlife in the tracker with photos where possible.

[OC- 95] Construct gabions or berms to control erosion and sediment runoff from adjacent slopes around the reservoir and dewatered reach to protect riparian and aquatic habitats from erosion, landslips, and to optimise habitat restoration along buffer zones.

- Train and use local community labour for berm construction
- Show location for gabions / berms on site development plans and demarcate on site
- Minimise loss of fields or community resources outside the acquired 50 m buffer zone
- Prioritise use of degraded habitats
- Source stone for gabions from designated degraded areas and do not use river stones unless within dam wall footprint only
- Consider water runoff requirements in embankment / gabion design to avoid water buildup or breaks in heavy rainfall

Note: Embankments created higher upslope away from the river may potentially support more intensive agriculture in exchange for loss of land use access along riverbanks in the buffer zone. This would need to be determined and assessed if feasible with community members.

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[OC- 96] Develop and implement habitat restoration measures in accordance with a Sub-Catchment Restoration and Management Plan for identified habitats outside the buffer zone in the reservoir sub-catchment. This will include:

- Identification of a suitable NGO to work with local communities to agree locations and methods for habitat restoration.
- Establishment of a plant nursery to propagate indigenous plants for restoration which can provide local employment and skills development.
- Removal of alien trees and vegetation from remaining patches of hillslope forest/thicket and hillslope grassland/savannah.
- Encourage local communities to plant species indigenous to the area and beneficial to slope stabilisation.
- Working with communities to reduce harvesting pressures on timber and natural resources through finding alternatives such as creation of woodlots for alternative wood supply. This could be done through supporting wider catchment initiatives.
- Conducting walk-through surveys of habitats pre-construction / reservoir filling to confirm the restoration potential and requirements.
- Collection of seed from indigenous plants for use in land restoration.

The above measures shall be continued through operation

[OC- 97] Support initiatives to reduce community dependence on natural wood resources. These shall be continued into operation phase. This can be done through:

- Investigating the viability of supporting electrification of directly affected local communities.
- Supporting cook-stove projects for alternative cooking technology.

4.9.3.3 BAP 3. Fish Monitoring and Protection

A Introduction

Key concerns to the fish population are loss of habitat from reservoir flooding which could potentially include impacts on threatened *Chiloglanis* species that qualify for critical habitat, and the barrier to fish migration in the 12.5 km of river up to Ruzizi II HPP (which cannot be mitigated).

Additional risks to fish include potential fish stranding and increased harvesting below the power outlet (when turbines are switched off), and loss of fish habitat connectivity and increased fishing pressures in the dewatered reach due to the shallower water levels. The increased fishing pressures on migratory fish occurs below Ruzizi II HPP and is a concern since fish upstream to spawn and are blocked by barriers where they are exposed to easier fishing risks. Excessive capture of fish of conservation concern is a risk to species restricted to the catchment that may be extirpated within the reach. In order to minimise this impact, actions are presented below.

B Monitoring and Mitigation

[OC- 98] Conduct comprehensive pre-construction fish surveys in the Ruzizi River mainstem to confirm the presence and abundance of Chiloglanis in the affected river reaches and provide a baseline for construction and operation phase monitoring. This includes:

- Survey team: staff of CRBEC/CRSNE and international fish expert.
- Survey sites: riffles and rapids in the reservoir and dewatered reaches and reach below the power outlet to confluence with the Ruhwa River (6-8 sites).
- Methods: surveys will be undertaken using electrofishing and eDNA to match barcoded material for future monitoring. Field water quality measurements should be collected. Methods will be standardised across sites to record catch per unit effort. Species required for further identification or DNA barcoding will be retained.

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- Timing: surveys will be timed to coincide with low flow seasons (June-September) and low flow releases from Ruzizi II with the cooperation of other HPP operators.
- Records: surveys will record species, number and size range, any abrasions or defects, habitat type and condition with photos and GPS coordinates of each site, and photos of representative species.

[OC- 99] Conduct comprehensive pre-construction fish surveys in the Ribyiro and Ruhwa Rivers to confirm the presence and abundance of threatened Chiloglanis species. This includes:

- Survey team: staff of CRBEC/CRSNE and international fish expert.
- Survey sites: riffles and rapids along the Ribyiro River at representative sites (minimum of four, preferably six) along the length between the confluence with the Ruzizi to the Nyungwe National Park and along the Ruhwa Riverin the reservoir and dewatered reaches and reach below the power outlet to confluence with the Ruhwa River.
- Methods: (as above - electrofishing and eDNA).
- Timing: (as above – coinciding with mainstem Ruzizi River where possible).
- Records: (as above).

[OC- 100] Conduct comprehensive pre-construction seasonal fish surveys in the Ruzizi River mainstem to confirm the presence and abundance of migratory fish, in particular, to improve understanding of migration and seasonal differences in fish, and to confirm additional mitigation requirements of the project. The survey should be done for at least two years to provide a basis for long term monitoring.

- Survey team: staff of CRBEC/CRSNE and international fish expert (for first survey to guide the long-term monitoring programme).
- Survey sites: riffles and rapids along the Ruzizi River at representative sites (minimum of 8, preferably 18) along the length between the Ruzizi II HPP to Lake Tanganyika in Burundi.
- Methods: electrofishing, cast netting, gill netting, examination of fisher catches, selected sampling of fish stomachs to confirm food content, examination for presence of parasites, crab traps, eDNA, and field water quality measurements).
- Timing: six monthly: Feb-April & Sept/October.
- Records: surveys will record species, number and size range, any abrasions or defects, habitat type and condition with photos and GPS coordinates of each site, photos of representative species, and water flow and quality to interpret data.
- Reporting: Survey data will be drafted into a field report that will document survey sites (locations, photos, habitat type/condition); catch data by site; catch per unit effort; describe and infer seasonal differences.

[OC- 101]: Undertake stakeholder engagement with relevant fisheries institutions and research departments in fisheries to discuss and confirm the proposed fisheries protection measures in this BAP

[OC- 102] Develop detailed construction and operation Fish Monitoring Plan and programme. The plan should include:

- Detailed methods and schedule to be adopted
- Resource requirements including equipment, staffing
- Permit requirements for collection and export of samples
- Mapping, locations, and photos of fish monitoring sites
- Species photo log with taxonomic information and local fish names to aid identification
- Template for reporting and database for fish records
- Other useful information to execute the work.

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4.9.4 Management Actions During Operation

4.9.4.1 BAP 1. Protection of Birds Against Collision and Electrocution on Transmission Lines

No action required during operation phase.

4.9.4.2 BAP 2. Sub-Catchment Management to Protect and Restore Terrestrial Natural Habitats

[OO- 29] Enforce a 50 m wide buffer zone around full supply level of reservoir and along dewatered reach to protect riparian habitats and enable restoration.

- Notify and work with affected communities to inform them of the location, purpose and restrictions associated with the buffer zone including restrictions on land use activities (e.g. no agriculture or settlement, no charcoal production, no tree cutting)
- Demarcate the 50 m wide expropriation buffer within the footprint of the Project's land acquisition around the reservoir full supply level of the reservoir and high-water level of the riparian zone of the 5.5 km dewatered stretch within which no clearance for agriculture, settlement, timber harvesting or charcoal making will be allowed. This will be done during RAP implementation when households affected by the loss of agricultural land and loss of access to ecosystem services will be identified and compensated.

[OO- 30] Implement and monitor the sub-catchment habitat restoration measures agreed during construction phase. This involves:

- Nursery plant propagation with trained community members
- Planting of indigenous trees and shrubs in areas earmarked for restoration
- Alien plant monitoring and control
- Erosion control and remediation
- Monitoring of plant establishment success
- Annual reporting and mapping of restoration success

4.9.4.3 BAP 3. Fish Monitoring and Protection

A Introduction

Fish protection measures to be implemented during operation will be determined based on the findings of pre-construction fish monitoring surveys.

For instance, failure to find any *Chiloglanis* species in the mainstem Ruzizi River during pre-construction surveys despite concerted effort during low flow periods may remove the requirement to implement additional protection measures in the Ribyiro catchment (where the endangered *Chiloglans asymetricaudalis* has been confirmed). These species are identified as potential critical habitat qualifying species in the Ruzizi Basin, but they are believed to occur in very low numbers in the mainstem relative to tributaries. If found in the project footprint, and Project impacts are confirmed, then additional measures to achieve net gain will be required.

Protection measures for migratory fish will be required regardless of the results of further monitoring and are documented below.

B **Monitoring and Mitigation**

[OO- 31] Conduct ongoing biannual seasonal fish monitoring surveys in the Ruzizi River mainstem and Ruzizi III HPP reservoir (as per the Fish Monitoring Plan in Section 4.9.3.3) to document potential changes in fish community and requirement for adaptive mitigation (e.g. requirement for ramp down rates to avoid fish stranding). This includes:

- Survey team: staff of CRBEC/CRSNE and international fish expert.
- Survey sites: riffles and rapids upstream and downstream of the reservoir, the reservoir (2 sites), and in the dewatered reaches and the reach below the power outlet to confluence with the Ruhwa River (8-10 sites).
- Methods: surveys will be undertaken using electrofishing, cast/gill netting, fish catch examination, and eDNA to match barcoded material. Field water quality measurements should be collected. Methods will be standardised across sites to record catch per unit effort. Species required for further identification or DNA barcoding will be retained.
- Timing: biannual surveys timed for wet and dry season – Feb-April & Sept/October. Specific effort will be required to time surveys for low flow periods during hydropeaking and to confirm and assess fish stranding at the end of hydropeaking periods as a basis to determine the requirement to impose ramp down rates.
- Records: surveys will record species, number and size range, any abrasions or defects, habitat type and condition with photos and GPS coordinates of each site, and photos of representative species.
- Reporting: biannual fish report with inter-seasonal and interannual fish data and comparison with recommendations for mitigation or changes to the monitoring programme if required.

[OO- 32]: Maintain water depth and pool connectivity in dewatered reach to ensure adequacy for fish migration and apply corrective measures. This includes:

- Assessment of water depth, flow connectivity and pool condition along 5.5 km reach.
- Implement engineered solutions to deepen shallow stretches to facilitate connectivity.
- Release of freshets of 50m^3/s seasonally to flush sediment from pools.
- Monitor and maintain berms/embankments and stabilise slopes to reduce sediment inputs from side slopes and banks (as per sub-catchment restoration Section 4.9.4.2).

[OO- 33]: Implementation of a fish no-take (exclusion) zone in 5.5-km dewatered reach between Ruzizi III HPP dam and 1 km downstream of power outlet (for human safety and fish protection). This will involve:

- Engagement with relevant fisheries institutions and researchers to obtain views and suggestions for improved fish protection measures and confirm legal requirements and restrictions applicable to fishing and use of fishing gear.
- Notification of community members and signage to publicise the fish exclusion zone and purpose.
- Fencing of power outlet area for human safety and to preclude fishing.
- Hire of local fish monitors or river guards on a full-time basis to monitor the no fishing zone with the approval of relevant fishery institutions and local security guards.
- Monitor fishing practices downstream to Ruhwa River and create awareness of local fishers for sustainable fishing practices and enforce restrictions on use of illegal fishing gear (e.g. monofilament nets, mosquito nets) to facilitate survival of young fish.

[OO- 34] Implement habitat restoration and protection measures in the Ribyiro River catchment to protect specific areas with confirmed abundances of *Chiloglanis* species (subject to results of pre-construction surveys if these fish are confirmed in the Ruzizi River project area of influence). Activities will focus on protection of riverbanks from cultivation and restoring habitat on riverbanks to reduce soil erosion and sedimentation. This will include:

- Engagement with staff of the Ministry of Environment and Rwanda Environmental Management Authority (REMA), Rwanda Agriculture and Forestry Research Institute

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(RAFRI) and possibly ABAKIR on monitoring and enforcement of land restrictions along rivers and lakes[5]

- Engagement with local communities and other stakeholders (including NGOs and possibly staff of Nyungwe National Park) to create awareness of environmental and fish protection and to confirm their willingness to participate in restoration measures. This includes potential for improved water supply, soil stabilisation and availability of non-timber forest products.
- Identify potential NGO partners to assist with working with communities and implementation of restoration measures.
- Compile a habitat restoration and monitoring plan for riverbank habitat and *Chiloglanis* and other fish species monitoring.
- Identifying alternative cropping and watering methods to improve crop yields to compensate for not cultivating riverbanks.
- Confirm and map riverbank protection locations and measures to be implemented and obtain in principle stakeholder agreement to the measures.
- Provide support for plant nursery establishment to propagate trees and shrubs.
- Provide resource requirements including equipment and daily allowance to cover local allowances for community involvement in site establishment and restoration work.
- Monitor restoration success and habitat recovery and Monitor status of *Chiloglanis* populations and water quality at restoration sites relative to other control sites.
- Compile annual report to document progress.

4.9.5 Summary of Biodiversity Mitigation and Compensation Measures

Mitigation and proposed biodiversity compensation measures are summarised in Table 7.

In summary, the actions proposed below are considered feasible and would adequately mitigate and compensate for predicted residual impacts on the priority biodiversity features assessed to qualify for natural or critical habitat.

Table 7- Summary of Alignment of Mitigation Measures against Mitigation Hierarchy

Summarised mitigation measures	Outcome	Mitigation Hierarchy				
		Avoid	Minimise	Remedy /Restore	Compensation / Offset	Additional conservation Actions
Design and construction phase measures (EPC Contractor)						
BAP 1: Protection of Birds against Collision and Electrocution on Transmission Lines						
Bird diverters and anti-electrocution devices on TL	Avoids and reduces risk of bird collision and electrocution					
TL design to minimise pylons and access roads in natural habitat	Avoid and minimise loss of Hillslope Grassland habitat					
BAP 2: Sub-Catchment Management to Protect and Restore Terrestrial Natural Habitats & Biodiversity						
Construction site layout planning to minimise loss of natural habitat	Avoid and minimise loss of Hillslope Grassland habitat					

[5] In Rwanda the Law No 48/2018 on Environment specifies that no agriculture is permitted within 10 m of a riverbank and 50 m from a lake shore. Note: 10 m is considered insufficient to adequately protect riverbanks and additional buffer from cultivation (50 m) is desirable and would likely need to be based on willingness of community members to adopt this possibly for alternative benefits or agricultural support measures.

Summarised mitigation measures	Outcome	Mitigation Hierarchy				
		Avoid	Minimise	Remedy /Restore	Compensation / Offset	Additional conservation Actions
No development buffer zone of 50 m from riparian habitats (except essential dam footprints)	Avoid and minimise impacts on riparian habitats and reduced sedimentation of river course	■	■			
Minimise construction footprints	Reduce habitat loss for construction		■			
Alien plant control	Reduce risk of alien plant invasion and enhanced potential for reinstatement		■	■		
Clear and store topsoil/ reinstate construction sites (soil management)	Optimises potential for successful site restoration		■	■		
Translocation of wildlife if encountered	Protection of threatened wildlife species		■			
BAP-3: Fish Monitoring and Protection Measures						
Pre-construction fish surveys in Ruzizi, Rubyiro and Ruhwa	Confirm threatened and migratory fish in Ruzizi for monitoring, and Confirm need and desirability for river restoration to protect *Chiloglanis* as compensation to achieve net gain			■	■	■
Measures under overall responsibility of REL under this Framework BAP (Operation phase)						
BAP 1: Protection of Birds against Collision and Electrocution on Transmission Lines						
Stakeholder engagement to discuss and confirm restoration options including nursery establishment	Restore and protect hillslope woodland and thicket around Ruzizi III project			■	■	■
BAP 2: Sub-Catchment Management to Protect and Restore Terrestrial Natural Habitats & Biodiversity						
Stakeholder engagement to discuss and confirm restoration options including nursery establishment	Restore and protect hillslope woodland and thicket around Ruzizi III project			■	■	■
Establish plant nursery and restore habitat in 50 m buffer zone of reservoir & dewatered reach to compensate for loss of 18 ha natural habitat	Restore and protect hillslope woodland and thicket around Ruzizi III project			■	■	■
BAP-3: Fish Monitoring and Protection Measures						
Check & ensure flow and depth connectivity in dewatered reach, implement engineered options to ensure connectivity if required	Sufficient flow / water depth maintained for fish migration		■			
Construct berms / embankments along dewatered reach to reduce sediment inputs to dewatered reach	Maintain sufficient pool depth and connectivity for fish		■	■		
Seasonal release of freshets of 50m³/s from dam to remove collected sediment from river course	Sufficient pool depth and connectivity for fish		■	■		
Monitor and adapt ramp down rates to avoid fish stranding if required	Hydropeaking operation minimises risk of fish stranding		■			
Enforce a no fishing exclusion zone in dewatered reach and 1 km downstream of powerhouse	Reduced fishing pressures on migratory fish		■		■	
Hire fish monitors to enforce exclusion zone and restrict use of illegal fishing gear downstream to Ruhwa confluence	Reduced fishing pressures on migratory fish			■	■	
BAP-2: Chiloglanis Protection						
Implement restoration measures in Ribyiro catchment	Enhance protection of Chiloglanis species and aquatic habitats			■	■	■

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4.10 Environmental Flow Management

4.10.1 Objective

Ruzizi III HEPP will comprise: i) a short, steep, reach of approximately 500 m between the dam wall and the bottom outlet in which the riverbed will be permanently dry; ii) an approximate 5 km 'dewatered reach' between the bottom outlet and the powerhouse tailrace; and iii) a downstream hydropeaking reach that extends to below the Burundi border.

The hydrological, hydraulic, and geomorphological characteristics of the Ruzizi River and how they are modified by the Ruzizi III HEPP drive the predicted responses of the ecological and social components or receptors.

The changes in hydrology may occur at the following typical periods:

- During the reservoir filling, part of the river discharge will be stored in the reservoir. The Ruzizi River flow rate downstream of the dam will be reduced accordingly. However, it is understood that reservoir filling will take of the order of 12 days at a flow rate of approximately 8 m^3/s and as such the majority of the Ruzizi River flow will be passed through the bottom outlet.
- During the normal operation phase, the dewatered reach between the bottom outlet and the powerhouse tailrace will be subject to minimum flows of no less than 10 m^3/s, and the reach downstream of the tailrace will be subject to flows comprising the dewatered reach minimum flows, variable turbined flows based on optimised operation of the HEPP system (as yet to be fully defined but not exceeding 150 m^3/s) and any lateral inflows from diffuse catchments and/or downstream tributaries.
- During sediment release operations, the frequency and duration of which are yet to be defined by the Design Team, the reservoir could be lowered and generate downstream river flows with elevated concentrations of suspended solids and/or flows that result in floodplain inundation.
- During the maintenance of the turbines, or any unplanned events which would reduce the outflow at the powerhouse, the reservoir would be lowered and generate downstream river flows with elevated concentrations of suspended solids and/or flows that result in floodplain inundation.
- During periods when reservoir inflows are elevated above the normal range of inflows (e.g., when storms occur over the intervening catchment area between Ruzizi II dam wall and Ruzizi III dam wall), reservoir levels below FSL would result in flood attenuation.

The following changes in geomorphology and sediment transport may similarly occur:

- The proposed Ruzizi III development is likely to trap the longitudinal supply of bed material and will possibly lead to further armouring (removal of fine sediment from the bed matrix) directly downstream of the reservoir along the dewatered reach. The effect of this on the bed elevation lowering is predicted to be minor and localised.
- Where tributaries or hillslope processes contribute large volumes of sediment to the Ruzizi along the dewatered reach, sediment fans or bars could develop as the transport capacity has been reduced. This can improve the habitat diversity but lead to sedimentation of slack waters. In extreme mass wasting events, the channel could be blocked, leading to damming of the valley.
- Downstream of the Ruzizi III powerhouse the increased flow rate fluctuations will increase the peak energy (shear stress) of the river, driving sediment entrainment of slightly larger particles. This is likely to drive the process of armouring, stripping the channel further of finer substrates. No significant sediment contributions take place between the Ruzizi II powerhouse and the confluence with the Rubyiro River to mitigate this armouring process, although some lateral contributions from localised landslides, bank erosion, and surface runoff and erosion may occur. The removal of finer substrates

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is likely to happen along the banks too, but due to the stable nature of the channel perimeter, no significant incision or widening is likely to occur.

Downstream flow alteration, sediment management, and engagement with key stakeholders are complex but critical components of the environmental and social management of the proposed Ruzizi III HEPP. This is why this Environmental Flow Management Plan (EFMP) is required, with the following objective:

- The effects of flow alteration and loss of ecological and sediment connectivity will be minimized through operating procedures, sediment management, and coordination with key local stakeholders (other HEPPs and river basin management authorities, e.g., ABAKIR).

The main measures for the water quality management of the Ruzizi III reservoir and the downstream Ruzizi River reach are related to construction activities causing increased sediment loading and turbidity and possible contamination from minor hydrocarbon spills, reservoir vegetation clearing and filling, potential water hyacinth control and water quality monitoring.

4.10.2 Components, Timing and Responsibilities

The main components forming the present plan are:

- EFMP 1.- Operating Procedures and Adaptive Management
- EFMP 2.- Minimum Flow Requirements in the Dewatered Reach
- EFMP 3.- Flow Regime Variation Management in the Hydropeaking Reach
- EFMP 4.- Sediment Management
- EFMP 5.- Engagement with key local stakeholders (other HEPPs / river basin management authorities, e.g., ABAKIR)

REL will retain ultimate responsibility for ensuring the project manages downstream flows in accordance with the mitigation measures identified in the accompanying ESIA. However, the process of defining operating procedures to minimize the effects of flow alteration and loss of ecological and sediment connectivity will require collaboration with the EPC Contractor and the Owners Engineer, as well as with the upstream HEPP operators and river basin management authorities in the three affected countries (e.g., as represented by ABAKIR).

The implementation of Environmental Flow Management will start at the detailed design stage with the definition of operating procedures, sediment release management, and engagement with key local stakeholders (other HEPPs / river basin management authorities, e.g., ABAKIR). It will continue during construction and through operation. The operation phase will be the main implementation period as the main environmental and social effects relating to loss of ecological and sediment connectivity are expected to occur during this period.

4.10.3 Management Actions during Construction

A EFMP 1.- Operating Procedures and Adaptive Management

[OC- 103] Operating Procedures

- The EFA included in the ESIA Main Report has adopted a medium-resolution and this is considered suitable by the ESIA Consultant and REL. However, the suitability will be assessed by the Environment and Social Independent Panel of Experts (IPoE) and if necessary, the EFA will be revised to address the panels comments post financial closure and the revised EFA will inform the operating procedures and adaptive management plans.
- Prior to the start of diversion works, based on the EPC Contractor and Owners Engineer input, as well as other local hydropower operations, prepare the Reservoir and Powerhouse Operating Procedures, in relation to the bottom outlet operation, powerhouse turbine sub-daily peaking/ off-peaking operations, and reservoir level management, with integration of

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the environmental and social issues developed in EFMP 2, EFMP 3, EFMP 4, and EFMP 5, as well as in CHS 2, CHS 3, and MON 1:

- sediment management
- downstream community safety
- early warning systems
- floodplain protection
- consultation with ABAKIR
- coordination with upstream operators

[OC- 104] Adaptive Management based on Monitoring and Stakeholder Engagement

- Environmental consequences of hydropower development and operations cannot be predicted with complete certainty. The monitoring activities and data analysis techniques proposed for the environmental flow management, and more generally in this ESMP, address predictive uncertainties and will be used to develop further mitigation or compensation measures as may be required in the event of unforeseen effects.
- The proposed program of monitoring and adjustment is the Adaptive Management (ARM) strategy of the ESMP. In the case of downstream flow management, adaptive management will be important as the sediment management program was yet to be designed before this ESMP was prepared and the impacts associated with the agreed minimum flow regime and hydropeaking operation cannot be fully known *a priori*.
- As described in the IFC Good Practice Handbook for Environmental Flows for Hydropower projects: 'For the adaptive management system to be effective, there should be cooperation and communication among the dam operators, the organization responsible for monitoring, and the relevant authorities'. These key actors will need to broadly agree on the baseline condition, the expected condition of the river, the EFlows predicted to maintain the expected condition, and the indicators and targets that will be used to measure whether these are being achieved. Implementation of EFlows should be accompanied by an EFlows monitoring program that provides the necessary data to inform each step, and supported by transparent reporting and independent auditing.

[OC- 105] Cooperation and communication among the Ruzizi River HEPP operators

- During the detailed design period, initiate coordination with the operators of Ruzizi I and Ruzizi II and discuss:
  - The strategies planned by each HEPP for: (i) sediment management, (ii) fish passage, (iii) reservoir operating mode, and (iv) dam safety.
  - How hydrological data could be shared between each operator on a continuous basis so that downstream operations may benefit from the information collected by the upstream operations.
- Agree on a forum to meet on regular basis and exchange data (e.g. on sediment management, water quality, reservoir management, fish presence and abundance), that are beneficial to all operators and downstream communities.
- Agree on a common program on monitoring of the cumulative effects of sediment trapping in the various Ruzizi HEPP reservoirs.
- Report on the effectiveness of this cooperation in the six-monthly E&S reports.

[OC- 106] Agree on the proposed EFlow management and monitoring with the relevant authorities

- Present to ABAKIR and other key relevant river basin management authorities the outcome of the ESIA and the EFlows assessment undertaken as part of current ESIA. Discuss the outcome and agree on the proposed measures for ecological continuity, sediment management, flow rate and water quality management and monitoring, and downstream stakeholder engagement.
- Where further required, submit to the relevant organization responsible for the monitoring of the present ESMP and organize a meeting to present:
  - the main issues relating to environmental flow management identified in the current ESIA.

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B **EFMP 2.- Minimum Flow Requirements in the Dewatered Reach**

[OC- 107] Ensure compliance with minimum flow requirements

- Ensure that the Ruzizi River flow continuity is maintained at any time during the construction period, including at the start of the river diversion and for the reservoir filling period.
- Verify that the EPC Contractor maintains the specified minimum flow regime (10 m^3/s) - or that minimum flow regime otherwise specified in national regulations, whichever is the most stringent - in the dewatered reach downstream of the bottom.
- Release freshets of at least 50 m^3/s over a few days on a biannual basis timed with rising river levels (volume to be confirmed through further modelling).

[OC- 108] Consult with relevant stakeholders on reservoir clearing and filling plan

- Consult with relevant stakeholders to plan the reservoir clearing and filling.
- As the start of the reservoir filling period, should REL wants to reduce the time needed for the reservoir filling, discuss the possibility of reducing the flow diverted through the diversion tunnel.
- Whatever is the agreement with downstream stakeholders at that time, the minimum flow downstream of the bottom outlet will not be lower than the specified minimum flow regime (10 m^3/s), or that specified in the national regulations, whichever is the most stringent.

[OC- 109] Staged approach for reservoir filling

- As part of the review of the Reservoir Filling Plan prepared by the EPC Contractor, discuss with the Owners Engineer and the EPC Contractor the approach for the bottom outlet closure.
- Ensure that a staged approach is followed to close the bottom outlet so that there is no risk of i) fish stranding downstream of the bottom outlet and ii) dam wall failure.
- The rate of river water level decrease downstream of the bottom outlet should not be higher than 15 cm/hour.

[OC- 110] Public announcement of reservoir filling period and restrictions

- Ahead of the start of the reservoir filling, organize public information meetings in villages along the reservoir and in villages along the Ruzizi River downstream of the dam down to the Burundi border, including workers camps.
- Disclose the reservoir filling process, access restrictions, how the Ruzizi River flow rate would be reduced during a short period of time, and the expected water quality changes during reservoir filling and the next months.
- Ensure the grievance mechanism is fully known and understood from the stakeholders.

[OC- 111] Monitoring of downstream minimum flow and water quality during reservoir filling

- The Ruzizi River flow rate will be lower than the reservoir inflow during the reservoir filling period. The river water quality will also be poorer downstream of the dam as soil and vegetation will progressively be inundated and generate turbidity and debris.
- Monitor the downstream flow as per the monitoring activities described in the accompanying Environmental & Social Monitoring Programme section.

C **EFMP 3.- Flow Regime Variation Management in the Hydropeaking Reach**

[OC- 112] Confirm hydropeaking requirements

- During detailed design, consult with EPC Contractor and local stakeholders and assess and agree requirements for improved hydrological and hydraulic characterisation of micro-/meso-scale habitat in hydropeaking reach to reduce uncertainty inherent in current broad-scale assessment.
- Undertake revised assessment where agreed, to revise specified hydropeaking requirements / reservoir operation. Update detailed design as required (e.g., revise [OC-

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103] Operating Procedures, revise tailrace design, incorporate hydropeaking regulation basin, downstream river restoration design).

D **EFMP 4.- Sediment Management**

[OC- 113] Reservoir hydromorphological modelling

- During the construction phase, monitor the suspended sediment concentrations to inform adaptive management requirements.
- Use of continuous loggers with a real-time data feed that are calibrated to the local suspended sediment type (samples analysed to account for grain size influence on suspended sediment concentration) and can accurately measure very high sediment concentrations (light-based methods fail during very high sediment concentrations).
- The monitoring should start a month before construction starts to monitor short term natural variability and continue for the duration of the construction phase.
- Use the results as an input for numerical modelling studies performed by the EPC Contractor to predict how inflowing sediment would move through, or be trapped, in the reservoir and this shall be used to define when and how venting and sluicing of sediment should be performed by REL during the operation phase.
- Review the detailed sediment transport modelling performed by the EPC Contractor and ensure that the downstream environmental impacts on riverbed and bank erosion as well as reduction in nutrients associated to suspended solids are effectively taken into account in the proposed sediment management program.

[OC- 114] Sediment management during reservoir filling

- During the reservoir filling phase, bottom sluicing will be undertaken to maintain sediment throughflow as best possible and flows will be sufficient to transport the released sediment downstream to avoid siltation of instream habitats immediately downstream of the bottom outlet.

[OC- 115] Riverbed sediment size downstream of the dam

- Characterise sediment size with depth along the Ruzizi riverbed downstream of the dam (4 stations to the border with Burundi) to better predict the downstream bed and bank erosion.

E **EFMP 5.- Engagement with key local stakeholders (other HEPPs / river basin management authorities, e.g., ABAKIR)**

[OC- 116] Identify relevant authorities and communication forum

- The Project should be discussed and agreed at a transboundary level so that the relevant stakeholders in Rwanda, DRC, and Burundi are aware of the downstream impact on sediment and nutrient contributions to the Ruzizi River, and the key importance of effectively implementing the proposed mitigation and monitoring measures to avoid significant adverse effects on the Ruzizi River are considered acceptable.
- During detailed design stage, identify the relevant national authorities, as well as the relevant river basin management authorities that should be involved in this transboundary dialogue (e.g., ABAKIR). Identify and implement the appropriate and required communication channels.
- Share the current ESIA as well as the Feasibility Study and any subsequent refined design, as applicable, with the identified relevant institutions.

[OC- 117] Undertake effective engagement during detailed design stage

- Assist the relevant authority(ies) in organizing the first meeting on Ruzizi III, present the reference design and the outcome of the current ESIA, and agree on the way forward in terms of information sharing.
- Obtain a proof of consent about the E&S management of the Ruzizi III HEPP from the relevant key stakeholders / river basin management authorities.

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4.10.4 Management Actions during Operation

A **EFMP 1.- Operating Procedures and Adaptive Management**

[OO- 35] Revise procedures based on outcome of monitoring and coordination with other operators

- Using the result of the monitoring activities undertaken for river flow, sediment releases, downstream riverbed and bank erosion, water quality, ecological impacts, and feedback from downstream stakeholders, review operating procedures every year.
- Decide if any adaptation is required to minimize environmental or social issues not initially foreseen and propose any necessary improvements, consistent with good public safety practices and the primary purposes of the Project. Consider river engineering, to attenuate the rate of change of water level to reduce the risk of risk stranding during ramp-down.
- Implement accordingly.

[OO- 36] Revise monitoring and maintain transparent reporting

- Using the result of the monitoring activities undertaken for river flow, sediment releases, downstream riverbed and bank erosion, water quality, ecological impacts, and feedback from downstream stakeholders, review the environmental and social monitoring program every year.
- If any adaptation is required to better detect and characterize changes, propose any necessary improvements, consistent with the primary purposes of the E&S monitoring program and implement accordingly.

B **EFMP 2.- Minimum Flow Requirements in the Dewatered Reach**

[OO- 37] Managing flow variations during maintenance periods

- The project will be operated such that, over a daily period, the reservoir inflow will match the reservoir outflow. However, there may be periods when a component of the hydropower scheme requires maintenance which, in turns, results in a lower than normal bottom outlet mini-hydro turbined outflow.
- As part of the operating procedure definition, list the situations where a reduction of bottom outlet mini-hydro turbined outflow flow could arise as a result of (i) a planned maintenance operation, such as reservoir filling post sediment sluicing (ii) an accidental event, such as an issue on the evacuation line.
- For normal maintenance events:
  - Ensure that the reservoir operating procedures include references to the specified minimum flow requirements defined in [OC- 107] and [OC- 108].
  - Monitor effective implementation of the minimum flow releases through continuous recording and web portal data publishing to demonstrate compliance.
- For accidental events:
  - As part of the Emergency Response Plan described in [OC- 56], ensure that a screening of such events is undertaken and that management measures are defined in case of such event to avoid significant ecological and/or social impacts downstream of the bottom outlet.

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C **EFMP 3.- Flow Regime Variation Management in the Hydropeaking Reach**

[OO- 38] Managing flow variations during maintenance periods

- The project will be operated such that, within a 24 hour period, the hydropeaking releases discharged through the powerhouse tailrace will be based on an agreed reservoir operation schedule. However, there may be periods when a component of the hydropower scheme requires maintenance which, in turns, results in variations in the powerhouse turbine operation and discharged flow.
- As part of the operating procedure definition, list the situations where a variation of powerhouse turbined outflow flow could arise as a result of (i) a planned maintenance operation, such as reservoir filling post sediment sluicing (ii) an accidental event, such as an issue on the evacuation line.
- For normal maintenance events:
  - Ensure that the reservoir operating procedures include references to the agreed reservoir operation schedule [OC- 112].
  - Monitor hydropeaking releases through continuous recording and web portal data publishing to demonstrate compliance.
- For accidental events:
  - As part of the Emergency Response Plan described in [OC- 56], ensure that a screening of such events is undertaken and that management measures are defined in case of such event to avoid significant ecological and/or social impacts downstream of the powerhouse tailrace.

D **EFMP 4.- Sediment Management**

[OO- 39] E&S Risk Assessment prior to first sediment release

- At the time of writing this ESMP, the Sediment Management Program was yet to be defined and the method/frequency/rates and duration of sediment release were yet to be defined. This will be undertaken by the EPC Contractor and the Owner's Engineer during the detailed design and the construction period. The first sediment release operation may happen several years after the project's commissioning. At that time, the baseline conditions around and downstream of the Ruzizi III reservoir will be different from those prevailing in 2022. In addition, more data will have been collected on suspended solid concentrations.
- One year before the planned first sediment release operation, undertake an environmental and social risk assessment of the planned venting/sluicing/flushing operation on (i) the Ruzizi River reach downstream of the dam and (ii) the Ruzizi III reservoir facilities and any activities which may depend on the reservoir water level at that time, should the sediment release operation result in partial or total lowering of the reservoir.
- This environmental and social risk assessment will follow the Lenders standards.
- The outcome of the environmental and social risk assessment will be disclosed to, and discussed with the relevant authorities as well as the reservoir and river water users not later than 3 months before the sediment release operation.

[OO- 40] Coordination with upstream HEPP operators outlet closure

- Sediment management along the Ruzizi River will be coordinated with other reservoir operators and with the power system operator.
- The coordination will involve the scheduling of sediment release along with regulation of reservoir levels to manage the deposition zones in the reservoir. The objective of the coordination is to allow for downstream movement of sediment to the extent possible while minimizing accumulation of sediment in storage.

[OO- 41] Inform downstream river users prior to sediment release

- Should the sediment release result in either a reservoir outflow higher than the reservoir inflow (i.e. reservoir lowering) or with higher suspended solid concentration, the

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downstream communities and other river water users will be informed ahead of the sediment release event.

- The timing and media for this information will be decided in accordance with the risks on community health and safety and river water uses identified in the environmental and social risk assessment.

[OO- 42] Bottom outlet opening / closure rate

- Should sediment release result in temporary reservoir lowering, the reservoir outflow would be higher than the reservoir inflow. In that case, the opening and closure of the bottom outlet will need to be undertaken so that no community safety risk (opening) and no significant fish stranding (closure) may occur.
- Community safety issues associated by sudden increase of water level would be minimized if the increase rate of river water level caused by the increased reservoir outflow at the beginning of the sediment release operation is less than 5-10 cm / minute.
- Fish stranding associated by sudden decrease of water level would be minimized if the decrease rate of river water level caused by the decreased reservoir outflow at the end of the sediment release operation is less than 15 cm / hour.

[OO- 43] Monitoring and adaptive management

- Undertake the monitoring of water quality, flow rate and sediment deposition associated with each sediment release event as described in section 4.11.
- Refer to MON 2.

E **EFMP 5.- Engagement with key local stakeholders (other HEPPs / river basin management authorities, e.g., ABAKIR)**

[OO- 44] Maintain effective engagement during operation stage

- Maintain regular exchanges of information and environmental data with key local stakeholders (other HEPPs / river basin management authorities, e.g., ABAKIR).
- Organize one formal meeting every year to discuss and present the results of the environmental and social monitoring undertaken in the previous period.
- Include a summary of the conclusions in the six-monthly and then annual E&S reports.
- Feedback into [OO- 43] Monitoring and adaptive management any resultant recommendations.

4.11 Management of Accumulation of Domestic Waste in the Reservoir

4.11.1 Rationale and Objectives

Domestic waste originating from the Bukavu city is transported by the Ruzizi River and accumulates in the Ruzizi-I and -II reservoirs. This waste is collected and disposed of by the operators of Ruzizi-I and -II HEPPs. However, this is an issue as the operators do not have the resources to manage the important quantities of waste that accumulate. It can be anticipated that a similar issue may be encountered by the Ruzizi -III Project.

The objective is to anticipate the problem, identify management measures and support Ruzizi-I and -II in managing the waste. During the construction period and reservoir fulling it will be contractor's responsibility to collect and manage the waste transported by the river that collects in the Ruzizi-III reservoir.

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4.11.2 Components, Timing and Responsibilities

The plan for the management of accumulation of domestic waste in the reservoir will be developed by REL prior to and during construction, with inputs from relevant institutions and stakeholders, including the operators of Ruzizi-I and II (SNEL and SINELAC). Implementation will start during construction. It will continue during the operation phase.

4.11.3 Management Actions during Construction

A **MRT 1.- Management of Reservoir Trash**

[OC- 118] Preparation of the Plan for Management of Accumulation of Domestic Waste in the Reservoir

- Prepare detailed terms of reference for, and retain the services of, a qualified person to develop a detailed Plan and assist in execution and monitoring.
- Prepare the plan.
- Consult, receive and consolidate comments on the draft plan from relevant government agencies and operators of Ruzizi-I and II.

4.11.4 Management Actions during Operation

A **MRT 1.- Management of Accumulation of Domestic Waste in the Reservoir**

[OO- 45] Implement the plan for the management of accumulation of domestic waste in the reservoir and monitor effectiveness

- Implement the Plan and monitor effectiveness.
- The following checks will be required on a regular basis, some of which link to other management and monitoring measures in this ESMP:
  - Compliance with buffer restrictions.
  - Natural vegetation restoration around full supply level and requirements for intervention.
  - Erosion and sedimentation points and potential control measures.
  - Encroachment into wildlife protection zones (if applicable).

[OO- 46] Plan for the management of accumulation of domestic waste in the reservoir

- Amend the Plan if required to cater for necessary changes required to optimise the management solutions adopted.

4.12 Environmental & Social Monitoring Programme

The ESIA has identified potential adverse effects on hydrology, water quality, river geomorphology, fish habitat, birds, and community safety and livelihood. A strategy has been established to minimize or compensate those effects. This process has been based on predictions and assumptions which must be verified during the Project implementation though a monitoring program. The objective is to detect changes in the key environmental quality parameters, which can be attributed to the Project in order to plan the necessary corrective measures. The results of the monitoring program are used to evaluate the following: (i) extent and severity of the environmental or social impacts against the predicted impacts; (ii) performance of the environmental and social protection measures or compliance with pertinent rules and regulations; (iii) trends in impacts; and (iv) overall effectiveness of the Project ESMP.

REL will prepare periodic monitoring reports that describe progress with implementation of the ESMP.

The objective of this plan is:

- Monitoring of key environmental (water quality, hydrology, suspended solids and sediment load, vegetation, river fish) and social (health, revenues) indicators is carried out and deviations are detected for the implementation of corrective actions.

4.12.1 Components, Timing and Responsibilities

- MON 1.- Hydrology, Environmental Flow and Water Quality
- MON 2.- Reservoir and River Geomorphology and Sediment
- MON 3.- Fish & Aquatic invertebrates
- MON 4.- Bird Monitoring for Transmission Line Operation
- MON 5.- Land use and Revegetation Progress
- MON 6.- Fishery Activity
- MON 7.- Socioeconomic Households
- MON 8.- Project-induced in-migration and local inflation
- MON 9.- Reporting and public disclosure

Implementation of these components will start during the detailed design phase and will continue during the main construction phase and throughout the first years of operation.

REL has the overall responsibility for the implementation of the environmental monitoring and reporting. During the construction period, the EPC Contractor's monitoring results will complement REL's own monitoring activities. For monitoring activities that requires specific expertise (e.g. socio-economic monitoring, river fish monitoring), REL will retain qualified and experienced external experts or qualified NGOs to plan, conduct and analyse the monitoring survey.

Planning and conducting surveys and sampling programs and then, analysing the data collected and preparing the reports to support environmental management require resources and professional advice. This is the reason why the present plan is needed.

4.12.2 Management Actions during Construction

A MON 1.- Hydrology, Environmental Flow and Water Quality

The water level monitoring in the Ruzizi III reservoir, the discharge of turbined waters and the quantities of Ruzizi III reservoir water spilled via the spillway will be monitored for operational and safety purposes and are not discussed in this section.

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[OC- 119] Monitoring of Environmental Flow and River flow

- Objectives: Demonstrate that the minimum environmental flow downstream of the Ruzizi III dam is maintained during reservoir filling.
- 2 stations within the dewatered reach downstream of the Ruzizi III dam.
- Method: simple solution (e.g. level gauge on downstream bridge or existing river gauge station) that may allow a visual check that the river flow is equal or greater than the recommended environmental flow.
- Frequency: From the start of the cofferdam construction, the Ruzizi River flow rate will be monitored at least twice per day, or as per applicable national guidelines, whichever is the most stringent, during the whole construction period.
- Reporting: Results included in the six-monthly E&S reports. Comparison upstream daily inflow / downstream daily outflow and recommended minimum flow. Disclosure of the monitoring results to the communities.

[OC- 120] Monitoring of river water quality

- Objectives: confirm that the project activities do not alter the Ruzizi River water quality.
- 8+3 stations: Ruzizi River upstream of the reservoir, immediately downstream from the Ruzizi III dam, and at 3, 20, 40, 60 and 100 km distances downstream from the dam. From the start of reservoir filling: Upper and middle reaches of reservoir and in close proximity to the dam.
- Indicators:
  - for the Ruzizi III reservoir: Temperature; pH; Dissolved oxygen; Conductivity; Total phosphorus; Turbidity; Phosphates; Total suspended solids; Ammonia; Nitrate; Total alkalinity; Nitrite; Organic carbon; Chlorophyll-a; Cyanotoxin.
  - for the Ruzizi River: Temperature; pH; Dissolved oxygen; Conductivity; Total phosphorus; Turbidity; Phosphates; Total suspended solids; Ammonia; Nitrate; Sulphate; Total alkalinity; Nitrite; Organic carbon; Chlorophyll-a; Benzene, Toluene, Ethylbenzene, Xylene (BTEX); EPA Priority Pollutant Metals (PP-13[6]); Total coliforms; Faecal coliforms; BOD; COD; Cyanotoxin.
- Method: water quality in-situ direct measurement using portable equipment for the first 4 parameters. For the reservoir, 3 depths: surface, mid-depth and bottom. Sampling in dedicated containers and analysis in laboratory.
- Frequency:
  - Quarterly, starting 1 year before start of construction (river) and starting from the start of the reservoir filling (reservoir).
  - During reservoir filling, for the Ruzizi river downstream of the dam only: in addition of the normal quarterly water quality surveys, one additional water quality survey when the reservoir level is at its full supply level.
- Disclosure of the monitoring results to the communities and ABAKIR.

[OC- 121] Floating debris and trash

- Objectives: Verify the amount of waterborne woody debris and domestic trash collected at the dam and measures have been taken to dispose appropriately the debris/trash.
- Indicators: types and quantities of floating debris removed, locations of debris accumulation, substantial debris removal activities (e.g. removal of beached debris), substantial debris prevention activities (e.g. tree clearing along eroding shorelines), location of disposal or re-use.
- One station: Ruzizi III debris access platform
- Method: direct observations and volume calculation in tons.
- Frequency: six-monthly, start during construction with the construction of the upstream cofferdam.

[6] PP-13: (Sb) Antimony, (As) Arsenic, (Be) Beryllium, (Cd) Cadmium, (Cr) Chromium, (Cu) Copper, (Pb) Lead, (Ni) Nickel, (Se) Selenium, (Ag) Silver, (Tl) Thallium, (Zn) Zinc, and (Hg) Mercury.

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B **MON 2.- Reservoir and River Geomorphology and Sediment**

Monitoring is essential to manage the Project to ensure benefit to the scheme and downstream users and biota. As there is uncertainty regarding the exact extent of predicted impacts of the operation of the scheme and the downstream consequences, monitoring is needed to guide adaptive management. Monitoring should include river sediment load, turbidity and total suspended solids, reservoir volume, character and volume of deposited sediment, river channel morphology and suspended sediment concentrations (and deposition associated with sediment release operations from Ruzizi-I and -II).

[OC- 122] Monitoring of sediment transport in the Ruzizi future reservoir area and upstream tributaries

- Objectives: Observe and measure during construction the sediment load, turbidity, total suspended solids, and accumulation of sediments in the Ruzizi River upstream from the Project cofferdam and in the main upstream tributaries. This is to validate the sediment transport computations made for the development phase. The information will be used to adapt the operating policies for the Project as required to manage the available reservoir live storage.
- Initial action: establish a high-resolution topographical map of the reservoir floor before filling to form the baseline for successive bathymetric surveys.
- Observations during construction:
  - 2 stations in the Ruzizi River: one station upstream of Ruzizi III upstream cofferdam and one station downstream of the diversion channel outlet.
  - 1 station in the right bank tributary 7.6 km upstream from the Ruzizi III dam site, within 50 m of the outflow into the Ruzizi River.
  - Method: Survey of sediment deposits and turbidity monitoring if required.
  - Frequency: During high flow period.

C **MON 3.- Fish & Aquatic Invertebrates**

REL will be responsible for this monitoring activity, with the participation of subcontractors from DRC, Rwanda and Burundi, with oversight by a specialist consultant in fish monitoring.

This monitoring activity will provide the platform for biannual monitoring in the upstream and downstream reaches of the Ruzizi River, including reservoir and dewatered stretch of river. It will cover all biomonitoring requirements commencing at least one year prior to dam construction and will continue through operation until such time as results indicate stabilisation or possible improvement of the fish and macroinvertebrate community and an absence of observable impacts on aquatic habitats and biota.

[OC- 123] Monitoring of Diatoms and Aquatic Macroinvertebrates

- Objectives: Provide an improved baseline during pre-construction as a basis for ongoing monitoring during construction, reservoir filling and operation to confirm or demonstrate changes to macroinvertebrate diversity and abundance.
- Proposed sampling sites: One site above reservoir; at least one site in Reservoir; two sites in dewatered reach, and two sites downstream between Ruzizi III and Bugurama. These should be confirmed in a more detailed monitoring plan.
- Methods: Sampling methods should be aligned with those of previous studies for the Ruzizi III HEPP, including:
  - In-field water quality: pH, Electrical Conductivity, Temperature and Dissolved Oxygen using suitable calibrated equipment.
  - Macroinvertebrates: Sweep netting and examination of substrates for macroinvertebrates using SASS5 collection approach.
  - Diatoms: brushing of gravel substrates and marginal riverine vegetation to collect diatom and send to laboratory for analysis

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- Bilharzia snails: sweep netting and examination of marginal vegetation for *Bullinus* snails. Examples of snails will be collected and presence of cercaria checked with field microscope.

- Frequency: Biannual (preferably rising flow (April/May) and falling flow (Sept/Oct)).
- Key Indicators:
  - In-field water quality: dissolved oxygen levels (threshold of 5mg/l);
  - Macroinvertebrates: Abundance and diversity of invertebrates. Potential indicator species to be confirmed e.g plecopteran (stone flies);
  - Diatoms: using an index of scores including presence and proportion of Pollution Tolerant Values (PTV) (indicator of organic pollution); Specific Pollution Sensitivity Index (SPI) (indicator of organic / inorganic pollution); Biological Diatom Index (BDI) (indicator of morphological and taxonomic similarity; and deformities (indicator of metal toxicity).

Reporting: Results included in six-monthly integrated monitoring reports and disclosure of the monitoring results to the communities. Data to be stored and maintained by REL and supplied to ABAKIR and other relevant organisations.

[OC- 124] Monitoring of Fish

- Objectives: Provide an improved understanding of fish diversity, abundance, habitat preferences and seasonality to confirm project induced changes, and presence of threats from alien fish and provide basis for adaptive management and improved mitigation where feasible.
- Proposed sampling sites: One site above reservoir; two sites in Reservoir (one upstream and one in middle); two sites in dewatered reach and two sites downstream between Ruzizi III powerhouse and Burundi border. Additional sites should be considered in Burundi to confirm fish migration along the length of the river to establish the relative importance of various reaches.
- Methods: Sampling methods should be aligned with those of previous studies for the Ruzizi III HEPP, including:
  - Electrofishing. Timed electrofishing sweeps to provide catch per unit effort (CPUE) data to be used in wadeable streams and slackwaters/backwaters along river or future reservoir margins.
  - Netting. Nets should be left overnight and checked in the morning. Cast-netting in pools where suitable conditions exist. Additional methods that can be considered included line and hook sampling if available local fishers hired and supplied with equipment.
- Frequency: Quarterly during pre-construction and construction and biannual during operation preferably rising flow preferably rising flow (April/May) and falling flow (Sept/Oct)).
- Key Indicators:
  - Presence and relative abundance of fish in different fish guilds (see below)
  - Catch per unit effort where feasible (e.g. electrofishing)
  - Presence and abundance of alien fish
  - Migratory fish species presence in different reaches and seasons.
- Reporting: Results included in six-monthly integrated monitoring reports and disclosure of the monitoring results to stakeholders. Data to be stored and maintained by REL and supplied to ABAKIR and other relevant organisations.
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D **MON 5.- Land use and Revegetation Progress**

[OC- 125] Annual land use monitoring

- Objectives: Document the changes in land use+ induced by the Project activities in the Ruzizi valley around the dam site and along the transmission line corridor and monitor reinstatement of areas disturbed during the construction period.
- Observations: Areas opened or disturbed for construction purposes, e.g. site installations, camps, parking areas, disposal and borrow areas, quarry area, cut and fill areas, access roads used only for construction, areas adjacent to upgraded roads or service roads, 220 kV transmission line right of way, reservoir area.
- Indicators: location, area, status of use (on-going works / under reinstatement / fully rehabilitated), percentage of vegetation coverage; percentage affected by erosion pattern.
- Method and frequency: six-monthly, photo reporting and production of GIS-based maps based. Every 2 years, starting one year after the commencement date, Remotely Piloted Aircraft Systems (drones) survey of affected sites.
- Reporting: results to be included in the six-monthly E&S reports disclosed on the project website

E **MON 6.- Fishery Activity**

[OC- 126] Downstream Fisheries

- Monitor fish catch of fishers at different points downstream of the dam to provide a pre-construction baseline for monitoring and thereafter to determine potential influence of the Project on fish catch. This will include:
  - Identify fishermen downstream of the dam to be targeted for monitoring of fish catch.
  - Develop a questionnaire for the fishery surveys covering aspects such as intensity of fishing (e.g. days per week/month); seasonality of fishing effort; types and size of fish caught and seasonal variations; fishing gear used; purpose of fishing (home consumption/sale/barter); trends in fish catch success and perceived reasons for any changes or trends.
  - Conduct quarterly monitoring during pre-construction and construction (for continuation into operation).
  - Analyse results to quantify and understand any trends. Correlate results with dam construction activities and water quality monitoring results.
  - Reporting: results to be included in the six-monthly E&S reports disclosed on the project website. Data to be stored and maintained by REL and supplied to ABAKIR and other relevant organisations.

F **MON 7.- Socioeconomic Monitoring**

[OC- 127] Tracking Project Employment

- Local employment in the communities in the Project area will be tracked by creating a local employment register and then recording how many people from each community/village are available for employment and how many are employed.
- A report will be prepared every 6 months.

[OC- 128] Socioeconomic Households Survey every 2 years

- Objectives: Evaluate the effects of the Project on the community's social and economic welfare and ensure no degradation of local livelihood, based on data collected from a representative sample of households which are not affected by the land acquisition process caused by the Project.

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- Target groups: 10% of the households not affected by land take living in the villages in the Project area of influence. Survey will cover one of the following three employment situations: (i) households with at least one member employed by the Project; (ii) households with wage employments indirectly related to the Project, (iii) household with no wage employments.
- Indicators: (i) Employment status of all household's members, (ii) Sources of Income, level of cash and non-cash income, (iii) Budget and expenditure surveys with measurement of current consumption patterns.
- Method: Annual questionnaire every 2 years during the construction period.
- Reporting: Results to be included in the six-monthly E&S reports disclosed on the Project website.

G **MON 8.- Project-induced in-migration and local inflation**

[OC- 129] Project-induced in-migration

- Objectives: The assumption is that project-induced in-migration will be happen during the construction (job-seekers). The magnitude of it must however be documented through documentation of in-migration in the project area close the construction camp (in Rwanda Gatebe, Kabuzunu villages and Nyagahanga villages and Bugano, Kafunda and Nachihembe villages in DRC), in close collaboration with the local authorities.
- Target groups and Indicators: REL will work with the representatives of the communities located close to the project facilities, to document anonymously the number of newcomers who migrates into the villages during the construction phase. This measure will be explained and disclosed to the local communities.
- Reporting: results to be included in the six-monthly E&S reports disclosed on the Project's website.

[OC- 130] Local inflation monitoring

- Objectives: The assumption is that the project-induced in-migration and the control of the EPC contractor implemented on its supply chain will not induce significant negative impact such as local inflation. This must however be confirmed through documentation of local prices.
- Target groups and Indicators: REL will work with the shopkeepers in the Project area to register the prices of a group of key products sold locally. The choice of the key products/services to be monitored will be discussed with the shopkeepers and with representatives of the local communities, as part of a participative monitoring system.
- Reporting: Results to be included in the six-monthly E&S reports disclosed on the project website.

H **MON9.- Reporting and public disclosure**

[OC- 131] – Reporting disclosed to public

- Prepare and distribute locally the six-monthly newsletter in local language.
- Prepare and publicly disclose (locally and internet) the six-monthly E&S performance reports in Swahili, Kinyarwanda, French and English that summarizes the following information during the reporting period:
  - Project construction activities and update of the construction schedule.
  - Environmental monitoring activities and results: water quality, hydrology, land use, socio-economic, river fish.
  - Social or community development initiatives undertaken by the Project.
  - Interaction with stakeholders, including meeting or other initiatives to engage with members of the public or public organisations, civil society, communities, including vulnerable groups.

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- Main issues raised in the complaints or grievances and how they were resolved.
- Number of direct employees, contracted workers and temporary workers recruited and dismissed, whether international, national or from the two valleys.
- Number of job opportunities for local people and for women; opportunities for women owned or managed companies to be involved in local procurement skills training; and community initiatives under the Local Area Development Plan Programme that benefit women.

[OC- 132] – Reporting to Lenders

- Six-monthly E&S compliance report: Prepare semi-annual report in form and scope satisfactory to the Lenders, on environmental and social matters arising in relation to the Project or which may affect the Project. The report could be structured as follows:
  - General: (i) Project update, (ii) summary of environmental and social performance and this ESMP implementation status to help the Lenders review the Project's compliance with applicable E&S regulations and the Lenders E&S policies. For actions with delays, reasons for the delays or changes and actions planned to meet the requirements and estimated completion date for the action.
  - Core questions: (i) new environmental, social or gender issues which were not foreseen during the ESIA stage, (ii) accidents or incidents that have caused damage to the environment, affected cultural property, or created liabilities for REL, (iii) exceedances of the emission and discharge standards that apply to the Project, and (iv) court cases filed against REL which are related to labour, health & safety, environment, land acquisition, damage to third party assets.
  - Human resource management: (i) local/national recruitment or dismissal, redundancy plans, workers grievances, strikes or collective disputes, (ii) health and safety data including any accidents / incidents that have happened to employees or third parties, training, audits, road traffic collisions, and remedial actions to any newly identified health or safety issue.
  - Land Acquisition Process: progress made in the implementation of the RAP, using the monitoring indicators as detailed in the RAP. Results of any other related monitoring carried out by REL.
  - Stakeholder engagement: progress made in the implementation of the SEP, including meetings to engage with communities and public organisations, any coverage in media on E&S issues related to the project, and interaction with any environmental or other community groups. Grievances not solved during the timeframe established in the Grievance Redress Mechanism.
  - Community Investment Programme: Social or community development initiatives undertaken by the project during the reporting period, and associated expenditure. Comment on whether/how the community has input into the selection of initiatives to be supported.
  - Non-conformities of level 2 or level 3 from the EPC Contractor.
  - Change Management Procedure: changes in design or in operating procedure proposed during the reporting period which could have potential E&S implications - Screening actions, environmental and social assessment, mitigation measures decided and status of implementation.
  - Labour audit arrangements and reporting on contractor, subcontractor and service provider compliance with national, Lenders and ILO requirements.
  - Project Incident Notification: In case of incident during Project implementation with fatality (e.g. vehicle accident, explosion, fall) or without fatality (e.g. strikes or other collective disputes related to working conditions, spill, major natural hazard): (i) Inform immediately by email the Lenders safeguard specialists; (ii) Describe the incident: What has happened and when; How many fatalities/injured, what were their ages, gender; Identify their relationship such as employee, contractor, member of the public; What is known to date about the damage to the environment or community health and safety; Are there effects off-site to the public or the environment; What

was the cause of the incident/accident if known; What kind of follow-up investigation is being conducted.
[OC- 133] – Reporting to Environmental Authorities • Report to the environmental authorities in DRC and Rwanda on project activities and monitoring/mitigation activities as provisioned in the Conditions attached Environmental Permit.

4.12.3 Management Actions during Operation

A **MON 1.- Hydrology, Environmental Flow and Water Quality**

[OO- 47] Monitoring of Environmental Flow and River flow • Objectives: Demonstrate that the environmental flow downstream of the Ruzizi III dam is indeed operational; establish the actual flow rates of the Ruzizi River downstream of the dam. • Same stations and same method as during the construction period. • Frequency: Daily record, from the start of the Ruzizi III reservoir filling. • Reporting: Results included in the yearly E&S reports and disclosure of the monitoring results to the communities.
[OO- 48] Monitoring of Ruzizi III Reservoir and Ruzizi River water quality • Same objectives, stations, indicators, method as for the construction period. Monitoring of non-detected PP-13 Metals may be stopped at the end of the construction period. • Frequency: February, May, August and November in the first 3 years following reservoir filling. March (inter-seasonal flow) and September (low seasonal flow) in subsequent 2 years. At the conclusion of the initial monitoring periods, a determination of any effect and of the need for any additional work to assess the issue will be made. • Reporting included in operation annual reports.
[OO- 49] Floating debris and trash • Same objectives, stations, indicators, and method as for the construction period. • Frequency: six-monthly, for the first 3 years of operation. At the conclusion of the initial monitoring period, examine the relevance of any additional monitoring work.
[OO- 50] Monitoring during sediment release events • Objectives: documenting river water quality and sediment deposition downstream of the Ruzizi III dam during and after the sediment release operations. If the suspended sediment concentrations are above the biological and socially acceptable limits, the operations of venting, sluicing and flushing should be modified to allow for greater dilution. The monitoring of sediment deposition along the downstream river reaches should be used similarly to adjust the sediment release operation and timing to reduce sedimentation to reasonable levels. • Observations taken from the river (3 sites: 3 km, 20 km, 50 km) for both water quality and sediment deposition. • Indicators: > River water quality: same as water quality indicators listed in above. > Sediment deposition, photo survey of 1 km of riverbed along kilometric point 3 km, 20 km and 50 km before and after the sediment flushing event. • Method: > River water quality: in-situ measurement of suspended sediment concentration and dissolved oxygen using continuous loggers that are calibrated to the local sediment type (grain size) and can accurately measure very high sediment concentrations.

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- Deposition along the banks: Simple staff gauges (indicating 1mm increments) can be installed perpendicular to the surface to measure the relative surface elevation before and after the sediment release event. Measuring at 10 stations per site (scattered along the banks) will give a good indication of sedimentation processes and subsequent erosion of the deposited material (if the bank staff gauges are monitored weekly after the release event). The monitoring will be dependent on lower water levels to expose the upper banks. More sophisticated equipment can be used, such as a Total Station or DGPS, but their vertical error margins (2 to 5cm) are within the magnitude of the expected sediment deposition thickness and unlikely to be of use. Fixed-point photos along the floodplain and banks at the 3 sites immediately before and after the release event should give visual evidence of the presence or absence of larger changes associated with the sediment release events along the floodplain and banks. Additional fixed-point photos of features such as pump infrastructure and cultivated fields should be included along this reach.

- Frequency:
  - River water quality: During sediment release in the first three sediment release operations. Monitoring should start a week before the sediment release event and continue for a month after the sediment release event to get a complete dataset on peaks in sediment concentrations, how the released sediment propagates down the system and when the sediment concentrations return to pre-flushing levels.
  - Sediment deposition: first three sediment release operations
- At the conclusion of the initial monitoring period, a determination of any effect and of the need for any additional monitoring work to assess the issue will be made.
- Reporting included in operation annual reports.

B **MON 2.- Reservoir and River Geomorphology and Sediment**

[OO- 51] Monitoring Sediment Deposition in the Reservoir

- Objectives: Characterize the volume and character of the deposited sediment in the reservoir in relation to floods and sediment release events.
- A bathymetric survey of the reservoir will be undertaken before and after sediment release events in the first 5 years. Then every 5 years.
- The bathymetric surveys will be coupled with grain size studies from the bottom of the reservoir. This dataset will allow the calculation of the volume of bed sediment deposited and supply rates, siltation rates throughout the reservoir (trapping efficiency), remaining reservoir volume and character of suspended sediment along the length of the reservoir.
- Further data on sediment density current formation will be collected:
  - Frequency: one per month in May-June-July every year during the first 3 years, i.e. until the dynamics is understood well enough for sediment management perspective.
  - Method: longitudinal survey of suspended sediment particle size in the reservoir at three depths: surface, mid-depth, 1 m above bottom along cross-sections at 3 points along the reservoir (in the deepest part) during high seasonal flows. The surveys will include velocity measurements (using Acoustic Doppler Current Profiler), suspended sediment concentration with depth (collected with Niskin bottles) and temperature.
  - This information will aid the planning of sediment management events and adaptation to improve the efficiency of the events.
  - Results included in six-monthly integrated monitoring reports.

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[OO- 52] Monitoring of the Physical Dimensions of the River Channel

- Channel dimensions will be monitored at fixed cross-sections with survey-grade instruments (2-5 cm vertical accuracy) that are referenced to local control points (survey beacons and fixed markers on the riverbanks) every 3 years.
- Method:
  - Combination of a Total Station or Differential Global Positioning System for the terrestrial sections and an Acoustic Doppler Current Profiler for the river sections of the cross-section.
  - The measurements will track the changes of channel dimensions against the predictions. This will allow additional mitigation measures to be implemented (such as bank protection along sensitive regions) before damage occurs to essential infrastructure.
  - The surveys will take place at 3 km, 20 km, 50 km, 100 km.
  - The surveys will include a composite (5 randomly selected samples combined to form a composite) of surface sediment grab samples to represent the bed, banks and floodplain for each cross-section.
  - The bed and bank sediment should be analysed for particle size, whereas the floodplain sediment should be analysed for particle size and nutrients.
  - Fixed point photos of the various morphological features (channel, banks, floodplain and beach) will be taken during the monitoring.
  - High-resolution aerial images, taken by a drone or acquired from a high-resolution satellite platform (such as - in 2021 - Planet Labs for 0.5m resolution SkySat images) would allow mapping of changes along the channel and on the floodplain.
- This dataset will provide information on the natural variability of erosion and deposition along the river and the beaches and trends associated with reductions in sediment supply.
- Results included in six-monthly integrated monitoring reports.

C MON 3.- Fish & Aquatic Invertebrates

[OO- 53] Monitoring of Diatoms and Aquatic Macroinvertebrates

- Objectives: To quantify how the macroinvertebrate community changes over time from the current baseline through to post reservoir filling and early operation, and determine whether water borne disease vectors increase (e.g. bilharzia).
- Same stations, indicators, and methods as for the construction period.
- Frequency: Biannual for five years following reservoir filling, after which time the frequency and timing will be reviewed.
- Reporting: Results included in six-monthly integrated monitoring reports with disclosure of the monitoring results to stakeholders.

[OO- 54] Monitoring of Fish

- Objectives: To quantify how the fish community species and population abundance changes over time from current baseline through to post reservoir filling and early operation, including the threats posed by increasing fishing pressure and the potential presence of alien fish species.
- Same stations, indicators, and methods as for the construction period
- Frequency: Biannual for five years following reservoir filling, after which time the frequency and timing will be reviewed.
- Reporting: Results included in six-monthly integrated monitoring reports with disclosure of the monitoring results to stakeholders.

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D **MON 4.- Bird Monitoring for Transmission Line Operation**

Monitoring of bird collision and electrocution is recommended at least for the first year after construction to determine the extent of impact. Monitoring should be undertaken twice, coinciding with seasonal passage of migrants in November and March, which will be the periods of highest risk for collisions and electrocutions because of increased number of large birds moving through the area. This will involve walked transects along the transmission line searching for bird carcasses. Depending on the results from the first 2 years of surveys, the need for additional monitoring should be determined.

[OO- 55] Bird Mortality Monitoring along Transmission Line

- Objectives: Monitor the incidence of bird collision and electrocution on the transmission line to confirm impact predictions and provide basis for adaptive management and improved mitigation where feasible.
- Proposed sampling sites: Along entire transmission line.
- Methods:
  - Walking observations and active searches for injured or dead birds. Area of observation within 30 m from the centre line (i.e. 60 m corridor).
  - Interview of local informants to confirm any observations of bird mortality.
- Frequency: Biannual survey (preferably in March and November, coinciding with passage of summer migrant birds). Survey to be continued depending on results from first 2 years of surveys.
- Key Indicators: Number of dead birds correlated with habitat type and transmission line section.
- Reporting: Results included in biannual report.

E **MON 5.- Land Use and Revegetation Progress**

[OO- 56] Annual Land use monitoring as per the Reinstatement Plan

- Same objectives, stations, and indicators as for the construction period.
- Frequency: site inspection every January and July for the first two years after start of power generation. At the conclusion of this initial monitoring period, examine the relevance of any additional monitoring work.

F **MON 6.- Fishery Activity**

[OO- 57] Downstream Fisheries

- Continue the downstream fishery monitoring initiated during pre-construction phase.
- Continue for at least 3 years or scale back the downstream extent of the survey when results are consistent or stable or show limited effect of the dam. The number of questions on standard fishing methods can also be reduced to minimise repeat questioning in successive surveys of the same fishers.
- It is envisaged that there will be an increase in fishing pressure during periods of reduced flows when fish become trapped in the de-watered reach (as observed in Ruzizi II). The data will also inform on fishing pressure as a result of the project.

G **MON 7.- Socioeconomic Monitoring**

[OO- 58] Socioeconomic Households Survey

- Same objectives, target groups, indicators as for the Construction period.
- Method: Socioeconomic survey every 2 years for four years post reservoir filling. Survey based on questionnaires.

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• Reporting: results to be included in the E&S reports disclosed on the Project's website

H **MON 8.- Project-induced in-migration**

[OO- 59] Project-induced in-migration
• Objectives: The assumption is that project-induced in-migration could happen during the operation (fishers attracted by the fishing potential of the newly created reservoir). The magnitude of it must however be informed through documentation of in-migration in the project area around the reservoir area camp, in close collaboration with the local authorities. • Target groups and Indicators: REL will work with the representatives of the communities located close to the Ruzizi III reservoir, to document anonymously the number of newcomers who migrates into the villages during the first five years of the operation phase. This measure will be explained and disclosed to the local communities. • Reporting: results to be included in the six-monthly E&S reports disclosed on the Project's website.

I **MON 9.- Reporting and public disclosure**

[OO- 60] – Reporting disclosed to public • Same reporting as for the Construction period • Frequency is six-monthly during the first three years of operation and then annual.
[OO- 61] – Reporting to Lenders • Same reporting as for the Construction period. • Frequency is six-monthly during the first three years of operation and then annual.
[OO- 62] – Reporting to Environmental Authorities • Report to the environmental authorities in DRC and Rwanda on project activities and monitoring/mitigation activities as provisioned in the Conditions attached to the Environmental Permit.

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4.13 Reservoir Fisheries Management Programme

4.13.1 Rational and Objective

The creation of a new reservoir is often the occasion for local communities to develop fisheries activities. The Project intends to support the development and implementation of a Reservoir Fisheries Management Programme (FMP) with the support of institutional stakeholders. This FMP will have 2 objectives:

- To go beyond the mitigation of project impacts by developing sustainable livelihoods for the local communities, and
- Manage the risk of Invasive Alien Fish species – with emphasis on prevention of introduction.

Accidental or deliberate introduction of alien fish species (e.g. Nile perch *Lates niloticus* and Nile tilapia *Oreochromis niloticus* into the Ruzizi-III reservoir represents a risk for indigenous fish biodiversity in the Ruzizi River. These predatory fish are adapted to lentic (lake-like) environments and can predate and outcompete the indigenous fish, particularly the smaller or juvenile fish, altering the natural fish community. These fish are desirable edible fisheries species and may be sought after to establish a fishery in the reservoir.

The FMP will therefore include management measures to optimise the ability for the reservoir to support indigenous fish and prevent introduction and spread of alien fish species. These measures are linked to: (i) establishment of a viable aquaculture fishery based on indigenous fish species, and (ii) sustainable reservoir fisheries management.

KfW Development Bank will be funding the rehabilitation of the Ruzizi II fish ladder that is currently not functioning. The aim of this will be to re-instate river connectivity from the Ruzizi III reservoir to upstream of Ruzizi II, and therefore enable the migration of fish species within this segment of river. This will also likely reduce fishing pressure below Ruzizi II where migratory species become stranded and are easily netted.

The development of the FMP is envisaged to reduce the impacts of increased fishing pressure downstream within the Ruzizi River, by providing an alternative fishing area. Fishing pressure is expected to increase downstream of the project during periods of retention, and the water level within the de-watered reach has considerably lowered. This impact has been observed to be associated with Ruzizi II and is therefore expected to occur during the operation of Ruzizi III. By providing an alternative fishing area, it is anticipated this will not occur, although monitoring and management actions will still be undertaken (see Section 4.12.3F).Components, Timing and Responsibilities

The FMP for the Ruzizi III reservoir is the responsibility of REL and will require careful planning starting during the pre-construction phase to investigate and prepare the necessary plans which will require implementation immediately after reservoir filing and commencement of operation.

The FMP will be implemented in 2 phases: a first phase of 5 years, (year 1 to year 5) followed by a second phase of 5 years (year 6 to year 10). The first phase will start as soon as the construction activities start. The second phase will be funded after evaluation of the activities implemented during the first phase.

Three components form the present plan:

- FMP1.- Fisheries Management Plan preparation and update
- FMP1.- Alien Fish Management
- FMP3.- Delivering FMP initiatives

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4.13.2 Management Actions during Construction

A FMP1.- FMP Preparation

[OC- 134] Undertake a Fisheries Feasibility Study

- Prepare detailed terms of reference for, and retain the services of, a qualified person to prepare a detailed Fisheries Feasibility Study, including a FMP and assist in execution and monitoring.
- Engage with local community about the develop of the reservoir fisheries and provide awareness on using the reservoir as an alternative source of fish, rather than placing pressure on the fish population within the Ruzizi River.
- Prepare a Fisheries Feasibility Study and FMP based on guiding principles indicated in the below management actions.
- Consult, receive and consolidate comments on the draft plan from relevant government agencies and riparian communities, and consider them in the revision to this plan.

[OC- 135] Develop an Initial Reservoir FMP

- Describe and analyse the proposed options for fishery development, including analysis of suitable species.
- Identifies appropriate species and provides an estimate of sustainable yields.
- Identifies pest and disease control requirements.
- Establishes fishing rights, licences and practices to limit over-exploitation.
- Identifies supply chain requirements, including facilities for storage of equipment, fish (ice / packing facilities); boat access / jetties etc.
- Promotes the conservation of threatened and restricted range species.
- Provides for monitoring plan to enhance knowledge of the resource and provide guidance with respect to ongoing management practices.

B FMP2. - Alien Fish Management

[OC- 136] Develop an Alien Species Management Plan

- Develop an integrated Alien Species Management Plan that incorporates the various measures to prevent introduction, and if introduction does occur, monitor, and minimise the spread of alien fish in the reservoir.
- The plan will identify how alien fish species may be introduced into the reservoir, including intentional introduction because of commercial interests.

[OC- 137] Awareness / Education to Prevent Alien Fish Introduction and Legal Requirements

- Undertake consultation and awareness raising with regional and district stakeholders, institutional stakeholders, and conservation stakeholders to:
  - Highlight the risks associated with introduction of alien fish into the reservoir and promote the benefits and potential for a fishery based on indigenous fish species.
  - Confirm the legal restrictions regarding the introduction of alien fish species for aquaculture and permit requirements for aquaculture development.
  - Importance of protecting indigenous fish.
- Develop posters on indigenous fish in the Ruzizi River and threat of Nile perch and Nile tilapia which can be erected at offices and public areas in government departments and at the dam.

[OC- 138]: Plan for measures to restrict and manage alien fish in the reservoir

- Prior to operation, the following measures will need to be planned to monitor and manage the potential risk of alien fish establishing or becoming abundant in the reservoir:

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- Selective fishing of large Nile perch using large mesh gillnets (150 mm) in the reservoir to reduce their numbers if monitoring demonstrates invasion and growth of these fish.

C **FMP3.- Delivering FMP programme (year 1 to year 5)**

The management actions of this component will depend on the outcome of FMP1- FMP Preparation

[OC- 139] – Support to the development of fish farming and fisheries activities in the reservoir

- Recruitment and mobilisation of implementing entities (NGO)
- Selection of individuals to be included in the implementation of the Reservoir FMP,
- Provision of training and materials to fishers and fish farmers

4.13.3 Management Actions during Operation

A **FMP1.- FMP update**

[OO- 63] Reservoir Fisheries Surveys to Confirm Fisheries Potential

- Undertake reservoir fish monitoring surveys on a quarterly basis for the first two years after reservoir filling, possibly reducing to biannual surveys for the following 3 years depending on results from the first two years. The fisheries monitoring should link and share results with the aquatic biomonitoring for the Project.
- Reservoir fisheries monitoring surveys should include:
  - Assessment of catch per unit effort (CPUE) and fish yields in different parts of the reservoir. All fish caught shall be returned to the reservoir (except any individuals required for taxonomic confirmation or more detailed morphological examination). Any threatened species caught should be released after basic morphological examination and sizing.
  - Incorporate water quality parameters in the monitoring programme: temperature (at different depth profiles), pH, electrical conductivity and dissolved oxygen.
  - Reporting of results should detail information on the fish assemblage in different parts of the reservoir (including species, abundance, size, maturity, sex and condition of the fish caught).
  - Correlate CPUE and fish yield results with water quality and dam depth.
  - Track change in fish diversity and composition, and population yield across successive monitoring campaigns to document the predicted increase in fish stocks over time.

[OO- 64] Update the Reservoir FMP

- Results of reservoir fish monitoring surveys will be used to inform updates to the Reservoir FMP.
- Specifically, this will require confirmation of potential fish yields of different target species; size limits; recommended fishing methods and gear; defining fishery areas and possible no go fishing zones as nursery areas; need for other fishery infrastructure support aspects (e.g. road access) and staffing requirements for fishery oversight and enforcement. The plan should include a detailed costing of an investment requirements (e.g. fishing gear; jetties for boat launching; fish processing / storage area, ice facility (if viable) etc. Fishers will be required to purchase permits for fishing to limit the risk of overfishing and provide funds for fishery officers.

- Should alien fish species be found to increase in abundance at levels that pose a risk to indigenous fish then amendments to the Reservoir FMP to target these and reduce their population (see Section 4.7).

[OO- 65] Restrictions on Reservoir Fishing

- Discuss with relevant authorities how to restrict - and enforce that restriction - all fisheries in the reservoir until such time as the fish community has had an opportunity to increase to levels suitable for sustainable harvesting, as determined by the fishery surveys.
- Support and monitor the actual enforcement of fisheries restrictions in the reservoir, as applicable.

[OO- 66] Participatory Planning in Reservoir FMP

- Implement participatory planning with representatives of local authorities and local community members to obtain buy-in and agreement of the restrictions and regulations specified in the Reservoir FMP.

[OO- 67] Training of Fishers

- Undertake artisanal fishers training in appropriate fishing techniques to minimise fish mortality and optimise sustainable yields.
- Training requirements will be specified in the Reservoir FMP.

B FMP2. - Alien Fish Management

[OO- 68] Monitor the number of alien fish species in the reservoir

- Monitor the fish community in the reservoir to confirm the risk posed by the fish pass relative to natural species establishment versus deliberate introduction to create a fishery.

[OO- 69] Ongoing awareness raising on alien fish

- Undertake ongoing engagement with district stakeholders including fishers to share fish monitoring results and highlight the need for vigilance to prevent alien fish introductions.

[[OO- 70] Measures to restrict and manage Nile perch in the reservoir

- Priority will be given to avoid introduction of alien species but if alien species are introduced into the reservoir, then coexistence of Nile perch and Nile tilapia needs to be managed to keep numbers of alien fish down.
- Options to manage alien fish will need to be developed in a dynamic management strategy based on monitoring results. Management measures include:
    - Depending on results of monitoring in the reservoir, if numbers and size of Nile perch increase to levels that pose a risk to indigenous species, implement selective fishing of Nile perch in the reservoir using gill nets with a large mesh size (150 mm) to target the large fish which are more predatory than smaller ones.
    - Consider the option of introducing fingerlings of indigenous fish species into the reservoir to enhance protection of this species, possibly based on the results of pilot-testing of aquaculture development. If successful, this may reduce the proportion of alien fish species.
    - Undertake ongoing monitoring of the fish community in the reservoir to allow for adaptive management.

C FMP3.- Delivering FMP (year 6 to year 10)

The management actions of this component will depend on the outcome of the updated FMP.

[OO- 71] – Support to the development of fish farming and fisheries activities in the reservoir

- If necessary, recruitment and mobilisation of new implementing entities (NGO), or continuation of the previous ones.

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- Update of the selection of individuals to be included in the implementation of the Reservoir FMP.
- Provision of training and materials to fishermen and fish farmers after the impoundment of the reservoir.

4.13.4 Performance indicators

FMP1.- FMP Preparation	• Availability and relevance of Fisheries Feasibility Study • Availability and relevance of Initial Reservoir Fisheries Plan • Availability of Reservoir Fisheries Survey results • Availability and relevance of updated Reservoir Fisheries Management Plan • Restriction on reservoir fishing defined • Participatory Planning executed • Training of fishermen executed
FMP2- Alien Fish Species Management	• Availability of Alien Species Management Plan • Awareness campaign /education on risks of alien fish introduction defined and delivered • Availability and relevance of restriction on alien fish in the reservoir
FMP3- Delivering FMP initiatives	• Evidences of activities to support to the development of fish farming and fisheries activities in the reservoir • Actual timing and budget matches forecast • number of fishermen trained and having received support as part of the Reservoir Fisheries Management Plan

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5 Measures Under the Responsibility of Government Agencies

5.1 Resettlement, Land Acquisition and Compensation

[GC 1] Validation of the Project Resettlement Action Plan and associated budget • A Joint Implementation Unit (JIU) formed by the Contracting states, EGL and REL will acquire the private lands and land rights required for the Project, in accordance the present Resettlement Action Plan (RAP) prepared by REL, in compliance with the Lenders requirements. • This JIU will approve the budget for the implementation of the RAP (including Compensation, other assistance measures and implementation costs), • Once the RAP budget will have been approved, each contracting State will provide its share of the funds necessary for the RAP implementation into an account from which REL will draw to pay the compensations and other assistance measures.
[GC 2] Provision of Land Rights to REL before the start of construction • After REL will have paid compensations to the affected persons, the District Land Office in Rwanda, and to the Provincial land Office in DRC, will grant land rights to REL. This will be done prior to any construction activity.
[GC 3] Expropriation process (if needed) • If some lands cannot be acquired through the previous steps 6 months after the RAP will have been received by the Contracting States, they will exercise their right of eminent domain and start a legal expropriation process to acquire these lands
[GC 4] Update of compensation amount if payment of compensation is delayed • The Project will apply an annual interest rate to the compensation rates, if compensation rates are not paid within one year after the valuation exercise (the valuation exercise was completed in March 2022). This interest rate will be the average percent of annual interest offered by commercial banks on fixed deposits. In 2020, this annual interest rate was estimated to 6.2% in DRC and 7.6% in Rwanda[7]. • Should this interest rate be applied, the Contracting States will provide the funds necessary on the account managed by REL for the RAP implementation.

[7] source: deposit interest rate documented on the World Bank open data website : https://data.worldbank.org/indicator/FR.INR.DPST?locations=RW-CD

5.2 Monitoring of E&S Conditions in the Environmental Permit

When the Environmental Permit is issued by environmental authorities in DRC and Rwanda, the permit will include conditions associated with the Project Activities. The environmental authorities will supervise the effective compliance of the Project with these conditions during the construction and operation periods.

[GC 5] Monitor effective implementation of conditions included in Environmental Permit

- Verify timely and qualitatively submission of activity progress and monitoring reports from REL.
- Review project documentation and ensure compliance with condition listed in the permits.
- Conduct regular monitoring site inspections.

5.3 Watershed and Transboundary Coordination

[GC 6] Validation of environmental flow management by watershed authorities

- The Lake Kivu Ruzizi River Basin Authority (ABAKIR) will review the proposed environmental flow management described in this ESMP and approve or amend its content.

[GC 7] Transboundary dialogue

- Relevant national authorities will assist REL in identifying the appropriate communication channel with Burundi to share the findings of the ESIA and establish a forum for dialoguing on the effects of the Project on the lower Ruzizi River and the associated monitoring program.
- EGL and SINELAC will advise on the most relevant and efficient approach to establish the dialogue between Burundi, DRC and Rwanda about the Ruzizi hydropower cascade and its cumulative effects on aquatic ecology.

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5.4 Other Programmes & Studies

[GC 8] Integrated River Basin Management for the Lake Kivu and Ruzizi River Basin

- ABAKIR (with support from several IFIs) is implementing a Strategic Action plan (SAP) in the frame of an objective to develop Integrated River Basin Management. The SAP includes subplans and programmes to manage deforestation, soil erosion, protection of biodiversity, solid waste from urban areas and increased sediment loads in the Ruzizi (see Annex F for more information).
- ABAKIR will liaise as appropriate with the Ruzizi III Project.

[GC 9] Comprehensive Basin-Wide CIA

- It is an expectation of the lenders supporting the Project that a Comprehensive Basin-Wide CIA is undertaken. The ESIA recommends that EGL coordinate with the Contracting States and ABAKIR to identify funding for an International Consultant to undertake the comprehensive CIA.
- The comprehensive CIA will be undertaken in alignment with the IFC's CIA Good Practice Guidebook (IFC, 2013) and include the following:
  - Stakeholder engagement at basin-level to identify the Valued Environmental Components (VEC) to be assessed.
  - Hydrological modelling of the whole length of the Ruzizi River between Lake Kivu and Lake Tanganyika, including the necessary bathymetric surveys. The modelling will consider baseline conditions, and conditions with the combined operation of Ruzizi-I, -II, -III and -IV.
  - Environmental Flow Assessment for the whole length of the Ruzizi River, with the combined operation of Ruzizi-I, -II, -III and -IV. A suitable model, such as DRIFT will be used. The results of the hydrological modelling will be used as input data for the assessment. Climate change predictions will be factored into the assessment.
  - Existing modelling studies of soil erosion in the catchment will be updated and factor in expected future changes due to climate change, and demographic & land use / land cover changes.
  - Sediment studies encompassing the whole length of the Ruzizi River, including determination of sediment input from tributaries, catchment runoff, and landslides and taking into account river sediment transport capacity. Sediment budgets will be established for strategic points along the river, including the locations of Ruzizi-I, -II, -III and -IV.
  - Framework for management of cumulative impacts and implementation arrangements

[GC 10] Ruzizi Hydropower Cascade Management Plan

- EGL will prepare a Cascade Management Plan for the optimised operation of the hydropower schemes on the Ruzizi River, including Ruzizi-I, -II, -III and -IV. The plan will define modes of operation to ensure schemes operate in a coordinated manner to:
  - Optime power generation.
  - Optimise sediment management.
  - Ensure environmental flows released comply with agreements and permits.
  - Minimising health and safety risks for local communities.
- The plan will include:
  - Monitoring and adaptive management.
  - Coordination with ABAKIR and other institutional stakeholders.
  - Stakeholder engagement.
  - Reporting (power generation, environmental and social performance, hydrological conditions).

6 Budget and Workplan

6.1 Budget

The estimated cost of the ESMP measures under the responsibility of REL is provided in Table 8. It is a preliminary budget that would need to be refined as the Project moves forward:

- Budget during the construction period: US$ 6,220,000 (excluding RAP)
- Annual budget for the operation phase, during the first three years: US$ 2,635,000
- Annual budget for the operation phase, after the first three years: $1,228,000

The budget for REL E&S resources (ESMU) are included in the REL management cost and not included in Table 8. The budget required for the implementation of the measures under the responsibility of the EPC Contractor is included in the EPC Contract. The budget required for the Owners Engineer work is included in the Owners Engineer Contract. Therefore, these costs are not included in Table 8. The budget required for the implementation of the measures under the responsibility of Governmental Agencies has not been assessed however it is assumed that the required costs are included in the respective annual operating budget of each agency.

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Table 8 - Estimated Provisional Budget for the ESMP Measures

Plan	Component	Construction	Operation per year	
		52 months	First 3 years	>3 years
Environmental and Social Management System	ESMS 1.- System Development	-	-	-
	ESMS 2.- System implementation	$100,000	$50,000	$78,000
	ESMS 3.- Environmental and Social Technical Assistance	$500,000	$75,000	-
Management of Change Procedure	MCP 1.- Screening	$150,000	-	-
	MCP 2.- Assessment and approvals	$300,000	-	-
	MCP 3.- Public disclosure	$25,000	-	-
Detailed Design and Environmental and Social Surveillance of Construction Works	SURV 1.- River Engineering Feasibility studies & Sediment Management Programme	$300,000	-	-
	SURV 2.- Review of detailed design in line with E&S considerations	-	-	-
	SURV 3.- Environmental supervision of construction methods	-	-	-
Community Health and Safety	CHS 1.- Construction Health & Safety	$150,000	-	-
	CHS 2.- Community health and safety around and downstream of the reservoir	$500,000	$400,000	$50,000
	CHS 3.- Emergency Response Plan	$250,000	$50,000	$25,000
Influx Management	INF1.- Planning and Monitoring	$75,000	$25,000	-
	INF2.- Anticipating and managing Project-induced In-migration	-	-	-
	INF3.- Addressing potential negative impacts	$500,000	$50,000	$25,000
Historically Marginalised People Development Plan	HMPDP 1. – Targeted Social Impact Assessment	Included in the LADP budget*		
	HMPDP 2. – Historically Marginalised People Development Plan			
Reservoir Zoning	RZF 1.- Reservoir zoning	$50,000	$25,000	-
Alien Invasive Plant Species Management	AIS 1.- Aquatic weed management	$350,000	$50,000	$50,000

Plan	Component	Construction	Operation per year	
		52 months	First 3 years	>3 years
Biodiversity Action Plan	BAP1. - Bird deflectors and anti-electrocution devices	$50,000	$5,000	$5,000
	BAP2. - Sub-catchment protection & habitat restoration	$750,000	$250,000	$150,000
	BAP3. – Fish monitoring and protection	$360,000	$250,000	$250,000
Environmental Flow Management	EFMP 1.- Operating Procedures and Adaptative Management	$50,000	$170,000	$25,000
	EFMP 2.- Minimum flow during Reservoir filling or Maintenance	-	-	-
	EFMP 3.- Flow Regime Variation Management in the Hydropeaking Reach	$500,000	$50,000	$25,000
	EFMP 4.- Sediment Management	$100,000	$50,000	$25,000
	EFMP 5.- Engagement with Key Stakeholders (other HEPPs/ABAKIR)	$25,000	$25,000	$25,000
Management of Reservoir Trash	MRT 1. Management of Reservoir Trash	$100,000	$500,000	$250,000
Fisheries Management Programme	FMP1 – FMP preparation and update		$30,000	$30,000
	FMP2 – Alien fish species management	$25,000	$50,000	$25,000
	FMP3 – Delivering FPM initiatives		$80,000	$80,000
Monitoring	MON 1.- Hydrology, Environmental Flow and Water Quality	$200,000	$ 50,000	$25,000
	MON 2.- Reservoir and River Geomorphology and Sediment	$200,000	$150,000	$ 50,000
	MON 3.- Fish & Aquatic invertebrates	$160,000	$60,000	$60,000
	MON 4.- Bird Monitoring for Transmission Line Operation	-	$25,000	$25,000
	MON 5.- Land use and Revegetation Progress	$100,000	$50,000	$25,000
	MON 6.- Fishery Activity	$100,000	$25,000	$25,000
	MON 7.- Socioeconomic Monitoring	$100,000	$50,000	-
	MON 8.- Project-induced in-migration and local inflation	$75,000	$25,000	-
	MON 9.- Reporting and public disclosure	$75,000	$15,000	-

Plan	Component	Construction	Operation per year	
		52 months	First 3 years	>3 years
Monitoring by Environmental Agencies of Contracting States	Monitoring of E&S Conditions in the Environmental Permit	Included in Monitoring MON 1 - 9		
TOTAL		$6,220,000	$2,635,000	$1,228,000

*A provision of US$30,000,000 is included for a Local Area Development Plan (US$10,000,000 for each Contracting State).

Annex A – Project's Code of Conduct

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Annex A – Project's Code of Conduct

REL POLICY

CODE OF CONDUCT

Document Rationale	
Purpose The Code of Conduct describes what is expected of you and REL when interacting with our stakeholders and with each other. It sets out the essential requirements for ethical business conduct and provides references to procedures in our governance system.	**Responsibility** The document is approved by the Board of Directors. This document is owned by the Project Director.
Scope This Code of Conduct provides guidelines and expectations to all employees, temporary personnel, consultants and directors of REL, including our subsidiaries, branches and affiliates. Certain external partners of REL may represent us or act on our behalf. These partners are required to adhere to the spirit of the Code of Conduct.	

Rev.	Date	Reason for Revision	Prepared By	Checked By	Approved By
00	2022-07-14	First issue	L. Kwamboka	L. Canale	Board of Directors

CODE OF CONDUCT

Contents

Dear Colleagues

Our Code of Conduct is based on Ruzizi III Energy Ltd (REL's) fundamental principles of business ethics. It summarises our values and standards and further describes what is expected of both you and the company when interacting with stakeholders and with each other. I expect everyone working for REL at any location around the world to comply with this Code of environment.

Compliance with national, regional and international laws and regulations is mandatory for all our activities. For us, business ethics extend beyond simple compliance. We shall conduct business with integrity, respecting the cultures, dignity and rights of individuals in all the4environs where we operate. We shall always strive to maintain high ethical standards and conduct our business in a way that makes people proud to work for REL.

We encourage all employees and stakeholders to ask questions if you observe any suspicious behavior and I expect you to report any concerns or possible violations of this Code of Conduct immediately through one of our reporting channels. REL depend on your support to ensure we follow up and correct any inconsistencies with our values and standards.

REL's culture values honesty, integrity and transparency, and we require each partner and supplier to adhere to the same values. We believe this makes us stronger as we are working towards our vision of improving our future.

Luciano Canale

Project Director

INTRODUCTION

The purpose of this Code

The Code describes what is expected of you and REL when interacting with our stakeholders and with each other. It sets out the essential requirements for ethical business conduct and provides references to procedures in our governance system.

The Code is intended to provide general guidance and does not provide detailed instructions on any given situation or how to comply with local legal requirements in the many different countries in which we operate. It is therefore expected that we always show good judgement and seek superior advice when in doubt.

Our values

The Code is based on RE''s fundamental principles of business ethics: We are continuously working together to ensure full compliance with our Code of Conduct. We are predictably a trusted partner who observes the highest integrity standards and always strives to be driving results in an impeccable manner.

Compliance with laws and regulations

Compliance with national, regional and international laws and regulations is mandatory in all REL activities. But business ethics extend beyond simple compliance. REL shall conduct its business with integrity, respecting the cultures, dignity and rights of individuals in all the regions where we operate. We shall strive to conduct our business in a way that makes people proud to work for REL.

REL can face severe fines should we fail to comply with applicable laws and regulations. REL's reputation and relationship with key stakeholders will be damaged, and the individuals involved may face legal actions and imprisonment.

Reporting concerns

We encourage all employees and stakeholders to ask questions if they see suspicious behavior and to report concerns. Reports from our employees and stakeholders are our most important mechanism to understand when things are not as they should be in REL. All employees reporting in good faith will be protected from retaliation.

You can report anonymously through our whistleblowing channel.

Remember: No reason, including the desire to meet business goals, should ever be an excuse for violating applicable legislation or this Code.

ACCOUNTABILITY

To whom the Code applies

Everyone has a role in ensuring that our fundamental principles are adhered to. This Code provides guidelines and expectations to all employees, temporary personnel, consultants and directors of REL, including our subsidiaries, branches and affiliates.

Certain external partners of REL may represent us or act on our behalf. These partners are required to adhere to the spirit of the Code.

Employees' responsibilities

All employees are responsible for being compliant with this Code, and we expect you to:

- Act well within our values and standards. If you find yourself in a grey area, always involve your manager or the Officer charged with compliance
- Always report any concern about possible violations of laws, regulations or this Code through one of our reporting channels described in our Whistleblowing Policy
- Complete mandatory business ethics and anti-corruption training
- Balance short-term priorities with long-term objectives
- Spend sufficient time on difficult decisions and use common sense. If what you are planning is something you would not want to share with a family member or colleague, it probably falls outside the boundaries of what is acceptable

Managers' additional responsibilities

All our managers are role models. We expect leaders to demonstrate their commitment to our ethical standards and this Code. Managers are expected to:

- Lead by example
- Never ask an employee to do something that is in a grey area
- Create a culture where employees are comfortable with raising concerns and reporting potential violations
- Be open about dilemmas you and your team is facing
- Never leave concerns reported by employees unresolved
- Take action to correct conduct that is inconsistent with the Code and hold employees accountable

Legal and compliance in REL

The compliance function, led by the Head of Legal and Regulatory Affairs, has the overall responsibility for compliance in REL.

The compliance officers are responsible for providing guidance on compliance matters, this Code and for following up potential violations by our employees, partners and suppliers. Where required, a local compliance officer will be appointed.

Violations of this Code

Anyone who violates this Code may face disciplinary sanctions, which in severe events can include termination of employment and reporting to relevant authorities. Everyone working in REL is subject to the same principles and will be subject to the same discipline if violating the Code, regardless of which position they are in.

Leaders who passively tolerate violations by their team members may also face disciplinary actions.

We will investigate potential misconduct in accordance with the relevant laws.

TAKING CARE OF OUR PEOPLE

Human rights

We are committed to conducting our business in line with all fundamental human rights. We have a responsibility to avoid adverse impacts to our employees, suppliers, local communities and all other stakeholder groups affected by our operations.

Our standards

- We oppose all forms of slavery, forced labour, trafficking, illicit forms of child labour and violations of human rights in our operations
- We will take the necessary steps to identify and address any adverse impacts through our activities or our business relationships
- We pay particular attention to individuals and groups who may be at higher risk of negative human rights impacts due to their vulnerability
- We shall provide effective remedy wherever human rights impacts occur through our grievance mechanisms

Your responsibilities

- Actively consider if our activities have a negative impact on the human rights of the communities we are present in
- Never accept any suppliers or business partners that use forced labour, illicit forms of child labour or through other means are involved in human rights abuses
- Report any human rights abuse through one of our reporting channels

Equal opportunities

We value the diversity of our workforce. We are committed to a culture where employees are given the opportunity to reach their full potential with equal opportunities for all, free from any discrimination, bullying or harassment.

Our standards

- We oppose any form of less favourable treatment on the grounds of colour, nationality, ethnicity, gender, age, sexual orientation, disability, religion or belief
- We are committed to the fair and respectful treatment of all job applicants, employees, contractors, suppliers, agency workers, visitors and customers
- We will ensure that our suppliers, customers and business partners understand what it means to strive for a workplace with equal opportunities

Your responsibilities

- Never act in a manner that can be characterised as offensive, intimidating or humiliating
- Be mindful about how your actions and language may be perceived by others
- Report any acts of harassment or discrimination through one of our reporting channels

***Fact Box** – Zero-tolerance for sexual harassment*

- We operate with a zero-tolerance policy for any form of sexual harassment in the workplace

- Any person found to have sexually harassed another will face disciplinary action, up to and including dismissal from employment.
- All complaints of sexual harassment will be taken seriously and treated with respect and in confidence. No one will be victimised for making such a complaint

Health, safety, security and environment

We continuously work for zero harm to personnel, assets and the environment. We work systematically to identify, assess and respond in an appropriate manner to all occupational health, safety and security risks.

Your responsibilities

- Always act as a Health, Safety, Security and Environment ("HSSE") role model
- Observe HSSE rules and procedures
- Know the emergency procedures where you work
- Use provided safety equipment and devices as instructed
- Stop an activity immediately if you consider it unsafe
- Any situation that may pose a threat to health, safety, security and the environment must be reported immediately to the line manager or HSSE representative
- New incidents and observations shall be registered in the Reporting and Improvement database

Drugs and alcohol

REL is a drug-free workspace. We have a zero-tolerance policy for alcohol and drugs during working hours. Being under the influence of alcohol or drugs could create an unsafe work environment and may, therefore, be subject to disciplinary actions.

Exemptions can be made for use of alcohol in the event local custom or a special occasion makes it appropriate. In such events, only limited amounts of alcohol may be consumed. Alcohol consumption is never permitted when operating machinery, driving or being on-site.

Employees undergoing medical treatment with prescribed drugs, which may have the potential to impair behaviour or work performance, should report this to their supervisor, and refrain from taking on assignments where this could be an issue.

Tests for drugs and alcohol may be conducted whenever deemed necessary and in accordance with applicable law.

Remember: Alcohol consumption is never permitted when operating machinery, driving or being on-site.

OUR COMMITMENT TO SUSTAINABILITY

Environmental, social and governance

Sustainability is an integrated part of our organisation and is embedded in all business units. We support a precautionary approach to environmental challenges and undertake initiatives to promote greater environmental responsibility.

Our standards

- We are committed to working in accordance with international best practice including in all our operations and will always comply with national environmental legislation

- We strive to better understand and report the gas emissions we produce and the gas emissions we abate through our project
- We will safely handle transport and arrange for the disposal of raw materials, products and waste in an environmentally friendly manner
- We maintain a comprehensive, effective and consistent Environmental and Social Management System in compliance with all relevant legal requirements to achieve our objectives

Your responsibilities

- Consider the environmental and social impacts our operations have, and ensure this is considered when making business decisions
- Minimise the emissions of your own activities and find ways to efficiently use resources around you

Community engagement

Engaging with our communities is a key element of building trust among the local communities we operate in. We believe that a good relationship with the community will result in a meaningful and positive long-lasting impact on our stakeholders.

Our standards

- Community engagements are part of an overall Stakeholder Engagement Plan that all involved REL employees are expected to act in accordance to
- We engage with the local communities in a respectful and inclusive manner and strive to ensure sustainable development in the engagement in which we are involved
- We will engage in an open and transparent dialogue with the community representatives from an early stage through consultations, formal letters and through our Community Liaison Officer or the equivalent
- We will encourage local communities and other stakeholder groups to use our grievance mechanism to raise any concerns about our projects. We will assess any complaints received in accordance with our Grievance Procedure

Your responsibilities

- Actively consider how our activities affect the communities we are in
- Seek to understand the local community, its livelihood, history and priorities
- Engage in respectful dialogue with community representatives
- Cooperate with our Community Liaison Officer and Sustainability Officer or the equivalent

Community investments

Community investments demonstrate our commitment to social responsibility. These are voluntary initiatives which contribute to the long-term common good of local communities and come in addition to efforts made to mitigate or compensate for project related impacts.

Our standards

- All community investments shall be defined in a Project Community Development Plan

- We are committed to contributing to the communities in a way that allows them to develop by themselves without becoming dependent on us
- We will ensure that contributions are in line with our values and with the local laws and regulations. We acknowledge the corruption risk by giving donations and disbursements and will take the necessary steps to manage these risks
- We are supporting worthy organisations and activities
- We do not make contributions to political parties, religious groups, trade unions, candidates or campaigns for public office
- We will be fully transparent and publicly disclose all donations and contributions

Your responsibilities

- Ensure that community investments are made in compliance with our anti-corruption requirements in the Anti-Corruption Program
- Make sure proper approval has been obtained in line with the REL Authority and Signature Matrix
- Never make a charitable contribution with the intent to improperly influence someone
- Follow up the projects closely, ask questions and raise concerns if observations of undue influencing are made

OUR ZERO-TOLERANCE POLICY FOR CORRUPTION

Anti-corruption and bribery

Our activities are covered by the strictest anti-corruption laws in the world. These laws not only prohibit receiving, offering or payment of a bribe but require us to actively prevent our suppliers and partners from engaging in corruption on our behalf. Any form of corruption by our employees, suppliers or partners will harm REL and our reputation.

REL employees shall never offer or accept a bribe, facilitation payment, kickback or other improper payment for any reason. This applies to foreign and domestic public officials as well as with employees of private companies or consultants. Our zero-tolerance policy applies irrespective of whether the payment is made or received directly or through a third party, such as an agent, consultant, contractor or joint venture partner.

Our standards

- We strictly oppose all forms of corruption and will always comply with applicable anti-corruption laws
- Government approvals, licenses and permits shall be obtained by adhering diligently to all regulatory requirements
- All our business relationships shall be entered in full transparency, the agreed compensation must be proportionate, and payment only made against satisfactory documentation of work performed

Exemption: If payment is extorted through imminent threat to life, health or detention, the REL employee may make the payment. Extortion payments must be reported to your Compliance Officer or Head of Legal and Regulatory Affairs immediately without exception.

Your responsibilities

- Never offer, authorise or give anything of value to an agent, representative, intermediary or a public official to influence any action or in connection with the recipient's position
- Never accept an offer of an advantage in relation to your position as a REL employee from our partners or suppliers
- Conduct appropriate integrity due diligence (IDD) and ensure that all suppliers and partners live by our zero-tolerance policy for corruption
- Diligently monitor the works of our suppliers and partners, and never approve any payment without enough evidence of work performed

Fact Box *– Facilitation payments:*

- Facilitation payments are payments made to expedite routine and administrative government actions, to secure the performance of a duty that a public official is already obliged to perform, and where the payment exceeds what is properly due
- Facilitation payments are illegal and are not permitted in REL
- A fee that is required by law is not a facilitation payment. Neither is the urgent processing of a regular government-provided service against rates published by the government, to which payment is made to a government account and a receipt is given
- The exemption for imminent risk to health and safety also applies to facilitation payments

Prior to accepting a fee, you are required to

- Obtain sufficient regulatory basis to determine whether the fee is legal or not
- A legal government fee shall be paid against receipt, or other acceptable documentation to a government administrated account

Our standards

- We prevent challenges with bureaucratic processes and conflicting regulatory requirements by paying careful attention to details and documentation in regulatory processes
- We meet illegitimate claims and slow processing times by actively using embassies and multinational agencies to apply pressure
- We meet refusals by using the appropriate channels of appeal and if necessary, the court system

Q&A

- Q: Our goods have been held at customs for a long time, and we have been told that the customs may expedite our goods quicker if we use a specific customs broker to prepare the documentation in a different way. Can I use the customs broker?
- A: It must be clear to you what service the customs broker will actually do that you have not already done, and the payment must be proportionate to this service. Using the customs broker must be an option open to everyone. You need to do an IDD of the customs broker to identify whether it is connected to a public official.

- Q: On your way to site you are stopped by a single police car blocking the road. The police tells you there is a road fee of 20 USD to continue on the new road through the town. Can you pay the fee?
- A: No, you cannot. Unless this is a fixed toll fee officially set by the government and applicable to all, this is a bribe. You should try to ask the police for the road fee regulations and explain that you must receive an official receipt for any payment. If you don't obtain necessary comfort you must turn around the car and postpone the trip.

Meeting with public officials

When meeting with public officials, it is required of REL employees to take the necessary precautions.

Advocacy is a necessary and acceptable activity that attempts to influence lawmakers and politicians about our legitimate interest. If engaging lobbyists, the contract shall include an obligation to be fully transparent of representing REL and to the furthest extent possible, the specific activities to be undertaken by the service provider.

Your responsibilities

- REL employees may not meet public officials without bringing someone with them to the meetings with public officials or government authorities
- In the rare event that there is need to meet with a public official alone, the employee must procure express authorization from the Project Director
- Always inform your leader and keep minutes of meetings
- When promoting our interests, be transparent about representing REL
- Report any request for improper advantages from a public official to your Compliance Officer or Head of Legal and Regulatory Affairs

***Fact Box** - What is a public official?*

- Elected or appointed government official or representative
- An employee or representative of a state-owned or state-controlled company
- An employee or representative for a company performing a governmental function
- En employee of international public organizations (UN, EU, World Bank)
- A representative for a political party or a labour union
- Members of royal families
- Members of the Disciplined/Armed Forces such as the Army and the Police
- A known close family members to any of the above

Providing entertainment, hospitality and gifts

Providing entertainment, hospitality and gifts shall never be done in an attempt to influence a person or decision. Even if the intent is not corrupt, it is still a risk that the recipient is unduly influenced or that others will perceive it as an improper advantage.

Entertainment can come in the form of tickets to a concert, invitations to ceremonies or a sports event. Hospitality can come in the form of meals or expenses for travel or accommodation.

No-Gift Policy

REL accepts normal and appropriate gestures of hospitality and goodwill (whether given to/received from third parties) so long as the giving or receiving of gifts is in good faith and meets the following requirements:

i. It is not made with the intention of influencing the party to whom it is being given, to obtain or reward the retention of business or business advantage, or as an explicit or implicit exchange for favours or benefits

ii. It is not made with the suggestion that a return favour is expected

iii. It is in accordance with the law and REL policies

iv. It does not include cash or a cash equivalent (e.g., a voucher or gift certificate)

v. It is appropriate for the circumstances (e.g., giving small gifts around Christmas or as a small thank you to REL for assistance already advanced)

vi. It is of an appropriate type and value and given at an appropriate time, considering the reason for the gift

vii. It is given/received openly, not secretly

viii. It is not selectively given to a key, influential person, clearly with the intention of directly influencing him/her

ix. It is not above a certain excessive value, as pre-determined by the REL's personnel in charge of compliance and as may be amended from time to time (no more than USD $30).

x. It is not offered to, or accepted from, a government official or representative or politician or political party, without the prior written approval of the personnel in charge of compliance.

Where it is inappropriate to decline the offer of a gift (i.e., when meeting with an individual of a certain religion/culture who may take offence), the gift may be accepted so long as it is declared to the relevant personnel, who will assess the circumstances.

REL recognizes that the practice of giving and receiving business gifts varies between countries, regions, cultures, and religions, so definitions of what is acceptable and not acceptable will inevitably differ for each.

As good practice, gifts given and received should always be disclosed to the Human Resources Manager. Gifts from suppliers should always be disclosed.

The intention behind a gift being given/received should always be considered. If there is any uncertainty, the advice of the personnel in charge of compliance should be sought.

Entertainment, meals and hospitality must meet the following three criteria:

1. *Have a clear and legitimate business reason:*
    - It shall be used to develop a business relationship and to discuss REL activities
    - A REL employee must participate during the entire meal or entertainment
2. *Be reasonable:*
    - This is an overall assessment of the situation and the country where it is offered
    - It must be infrequent and of modest character
3. *Specific circumstances preventing you from providing the entertainment and hospitality:*
    - There may be specific circumstances which prevents you from offering entertainment and hospitality such as during or closely preceding a bid process, a negotiation or award, or where a repetitive reciprocation pattern can be established

Your responsibility

- Never provide hospitality, meals, entertainment or gifts in excessive amounts or frequency that could rise to the appearance of improper conduct
- Be mindful of the situation where anything is offered in
- Ensure accurate recording in our books and records
- Check whether it complies with the recipient's policies
- Always discuss the giving of gifts, entertainment, meals or hospitality with Legal or Compliance if you are uncertain of whether either of the three criteria is met

Remember: Entertainment and hospitality must have a clear business reason. Spouses and partners of public officials should not benefit from meals and events, and any exceptions have to be approved by the Project Director.

Providing hospitality to public officials

Hospitality (in the form of meals or expenses for travel or accommodation) must always have a clear and legitimate business reason and be reasonable. You shall always assess whether their specific circumstances are preventing you from providing entertainment and hospitality such as during a bid process. Additional requirements apply for public officials.

Examples of acceptable hospitality are meals and refreshments during business meetings and business dinners if customary.

Gifts and entertainment to public officials for no apparent business related reasons, are not acceptable. In the event the failure of providing a gift or entertainment may hurt REL's reputation, the question shall be discussed with Legal or Compliance. All such gifts shall be pre-registered in the Gift registry for approval.

Hospitality – Covering travel and expenses

Travel and expenses may be permitted only in the following circumstances:

- Expenses to a public official must be specifically required under applicable legislation or contract with the government authority

- All expenses must have a clear business reason and be of reasonable character
- We pay directly to the supplier; we do not make cash reimbursements
- Where sitting allowances and/or per diems are required to be paid, REL shall only pay in accordance with public gazetted and publicly available rates, after consulting with the Contracting States' agent (EGL).
- We pre-pay all expenses possible such as train tickets, flight tickets and hotels
- Prior written approval by the Project Director or Legal/Compliance is required before any expenses are agreed

Red flags to look for:

- Requests for per diem
- Requests for travel expenses indicating expenses for more than one person
- Lack of adequate or inconsistent supporting documentation

Receiving entertainment, hospitality and gifts

Receiving entertainment and gifts may create a conflict of interest or the appearance of a lack of impartiality. In certain forms, it can also constitute corruption.

Our standards

- No employee shall receive anything of value in return for a favourable action
- Entertainment: Reasonable refreshments and meals in connection with business meetings or business dinners are allowed
- REL employees shall always pay their own travel expenses. Any form of hosting by our suppliers and partners are not allowed, except during ordinary course of business and the Project Director has approved
- Employees who have ongoing working relationships with suppliers or contractors shall avoid receiving a frequency of meals where a repetitive pattern can be established

Your responsibilities

- The value of a dinner or entertainment is seldom specified. Always assess if the offer is appropriate and if others can perceive it as an improper advantage
- Be transparent to your line manager about anything of value offered from a third party

***Fact box** - Receiving Gifts*

- Employees can only accept gifts of symbolic nature and with a value of less than 30 USD
- Gifts shall be delivered to the local human resource representative, and such gift shall be registered in the Gift registry
- Human resources shall arrange a lottery of the gifts every year where all employees can participate
- Edible gifts may be shared with other employees in a common area whenever possible

Remember: Anything of value received from a third party shall meet the three criteria for entertainment, hospitality and gifts set out herein above.

Accurate books and records

Our management, shareholders, banks and partners rely on the accuracy of our financial statements and the effectiveness of our internal accounting controls. Misrepresentation of facts may constitute fraud and can result in liability for you and REL.

Our standards

- Our books and records shall be prepared honestly, in reasonable detail and accurately, and fairly reflect our transactions
- All financial information shall be registered and reproduced in accordance with generally accepted accounting principles
- We shall maintain a system of internal accounting controls sufficient to assure that transactions are executed in compliance with management's authorisation

Your responsibilities

- Obtain approval from a person with the right level of authority in accordance with the Authorisation Matrix for any transaction
- Any accounting information you provide must be correct and registered in accordance with applicable laws and relevant accounting standards, for example, local GAAP and IFRS
- Never misrepresent facts, records, expense claims or timesheets
- Report if you are uncertain about whether our internal controls are identifying false and/or misleading documentation

Conflict of interest

A conflict of interest exists when a personal interest potentially conflicts with REL's interests, or your ability to make the right decision for REL. All employees have a duty to act in the best interest of REL.

Even if a conflict of interest does not actually influence your decision, it may be perceived by others as a lack of impartiality. Therefore, it is vital that all employees are fully transparent about any perceived conflict of interest to safeguard the integrity of our processes.

Your responsibilities

- Always make decisions that are in the best interest of REL
- Be open about actual or potential conflict of interests with your line manager and your team members
- Disclose all conflict of interests to the Head of Legal or Compliance
- Avoid situations where you might be involved in hiring or engaging a close relative or friend

- Don't let personal relationships with suppliers or partners influence business decisions
- Be mindful of how your personal relationships may be perceived by other suppliers, partners and stakeholders

Q&A

- Q: We have had several contracts with a company owned by a friend of my line manager. The company does a good job, but I wondered if this is appropriate?
- A: This situation creates the appearance of a conflict of interest. It could be that the company has been through the correct procurement process and was chosen because it is the best vendor. This is not possible to know without the manager being transparent. You should raise this with your line manager, and if you are not comfortable with that, contact Compliance.

Reporting directorships and ownership interests

Directorships and ownership interests in other companies may affect your ability to take the right decision for REL or may be perceived as a conflict of interest.

Our standards

- Employees cannot have board positions that are time consuming or for which they will be paid without approval of the line manager
- Employees shall be transparent about directorships and ownership interests in other companies that are or may become a supplier, business partner or competitor to REL

Your responsibilities

- You must disclose time consuming or paid directorships to your line manager and obtain the necessary approval
- You must disclose direct or indirect ownership interests in non-publicly traded companies that are or may become a supplier, business partner or competitor of REL

Remember: Be transparent with your colleagues about your or your close family member's financial interests in non-REL related companies.

EXPECTATIONS TO OUR BUSINESS PARTNERS

Our suppliers and partners expose us to reputational, legal and operational risk. REL may be held liable for bribery undertaken by a supplier or a business partner. We therefore expect our third parties to meet the Integrity Due Diligence policy requirements and to adhere to our Supplier Conduct Principles.

Integrity due diligence requirements

If the contract meets one or more of the following criteria the contract shall go through an Integrity Due Diligence (IDD):

- The third party will have interactions with a government authority or public officials as part of their scope

- The third party itself or the scope of work is referred to or recommended by a government authority or a public official
- The contract value threshold is above 50,000 USD per year
- You are aware of any adverse information related to the third party

An IDD shall be completed prior to any binding agreement being signed. If in doubt the issue shall be raised with the Officer in charge of Compliance.

Red Flags to look for:

When dealing with such third parties, we may encounter warning signs of illegal behaviour:

- The third party is recommended by a public official or government authority
- The third party is owned or controlled by a public official or their family members
- Unwillingness to reveal the beneficiaries or the ultimate ownership
- The business reason for using the third party is not apparent, or the services are vaguely described
- The third party seems to lack sufficient capability and staff qualifications
- The insistence of payment outside the country in which the services will be provided
- Sharing or payment of compensation with parties who are not part of REL's contract
- Offering to or providing false invoices
- Suggestions that illegal conduct is acceptable because it's a norm or custom in the country

Our standards

- No binding relationship with a third party may be established without a clear business reason and appropriate IDD
- All agreements with third parties must be made in writing and in sufficient detail describe the true relationship with REL. The remuneration must be proportionate to the service rendered
- Agreed payment will only be paid against satisfactory documentation of work performed, which must be regularly monitored
- We communicate our ethical standards on a continuous basis
- We discipline any attempts by to our suppliers and business partners to violate our ethical standards

Remember: A risk cannot be managed if it has not been identified - take responsibility to ensure red flags are brought to the attention of your manager.

Fair competition

In REL we are committed to fair and open competition and to comply with all applicable anti-trust laws. We compete on the basis of the quality of our services and shall offer equal opportunities and success to all suppliers and partners.

We do not tolerate anyone who engages in bid-rigging, price-fixing or abuse of market power.

Your responsibilities

- When cooperating with a third party, only share information that is necessary for the legal cooperation
- Do not discuss any aspect of a REL tender or bid process with any of our vendors or competitors
- Do not give any confidential information about a supplier to its competitors
- Be careful about the information you share with competitors and never share information about our prices, calculations or that otherwise is commercially sensitive
- Pay attention to exclusivity agreements or clauses that are anti-competitive

International trade restrictions and sanctions

International trade restrictions and sanctions are imposed on countries, economic sectors, companies and individuals to enforce national security and foreign policies. The restrictions vary from making it entirely illegal to enter into an agreement with a company or person, to restricting the trade of specific goods.

Our standards

- We will ensure that proper due diligence of all partners, suppliers and customers are performed to identify if they are subject to trade restrictions
- We will comply with all applicable sanctions laws, and assess whether government approval is required before using items subject to export control

Your responsibility

- Ensure that an assessment of the sanctions risk in a country is made
- Ensure that customers, partners and suppliers are screened against sanctions lists in accordance with our Integrity Due Diligence Procedure
- Employees that handle import and export of goods and technology must obtain the necessary governmental licenses
- Regulations that govern trade restrictions and sanctions are complex and often changed Employees are required to raise any potential concerns with the Head of Legal and Regulatory Affairs.

Anti-money laundering

Money laundering is used to cover the illegal origin of funds and is a crucial step for criminals to hide the proceeds of crimes.

Our standards

- We will comply with all applicable money laundering laws
- We will ensure appropriate integrity due diligence of partners, suppliers and customers to uncover the beneficial ownership
- All contracting parties are expected to inform their full ownership structure and beneficial ownership
- Payments are made to a bank account in a country where the services are rendered
- Contracting parties shall be incorporated in the country where the services are rendered, where the company has its headquarters or otherwise a legitimate place of business

Your responsibilities

- Follow the Integrity Due Diligence Procedure
- Be attentive if a business partner suggests an unusual banking arrangement or a transaction structure that seems unusually complex
- All payments shall be made to an account in the third party`s name, in the country the work has been performed or where the third party legitimately is incorporated
- Use extra attention when you are asked to receive or make payments in tax havens

Procedures

- Integrity Due Diligence procedure

COMMUNICATING THE RIGHT WAY

Confidentiality and public communication

Through working for REL, you will become aware of information that is not publicly available. This information is valuable to our suppliers, customers and competitors, and may harm REL if it became public knowledge. We are therefore obliged to protect non-public information.

Only authorised persons may talk to the media or make statements on REL's behalf in any external channel, including social media.

Your responsibilities

- Keep non-public information about REL confidential
- When using social media, be mindful of what information you share
- Keep all non-public information about our customers and suppliers with the same degree of confidentiality you would give REL's information
- In collaborative projects with third parties, only share information that is necessary for the legal cooperation
- Do not use information known to you through your work for personal benefit
- The duty of confidentiality also applies after your employment or assignment with REL

- If the press or media reach out to you, they shall be directed to the department in charge of Communication & Internal relations.

Inside information

Inside information is non-public information about REL, REL's Shareholders or our projects which is likely to influence the stock price, and that a reasonable investor is likely to use as part of its investment decision.

Examples of sensitive information that generally will be considered inside information:

- Negotiation of a power purchase agreement or any other project related agreements
- Difficulties or successes in the construction of a project which influences the timing of reaching commercial operations
- Reaching financial closure of a project
- Performance of plants not generally known to the public
- Forecast financial figures
- Signing or closing of acquisitions or sales

This information shall not be shared until it has been communicated officially through a press release and/or the REL website.

Our standards

- We will keep inside information confidential, and take necessary steps to prevent information to be shared with unauthorised persons
- We will keep updated lists of persons who are given access to inside information
- We will publicly disclose inside information without delay

Your responsibilities

- Keep inside information confidential and only share information with persons within REL who have a critical need for it in their work, authorised by your manager
- Never buy or sell shares in REL or other companies based on non-public information
- Never pass along inside information to unauthorised parties

Privacy and data protection

We are committed to protecting the personal data of our employees, partners, customers and suppliers.

Personal data will only be used to fulfil a legitimate purpose and for as long as required by applicable legislation or acceptable business reason. All personal data will be processed securely and with the appropriate technical and organisational measures.

Our standards

- REL undertakes to process personal data in accordance with all applicable personal data protection laws, specifically with the provisions of the GDPR

- This commitment applies to any person or company who provides REL with personal information through one of our various channels, for example as an employee, a supplier, a consultant or as a visitor to our website
- REL will only collect personal data when the data collected is adequate, relevant and not excessive in relation to the explicit and legitimate purpose for which they were obtained
- Personal data will only be kept for as long as is necessary to achieve the purpose
- REL will adopt and maintain the technical and organisational measures necessary to guarantee the security of personal information

Your responsibilities

- Only collect the data that is necessary to perform your work
- Adhere to the highest standards of confidentiality when using personal data
- Ensure that all personal data is processed in accordance with the IT Policy and the Privacy Policy in place

Retention of emails and information

We have a legal obligation to retain business relevant emails and documents. This obligation must be met while balancing the requirements of deleting data under applicable data privacy laws.

Our standards

- We will keep and safeguard business relevant emails and documents in compliance with data privacy laws
- Emails and documents of personal character shall be held separated and deleted regularly. All personal information in your email or on your computer shall be deleted prior to termination of the employment
- The use of messaging apps shall be occasional and only for practical purposes. In the event it is necessary to agree on important business decisions on messaging apps, whether between REL employees or externally, a summary of the agreement shall be sent by email

Employees' computers and email-accounts may be accessed to obtain business-critical information. Any such access will be made in accordance with applicable legislation.

Your responsibilities

- Business related emails and documents shall be kept and never deleted
- Correspondence on messaging apps shall be occasional and never include business critical information. Correspondance shall be documented if necessary via email
- Personal emails and information shall be held in separate folders easily marked as personal in your email and on your computer

Inspections and dawn raids from authorities

Authorities may write or call to obtain information concerning our business or suspected violations.

Always contact the Project Director or the Head of Legal and Regulatory Affairs (or their equivalent) if you receive an information request from authorities.

If authorities suspect REL of violating the law, they may conduct a surprise inspection ("dawn raid") to our premises. In the case of a dawn raid, the following actions shall be taken:

- Immediately notify the Project Director and the Head of Legal and Regulatory Affairs
- The inspectors shall be invited to wait in a suitable meeting room to delay the inspection until external lawyers have arrived
- Fully cooperate with the inspection and avoid answering questions that do not relate to practical matters without consulting the Head of Legal and Regulatory Affairs or external lawyer

WHISTLEBLOWING POLICY

Asking questions and reporting concerns

We encourage all employees and stakeholders to ask questions if they see suspicious behaviour and to report concerns. Reports from our employees and stakeholders are our most important mechanism to understand when things are not as they should be in REL.

What can you report?

- Any potential violation of the law, REL's procedures or this Code

What do you need to know before reporting?

- We don't expect you to have all the facts or to conduct your own investigation. It is not up to you to make the call if the behaviour you see is a violation or not

Where can you report?

- Your direct manager or someone else in the management
- Your Compliance Officer or the Project Director or the Head of Legal & Regulatory Affairs
- Your Human Resources representative
- The local appointed safety at workplace delegate
- The whistleblowing channel
- The grievance mechanism

You can report anonymously if you prefer.

What happens when you raise concerns?

- All reports will be handled confidentially. We will share information only with those who are necessary to properly investigate the matter

- We will initiate investigations immediately. How long the investigations take will depend on the complexity and severity of the concern
- If you report anonymously, we will not be able to contact you or to share the outcome of the investigation
- We will seek to be transparent about the outcome of an investigation with you and with the rest of the organisation

Protection from retaliation

We will not tolerate any form of retaliation against employees who report suspected violations in good faith. We will protect whistle-blowers and keep their identity anonymous.

Retaliation is illegal in the countries where we operate and will be disciplined accordingly.

Your responsibilities:

- If you see suspicious behaviour, ask questions and report your concern through one of the reporting channels
- If asked to participate in an investigation, assist honestly and keep all information confidential

Remember: Speak up if you see suspicious behaviour or actions that do not make you proud to work for REL.

Annex B –Summary of ESMP Components, Timing and Responsibilities

PUBLIC DISCLOSURE AUTHORIZED

Summary of ESMP Components, Timing and Responsibilities						
ESMP topic	Respons-ibility	Key Components (timing)				
		Planning	Mobilisation / Pre-Construction	Construction	Reservoir Filling	Operation
1. Environmental and Social Management Systems, monitoring and reporting	REL	• ESMS requirements included in EPC Contract	• Supervision and management of non-conformities			
	EPC	• Data management system designed • Construction ESMP prepared	• Human and material resources for EHS and E&S management mobilised/procured • Data management system operational • Construction ESMP implemented			-
	REL	• REL's Environmental and Social Management System (ESMS) for construction and operation developed	• REL's ESMS for the construction phase implemented • Mobilisation of technical assistance			• REL's ESMS for the operation phase implemented
2. Primary Suppliers	REL	• REL's supply chain requirements, in alignment with WB ESS2, included in EPC Contract	• Supervision and management of non-conformities			-
	EPC	-	• Compliance of primary suppliers with requirement of REL's supply chain policy and WB ESS2			-
3. Environmental flow	REL	• River Engineering Feasibility Studies conducted • Sediment Management Programme developed • Review of detailed design prepared by EPC to check alignment with ESIA Environmental minimum flow requirements in the dewatered reach defined and included in EPC Contract Operating: • Flow regime variation management in the hydropeaking reach defined • Procedures and adaptive management developed	• Supervision and management of non-conformities • Continue engagement with key local stakeholders (other HEPPs / river basin management authorities, e.g., ABAKIR) conducted •			• Implement environmental minimum flow requirements in the dewatered • Implement flow regime variation management in the hydropeaking reach • Implement sediment management measures • Implement adaptive management measures as required
	EPC	• Sediment management measures developed	• Implementation of environmental flow and sediment management measures defined by REL • Monitoring and reporting of river flow			-
4.	REL	• REL's construction effluent management	• Supervision and management of non-conformities		-	-

Summary of ESMP Components, Timing and Responsibilities						
ESMP topic	Respons-ibility	Key Components (timing)				
		Planning	Mobilisation / Pre-Construction	Construction	Reservoir Filling	Operation
Effluents		requirements included in the EPC Contract				
	EPC	• Pollution Prevention and Control Plan developed • Runoff/sediment management measures developed • Tunnel seepage water management measures developed • Effluent and runoff monitoring measures developed	• Pollution Prevention and Control Plan implemented • Runoff/sediment management measures implemented • Tunnel seepage water management measures implemented • Effluent and runoff monitoring measures implemented		-	-
5. Waste	REL	• REL's waste management requirements included in the EPC Contract • REL's waste management plan for operation developed	• Supervision and management of non-conformities		-	• REL's waste management plan for operation implemented
	EPC	• Waste management Plan developed • Accredited hazardous waste specialist management contractor identified • Accredited waste recycling contractor identified	• Waste management Plan implemented • Accredited hazardous waste specialist management contractor contracted • Accredited waste recycling contractor contracted		-	-
6. Hazardous substances	REL	• REL's requirements for management of hazardous substances included in the EPC Contract	• Supervision and management of non-conformities		-	• Hazardous Substance Handling and Storage Management Plan developed for operation phase and implemented • Spill Contingency Plan implemented when necessary • Authorisations obtained for transport of hazardous substances
	EPC	• Hazardous Substance Handling and Storage	• Hazardous Substance Handling and Storage Management Plan implemented		-	-

Summary of ESMP Components, Timing and Responsibilities						
ESMP topic	Respons-ibility	Key Components (timing)				
		Planning	Mobilisation / Pre-Construction	Construction	Reservoir Filling	Operation
		Management Plan developed • Spill Contingency Plan developed • Authorisations for transport of hazardous substances identified • Facilities designed according to international industry standards	• Spill Contingency Plan implemented when necessary • Authorisations obtained for transport of hazardous substances • Facilities for storage and handling of hazardous substances built according to international industry standards			
7. Reservoir and Construction Site Vegetation Clearing	REL	• REL's requirements for management of reservoir and construction site vegetation clearing included in the EPC Contract	• Supervision and management of non-conformities			• Measures for management of floating debris in the reservoir implemented
	EPC	• Vegetation Clearing and Debris Management Plan developed • Vegetation clearing method defined • Management measures of floating debris in the reservoir defined	• Vegetation Clearing and Debris Management Plan implemented • Vegetation clearing conducted • Measures for management of floating debris in the reservoir implemented			-
8. Soil and Erosion Control	REL	• REL's requirements for management of soil and erosion control included in the EPC Contract	Supervision and management of non-conformities			• Develop the soil, slope stability and erosion control plan for operation phase and implement • Develop erosion control plan for steep slopes for the operation phase and implement
	EPC	• Soil, Slope Stability and Erosion Control Plan developed • Topsoil management measures included in design / execution plan • Management of stormwater drainage	• Soil, Slope Stability and Erosion Control Plan implemented • Topsoil management implemented • Management of stormwater drainage implemented • Erosion control on steep slopes implemented			-

Summary of ESMP Components, Timing and Responsibilities						
ESMP topic	Respons-ibility	Key Components (timing)				
		Planning	Mobilisation / Pre-Construction	Construction	Reservoir Filling	Operation
		included in design / execution plan • Erosion control on steep slopes included in design / execution plan				
9. Materials Management & Spoil Disposal Management	REL	• REL's requirements for materials management and spoil disposal included in the EPC Contract	Supervision and management of non-conformities			-
	EPC	• Materials Management Plan developed • Spoil Disposal Management Plan developed • Management for the management of non-waste spoil defined • Methods for treatment of spoil prior to reuse defined	• Materials Management Plan implemented • Spoil Disposal Management Plan implemented • Management of non-waste spoil implemented • Treatment of spoil prior to reuse implemented		-	-
10. Atmospheric Emissions and Dust	REL	• REL's requirements for atmospheric emissions and dust included in the EPC Contract	Supervision and management of non-conformities			• Air Quality and Emissions Plan developed for operation phase and implemented
	EPC	• Air Quality and Emissions Plan developed • Dust-Reduction Measures included in execution plan	• Air Quality and Emissions Plan implemented • Dust-Reduction Measures implemented		-	-
11. Noise and Vibration	REL	• REL's requirements for noise and vibration included in the EPC Contract	Supervision and management of non-conformities			Noise & Vibration Control Plan developed for operation phase and implemented
	EPC	• Noise & Vibration Control Plan developed	Noise & Vibration Control Plan implemented		-	-
12. Quarry and Borrow Area Management	REL	• REL's requirements for quarry and borrow area management included in the EPC Contract	Supervision and management of non-conformities			-

Summary of ESMP Components, Timing and Responsibilities						
ESMP topic	Respons-ibility	Key Components (timing)				
		Planning	Mobilisation / Pre-Construction	Construction	Reservoir Filling	Operation
	EPC	• Quarry and Borrow Area Management Plan developed	Quarry and Borrow Area Management Plan implemented		-	-
13. Site Reinstatement	REL	• REL's requirements for site reinstatement included in the EPC Contract	-	Supervision and management of non-conformities	-	-
	EPC	• Site Reinstatement Plan developed • Landscaping and Revegetation measures included in execution plan	-	• Site Reinstatement Plan implemented • Landscaping and Revegetation measures implemented	-	-
14. Management of reservoir Trash	REL	• REL's requirements for management of reservoir trash included in the EPC Contract • Reservoir Trash Management Plan developed	Supervision and management of non-conformities			Continued implementation of the reservoir trash management plan
	EPC	• Measures related to Reservoir Trash Management included in project design and execution plan	-	-	Reservoir Trash Management Plan implemented	-
15. Ecology	REL	• Alien Invasive Species Management Plan developed • Integrated Weed Management Plan developed	Supervision and management of non-conformities			Continuation of implementation of measures for the control of alien invasive plant implemented
	EPC	• Biodiversity Awareness Plan developed • General Protection Measures defined and included in execution plan • Wildlife protection measures defined and included in execution plan • Measures to control alien invasive plants identified	• Biodiversity Awareness Plan implemented • General Protection Measures implemented • Wildlife protection implemented • Ecological Clerk of Works mobilised • Measures for the control of alien invasive plant implemented			-

Summary of ESMP Components, Timing and Responsibilities						
ESMP topic	Respons-ibility	Key Components (timing)				
		Planning	Mobilisation / Pre-Construction	Construction	Reservoir Filling	Operation
		and included in the execution plan				
16. Cultural Heritage	REL	• REL's requirements regarding cultural heritage included in the EPC Contract	Supervision and management of non-conformities			-
	EPC	• Measures for the protection of living Cultural heritage sites identified and included in the execution plan • Cultural Heritage and Chance Find Procedure developed • Community Grievance Procedure developed	• Measures for the protection of living Cultural heritage sites identified and implemented • Cultural Heritage and Chance Find Procedure implemented • Community Grievance Procedure implemented			-
17. Local Recruitment and Skills Development	REL	• REL's requirements regarding local recruitment and skills development for construction included in the EPC Contract	Supervision and management of non-conformities			-
	EPC	• Recruitment Policy developed • Local Skills Development Programme developed • Recruitment Process defined • Human Resources Policy developed • Workers Grievance Mechanism developed • Demobilisation Plan developed	• Recruitment Policy implemented • Local Skills Development Programme implemented • Recruitment Process implemented • Human Resources Policy implemented • Workers Grievance Mechanism implemented • Demobilisation Plan implemented at the end of the construction period • Local content reported to REL		-	-
18. Community Health and Safety	REL	• REL's requirements regarding community health and safety included in the EPC Contract	Supervision and management of non-conformities			• Continuation of access restrictions where necessary • Continuation of maintaining of access where necessary

Summary of ESMP Components, Timing and Responsibilities						
ESMP topic	Respons-ibility	Key Components (timing)				
		Planning	Mobilisation / Pre-Construction	Construction	Reservoir Filling	Operation
						• Continuation of measures for public safety (booms, alarms, and signage) • Continuation of flood management measures • Emergency Response Plan maintained up to date
	EPC	• Measures to support to Community Health Planning defined • Reservoir Filling Plan developed • Measures for access restrictions defined and included in execution plan • Measures for public safety (booms, alarms, and signage) defined and included in execution plan • Emergency Response Plan developed	• Support to Community Health Planning provided • Access Restrictions implemented • Maintaining of access where necessary implemented • Measures for public safety (booms, alarms, and signage) installed • Flood Management measures implemented • Emergency Response Plan implemented if necessary		• Reservoir Filling Plan implemented	-
19. Workers Health & Safety	REL	• REL's requirements regarding workers health and safety included in the EPC Contract	Supervision and management of non-conformities			
	EPC	• Construction camp requirements with regard to hygiene (food safety, water supply, sanitation and cleaning) included in project planning • Traffic Management Plan developed • Blasting Management Plan developed • Emergency response plan developed	• Measures to ensure compliance of construction camp hygiene (food safety, water supply, sanitation and cleaning) implemented • Traffic Management Plan implemented • First aid posts established and ambulances on stand-by • Medical officers mobilised/recruited • Safety Officers mobilised/recruited • Storage & Use of Explosives conducted in alignment with requirements of Blasting Management Plan • Emergency response plan ready and implemented if necessary		-	-
20. Traffic	REL	• REL's requirements regarding traffic included in the EPC Contract	Supervision and management of non-conformities			-

Summary of ESMP Components, Timing and Responsibilities						
ESMP topic	Respons-ibility	Key Components (timing)				
		Planning	Mobilisation / Pre-Construction	Construction	Reservoir Filling	Operation
	EPC	• Traffic Safety Plan developed	• Public informed about Project Traffic • Traffic Safety Plan implemented		-	-
21. Reservoir Zoning	REL	• Reservoir Zoning Plan developed	-		Reservoir Zoning Plan implemented	Reservoir Zoning Plan implemented
22. Management of Change Procedure	REL	• Management of Change process developed	Management of Change process implemented as and when needed – comprising screening, assessment and approvals and public disclosure if necessary			-
23. Biodiversity Action Plan Framework	REL	Biodiversity Action Plan Framework developed	• Implementation of the BAP		Implementation of the BAP	Implementation of the BAP
24. Reservoir Fisheries Management Programme	REL	• Fisheries Management Plan developed • Alien Fish Management Plan developed	•		• Fisheries Management Plan implemented • Alien Fish Management Plan implemented	Implementation and monitoring of the Fisheries Management Plan, with update of the plan if necessary
25. Influx Management	REL	• Planning for the management of potential Project-induced in-migration conducted	• Monitoring of in-migration • Addressing of negative impacts from in-migration		-	• Monitoring of in-migration • Addressing of negative impacts from in-migration
26. Historically Marginalised People	REL	• Targeted Social Assessment conducted • Historically Marginalised People Development Plan (HMPDP) developed • Financing for the HMPDP sourced	HMPDP implemented		-	Continuation of the implementation of the HMPDP
27. Community Health and safety	REL	• Community Health and Safety Plan developed (includes community H&S around construction sites, around and downstream of the reservoir and emergency preparedness plan)	Implement the community health and safety plan			Continue the Implementation of the community health and safety plan

Summary of ESMP Components, Timing and Responsibilities						
ESMP topic	Respons-ibility	Key Components (timing)				
		Planning	Mobilisation / Pre-Construction	Construction	Reservoir Filling	Operation
28. Monitoring of E&S Conditions in the Environmental Permit	Government agencies	-	Monitor effective implementation of conditions included in Environmental Permit			
29. Watershed and Transboundary Coordination	Government agencies	• Validation of environmental flow management by watershed authorities • Conduct the dialogue regarding transboundary issues • Watershed Management Initiatives	Implement watershed management initiatives Maintain a regular dialogue on transboundary issues			
30. Land Acquisition, resettlement and compensation	Government agencies	• Validation of the Project Resettlement Action Plan and associated budget • Provision of Land Rights to REL before the start of construction • Manage expropriation process (if needed) • Provide funds for payment of compensation by REL	Update compensation amount if payment of compensation is delayed			
31. Local Area Development	Government agencies	• Area covered by the Local Area Development Plan (LADP) defined • LADP developed	LADP implemented			

Annex C - Monitoring Plan

PUBLIC DISCLOSURE AUTHORIZED

Environmental and Social Monitoring Programme						
Aspect to be monitored	Parameter to be monitored	Monitoring frequency	Monitoring sites	Unit / elements	Target level / standard	Responsible party
Pre-Construction						
1. Air quality	CO, NOx, SO2, Ozone	Passive air monitoring devices left in place for one month to measure CO, NOx, SO2, Ozone.	4 locations to the N, S, E and W of each worksite at a distance of approx. 200 from temporary facilities, dam, powerhouse, and operators' village	Passive air monitoring devices	Not applicable – data collected to establish baseline conditions	REL
2. Noise	Hour-long measurements of noise levels during the day and at night every day	Once per month for a period of 3 months	Sensitive noise receptors in the vicinity of each worksite, along project roads and in the vicinity of the dam, powerhouse, and operators' village	Potable hand-held device	Not applicable – data collected to establish baseline conditions	REL
2. Diatoms and aquatic invertebrates	Diversity and abundance of aquatic macroinvertebrates Diatoms: using an index of scores including presence and proportion of Pollution Tolerant Values; Specific Pollution Sensitivity Index; Biological Diatom Index; and deformities.	Twice during the year prior to start of construction (preferably rising flow (April/May) and falling flow (Sept/Oct)).	1 sampling site upstream from the Ruzizi III reservoir; 1 in the reservoir and 2 sites in the dewatered reach, and 2 sites downstream between Ruzizi III and Bugarama	Mobile units, using sweep netting and examination of substrates for macroinvertebrates using SASS5 collection approach	Follow evolution	REL
3. Fish	Presence and relative abundance of fish in different fish guilds Catch per unit effort where feasible (e.g. electrofishing) Presence and abundance of alien fish Migratory fish species presence in different reaches and seasons.	Every 3 months during one year prior to the start of construction preferably rising flow preferably (April/May) and falling flow (Sept/Oct)).	1 site above reservoir; 2 sites in Reservoir (one upstream and one in middle); 2 sites in dewatered reach 2 sites downstream between Ruzizi III powerhouse and Burundi border. Additional sites between Bugarama and Lake Tankanyika	Timed electrofishing sweeps to provide catch per unit effort data to be used in wadeable streams and slackwaters/backwaters along river or future reservoir margins. Nets should be left overnight and checked in the morning. Cast-netting in pools where suitable conditions exist. Line and hook sampling if appropriate	Follow evolution	REL
Construction						
1. Environmental flow	Water level monitored to calculate river flow rate and rate of change of water levels	Twice per day from the start of the coffer dam construction	2 monitoring sites within the dewatered reach downstream from the Ruzizi III dam	2 fixed level gauges including existing gauge on the existing	10 m^3/s (9% average annual flow)	REL

Environmental and Social Monitoring Programme						
Aspect to be monitored	Parameter to be monitored	Monitoring frequency	Monitoring sites	Unit / elements	Target level / standard	Responsible party
				bridge in the dewatered reach		
2. River water quality	In situ: Temperature; pH; Dissolved oxygen; Conductivity Laboratory analysis: Total phosphorus; Turbidity; Phosphates; Total suspended solids; Ammonia; Nitrate; Total alkalinity; Nitrite; Organic carbon; Chlorophyll-a; Cyanotoxin.	Quarterly, starting 1 year before start of construction	7 sampling sites: Ruzizi River upstream of the reservoir, immediately downstream from the Ruzizi III dam, and at 3, 20, 40, 60 and 100 km distances downstream from the dam	Mobile sampling	Compare to pre-project situation – follow evolution	REL
3. Reservoir water quality	In situ: Temperature; pH; Dissolved oxygen; Conductivity Laboratory analysis: Total phosphorus; Turbidity; Phosphates; Total suspended solids; Ammonia; Nitrate; Total alkalinity; Nitrite; Organic carbon; Chlorophyll-a; Cyanotoxin.	Quarterly, starting when reservoir filling completed	1 sampling site, samples taken from 3 depths	Mobile sampling	Compare to pre-project situation – follow evolution	REL
4. Reservoir and river water quality during reservoir filling	In situ: Temperature; pH; Dissolved oxygen; Conductivity Laboratory analysis: Total phosphorus; Turbidity; Phosphates; Total suspended solids; Ammonia; Nitrate; Total alkalinity; Nitrite; Organic carbon; Chlorophyll-a; Cyanotoxin.	Once during reservoir filling when reservoir reaches FSL	1 sampling site in the reservoir 1 sampling site downstream from the dam	Mobile sampling	Compare to pre-project situation – follow evolution	REL
5. Floating debris in the river and trash	Types and quantities of floating debris and trash removed Location of debris removed Method of disposal or reuse	6-monthly, from the start of the construction of the coffer dam	1 location, Ruzizi III debris access platform	Fixed unit	Follow evolution	REL
6. Reservoir and river geomorphology and sediment	River sediment load, turbidity and total suspended solids, reservoir volume, character	Yearly during construction, during high flow period	2 monitoring sites in the Ruzizi River: 1 upstream of Ruzizi III upstream cofferdam and 1	Mobile units	Follow evolution	REL

Environmental and Social Monitoring Programme						
Aspect to be monitored	Parameter to be monitored	Monitoring frequency	Monitoring sites	Unit / elements	Target level / standard	Responsible party
	and volume of deposited sediment, River channel morphology and suspended sediment concentrations (and deposition) associated with sediment release operations from Ruzizi-I and -II		downstream of the diversion channel outlet. 1 site in the right bank tributary 7.6 km upstream from the Ruzizi III dam site, within 50 m of the outflow into the Ruzizi River.			
7. Diatoms and aquatic invertebrates	Diversity and abundance of aquatic macroinvertebrates Diatoms: using an index of scores including presence and proportion of Pollution Tolerant Values; Specific Pollution Sensitivity Index; Biological Diatom Index; and deformities.	Six-monthly, starting at the start of construction (preferably rising flow (April/May) and falling flow (Sept/Oct)).	1 sampling site upstream from the Ruzizi III reservoir; 1 in the reservoir and 2 sites in the dewatered reach, and 2 sites downstream between Ruzizi III and Bugarama	Mobile units, using sweep netting and examination of substrates for macroinvertebrates using SASS5 collection approach	Follow evolution	REL
8. Fish	Presence and relative abundance of fish in different fish guilds Catch per unit effort where feasible (e.g. electrofishing) Presence and abundance of alien fish Migratory fish species presence in different reaches and seasons.	Quarterly starting at the start of construction and biannual during operation preferably rising flow preferably rising flow (April/May) and falling flow (Sept/Oct)).	1 site above reservoir; 2 sites in Reservoir (one upstream and one in middle); 2 sites in dewatered reach 2 sites downstream between Ruzizi III powerhouse and Burundi border. Additional sites between Bugarama and Lake Tankanyika	Timed electrofishing sweeps to provide catch per unit effort data to be used in wadeable streams and slackwaters/backwaters along river or future reservoir margins. Nets should be left overnight and checked in the morning. Cast-netting in pools where suitable conditions exist. Line and hook sampling if appropriate	Follow evolution	REL
9. Land use and revegetation progress	Location, area, status of use (on-going works / under reinstatement / fully rehabilitated), percentage of vegetation coverage; percentage affected by erosion pattern.	6-monthly: photo reporting and production of GIS-based maps based. Every 2 years, starting one year after the commencement date, Remotely Piloted Aircraft Systems (drones) survey of affected sites.	Areas opened or disturbed for construction purposes, including roads and 220 kV transmission line wayleave	Mobile units	Follow evolution	REL

Environmental and Social Monitoring Programme						
Aspect to be monitored	Parameter to be monitored	Monitoring frequency	Monitoring sites	Unit / elements	Target level / standard	Responsible party
10. Downstream fisheries	Fish catch by selected individual fishermen	Quarterly during pre-construction and construction	Villages near to dam and dewatered reach	Questionnaires	Follow evolution	REL
11. Household socioeconomics	Project employment in the local communities Implementation of the skills development programme by the EPC Contractor	6-monthly	Project affected villages	Questionnaires	Follow evolution	REL
	Employment status of all household's members Sources of Income, level of cash and non-cash income Budget and expenditure surveys with measurement of current consumption patterns.	2-yearly	10% of the households not affected by land take living in the villages in the Project area of influence	Questionnaires	Follow evolution	REL
12. In-migration	Number of newcomers	6-monthly	Rwanda: Gatebe, Kabuzunu and Nyagahanga villages DRC: Bugano, Kafunda and Nachihembe villages	Questionnaires	Follow evolution	REL
13. Local inflation	prices of a group of key products sold locally	6-monthly	Rwanda: Gatebe, Kabuzunu and Nyagahanga villages DRC: Bugano, Kafunda and Nachihembe villages	Questionnaires	Follow evolution	REL
14. EPC Contractor's compliance with E&S, labour and H&S Requirements	Quality of discharged wastewater • In situ: temperature, pH, electrical conductivity, turbidity, dissolved oxygen • Laboratory analysis: Organic pollution: BOD5, nitrates, phosphates, oils and grease, suspended matter, bacterial pollution	Weekly Random checks	All wastewater discharge points of construction contractor works sites and facilities Sampling stations shall include the effluent stream prior to discharge, then at 5 m and 10 m down the river or the stream to check for dilution effects.	Mobile units	E&S Specification	EPC Contractor REL
	• Groundwater pollution in relation to landfill sites: BOD5, COD, ammoniac nitrogen, nitrates, chlorine, zinc, chromium, lead, mercury	Quarterly Random checks	Groundwater monitoring wells installed by the EPC Contractor adjacent to work sites (monitoring wells to be hydraulically downstream)	Monitoring wells	E&S Specification	EPC Contractor REL
	• Noise, dust and air quality	Monthly	All construction contractor work sites	Mobile units	E&S Specification	EPC Contractor

Environmental and Social Monitoring Programme						
Aspect to be monitored	Parameter to be monitored	Monitoring frequency	Monitoring sites	Unit / elements	Target level / standard	Responsible party
	• PM_{10}, dB, SO_2, NOx, CO	Random spot checks				REL
	• Effectiveness of control measures for terrestrial alien invasive plants	Quarterly	Worksites, disturbed areas and 220 kV transmission line wayleave	Inspections	E&S Specification	EPC Contractor
		Random checks				REL
	• Implementation of community health and safety measures	Weekly	Worksites	Inspections	E&S Specification	REL
	• Alignment with requirements regarding labour and working conditions	6-monthly	Worksites	Inspections	E&S Specification	REL
	• Alignment with requirements regarding Workers' health and safety	Weekly	Worksites	Inspections	E&S Specification	REL
	• Alignment with requirements regarding Gender	6-monthly	Worksites	Inspections	E&S Specification	REL
15. Historically Marginalised People	Implementation of the Historically Marginalised Peoples Development Plan	6-monthly	Villages in the Project area of influence where Historically Marginalised People are living	Observations/questionnaires	Measures set out in the Historically Marginalised Peoples Development Plan	REL
Operation						
1. Environmental flow	Water level measured to monitor river flow rate	Daily, starting from the start of reservoir filling	2 monitoring sites within the dewatered reach downstream from the Ruzizi III dam	2 fixed level gauges including existing gauge on the existing bridge in the dewatered reach	10 m^3/s (9% average annual flow)	REL
2. Air quality	CO, NOx, SO2, Ozone	Passive air monitoring devices left in place for one month to measure CO, NOx, SO2, Ozone.	4 locations to the N, S, E and W of each worksite at a distance of approx. 200 from temporary facilities, dam, powerhouse, and operators' village	Passive air monitoring devices	IFC EHS guideline values	REL
3. Noise	Hour-long measurements of noise levels during the day and at night every day	Once per month for a period of 3 months	Sensitive noise receptors in the vicinity of each worksite, along project roads and in the vicinity of the dam, powerhouse, and operators' village	Potable hand-held device	IFC EHS guideline values	REL
4. River flow	Water level measured to monitor river flow rate and rate of change of water level during	Continuous, starting at the start of operation	7 monitoring sites: Ruzizi River upstream of the reservoir, immediately downstream from the Ruzizi III	Data loggers	Compare to pre-project situation – follow evolution	REL

Environmental and Social Monitoring Programme						
Aspect to be monitored	Parameter to be monitored	Monitoring frequency	Monitoring sites	Unit / elements	Target level / standard	Responsible party
	ramp-up and ramp down operations		dam, and at 3, 20, 40, 60 and 100 km distances downstream from the dam			
5. River water quality	In situ: Temperature; pH; Dissolved oxygen; Conductivity Laboratory analysis: Total phosphorus; Turbidity; Phosphates; Total suspended solids; Ammonia; Nitrate; Total alkalinity; Nitrite; Organic carbon; Chlorophyll-a; Cyanotoxin.	February, May, August and November in the first 3 years following reservoir filling. March (inter-seasonal flow) and September (low seasonal flow) in subsequent 2 years. At the conclusion of the initial monitoring periods, a determination of any effect and of the need for any additional work to assess the issue will be made.	7 sampling sites: Ruzizi River upstream of the reservoir, immediately downstream from the Ruzizi III dam, and at 3, 20, 40, 60 and 100 km distances downstream from the dam	Mobile sampling	Compare to pre-project situation – follow evolution	REL
6. Reservoir water quality	In situ: Temperature; pH; Dissolved oxygen; Conductivity Laboratory analysis: Total phosphorus; Turbidity; Phosphates; Total suspended solids; Ammonia; Nitrate; Total alkalinity; Nitrite; Organic carbon; Chlorophyll-a; Cyanotoxin.	February, May, August and November in the first 3 years following reservoir filling. March (inter-seasonal flow) and September (low seasonal flow) in subsequent 2 years. At the conclusion of the initial monitoring periods, a determination of any effect and of the need for any additional work to assess the issue will be made.	7 sampling sites: Ruzizi River upstream of the reservoir, immediately downstream from the Ruzizi III dam, and at 3, 20, 40, 60 and 100 km distances downstream from the dam	Mobile sampling	Compare to pre-project situation – follow evolution	REL
7. Floating debris in the river and trash	Types and quantities of floating debris and trash removed Location of debris removed Method of disposal or reuse	6-monthly, from the start of the reservoir filling for the first 3 years of operation. At the conclusion of the initial monitoring period, examine the relevance of any additional monitoring work.	1 location, Ruzizi III debris access platform	Fixed unit	Follow evolution	REL
8. River water quality during sediment flushing	In situ: Temperature; pH; Dissolved oxygen; Conductivity	During the sediment flushing event	6 sampling sites: Ruzizi River immediately downstream from the Ruzizi III dam, and at 3, 20, 40, 60 and	Mobile sampling	Compare to pre-project situation – follow evolution	REL

Environmental and Social Monitoring Programme						
Aspect to be monitored	Parameter to be monitored	Monitoring frequency	Monitoring sites	Unit / elements	Target level / standard	Responsible party
	Laboratory analysis: Total phosphorus; Turbidity; Phosphates; Total suspended solids; Ammonia; Nitrate; Total alkalinity; Nitrite; Organic carbon; Chlorophyll-a; Cyanotoxin.		100 km distances downstream from the dam			
9. Sediment deposition during sediment flushing	Sediment deposition, photo survey	Before and after the first 3 sediment flushing events At the conclusion of the initial monitoring period, a determination of any effect and of the need for any additional monitoring work to assess the issue will be made.	1 km of riverbed along kilometric point 3 km, 20 km and 50 km	Mobile sampling	Compare to pre-project situation – follow evolution	REL
10. Reservoir and river geomorphology and sediment	Bathymetric survey of the reservoir Sediment grain size	Before and after sediment release events in the first 5 years. Then every 5 years.	Reservoir	Mobile unit	Compare to pre-project situation – follow evolution	REL
	Longitudinal survey of suspended sediment particle size in the reservoir	Once per month in May-June-July every year during the first 3 years	At 3 depths: surface, mid-depth, 1 m above bottom along cross-sections at 3 points along the reservoir (in the deepest part)	Mobile sampling	Compare to pre-project situation – follow evolution	REL
11. Physical dimensions of the river channel	Channel dimensions	Every 3 years	At locations 3 km, 20 km, 50 km, 100 km downstream from the dam	Combination of a Total Station or Differential Global Positioning System for the terrestrial sections and an Acoustic Doppler Current Profiler for the river sections of the cross-section	Compare to pre-project situation – follow evolution	REL
12. Diatoms and aquatic macroinvertebrates	Abundance and diversity of macroinvertebrates community Determine whether water borne disease vectors increase (e.g. bilharzia snails and blackflies).	Biannual for five years following reservoir filling, after which time the frequency and timing will be reviewed	1 sampling site upstream from the Ruzizi III reservoir; 1 in the reservoir and 2 sites in the dewatered reach, and 2 sites downstream between Ruzizi III and Bugarama	Mobile units, using sweep netting and examination of substrates for macroinvertebrates using SASS5 collection approach	Follow evolution	REL

Environmental and Social Monitoring Programme						
Aspect to be monitored	Parameter to be monitored	Monitoring frequency	Monitoring sites	Unit / elements	Target level / standard	Responsible party
13. Fish	Presence and relative abundance of fish in different fish guilds Catch per unit effort where feasible (e.g. electrofishing) Presence and abundance of alien fish Fish stranding during ramp-down Migratory fish species presence in different reaches and seasons.	Biannual for five years following reservoir filling, after which time the frequency and timing will be reviewed	1 site above reservoir; 2 sites in Reservoir (one upstream and one in middle); 2 sites in dewatered reach 2 sites downstream between Ruzizi III powerhouse and Burundi border. Additional sites between Bugarama and Lake Tankanyika	Timed electrofishing sweeps to provide catch per unit effort data to be used in wadeable streams and slackwaters/backwaters along river or future reservoir margins. Nets should be left overnight and checked in the morning. Cast-netting in pools where suitable conditions exist. Line and hook sampling if appropriate	Follow evolution	REL
14. Birds	Observations of injured or dead birds	Twice in the first year following construction	Transmission line	Walking observations and active searches within 30 m from the transmission line centre line	Follow evolution	REL
15. Land use (continuation of monitoring during the construction phase)	Location, area, status of use (on-going works / under reinstatement / fully rehabilitated), percentage of vegetation coverage; percentage affected by erosion pattern.	Site inspection every January and July for the first two years after start of power generation. At the conclusion of this initial monitoring period, examine the relevance of any additional monitoring work.	Areas opened or disturbed for construction purposes, including roads and 220 kV transmission line wayleave	Mobile units	Follow evolution	REL
16. Downstream fisheries (continuation of monitoring during the construction phase)	Fish catch by selected individual fishermen	Quarterly during pre-construction and construction	Villages near to dam and dewatered reach	Questionnaires	Follow evolution	REL
17. Household socioeconomics	Employment status of all household's members Sources of Income, level of cash and non-cash income	2-yearly	10% of the households not affected by land take living in the villages in the Project area of influence	Questionnaires	Follow evolution	REL

Environmental and Social Monitoring Programme						
Aspect to be monitored	Parameter to be monitored	Monitoring frequency	Monitoring sites	Unit / elements	Target level / standard	Responsible party
	Budget and expenditure surveys with measurement of current consumption patterns.					
18. In-migration	Number of newcomers	Yearly, during first 5 years of operation	Villages close to Ruzizi III reservoir	Questionnaires	Follow evolution	REL
19. Reservoir fisheries	Catch per unit effort and fish yields Species, abundance, size, maturity, sex and condition of the fish caught Presence of alien fish species	Quarterly for the first two years after reservoir filling, possibly reducing to biannual surveys for the following 3 years depending on results from the first two years.	Villages close to Ruzizi III reservoir	Questionnaires	Follow evolution	REL
20. Water hyacinth	Extent of weed coverage Biocontrol effectiveness	Quarterly	Ruzizi III reservoir	Observations	Follow evolution	REL
21. Operational noise	Noise levels at the Project site boundary limits	Yearly	Operators' village, powerhouse and 220 kV substation	Mobile monitoring equipment	E&S Specification	REL
22. Community health and safety	Prevalence of malaria and schistosomiasis	Yearly, during first 5 years of operation	Medical centres in villages close to Ruzizi III reservoir	Questionnaires	Follow evolution	REL
23. Reservoir zoning	Anthropogenic activities with 50 m of the reservoir FSL Compliance with buffer restrictions. Extent of natural vegetation restoration around full supply level and requirements for intervention. Signs of erosion and sedimentation	Yearly	Ruzizi III reservoir	Observations	Follow evolution	REL
24. Historically Marginalised People (continuation of monitoring started during construction phase)	Implementation of the Historically Marginalised Peoples Development Plan	6-monthly, for a period of 3 years following start of operation phase	Villages in the Project area of influence where Historically Marginalised People are living	Observations / questionnaires	Measures set out in the Historically Marginalised Peoples Development Plan	REL

Annex D – Labour Management Procedures

PUBLIC DISCLOSURE AUTHORIZED

LABOR MANAGEMENT PROCEDURES

RUZIZI III ENERGY LIMITED (REL)

KG 569 ST, No 3
Kacyiru, Kigali
Burundi : +257 61 74 54 54
DRC : +243 993 876 465
Rwanda: +250 786 674 578

Email: info@ruzizienergy.com
Website: www.ruzizi3.com

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Contents

I. Introduction:

The World Bank and other lenders (British International Investment, European Investment Bank, Agence Française de Development, Kfw, AfDB, and Industrial Promotion Services (IPS) and Scatec ASA) are funding the construction of the Ruzizi III Regional Hydropower project. The 206 MW hydropower project is located on the border of DRC and Rwanda on the Ruzizi River, between Lake Kivu and Lake Tanganyika. It will be part of the Ruzizi Cascade, already equipped with Ruzizi I and Ruzizi II projects, and will belocated approximately 13 km downstream of the Ruzizi II dam,

The Project will comprise the following main components:

A. Embankment dam with an associated spillway, low-level outlet, and a mini-hydroplant at the dam site utilizing the eco-flow;
B. Headrace tunnel and surge chamber.
C. Penstock and unit penstocks.
D. Power station and switchyard.
E. A 7.3 km long, 220 KV double-circuit transmission line connecting the Ruzizi III substation to the regional dispatch station in Kamanyola, DRC; and
F. Access roads from Kamanyola to the dam site and from Bugarama to the dam site.
G. Permanent operators' Village located on the DRC sides near the switchyard opposite the Powerhouse.

Ruzizi III Energy Limited ("REL"), is a special-purpose vehicle that has been established and registered in Rwanda to develop the Ruzizi III hydroelectric power plant ("Project"). The Project will be constructed and owned as a public-private partnership among the Republic of Burundi, the Democratic Republic of the Congo (DRC), and the Republic of Rwanda (together as "the Contracting States") and REL. Énergie des Pays des Grands Lacs ("EGL") acts as the agent for the three Contracting States and the power purchasers from each Contracting State ("Offtakers") for the Project.

The development of the Labor Management procedures aims to ensure that the Ruzizi III project meets the requirements of the World Bank's Environmental and Social Standard (ESS 2), "Labor and Working Conditions" and other Lenders' requirements on the same, and to align with the requirements of Labor laws of the Contracting States (Burundi, DRC, and Rwanda). It will be applied during the implementation of the Ruzizi III Project and will include the Ruzizi III construction phase and operation of the power plant.

The document is organized as follows:

Section 2: Estimate the number of workers who will be involved in the Project.
Section 3: Describe the timing and nature of labor requirements, including the number, source, and likely characteristics of the workforce.
Section 4: Describe project activities and potential risks to workers.
Section 5: Provide an overview of key provisions in relevant legislation.
Section 6: Describe the Ruzizi III Energy Limited Staff who will be responsible for the Project.
Section 7: Identifies Ruzizi III Energy Limited policies and procedures governing employment. and labor relations
Section 8: Defines the age of employment.
Section 9: Describes terms and conditions of employment.

Section 10: summarizes the worker grievance redress mechanism.
Section 11: describes how REL will manage contractors Section.
Section 12: Describes how REL will ensure primary suppliers do not use child or forced labor or expose workers to unsafe conditions.

II. Number of Project Workers

The number of project workers who will be employed for the various project components during the construction and operation phases is not yet known. Ruzizi III Energy Limited (REL), established to develop the Ruzizi III Regional Hydropower Project (Project) is operating in the 3 Contracting States with a total of 23 staff. The number will increase during the construction and operation phases. The company benefits from support from its Sponsors (IPS and Scatec ASA) to advance the project, with a total of 15 experts working on the project (finance, E&S, engineering, etc.). In addition, the project employs consultant firms to support the development phase including:

- Environmental and Social consultant company was hired to support the project and in total 18 experts are working on the project.
- An engineering company supports REL on the engineering and technical design and in 13 are working on the project.

The recruitment process of the project EPC contractor using World Bank Standard Procurement is ongoing. The shortlisting of EPC constructors' companies was completed and approved by the WB and Contracting States. Bidding documents prepared by REL were reviewed and approved by the World Bank and Contracting States. In parallel, joint procurement between REL and EGL of the Independent Engineer using World Bank quality-based selection, the independent panel of experts on Dam safety, and Environmental and Social experts is also ongoing.

III. Timing and Nature of Labor Requirements

3.1. Timing:

Work on the various project components will start after the recruitment of the EPC contractor. The tentative construction period is between 48-60 months. At present, the timing is expected to be as follows:

- ✓ Recruitment and Mobilization of the EPC contractor is expected to be during the third quarter of 2025 (September 2025)
- ✓ Engineering studies:
  - Civil engineering studies: first year (April 2025-March 2026)
  - Hydromechanical and Electromechanical studies: First year (May 2025-january 2026)
  - Switchyard and line studies: First year (June 2025- December 2025)
- ✓ Preparatory Works during the first year (September 2025-March 2026)
- ✓ Civil works: Janv 2026-March 2029
- ✓ Powerhouse Mechanical equipment: Janv. 2026-Dec. 2028
- ✓ Electromechanical works: Jan.2026-March 2029

3.2. Sources of the Workforce

Most unskilled staff will come from the 3 Contracting States (Burundi, DRC, and Rwanda) specifically in the project area, District of Rusizi in Rwanda and the Walungu Territory (Nyangezi, Kamanyola) in South-Kivu (DRC) and Province Cibitoke in Burundi as a measure to improve the local economy. Many of the semiskilled and skilled positions such as managers, engineers, forepersons, drivers and equipment operators, and electrical workers will still come from 3 Contracting States, from the surrounding cities and capitals of the 3 countries (Kamembe, Kigali in Rwanda, Bukavu, Goma and Kinshasa in DRC and Bujumbura in Burundi). It's estimated that about 80% of the staff will be composed of unskilled and semi-skilled staff and will come mainly from the 3 Contracting States.

3.3. Type of workers

It is expected that the project will engage the following categories of project workers, as defined by ESS2:

1. ***Direct workers***: Direct workers for the Ruzizi III Project will include project managers, supervisors, and administrative and support staff who are REL employees and will be involved in project construction and operation. The estimated number of direct Project workers would be around 40 people during construction and 45 during operation phases. Direct workers would also include independent consultants (individuals or firms), specialized in different disciplines working on the project including E&S aspects, engineering, health, and safety. Some individual consultants will be hired part-time, with specific assignments and tasks (Technical advisory roles, monitoring, and Evaluation, etc.).

2. **Contracted Workers**. People engaged through third parties, in particular, the EPC contractor as the lead technical partner, and recruited using WB procurement requirements to perform work related to the construction of the Ruzizi III Project. The EPC contractor will engage multiple subcontractors that will not be known until the EPC contractor is selected. The subcontractors' workforces will be also considered to be contracted workers. At the pick of construction activities, the contractor and sub-contractor (s) will have around 1500 workers on site.

3. ***Community workers***: considered as people engaged in providing labor-intensive public works, community workers will not be employed by the project.

4. ***Migrants' workers***: The construction of the Ruzizi III Regional hydropower project will require a combination of local workers from nearby communities, workers from other parts of 3 Contracting States, and possibly workers from other countries. The "internal migrants" would be semiskilled and skilled workers who already have experience working on similar projects in the region. Foreign "migrant" workers would be management and technical staff. The number of migrant workers would depend on the assessment of the situation at that time. Based on previous experiences in the region, the distribution during construction could be about 5-10 % international.

3.4. Workforce Characteristics

As noted, the required workforce for the Project will include a mix of unskilled and semiskilled construction labor as well as technicians, electricians, and engineers, especially for the electromechanical works. About 25 percent of the construction workforce will be unskilled labor. Considering the nature of the project workforce and characteristics of the labor force market in the three Contracting States (Burundi, DRC, and Rwanda), it is likely the workforce, especially the lower-skilled workers, will be predominantly male. It is possible that women could represent a lower percentage of the workforce, and those would likely be technical (e.g., engineering) and/or staff working in the operation offices and camps (maids, cooks, cleaners, etc.). However, during the recruitment process, women and girls will be encouraged to enroll to ensure that the project represents the equality of genre. All workers are and will be over 18 and will probably average 25-40 years old.

IV. Potential Labor Risks

4.1. Project activities.

The Ruzizi III Regional Hydropower Project consists of a hydropower dam, a reservoir, a powerhouse, transmission lines, and supporting infrastructure including access roads, workers' camps, quarries, spoil areas, etc. The construction of the Ruzizi III hydropower plant will include the following activities:

1. Civil engineering studies:
    - Surveys and investigations
    - Camps and access road design
    - Civil works detailed design.
2. Hydromechanical and electromechanical studies
3. Switchyard and lines studies

4. Preparatory works:
    - Access road construction
    - Bridge rehabilitation
    - Quarries access roads
    - Camps construction.
5. Civil works:
    - Reservoir works.
    - Diversion Tunnel1 & Tunnel2 works.
    - River deviation
    - Upstream coffer dam
    - Dam structure
    - Power waterways
    - Intake tower
    - Headrace tunnel
    - Surge tank
    - High-pressure tunnel and Penstock
    - Spillway
    - Bottom outlet
    - Control building at the dam
    - Powerhouse
6. Powerhouse Mechanical equipment:
    - Unit1 procurement and installation

- Unit2 procurement and installation
- Unit3 procurement and installation

7. Electromechanical works:
    - Generator 1 procurement and installation
    - Generator 2 procurement and installation
    - Generator 3 procurement and installation
    - Transformer unit Procurement and installation
    - Line 220 KV powerhouse -Switchyard procurement and installation
    - Switchyard 220KV procurement and installation
    - Line 30KV switchyard-Dam procurement and installation
    - Transmission lines Switchyard-Kamanyola Procurement and installation
8. Test and commission.
9. Operation.

4.2. Key Labor Risks

The Ruzizi III hydroelectric power project faces important Health, Safety, Security, and Environmental (HSSE), risks that demand careful management to ensure the well-being of labor and project success. These risks encompass on-site hazards, accommodation standards, cross-border security concerns, contractor management challenges, and health risks.

1. **Construction and operation Site Risks**:

- Falls from heights, the potential for being struck by moving equipment or falling objects, and electrocution are primary concerns due to the elevated work areas, heavy machinery, and electrical installations inherent in construction.
- Excavation and trenching hazards pose risks of collapse and entrapment, particularly in areas with unstable soil or geological conditions.
- Exposure to hazardous materials, including chemicals, fuels, and lubricants, necessitates strict protocols for handling, storage, and disposal to prevent harm to workers and environmental contamination.
- Confined space work, such as in tunnels or tanks, presents risks of asphyxiation, toxic exposure, or entrapment if safety procedures are not rigorously followed.

2. **Camp and Accommodation:**

- **Poor staff housing:** Adequate housing facilities must be provided, ensuring safe and hygienic living conditions for workers, including clean and well-maintained accommodations, sanitation facilities, and potable water sources.
- **Poor staff feeding:** Food safety protocols are critical to prevent foodborne illnesses, requiring proper storage, preparation, and handling of food supplies.
- **Lack or ineffective waste management systems:** Effective waste management systems are essential to manage solid waste and sewage responsibly, mitigating environmental impact and maintaining sanitation standards.
  Lack or ineffective fire safety measures: Fire safety measures, including detection systems and fire suppression equipment, should be in place to protect accommodation areas from fire hazards.

3. **Cross-Border Security Risks:**

- Political instability, border disputes, and criminal activity along the Rwanda-DRC border pose security risks that may impact labor safety and project continuity.
- Collaboration with local authorities and security forces is crucial to monitor and address potential security threats, ensuring the safety of workers and project assets.

4. Contractor Management Risks:

- Competency gaps among contractors and subcontractors pose risks to project quality, safety, and timelines. Lack of expertise or adherence to HSE standards can compromise project outcomes.
- Robust contractor management protocols, including pre-qualification assessments, ongoing supervision, and performance evaluations, are necessary to ensure contractors meet required competency levels and comply with HSE regulations.

5. Health Risks, Emergency Response Plan (ERP)

- The prevalence of malaria in the region poses a significant health risk to workers. Mosquito control measures, such as insecticide-treated bed nets, indoor residual spraying, and personal protective measures, are essential to prevent malaria transmission.
- Regular health screenings, access to appropriate medical care, and provision of antimalarial medications are critical components of a comprehensive health management plan to protect workers from malaria and other vector-borne diseases.
- Food health risks are significant concerns in any construction project, particularly in remote or border areas like the Ruzizi III project. Inadequate food safety measures, and improper storage, handling, or preparation of food can lead to outbreaks of foodborne illnesses such as salmonella or E. coli infections among workers, impacting their health and productivity. Implementing stringent food safety protocols, ensuring access to clean and potable water, and maintaining proper sanitation facilities are essential measures to mitigate these health risks and safeguard the well-being of labourers on-site. Regular monitoring and hygiene education further bolster efforts to prevent the occurrence and spread of food and waterborne illnesses.
- Waterborne diseases may be present in contaminated water sources or poor sanitation facilities which can contribute to the spread of diseases like cholera, typhoid fever, or diarrhea.
- Emergency response plans must be developed and communicated to address medical emergencies, evacuations, and communication protocols.

To mitigate these risks effectively, REL project management team must develop and implement comprehensive HSSE management plans tailored to the unique challenges of the construction site and surrounding environment. Proactive risk assessment, continuous monitoring, stakeholder engagement, and adherence to regulatory requirements are essential for promoting labor safety, environmental stewardship, and project success in this complex border region.

V. Overview of relevant legislation

5.1. Labor legislation

Labor relations are governed by the provisions of the national labor and employment laws from the 3 Contracting States (Burundi, Democratic Republic of Congo, and Rwanda), REL policies including but not limited to the Code of Conducts, and the CEPGL Labor regulations.

5.1.1. Forced Labor and Child Labor

a) Burundi

With reference to Decree-Law N°1/11 of 24 November 2020 revising Decree-Law N°1-037 of 07 July 1993 on the Labour Code in Burundi, it is an offense for any person to cause, induce, permit, or impose, directly or indirectly, forced, or compulsory labor of any kind:

1. To compel or attempt to compel, by violence, deception, fraud, or promise, a worker to hire himself against his will or to prevent him from hiring himself or from fulfilling the obligations provided by his work,
2. Using a fictitious employment contract or any other document containing inaccurate information to be hired or voluntarily substituted for another worker.

The Decree-Law N°1/11 of 24 November 2020 revising Decree-Law N°1-037 of 07 July 1993, Article 10 provides that the age of admission to work is set at 16. An order of the Minister responsible for labor may provide for exceptions to this principle under Article 278 of this Code, provided that the child is at least 15 years old and is not enrolled at a basic school.

Article 11 of the same law provides that it is forbidden to make a child do work that is disproportionate to his or her abilities. Children shall not be employed in work which is not appropriate to their age, condition, or state, or which prevents them from receiving school instruction.

Article 12 of the same law provides that all the worst forms of child labor are prohibited. The worst forms of child labor include in particular:

1. All forms of slavery or practices similar to slavery, such as the sale and trafficking of children, debt bondage and serfdom, and forced or compulsory labour, including forced or compulsory recruitment of children for use in armed conflict.
2. The use, procuring, or offering of a child for prostitution, for the production of pornography, for pornographic performances, or obscenity.
3. The use, procuring, or offering of a child for illicit activities, in particular for the production and trafficking of drugs.
4. Work which, by its nature or the conditions in which it is carried out, is likely to harm the health, safety, dignity or morals of the child.

b) DRC

Article 2 of the Law No. 16/010 of 15 July 2016 amending and supplementing Law No. 015-2002 on the labour code provides that work is a right and a duty for everyone. It is a moral obligation for all those who are not prevented from doing so by age or medical incapacity. Forced or compulsory labor is prohibited. Also prohibited is any work or service required of a person under threat of any penalty and for which the said person has not offered himself voluntarily.

Law No. 16/010 of 15 July 2016 amending and supplementing Law No. 015-2002 on the labour code provides that the capacity to contract someone is set at eighteen years, subject to the following provisions:

1. A person aged 15 may only be hired or kept in service, even as an apprentice, with the express authorization of the President of the Tribunal de Paix, following a psycho-medical opinion from an expert and the labor inspector.
2. The matter shall be referred to the President of the Tribunal de Paix at the request of the parents or any person exercising parental or guardianship authority over the child, the labor inspector, or any interested person.
3. However, the opposition of the labor inspector and the parental or guardianship authority to the derogation provided for in point 1 above may be lifted by the President of the Tribunal de Paix where circumstances or equity so justify.
4. A person between the ages of 16 and 18 may only be hired or kept in service for the performance of light and sanitary work provided for by an order of the Minister responsible for Labour and Social Security.
5. In the absence of a birth certificate, verification of the age of the worker referred to in points 1 and 3 above is carried out under the procedures laid down by Law no. 87-010 of 1 August 1987 on the Family Code.
6. Any form of recruitment in violation of points 1 and 3 of this article is prohibited throughout the national territory.

In the spirit of ILO Convention 138, the minimum age for admission to employment or work must be equivalent to or higher than the age at which compulsory schooling ends, set at 15 by framework law no. 86/005 of 22 September 1986 on national education, article 115. For certain types of work, the legal age of admission is 18. These are activities likely to jeopardize the health, safety, or morals of adolescents (art.3 and 13) for 'light work', i.e. work that is not likely to endanger the health, safety, or morals of adolescents (art.3), activities that are not likely to be harmful to the child's health or development the child's health or development, his or her schooling, his or her participation in vocational guidance or training programs approved by the competent authority or to his or her ability to benefit from the instruction received (art.6). By Consequently, child labor will be considered to be:

1. Any activity undertaken by a child who has not yet reached the minimum legal age for the activity that is likely to hinder the child's education or development.
2. Any activity undertaken by a child under the age of 18, whether remunerated or not, that is dangerous or inappropriate for the age of the child or which is detrimental to the child's schooling or physical, social, mental, spiritual or moral development, spiritual or moral development, including the excessive pursuit of 'non-economic' activities. Congolese law prohibits anyone under the age of 16 from performing dangerous work in public, agricultural, industrial, or non-industrial enterprises industrial or non-industrial, public or private, or in any of its branches. Congolese law allows children aged 12 and over to be employed in certain cases.

c) Rwanda

In Rwanda, the working relationship between employers and workers is governed by Law N° 027/2023 of 18/05/2023 amending the law N°-66/2018 of 30/08/2018 regulating labour in Rwanda regulating Labor and its implementing orders. This Law applies to employees working in the formal sector and informal sector for some aspects such as occupational health and safety, social security, prohibition of child labor, etc.

Article 5 of the labor law in Rwanda provides that the minimum age for admission to employment is sixteen (16) years. However, a child aged between thirteen (13) and fifteen (15) years is allowed to perform only light works in the context of apprenticeship.
A child below the age of eighteen (18) years is prohibited to work in the following forms of work:

- ✓ Forms of work that are physically harmful to the child.
- ✓ Work underground, underwater, at dangerous heights, or in confined spaces.
- ✓ Work with dangerous machinery, equipment, and tools, which involves the manual handling or transport of heavy loads.
- ✓ Work in an environment that exposes the child to temperatures, noise levels, or vibrations damaging to his/her health.
- ✓ work for long hours or during the night or work performed in confined spaces.

The labour Law Labour prohibits the employment of children under the age of sixteen. In addition, there are some restrictions on what type of work can be done by workers under the age of 18, and what hours of work are permissible. For example, the Rwanda labor law stipulates that a child below the age of eighteen (18) years is prohibited from working in the following forms of work:

- Forms of work which are physically harmful to the child.
- Work underground, underwater, at dangerous heights, or in confined spaces.
- Work with dangerous machinery, equipment, and tools, which involves the manual handling or transport of heavy loads.
- work in an environment that exposes the child to temperatures, noise levels, or vibrations damaging to his/her health.
- work for long hours or during the night or work performed in confined spaces.

In general, the project will employ people over the age of 18, given that the project's activities do not contain any activities compatible with the employment of minors.

5.1.2. Wages and Deductions

The 3 countries' labor laws recognize that an employment contract for project workers shall be fixed and in written form with specifications of employment terms and conditions and shall be signed off by the employer and employee. The Decree-Law N°1/11 of November 24, 2020, amending Decree-Law N°1- 037 of July 07, 1993, establishing the Labor Code in Burundi stipulates that the salary payable to the employee must be paid under the terms of the employment contract, which can only determine the form and amount of the remuneration. It also provides that any form of employment must be fairly remunerated. Remuneration must be sufficient to ensure a decent standard of living for workers and their families. Workers subject to an employment regime other than a full-time and indefinite employment contract shall benefit from a fair reference wage.

The DRC Law No. 16/010 of 15 July 2016 amending and supplementing Law No. 015-2002 on the Labor Code aims, among other things, to Guarantee employment contracts and minimum wage. It provides that Remuneration is set by individual contracts freely concluded between employees and employers

or by collective agreements. Any clause in an individual contract or collective agreement setting remuneration at less than the guaranteed inter-professional minimum wages determined following Article 87 of this Code.

By Labor Law N° 027/2023 of 18/05/2023 amending the law N° 66/2018 of 30/08/2018 states that every employee is entitled to his or her salary for the work done and which is paid every day for an employee employed on an hourly or daily basis, every week for an employee recruited for a week, every fifteen days for an employee recruited for a fortnight and every month for employee recruited on a one-month basis. Salary is paid using currency provided for by relevant Laws.
The Labor Law states that the employer pays the employee the whole salary to which he/she is entitled and deposits it on an account given by the employee in writing in a bank or a financial institution recognized.

Article 73 of the labor law in Rwanda provides that an employer cannot seize the employee's salary, except for circumstances provided for by the Labor Law. Except for compulsory deductions and other possible charges under the provisions of the employment contract, an employer seizes an employee's salary in case of forced execution of court judgment or in case of voluntary transfer.

5.1.3. Women

Women will be given due attention by protecting them from any form of mistreatment or harassment and will be provided with assistance whenever deemed necessary.

The DRC labor code, article 146, stipulates that employers must comply with the provisions in force concerning the health and safety of workers, the organization and operation of company medical and health services, and special working conditions for pregnant women and young people. Orders issued by the Minister responsible for Labour, after consultation with the National Labour Council, lay down the health and safety conditions in the workplace and the conditions under which labor inspectors and supervisors will have recourse to the formal notice procedure.

Article 63 of the labor code in Rwanda provides that a pregnant or breastfeeding woman is not employed for work which can cause harm to her life or life of her fetus or baby in case she presents a medical certificate from a recognized medical doctor. If it appears that there might be health risks to the pregnant or breastfeeding woman, the following measures are taken:

- Removing what can cause such risks;
- Facilitating the exercise of her work.

5.1.4. Working hours

The Burundian Labour Code stipulates that working hours may not exceed 40 hours per week (8 hours per day). This does not include time for meal breaks. Working hours are normally eight hours a day and forty hours a week. Working hours are when the employee is at the employer's disposal.

Article 119 of the Congolese Labour Code stipulates that working hours may not exceed 45 hours a week (8 hours a day). This includes time for meal breaks. Working hours are the hours during which the worker is at the employer's disposal. In the absence of collective agreements, an ordinance of the

Minister responsible for labor sets the number of hours of overtime that may be authorized in excess of normal working hours and the terms and conditions of their payment.

The Rwandan Labor Law N° 027/2023 of 18/05/2023 amending the law N° 66/2018 of 30/08/2018 states that the maximum working hours are forty-five (40) hours a week. However, an employee can work extra hours upon the agreement with his/her employer. The daily timetable for work hours and break for an employee is determined by the employer. The daily rest granted by the employer to the employee is not counted as work hours.

5.1.5. Leave

Employees are entitled to paid leave (article 289 et seq. of the Burundian Labour Code). This leave does not include maternity leave (article 109). An employee has the right to accumulate paid sick leave days provided for in a collective agreement, or employment contract, up to the number of days to which he or she is entitled per 12 months of employment. Unless the employment contract, collective bargaining agreement, company rules, or practices provide otherwise, employees are entitled to paid annual leave, the duration of which may in no case be less than 1 day 2/3 working days per full month of service, i.e. 20 working days per year of service. Leave does not include maternity leave (article 122). At her request, a female employee will be granted 12 weeks' maternity leave, as provided for under Burundian law.

The DRC labor law states that the employer is obliged to grant the employee annual leave. The employee may not waive this leave. The right to annual leave arises on the expiry of one year's service, counted from date to date, with the same or a substitute employer. The date of the leave is fixed by mutual agreement, but the actual taking of the leave may not exceed six months after the date set for its commencement. The employee may only accumulate half of the leave within a period of two years. During the period of leave, the worker and his family are entitled to health care. In the event of leave outside the Democratic Republic of the Congo or the place of employment, the employer shall, on the advice of the medical officer, reimburse all or part of the costs of the care received.

Further, the Rwanda labor law states that an employee is entitled to an annual leave. He/she can also receive circumstantial leave, maternity, sick leave or authorized absence. Except for provisions of the contract that are more favorable to an employee, annual leave equals to one and a half (1½) working days per month of work. An employed child aged sixteen (16) and older but younger than eighteen (18) years of age must be given two (2) working days of leave per month of work. An employee benefits from one (1) additional working day per year of annual paid leave for every three (3) years of experience in the same enterprise. However, annual paid leave, in any case, cannot exceed twenty-one (21) working days of paid annual leave. A newly recruited employee enjoys an annual leave after twelve (12) months of service including the probation period. Official public holidays are not considered as part of the annual paid leave. An employee on annual leave continues to have the rights accruing from his/her employment contract.

5.1.6. Overtime Work

Article 261 of the Labour Code relates to overtime and provides that any hour worked more than the legal weekly working time, or the time considered to be equivalent is overtime. Any hour worked in excess of the legal weekly working time or the time considered to be equivalent is overtime and entitles the employee to additional pay or, where applicable, equivalent time off in lieu. Overtime is calculated on a weekly basis.

Article 119 of the Congolese Labour Code stipulates that the number of hours of overtime that may be authorized more than normal working hours and the terms and conditions of payment shall be determined by order of the Minister of Labour in the absence of collective agreements.

In case an employee has worked extra time, he or she is entitled to a rest or payment for compensating the working overtime as per the labor law in Rwanda.

5.1.7. Labor Disputes

The Burundian Labour Code contains provisions that allow workers to resolve disputes in the event of disagreement between employer and employee on the essential terms of a collective agreement or other aspects of work such disagreement will be resolved in accordance with conciliation procedures.

In fact, the Labour Inspector may adjourn the proceedings at any time if it appears possible that the dispute can be settled by conciliation (Article 173 et seq.). These procedures involve direct negotiations between the employee and the employer in the presence of the appointed conciliator. If the parties fail to reach an agreement on the dispute, the dispute continues before the court (article 460 of the Burundian Labour Code).

The Congolese Labour Code contains provisions that allow workers to resolve disputes in the event of disagreement between employer and employee on the essential terms of a collective agreement or other aspects of work such disagreement will be resolved in accordance with conciliation procedures.

The Labour Inspector may adjourn the proceedings at any time if it appears possible that the dispute can be settled by conciliation (article 298 et seq.). These procedures involve direct negotiations between the employee and the employer in the presence of the appointed conciliator. If the parties fail to reach a conciliator, if the parties fail to reach an agreement on the dispute, the dispute continues before the court (article 186 of the DRC Labour Code).

Article 102 of the labor code in Rwanda states the employees' representatives amicably settle individual labor disputes between employers and employees. If employees' representatives fail to settle the disputes amicably, the concerned party refers the matter to the labor inspector of the area where the enterprise is located.

If the Labour Inspector of the area where an enterprise is located fails to settle the dispute due to the nature of the case or the conflict of interests, he/she refers the dispute to the Labour Inspector at the national level stating grounds to refer such a dispute. If amicable settlement fails before a labour inspector of the area where an enterprise is located or before the Labour Inspector at the national level, the case is referred to the competent court. However, the court can decide not to receive the case after determining that steps for amicable settlement provided for in this Article have not been followed.

Collective labour disputes arising in the area of a labour inspector are notified to a labour inspector. Collective disputes extending beyond an area of a labour inspector not settled by the Labour Inspector at the national level or not settled due to their nature or the conflict of interests, are brought before the Minister in charge of labour.

An Order from the Minister in charge of labour determines the organization, functioning of labour inspection, and procedure for labour dispute settlement.

5.2. Occupational Health and Safety Legislation

The project is a regional project involving three countries Burundi, DRC, and Rwanda, and the Labor Codes also govern Occupational health and safety.

The Decree-Law N°1/11 of November 24, 2020, amending Decree-Law N°1- 037 of July 07, 1993, establishing the Labor Code in Burundi provides for Occupational Health and Safety Legislation. Article 30 of the law provided that all workers benefit from satisfactory health and safety protection in the workplace. Preventing accidents at work and occupational illnesses is an imperative obligation of the employer. Workplace health and safety training for workers shall be organized in all workplaces.

Article 316 stipulates that employers are required to comply with the current provisions regarding worker hygiene and safety, the organization and operation of medical and health services in companies, and the special working conditions for pregnant women, people living with disabilities, and children.

The Burundian labor code is clear about the work of pregnant women. In fact, an entire chapter (Chapter 5) is dedicated to this.

In Article 109, it is mentioned that "any pregnant woman whose health condition has been confirmed by a doctor may suspend work without notice." The same article determines the duration of the leave: "On the occasion of her delivery, and without this interruption of service being considered a cause for termination of the contract, every woman is entitled to leave upon presentation of a medical certificate confirming the expected date of delivery, the employee is entitled to maternity leave. The duration of this leave is twelve weeks, which can be extended to 14 weeks, with six weeks required to be taken after childbirth.”

Orders from the Minister responsible for Labor, issued after consultation with the National Labor Council, set the conditions of hygiene and safety at the workplace, as well as the conditions under which labor inspectors and controllers must use the formal notice procedure. Finally, Article 148 states that workers are required to adhere to strict discipline regarding hygiene and safety and must comply with the measures established by the employer or their representative.

Law No. 1/27 of December 29, 2017, revising the Penal Code, Article 586, Law No. 1/11 of November 24, 2020, related to the Labor Code, Article 20 and following, and Law No. 1/13 of September 22, 2016, on the prevention, protection of victims, and repression of Gender-Based Violence, Article 2(n), prohibit sexual harassment in the workplace.

It should be noted that gender-based violence is not effectively documented in Burundian criminal law. The law addresses it only in a piecemeal manner and only provides for a few forms of violence, namely indecent assault and rape, as stipulated in Articles 382 to 387 of the Penal Code Book II, as well as

incest and the corruption of minors, provided for in Articles 368 and 359 of the Penal Code Book II, respectively. In fact, rape or cruel, inhuman, or degrading treatment is less severely punished than theft or embezzlement.

In response to this legal gap, a law on gender-based violence was initiated to provide specific measures for prevention and reparation of damages suffered, in addition to repression. Thus, Law No. 1/13 of September 22, 2016, on the Prevention, Protection of Victims, and Repression of Gender-Based Violence was adopted. Articles 5, 6, 14, 15, 23, 35, and 52 of the law include the three measures, namely prevention, protection, and repression. Article 5 stipulates that the government should take all awareness measures to modify the social and cultural behavior patterns of men and women to eliminate customary practices or any other type based on the idea of superiority or inferiority of one sex or stereotyped roles of men and women.

Article 6 prohibits threatening a person or depriving them of their rights to commit any act of gender-based violence.

Regarding workplace harassment, Article 14 provides that an employee who is a victim of gender-based violence, within or outside the company, has the right, upon request and after consultation with a doctor, to a temporary reduction or reorganization of working hours, geographical relocation, assignment to another establishment, suspension of the employment contract, or resignation without notice.
Upon the expiration of the suspension of their contract, the employee will return to their previous job. Article 15 specifies that absences or failure to adhere to work schedules related to Gender-Based Violence can only be justified by a medical decision. The employer must be informed within 72 hours. During these absences, the employee will continue to receive their salary. To discourage offenses related to SEA, SH, Article 23 prohibits amicable settlements of GBV cases under penalty of being accused of complicity in the act of violence and is punishable by the same penalty as that provided for the offense. Article 35 states that any person found guilty of sexual exploitation as defined in Article 2 of the law under review is punishable by five to ten years of penal servitude. This penalty increases to fifteen to thirty years if the victim is a minor or a student. Finally, Article 52 states that any employer who violates the rights of a person enshrined by the labor code and its various implementing texts due to their gender will be fined between five hundred thousand and one million Burundian francs, without prejudice to civil compensation.

It should be noted that the official status of the perpetrator of an offense related to Gender-Based Violence cannot in any way exempt them from responsibility nor constitute a reason for a reduced sentence.

The labor inspection consists of a body of sworn civilian agents who are independent in inspecting workplaces and ensuring compliance with applicable rules. (Article 155).
Referring to Directive 89/391/EEC - OSH "Framework Directive" of June 12, 1989, updated on 05/03/2018, on the introduction of measures to encourage improvements in the safety and health of workers at work, it is the employer's obligation to ensure the safety and health of workers in all aspects related to work, and they cannot impose financial costs on workers to achieve this goal. Similarly, when an employer calls upon external competent services or competent persons, it does not exempt them from their responsibilities in this area.
The general principles of prevention listed in the directive are as follows:

1. Avoid risks
2. Evaluate risks

3. Combat risks at their source
4. Adapt work to the individual
5. Adapt to technical progress
6. Replace the dangerous with non- or less dangerous
7. Develop a coherent overall prevention policy
8. Give priority to collective protection measures (over individual protection measures)
9. Provide appropriate instructions to workers in advance.

Law Number 16/010 of July 15, 2016, amending and supplementing Law Number 015-2002 on the labor code of the DRC, Article 159 provides that Health and safety conditions at work shall be ensured with a view to:

1. Prevent accidents at work.
2. Combat occupational diseases.
3. Create healthy working conditions.
4. Remedying excessive fatigue at work
5. Adapting work to the individual
6. To manage and combat major community health endemics in the workplace.

Article 160 of the same law states that undertakings or establishments of any kind shall be obliged to enlist the assistance of occupational health services and Article adds that Occupational health services are run by an occupational physician. Their role is essentially preventive, and they are responsible for:

- Medical surveillance of workers and health surveillance of the workplace.
- Immediate assistance and emergency care for victims of accidents or illness.

Article 162 clarifies that an order of the Ministry in charge of Labour and Social Security, issued after consultation with the National Labour Council, shall determine and set the terms and conditions for the implementation of the present agreement. The opinion of the National Labour Council shall determine and set the terms and conditions for the implementation of this chapter.

From Article 163-166, the law provides the following:

1. All establishments are obliged to organize special safety, hygiene, and beautification of the workplace.
2. The Special Safety, Health, and Beautification Department is responsible for ensuring:
    - Technical surveillance of workers and health surveillance of workplaces.
    - General education and training of workers.
3. The Special Safety, Health, and Beautification of the Workplace Department is staffed by a manager known as the Head of the Safety, Health and Beautification of Workplaces beautification.
4. An order of the Minister responsible for Labour and Social Security, issued after consultation with the National Labour Council, shall determine and set the terms and conditions for the implementation of this agreement. the opinion of the National Labour Council shall determine and set the terms and conditions for the implementation of this chapter.

From Article 167 to 169, the law provides the following in line with the safety, hygiene, and workplace beautification committee of the workplace:

1. Any company or establishment of any kind, employing workers, is obliged to set up a safety, hygiene, and workplace beautification committee.
2. The Safety, Health and Beautification of the Workplace Committee is responsible:

- To devise, correct, and implement a policy to prevent accidents at work and occupational illnesses occupational illnesses.
- To encourage and monitor the proper operation of occupational health and safety services.

3. An order of the Minister responsible for Labour and Social Security, issued after consultation with the National Labour Council, shall determine the composition, competence, and operating rules of safety, health, and workplace beautification committees.

Law Number 16/010 of July 15, 2016, amending and supplementing Law Number 015-2002 on the labor code also provides for nuisance control from Articles 170 to 176:

1. All establishments must be kept in a constant state of cleanliness and present the necessary health and safety hygiene and safety conditions necessary for the health of staff.
2. Health and safety conditions in the workplace are governed by decrees issued by the Minister for Labour and Social Security.
3. These decrees specify in which cases and under which conditions the local Labour Inspector will have to resort to the formal notice procedure and the methods of appeal.
4. The formal notice must be issued by the local Labour Inspector either in writing, drawn up on the spot, and given to the employer, or by registered letter with acknowledgment of receipt.
5. It must be dated and signed. It specifies the offenses or dangers observed and sets the time limits within which they must be remedied. These deadlines may not be less than four clear days, except in cases of extreme urgency.
6. It is forbidden to sell, hire out, display, or transfer in any other way machinery whose dangerous parts do not have appropriate protective devices.
7. An order of the Minister responsible for Labour and Social Security, issued after consultation with the National Labour Council, will lay down the procedures for applying this article.
8. Visits, approvals, tests, re-tests, inspections, and examinations carried out by the bodies provided for under the legislative and regulatory provisions relating to health and safety at work, as well as inspections of electrical installations in companies and establishments using electrical current, must be carried out by persons or bodies approved by the Minister responsible for Labour and Social Security.
9. Where these persons or bodies belong to public service or are under the control of the State, the designation order is issued on the proposal of the Minister to whom the designated technician or body reports.
10. Any infringement of the provisions of the orders referred to in article 171 may be recorded immediately in a report.
11. Where the facts revealed constitute a serious and imminent danger to the safety or health of workers, the local Labour Inspector may, in exceptional circumstances, order the machine or work in question to be stopped or have it stopped.
12. Where there are working conditions which are hazardous to the safety or health of workers and which are not covered by the orders provided for in Article 171 above, the employer shall be given formal notice by the Labour Inspector to remedy them in the manner and under the conditions provided for in the previous Article.

In line with Company Medical Services to its employees, the Labor stipulates the following from Article 177 to 184:

1. All companies or establishments must provide a medical service for their workers. Decrees issued by the Minister responsible for Labour and Social Security, after consultation with the National Labour Council, determine the terms and conditions of application after consultation

with the Conseil National du Travail (National Labour Council), determine how this obligation is to be applied. These decrees set out in particular:

- ❖ The number, qualifications, and duties of the medical staff to be employed, considering local conditions and the number of workers employed in the undertaking or establishment.
- ❖ The conditions under which employers may have their medical service provided either by a medical training center outside the company or establishment, by a training course specific to the company or establishment, or by a service shared by several companies.
- ❖ The conditions under which employers are required to install and supply premises used as an infirmary, hospital, or first aid boxes.

2. In the event of illness, accident, pregnancy, or childbirth, and even in the event of suspension of the contract due to force majeure, the employer shall be obliged to provide the worker and his/her family, until the end of the contract:

- ❖ Medical, dental, surgical, pharmaceutical, and hospitalization expenses.
- ❖ Necessary travel expenses when the worker or his/her family is physically unable to travel.
- ❖ Spectacles, orthopaedic and prosthetic appliances, except dental prostheses, under medical prescription and rates established by the Minister responsible for Public Health.

When, as a result of the contract or the law, the employee must be repatriated at the employer's expense, the obligation to provide care shall not lapse before the day on which the employee's state of health permits his return. This is decided by the employer on the advice of the doctor. In the event of a dispute, the worker may appeal with a medical commission, the composition of which is set by the Provincial Governor, by the forms and procedures determined by order of the Minister responsible for Labour and Social Security, issued after consulting the National Labour Council.

3. If the illness or accident is deemed to be an occupational illness or accident under Social Security regulations, the employer's obligations under Article 178 are limited to the period not covered by benefits from the National Social Security Institute.

4. The employer is not responsible for the cost of treatment:
    - o if the illness or accident or the aggravation of a previous illness or accident results from a special risk, under Article 107 of this Code.
    - o If the beneficiary refrains, without a valid reason, either from medical treatment, even preventive or from preventive hygiene rules or a medical check-up proposed by the employer.
    - o In the event of false declaration or concealment on the part of the persons concerned.

5. The employer must take all necessary steps to ensure the care provided for in this Title, under the conditions laid down by the orders provided for in Article 177 of this Code.
6. In the event of an accident or illness for which a third party may be liable, bringing an action against the third party does not release the employer from its obligations.
7. The rate of reimbursement of costs incurred by the worker and his family for health care abroad is set by order of the Minister for Labour and Social Security, after consultation with the Minister for Public Health.
8. Members of the worker's family shall not benefit from the provisions of this Chapter unless they are dependent on the worker, actually live with him, and are not gainfully employed lucrative occupation. The following are considered as actually living with the worker:
    - o children attending school in the Democratic Republic of the Congo
    - o Members of the family when the separation results from the nature of the work, force majeure, an act of the employer, or custom.

In Rwanda, Labor Law N° 027/2023 of 18/05/2023 amending the law N° 66/2018 of 30/08/2018 stipulates occupational health and safety regulations. Article 77 on General health and safety conditions in the workplace provides that an employer must ensure the health, safety, and welfare in the workplace for employees working in his/her enterprise and for all persons who frequent the enterprise, and an employee is not required to pay any cost in connection with measures aimed at ensuring occupational health and safety. Further, article 78 provides that an enterprise establishes an Occupational Safety and Health Committee. An Order of the Minister in charge of labor determines general occupational health and safety conditions.

The Labor Law also stipulates in article 79 that an employer provides every person entering an area in an enterprise where he/she is likely to be exposed to the risk of injury or harm from contamination, with suitable protective equipment and instructions for their use and verify that they are used. An employer takes the necessary measures for first aid, firefighting, and preventing and fighting imminent danger that can occur in his/her enterprise.

Article 81 provides for the prevention and fighting of occupational accidents and diseases. It states that to prevent and fight occupational accidents and diseases, an employer does the following:

- To assess risks of occupational accidents and diseases.
- To develop occupational safety and health policy and monitor its implementation.
- To prevent risks of occupational accidents and diseases.
- To reduce in the best possible way risks of occupational accidents and diseases.
- To fight occupational accidents and diseases.
- To adapt modalities of preserving occupational health and security of employees with new technology.

Article 82 also provides that an employer declares to the management of the social security body in Rwanda and to the Inspectorate of Labour where the enterprise is located, occupational accident, disease, or death in accordance with relevant Laws. In case the employer fails to declare occupational accident, disease or death, the victim of an accident or of the disease is entitled to do it. It can also be done by the beneficiary of the victim of an accident or disease or the deceased or by the competent authority within a period provided for by relevant Laws.

In addition to existing labor legislations in the three Contracting States, REL aims to achieve the highest standards of health, safety, and environment, incorporating the principle of sustainable development in its business. REL has defined HSE policy and is committed to achieving the following health, safety, and Environmental aspects:

- Consult with our employees on matters affecting their health and safety.
- Provide sufficient information, instructions, and supervision for our employees.
- Develop customer satisfaction services to our clients and offer personalized solutions to any problems they might face.
- Ensure all employees are competent and qualified with suitable and sufficient training to perform their tasks.
- Continually improve the Health, Safety, and Environment Management System of the Company
- Ensure that all operations will follow recognized international management standards such as ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018
- To provide adequate control of the health and safety risks arising from our work activities
- Provide safe systems of work.
- Maintain safe work areas, plant, and equipment.

- ❖ Ensure emergency and recovery management for employees and other stakeholders and property against unplanned events and disasters, by assessing all business activities and locations.
- ❖ Continuously seek to improve environmental performance.
- ❖ Reduce pollution, emissions, and waste.
- ❖ Reduce the use of all raw materials, energy, and supplies.
- ❖ Raise awareness, encourage participation, and train employees.
- ❖ Select suitable supplier products and services and cooperate with HSE-responsible Suppliers and Subcontractors to obtain the best procurement quality possible.
- ❖ Maintain an effective reporting and information distribution framework on HSSE key performance indicators, operational risk, and lessons learned.
- ❖ Communicate this policy to all Employees, Suppliers, Subcontractors, and other stakeholders.
- ❖ Provide the necessary resources to enable implementation of this policy.
- ❖ Participate in discussions about environmental issues.
- ❖ Monitor progress and review performance annually.
- ❖ The Company will comply with all relevant legal requirements, standards, and best practices.
- ❖ Periodically review the relevance and appropriateness of this policy.

VI. Responsible Staff

This section outlines and clarifies the organs and/or staff within the project who will be responsible for engagement and management of project workers concerning the categories they belong to. The organs/staff who will be responsible for Occupational health and safety (OHS), training of workers, and addressing workers' grievances are also identified under this section.

- ❖ ***Engagement and management of project workers.***

The project's direct workers will be managed under the framework of REL Management

- ❖ ***Engagement and management of suppliers/contractors or subcontractors.***

The contractors will be managed by Ruzizi III Energy Limited Management while subcontractors will be managed by the contractors.

- ❖ ***Training of contractors and workers.***

Training will be managed under the existing structures of REL. Training of staff on Occupational Health and Safety (Hygiene, STDs, GBV, SEA, etc) will be assured by the Health and Safety Environment (HSE) Unit in collaboration with the Social and Environment Unit. Contractors will also undertake this responsibility for their employed workers. The contractors will be reporting to REL and HSE unit to ensure effective follow-up.

- ❖ ***Occupational health and safety.***

This responsibility will be under the attributions of the HSE Unit and Social and Environment Unit of REL to ensure safety and health at workplaces. Contractors will also have designated staff to ensure occupational health and safety are effectively respected.

- ❖ ***Management of workers' complaints and Grievances***

As a normal framework, employees' representatives will handle direct workers' grievances/disputes through amicable settlement following the laws in place. If the amicable settlement fails, the Court of Justice will handle the complaints.

Grievances from contracted workers and construction site's skilled and unskilled labor will be handled through Grievance Redress Committees established at different levels. To handle site-level grievances, Grievance Redress Committees (GRCs) will be established at the site with representation of the three Contracting States. A second layer of GRCs will be set up at the Sector and Groupement level to handle issues that are not resolved at the grassroots or site level. The final level of GRCs will be established and operationalized at the district level (combining representatives of the district authorities, contractors, and REL Leadership) to handle issues that have not been resolved at the two lower levels. Any grievances that are not resolved at those three levels will be directed to the Court of Justice.

VII. Policies and Procedures

This section outlines the main policies and procedures to be followed during the construction and operation phases of the project. As needed, this section will be updated and amended as needed throughout the project life cycle.

Labor relations are controlled by the labor law of the Contracting States **(Burundi:** Decree-Law N°1/11 of November 24, 2020, amending Decree-Law N°1- 037 of July 07, 1993, **DRC:** Law Number 16/010 of July 15, 2016, amending and supplementing Law Number 015-2002, **Rwanda:** Labor Law N° 027/2023 of 18/05/2023 amending the law N° 66/2018 of 30/08/2018), labor contracts between REL and employees, and the Collective Agreement between REL and Contractors. These instruments apply to direct workers (that is, REL employees working on the Project) and are also subject to a Code of Conduct. Contractors will also be subject to their own companies' Codes of Conduct, which will be approved by REL before the contractor is allowed to mobilize to the site.

The employment of project workers will be based on the principles of non-discrimination and equal opportunities. There will be no discrimination in any aspect of the employment relationship, such as recruitment, remuneration, working and employment conditions, access to training, promotion, or termination of employment. Recruitment to the various project posts must be published on the Project websites and in the renewals, and the selection process must respect the qualifications required for each post.

7.1. Development of an Action Plan to mitigate and respond to EAS/HS

As said above, there will be no discrimination in any aspect of the employment, proactive measures will be included in the process to encourage women and members of other vulnerable groups to be recruited for project work. GBV Action Plan will be developed and implemented before the start of project activities. Based on the assessment of GBV risks related to the project's planned activities, this action plan may consider the following elements:

- Formulate a responsibility and response framework as part of the project's ESMP.
- Mapping GBV service providers
- Integrating the EAS/HS risk into safeguarding instruments.
- Inclusion of GBV-sensitive approaches in the Project Management Manuals

- The definition of EAS/HS requirements in bid documents (including the requirement for a code of conduct for all workers).
- Ensure that codes of conduct are signed and understood by all staff, including local workers and supervisors.
- Ensure the physical safety of workplaces (such as separate facilities for women and men, signage for men and women, and signposting of prohibited behavior)

Further to the above actions, with the substantial level of risk, the project should also ensure that a GBV specialist is hired within the PMU and in the supervising consultant's team.

VIII. Age of Employment

8.1. Working Age

In Burundi, the law prohibits anyone under the age of 16 from performing dangerous work in agricultural, industrial, or non-industrial enterprises, whether public or private, or in any of their branches. However, a 14-year-old child is authorized to do light work only as part of an apprenticeship (Article 10). Generally, the project will not employ people under the age of 16. The project may, however, recruit people aged 14 or over if the work complies with Article 6 relating to the definition of light work under Burundian law.[1] The project in its internal regulations and complying with laws from the three Contracting States set the minimum age for working in the different project activities.

In addition to Burundi laws, the DRC Laws also state that the minimum age for admission to work or employment is 16. However, under certain conditions laid down by law, the labour inspector may grant a derogation to a person aged 15, with the agreement of parental or guardianship authority. Since the enactment of the Child Protection Act (article 50), this derogation has been granted by the juvenile court judge, following a psycho-medical opinion from an expert and the labour inspector. The matter is referred to the judge at the request of the parents or any person exercising parental or guardianship authority over the child, by the labour inspector or any interested party.

In the spirit of ILO Convention 138, the minimum age for admission to employment or work must be equivalent to or higher than the age at which compulsory schooling ceases, set at 15 by framework law no. 86/005 of 22 September 1986 on national education, article 115. For certain types of work, the legal age of admission is 18. These are activities likely to jeopardize the health, safety, or morals of adolescents (art.3) and 13 years of age for 'light work', i.e. activities that are not likely to harm the health or development of the child, his or her schooling, his or her participation in vocational guidance or training programmes approved by the competent authority or his or her ability to benefit from the instruction received (art.6). Consequently, the following will be considered as child labor:

- Any activity undertaken by a child who has not yet reached the minimum legal age for the activity that is likely to interfere with the child's education or development.
- Any activity undertaken by a child under the age of 18, whether paid or unpaid, that is dangerous or inappropriate to the child's age, or that is harmful to the child's schooling or physical, social, mental, spiritual, or moral development, including the excessive pursuit of 'non-economic' activities. Congolese law prohibits anyone under 16 from performing

[1] *Article 10 : Section 3 : L'âge d'admission au travail est fixé à 16 ans dans le code du Travail 2020*

dangerous work in public or private agricultural, industrial, or non-industrial enterprises, or in any of their branches. In certain cases, Congolese law allows children aged 12 and over to be employed.

Furthermore, the Rwandan law also regulates the working age. Labor Law N° 027/2023 of 18/05/2023 amending the law N° 66/2018 of 30/08/2018 regulating labor in Rwanda, through labour inspection, project personnel in charge of the Health and Safety Environment Unit hand in hand with the Environment and Social Unit will inspect the workplace to ensure that there are no underage workers employed in the project and compliance with national and international labor standards. There will be regular monitoring and evaluation to ensure the compliance with law in line with working age. In case of non-compliance, the sanctions provided by the Law mentioned above in its articles 117,119 and 121 will be applied.

According to the Law regulating Labour in Rwanda in Article 117, the employment of underage workers is a criminal case. In case it is revealed that an employer has employed underage workers, the case will be reported to the concerned authorities and the employer will be prosecuted.

Risk assessment for the prevention of occupational risks is the responsibility of an employer according to the Law regulating Labour in Rwanda. The procedure for conducting risk assessments for project workers and more particularly for workers aged between the minimum age and 18 will be the following:

- To assess risks of occupational accidents and diseases.
- To develop occupational safety and health guidelines and monitor their implementation.
- To prevent risks of occupational accidents and diseases.
- To reduce in the best possible way risks of occupational accidents and diseases.
- To fight occupational accidents and diseases.
- To adapt modalities of preserving occupational health and security of employees with new technology.

REL Management will be responsible for putting in place a mechanism for checking people recruited based on their national identity cards, to ensure that there are no workers under the age allowed under the labour codes. To accompany monitoring activities, a separate register of all project workers over the minimum age but under 18 must be established and maintained. This register may include information on the schools or vocational training programmes in which they are enrolled. Suppose a child under the prescribed minimum age is found to be working on the project. In that case, measures will be taken to terminate his/her employment or recruitment responsibly, considering the child's best interests. Any employer who hires a minor on its site would be treated under the law.

8.2. Forced Labour

REL will abide by the labor laws of the Contracting States, therefore, the project is against forced labor, which can be defined as any work or service exacted from an individual under the threat of any penalty

and for which the said individual has not offered himself voluntarily[2]. Articles 7 and 8 of the Burundian Labour Code prohibit all forms of forced or compulsory labor.

The Ruzizi III project will not resort to forced labour, which can be defined as any work or service required of an individual under threat of any penalty and for which the said individual has not offered himself voluntarily. Article 2 of the Congolese Labour Code prohibits all forms of forced or compulsory labour.

IX. Terms and conditions of employment

This section will be updated and amended as necessary, following the award of contracts for the various project positions. The terms and conditions applicable to REL employees are defined in contracts that provide for the rights of employees in accordance with the Labour Code, which is described in section 3 or the General Statute for Civil Servants.

These internal work rules and regulations will apply to REL employees who are assigned to specific work in relation to the project (direct workers). The conditions of employment of direct part-time workers are determined by their individual contract. For workers from contractors, each contractor must submit its workforce management plan to REL to ensure compliance.

Further, this section also sets out details regarding:

- Specific wages, hours, and other provisions that apply to the project

For project workers, wages are determined in accordance with relevant laws. For contracted workers, specific wages will be calculated upon negotiations between contractors and workers. However, according to the Law regulating Labour in Rwanda, an employer must pay employees equal salary for work of equal value without discrimination of any kind.

- Maximum number of hours that can be worked on the project

The maximum number of working hours is 40 hours per week. However, overtime is accepted and its compensation is regulated by the law.

- Any collective agreements that apply to the project. When relevant, provide a list of agreements and describe key features and provisions

The collective agreement is accepted by the Law regulating Labour in Rwanda. As such, during the implementation of this project, the parties (employees' representatives and employers) who may wish to enter into the collective agreement will follow the provisions of the laws.

X. Grievance Redress Mechanism

In addition to the Ruzizi III Project's Global Grievances Mechanism in Place under the Stakeholders' Engagement Plan, a Grievances Redress Mechanism (GRM) will be set up by REL to hear the concerns of Project workers, record their complaints, and facilitate their resolution, including specific procedures to manage complaints related to EAS/HS. The GRM will be accessible and open to all

[2] *https://www.ilo.org/dyn/normlex/fr/f?p=*NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C029

workers. In addition, project workers who believe they have been adversely affected by a World Bank-financed project may file complaints with the WB[3] Complaints Resolution Service.

The proposed GRM for Ruzizi III Project workers is based on the following principles and consists of the approach and steps described below. Contractors and service providers will play a leading role in the management of labor-related complaints. The principles and stages of handling are different from the overall GRM of the Project. Contractors are required to contact REL HSE and E&S Units with all complaints received, including those settled amicably to the satisfaction of the complainant.

10.1. GRM Guiding Principles

Labor-related complaints will be handled directly by contractors and service providers according to the mechanism described below. However, complaints received will be communicated regularly to REL HSE and E&S Units in collaboration with other agencies, which are responsible for ensuring that complaints, whether verbal or written, are received, documented, and dealt with.

REL HSE and E&S Units will be responsible for monitoring and following up on the resolutions reached between the Contractor and complainant to ensure they comply with the requirements of this mechanism. For complaints that have not been resolved amicably through the Contractor, REL HSE and E&S Units in collaboration with other agencies will be responsible for renewing the investigations and processing in accordance with the overall GRM.

Any complaint registered must, if necessary, be the subject of an inspection visit by a specialist, notified no later than seven (7) days after receipt.

75% of complaints must be processed and closed within 30 days of registration. Complaints that require more time to investigate will be dealt with as quickly as possible.
All complaints must be recorded, and the related investigations documented. The register of complaints will be included in the regular reports that the Contractor and service provider will have to submit to REL HSE and E&S Units. Anonymous complaints are received in confidence to protect the complainant.

10.2. GRM Approach

Interactions between the workers themselves and the employers can be a source of contentious situations. To minimize this type of situation, the Contractor will set up, under the supervision of REL HSE and E&S Units, a complaints management mechanism which is a mechanism designed to enable problems, difficulties, or misunderstandings encountered during the execution of the work to be resolved as quickly as possible, giving priority to amicable solutions. It will apply to all types of workers on the project and will provide a structured means of receiving and resolving a concern raised by workers who feel they have been adversely affected by working methods and conditions. Complaints will be dealt with promptly through a process that is understandable and transparent, culturally appropriate, free of charge, and without reprisals.

[3] *https://projects.banquemondiale.org/fr/projects-operations/products-and-services/grievance-redress-service.*
Pour plus d'informations sur la manière de soumettre des plaintes au Groupe d'inspection de la Banque mondiale, veuillez consulter le site www.inspectionpanel.org

The Contractor will propose a signed agreement to the complainant to formalize a settlement. Complaints may take the form of specific complaints about wages, working conditions, incidents or accidents, actual damage or injury, requests for corrections, general concerns about the work, and perceived or actual incidents and impacts. The Contractor shall give priority to negotiation and amicable conciliation. The workers will be informed by the Contractor, the control mission, and REL HSE and E&S Units of the procedure to follow to express their dissatisfaction and submit their complaints.

Although the management of the workers' complaints mechanism is carried out by the Contractor, a worker may freely choose to address the control mission directly, REL HSE, and E&S Units alone or in collaboration with the other agencies. The complaints register will be accessible at the site offices of the Contractor and from the REL HSE and E&S Units. Additionally, a reference number for the complaints register will be made public. If negotiations prove difficult for the Contractor, REL HSE and E&S Units, in collaboration with the other agencies, will conduct the negotiations through its extended complaints management mechanism, presented in the overall GRM of the Ruzizi III Project. Apart from these internal mechanisms, workers will be able to have recourse to state mechanisms for settling disputes (court).

In the case of the latter, recourse to the courts to deal with workers' complaints poses enormous difficulties in terms of time (long trial periods in the courts) and resources (judicial and administrative procedures are expensive, including lawyers' fees). These two reasons clearly show that few workers have any difficulty in accessing this method of dispute resolution (legal recourse).

10.3. Procedure, appeals, and handling of complaints

The various stages in the procedure for resolving employee complaints are set out below. Each claim or complaint, whether founded or not, will have to go through the process of resolution process. When a worker complains, it means that the problem raised constitutes a disadvantage, risk, or impact that requires the Contractor and REL and other agencies to resolve it. Whether the complaint is genuine or the result of a misinterpretation, it must be recorded under the procedure in place, which is based on the following fundamental principles:

- The complaints resolution procedure must be transparent and in harmony with local culture.
- The recording of complaints will consider the low academic level of the workers and will give priority to the local language depending on the specific part of the project area (Kirundi, Swahili, Kinyarwanda), and their resolutions will have to be communicated to the complainants verbally and in writing.
- Workers must have equal access to the procedure (men or women, skilled or unskilled labor);
- Complaints and grievances, whether real or unreal, must be recorded following the complaints resolution procedure;
- Registered complaints must be communicated to REL HSE and E&S Units as soon as possible;
- Complaints must lead to discussions with the complainant to better understand the nature of the problem.
- It should be noted that as part of complaints management, the Complaints Management Software (LGP) which will be set up by REL HSE and E&S Units will be applied to the entire Project, including the GRM sensitive to GBV/AES/HS, and will concern all the Project's workers.

Stage 1: Receipt and registration of the complaint

The Contractor concerned by the complaint, under the supervision of REL HSE and E&S Units in collaboration with the other agencies, will have to lead and coordinate the workers' complaints

management mechanism. A database will be set up to record all complaints received in connection with the works. A file will be created for each complaint which will include, among other things, the following:

- An initial complaint form containing the date on which the complaint was received, the complainant's contact details, and a description of the complaint;
- An acknowledgment of receipt of the complaint is given to the complainant following registration.
- A complaint follow-up form to monitor the measures taken (investigation, corrective measures);
- A copy of a file closure form will be given to REL HSE and E&S Units and the complainant once the latter has accepted the closure and signed the form. Any real or fictitious complaint will be entered into the system and will lead to an inspection within a maximum of seven (7) days.

Stage 2: Handling the Complaint.

The Contractor's social safeguards specialist or his representative among the Contractor's other key personnel will process the complaint through the following activities:

- Meet and discuss with the complainant;
- Determine the legitimacy of the complaint;
- Inform the PMU of the complaint received and its legitimacy;
- Close the complaint if, for example, it is unfounded. The Contractor will provide a verbal and written response to the complainant. Otherwise;
- Classify the complaint according to its extent: minor, moderate, serious, major, or catastrophic, and propose a solution;
- Close the complaint if the complainant(s) agrees with the proposed solution. Otherwise.

The complainant(s) may have recourse to appeal procedures which will require further examinations, investigations, consultations, and treatment.

Stage 3: Use of the GRM of REL

Suppose the complaint cannot be resolved internally between the complainant(s) and the Contractor; in that case, the complaint will be handled directly by REL HSE and E&S Units following REL Grievances Redress Mechanism instead of followingthe GRM' contractor.

Stage 4: Legal action

The fact that a worker has submitted a complaint or claim to the Contractor or to the project does not deprive him of the right to have recourse to the courts for his claims. Thus, if a worker's complaint has not been satisfactorily dealt with, he or she may refer the matter to the competent state authority, including, among others, the Ministries of Labour and, if necessary, the competent courts, to which he or she may submit his or her claims.

For employees governed by the Labour Code, a labour dispute may take two forms:

- An individual labour dispute is a dispute between a worker and his employer during the course of employment or when the employment contract is terminated;
- Collective disputes: any dispute between one or more employers on one hand, and a certain number of members of their staff on the other hand, relating to working conditions, is deemed to be a collective labour dispute if it is likely to jeopardise the smooth running of the business or social peace.

Details of the grievance mechanism for employees governed by the Labour Code are set out in their employment contracts. In addition, during contract negotiation sessions, the employer will inform the employee of his or her rights and obligations, as well as the dispute resolution mechanism.

Collecting, handling, and resolving Sexual Abuse and Exploitation/ Sexual Harassment complaints

Multiple Sexual Abuse and Exploitation/ Sexual Harassment (SAE/SH) complaint collection points will be set up at three levels: (i) Site level through the (SAE/SH) focal point who will also serve as a female member of the GRM's local committees; (ii) mobile platform; a female member trained to receive (SAE/SH) complaints; (iii) EAS/HS focal points at Sector/Groupement level. All of these collection points will direct these complaints to the Project (SAE/SH) Focal Point and the (SAE/SH) Complaints Verification Committee at the Project level to confidentially handle the complaints of this category. The (SAE/SH) focal points and the members of this committee will be trained to handle (SAE/SH-related complaints, taking account of their sensitive nature, using procedures that are transparent, secure, and confidential for all parties involved, in particular the survivor.

Toll-free number

The Toll-free number that will be set up under REL HSE and E&S Units will enable sub-projects to be monitored and evaluated using a community-based approach (CBA), which is based on the principle that beneficiaries have 'the right to participate in decision-making that affects their lives' as well as 'the right to information and transparency', and that project managers/investors/implementers are required to respect these rights). To achieve this, the service is provided by an external call center run by REL which makes the necessary follow-ups following the procedures of grievances management.

Standard Operating Procedures governing how complaints are to be classified into 4 levels (low, medium, high, and sensitive), a coding system to ensure anonymity and data collection, and a communication tree to manage the handling of different types of complaints. For example, if it is a sensitive complaint (which concerns, for example, a REL Staff with regard to a beneficiary, or an agent with regard to another project agent, etc.), it will reach REL Management. Every week, the Call Centre team (trained on SAE/SH, guiding principles, confidentiality, and the code of good conduct that everyone will sign) will provide a report to the Project Management, which will receive information not only on the interventions it is undertaking concerning the areas in which the project is being implemented but also on incidents concerning the safety and protection of communities, business partners, implementing agencies, NGOs, etc. Community consultations will make it possible to choose reporting models/tools that are appropriate for both genders.

Access to information and awareness campaigns

The project will set up awareness-raising sessions for project workers involved in construction, project-affected people, and the communities in the project area. These awareness-raising sessions will focus on the points at which complaints can be received, and the procedures and deadlines for resolving them at each level of the GRM.

The labour management procedures apply only to direct workers, contract workers, and main suppliers. However, all project workers will have access to the Grievances Management Mechanism, which will be available to all direct and contract workers (and their organizations, where applicable) to

raise work-related concerns, including SAE/SH-related complaints. Workers will be informed of the existence of the Grievances Mechanism at the time of hiring and of the measures taken to protect them against any reprisals for having used it. Care will be taken to ensure the complaints management system is easily accessible.

XI. Contractor management

REL in collaboration with other institutions (Districts, Groupement, Communes) will use the Bank's 2018 Standard Procurement Documents for tendering and contracting (2018 Standard Procurement Documents) for tenders and contracts including labour and occupational health and safety requirements.

The mandatory documents to be submitted by companies or suppliers will include the code of conduct, the work management plan, the worker's internal rules and regulations, the Environmental and Social Management Plan, and the principle relating to health and safety at work.

As part of the process of selecting the contractors who will engage contracted workers, REL will review the following information:

- Information in public records, for example, corporate registers and public documents relating to violations of applicable labor law, including reports from labor inspectorates and other enforcement bodies.
- Business licenses, registrations, permits, and approvals.
- Documents relating to a labor management system and occupational health and safety system (e.g., HR manuals, safety program) which may be required as part of the proposal.
- Identification of labor management, safety, and health personnel, their qualifications, and certifications
- Records of labor-related litigation
- Workers' certifications/permits/training to perform required work.
- Records of safety and health violations, and responses
- Accident and fatality records and notifications to authorities
- Records of legally required worker benefits and proof of workers' enrollment in the related programs
- Worker payroll records, including hours worked and pay received.
- Identification of safety committee members and records of meetings

Copies of previous contracts with contractors and suppliers, showing inclusion of provisions and terms reflecting ESS2 or equivalent requirements.

Construction and other contracts will include provisions related to labor and occupational health and safety as provided in the applicable World Bank Standard Procurement Document and National laws and REL's internal regulations.

REL will manage and monitor the performance of contractors in relation to contracted workers, focusing on compliance by contractors with their contractual agreements (obligations, representations, and warranties) and labor management procedures. The Environmental and Social Management Plans for the Ruzizi III Project Construction requires the Project Management Consultant to develop a Contractor Management Plan for approval by REL. The ESMPs also include specific

monitoring requirements, which include periodic audits, inspections, and spot checks of project locations and work sites as well as of labor-management records and reports compiled by contractors.

Contractors' labor management records and reports that may be reviewed would include representative samples of employment contracts or arrangements between third parties and contracted workers, records relating to grievances received and their resolutions, reports relating to safety inspections, including fatalities and incidents, and implementation of corrective actions, records relating to incidents of non-compliance with national laws, and records of training provided for contracted workers to explain occupational health and safety risks and preventive measures. The contract with the Contractor will include non-compliance remedy for possible violation of E&S provisions.

XII. Primary suppliers

The World Bank defines "primary suppliers" as "those suppliers who, on an ongoing basis, provide directly to the project goods or materials essential for the core functions of the project. Core functions of a project constitute those production and/or service processes essential for a specific project activity without which the project cannot continue. World Bank Environmental and Social Standard 1, paragraph 34, footnote 34). Primary suppliers include those who provide goods or materials to construction projects (on an ongoing basis).

REL will require all contractors whose required supplies and materials meet the definitions above to verify their vendors do not use child or forced labor. This could be accomplished by having the contractor require prospective providers to include information in their tenders as to whether the prospective supplier has been accused or sanctioned for issues related to child labor, forced labor, and safety. If they are found to use child or forced labor or to have been so accused or sanctioned, contractors will have to disqualify those suppliers.

Appendix A

Example Grievance Redress Mechanism

Worker Grievance Redress Mechanism

Ruzizi III Regional Hydropower Project

i. Introduction

The effective implementation of policies and procedures is crucial for any company's corporate culture. For this reason, it is critical for there to be a mechanism by which employees who perceive injustice, unfair treatment, or violation of policies can express their concerns and be sure they will be addressed.

Ruzizi III Energy Limited seeks to provide a working environment in which all employees feel they are an important part of the company, where employees feel fairly treated, and in which problems that arise can be discussed and resolved at an early stage through open and honest communication. REL will also require its contractors, including the consultants, to take steps to establish such a favorable working environment. Even in such an environment, however, there may be times when an employee has a dispute with a supervisor or the company which can best be resolved through a formal procedure for dispute resolution.

All disputes between an employee and the employer are to be resolved in accordance with the following procedure. REL reserves the right to modify this procedure at any time and nothing in this procedure should be construed to constitute a contract, or any part of a contract, between the employee and the Employer.

This Grievance Redress Mechanism (GRM, or Mechanism) is intended to enable employees to raise and address any concerns, problems, or complaints they may have so the issues can be resolved promptly, fairly, and in the interest of everyone involved. The company will ensure that employees' voices are heard. The aim is to make this Mechanism accessible and credible for all workers who are employed on the Ruzizi III Regional Hydropower Project.

It must be emphasized that the Mechanism should not be used to address issues regarding a worker's professional performance of duties or the role contained within the employee's job description or employment contract.

ii. Application of the Grievance Redress Mechanism

Many issues may cause worker dissatisfaction and lead to the submission of grievances. These could include, but not be limited to, such things as:

- Terms and conditions of employment
- Health and safety issues
- Work relations with co-workers or supervisors
- Mistreatment by supervisors
- Bullying and harassment by co-workers or supervisors
- Unsafe, unhealthy, or unpleasant working environment
- Discrimination by the company or supervisors

- Sexual harassment or gender-based-violence
- Organizational change.

This Mechanism or an equivalent Mechanism is available to all employees of REL, the Project Consultants, and contractors appointed to support the construction of the Ruzizi III Regional Hydropower Project. An employee may raise any issue through the Mechanism if she or he is directly affected or if she or he has observed or is aware of conditions or events that affect other workers.

It is possible that more than one employee may be affected by the same or similar circumstances, which they consider are more effectively dealt with by a collective grievance. In such cases, more than one employee can file a single grievance, and the group of employees will be treated as if they had raised the matter as a single individual. A single notification of grievance will be made and all members of the group may attend any grievance meeting(s) and any appeal(s).

iii. Principles

- This Grievance Redress Mechanism is available to all employees who are assigned to work on the Ruzizi III Hydropower Project.
- All such employees have the right to raise a formal grievance. It is desirable that the employee attempt to resolve the issue informally, but this is not necessary.
- All grievances will be taken seriously and dealt without unreasonable delay. The goal is that all grievances are resolved within 21 days.
- REL will require the Project Management Consultant and each contractor appointed to the Project to develop a Grievance Redress Mechanism that is equivalent to the one. The Project Management Consultant will review the Mechanisms submitted by contractors and approve them when they are determined to be equivalent. REL will review and approve the Project Management Consultant's Mechanism. Each company will be responsible for resolving its own employees' grievances, but workers may raise grievances to the next level if she or he is unsatisfied with the proposed resolution by the employer. If grievances are raised to higher levels, the REL decision will be considered final.

- The use of the Mechanism does not preclude any employee's use of legal means to resolve issues or means provided by unions or other legally constituted groups of employees.
- No decisions will be taken until a reasonable investigation to establish the facts has taken place.

- The employee raising a grievance has the right to be accompanied by a representative to any grievance meeting or appeal meeting under this grievance procedure. This representative may either be a labor union representative or a colleague, at the discretion of the employee. At any meeting, the representative may make representations and ask questions but should not answer questions on the employee's behalf.

- If a grievance is made against an individual, that person will be spoken to as part of an investigation and will have the chance to respond to allegations before any final decision is made.

- At any stage in the procedure, or between stages, the employee may seek mediation through REL as appropriate.

- REL or other employer will make every effort to resolve grievances promptly and informally through discussion and/or mediation. The use of mediation will be at the discretion of the manager responsible for Human Relations and will be considered in appropriate cases.

- Employees and their representatives should make every effort to attend grievance meetings as requested. Employers will provide time to attend such meetings. Failure to attend more than one meeting without adequate reason will result in a grievance being considered abandoned.

- Decisions regarding the resolution of grievances will be communicated to the person who submitted the grievance. If resolution takes more than 15 days, the current status will be reported at least every week until resolution.

- Grievances may be submitted anonymously. In such cases, it will not be possible to report the resolution to the person who submitted the grievance, but the resolution will be reported to all employees via announcements or bulletin board notices.

- No supervisor or manager may retaliate or take any action against an employee who has filed a grievance, regardless of the resolution.

iv. Procedure

In general, it is preferred that an employee first address the grievance with her or his immediate supervisor. However, if an employee does not feel able to speak with the immediate supervisor, or if the complaint relates to a supervisor, it may be sent to the next level of management or to the relevant HR Manager. If at all possible, the employee and the person to whom a grievance is reported should discuss options for resolving the matter informally. If such an informal effort is not successful, the formal grievance process can be initiated.

- Grievances may be submitted in writing or verbally. One or more “complaint boxes” will be placed at locations that are convenient for workers. Boxes will be locked, and only designated HR and/or ESHS personnel will have keys. Boxes will be checked at least two times per week.

- The head of HR and the ESHS Manager of each organization will establish a standing committee to deal with grievances. This will include the head of HR, the ESHS Manager, and the Project Manager, or their designees. This standing committee will review and be responsible for decisions on all grievances. If one of the members of the standing committee is in any way the subject of a grievance, the Head of HR will appoint an alternate member.

- Immediately upon receipt of a grievance, it will be logged into a Grievance Register that will be used to track the current status of all grievances and all key steps in the process of resolution.

- Within three days of receipt of a grievance, the standing committee will assign one or more persons to investigate the facts (this person may not be the subject or otherwise involved in the grievance). This investigation should include interviews with the person who submitted the grievance (unless it was anonymous), any relevant supervisors, and other knowledgeable people. The investigators will then prepare and submit a report that includes a recommended resolution, and the reason for the recommendation. The report will be submitted to the standing committee within one week.
- The Chair of the Committee will write to the employee acknowledging the grievance and invite her/him to a grievance meeting with the person who is investigating the case. This meeting will

be held within one week of the appointment of the investigator and will be held at a time convenient to all parties, especially the person who submitted the grievance. The investigator and the person who submitted the grievance may request that other persons with relevant knowledge or interest be invited to the meeting. At least one member of the standing committee will also attend.

- The grievance meeting will be led by a member of the standing committee. The employee will be asked to explain the nature of her/his complaint and how she/he considers the matter may be resolved. The investigator will then report the findings of the investigation, and others may present information if the chair finds it relevant.

- If the employee fails to attend the meeting without explanation or it appears that she/he has not made sufficient attempt to attend, the meeting may take place in the absence of the employee.

- Following the meeting, the standing committee will meet to reach an agreement on the resolution or to allow an extension of time during which further investigations will be made, which may include one or more meetings with the employee.

- Once a resolution is reached, the employee will be informed in writing of the outcome within 10 working days and told of any action the company proposes to take as a result of the complaint. It is the responsibility of the Chair of the standing committee to ensure that any outcome proposed as a result of the grievance meeting is carried out. Actions proposed will be monitored and reviewed, as appropriate. Where no actions are determined to be needed or appropriate, the Chair of the grievance meeting will make sure the reasons are carefully explained.

- If an employee is not satisfied with the decision of the Committee, she/he may submit a written appeal to REL management. The employee should clearly state the grounds for appeal. This should be done within 10 working days of the written notification of the outcome of the grievance.

- Where the responsible Manager is satisfied that there are genuine grounds for an appeal, she/he will nominate a suitable manager to consider the appeal. This will be a manager not related to the grievance. Where the Manager is of the view that there are no genuine grounds for appeal, she/he will write to the employee outlining the reasons for this decision.

v. Role of Human Resources and HSE and E&S Unit

REL HR supported by REL HSE and E&S Unit is responsible for implementing this policy within the company and on site. REL is also responsible for ensuring that the contractors implement this policy or develop and implement their own subject to REL's approval.

vi. Records

It is the responsibility of REL HR supported by REL HSE and E&S Unit to ensure that accurate records are made. Such records should include:

- The nature of the grievance
- Copy of the written grievance
- Report of findings by investigator

- Summary of meeting(s)
- Decision and reasons for decision
- Records of communication with the employee, including the date the employee is informed of the decision
- Whether there was an appeal and if so the outcome
- Confirmation that actions were implemented as required by the decision.
- Records will be treated as confidential and kept until the end of the Project, or longer if required by each company's internal procedure.
- Summaries of grievances and resolutions will be submitted in monthly progress reports by contractors to REL Management as required by the Environmental and Social Management Plan.

vii. Confidentiality

- The standing committee, the investigator, employees, their representatives, any respondent, and/or witnesses should not discuss the grievance, investigation, or contents of their statements with any other employee or third parties outside of the grievance process.

- Notes will be taken at meetings at each stage of the procedure as a record of proceedings. Notes will not be verbatim (word for word) but will form an accurate summary of the discussions that took place. A copy of all documentation will be kept in the records as noted above.

viii. Grievance form

An example of a grievance form is shown below. This form can be used, or another form that provides at least this much information.

Worker Grievance Form			
Grievance reference number (to be filled in at the time of registration):			
Contact details (may be submitted anonymously)	Name(s):		
	Address:		
	Telephone:		
	Email:		
Identify Card Number			
How would you prefer to be contacted (check one)	By mail/post: ☐	By phone: ☐	By email ☐
Preferred language	☐ Kirundi/French	☐ Swahili/French	☐ Kinyarwanda /English

Provide details of your grievance. Please describe the problem, who it happened to, when and where it happened, how many times, etc. Describe in as much detail as possible.			
What is your suggested resolution for the grievance, if you have one? Is there something you would like your employer or another party/person to do to solve the problem?			
How was this form submitted to the project?	Website ☐	email ☐	By hand ☐
	In-person ☐	By telephone ☐	Other (specify) ☐
Who filled out this form (if not the person named above)?	Name and contact details:		
Signature			
Name of the person assigned responsibility (investigator)			
Resolution (including appeals)	Short description of the resolution	Accepted? (Y/N)	Acknowledgment signature by an employee
1st proposed solution			
2nd proposed solution			
3rd proposed solution			

Annex E – Emergency Preparedness Plan

PUBLIC DISCLOSURE AUTHORIZED

TRACTEBEL
ENGIE

Emergency Preparedness Plan

Owner's Engineer Services for the Ruzizi III HEPP Project

Ruzizi III Energy Limited
RWANDA / DEMOCRATIC REPUBLIC OF THE CONGO

CONFIDENTIAL

July 31, 2020

REPORT

RUZ-AVP-TEF-GEN-HYD-RAP-0011

REL
Ruzizi III Energy Limited

With the trusted expertise of COYNE ET BELLIER Ingénieurs Conseils

TRACTEBEL ENGINEERING S.A.
Head Office (Gennevilliers)
Le Clever - 5, rue du 19 mars 1962 - 92622 Gennevilliers CEDEX - FRANCE
tel. +33 1 41 85 03 69 - fax. +33 1 41 85 03 74
engineering-fr@tractebel.engie.com
tractebel-engie.fr

REPORT

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RUZIZI III HPP
Emergency Preparedness Plan

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LIST OF ABBREVIATIONS AND ACRONYMS

DRC	Democratic Republic of Congo
DS	Downstream
EPP	Emergency Preparedness Plan
FSL	Full Supply Level
MOL	Maximum Operating Level
REG	Rwanda Energy Group
REL	Ruzizi III Energy Limited
US	Upstream

PART I - INTRODUCTION

1. GENERAL INFORMATION

1.1. Introduction

This document defines the methodological, institutional and documentary framework for the Emergency Preparedness/Action Plan for Ruzizi III Dam for construction phase and operational phase.

Ruzizi III Hydroelectric Project is located on the Ruzizi river some 32km downstream Lake Kivu, some 29 km downstream Ruzizi I Dam and 13 km downstream Ruzizi II Dam. Its purpose is for energy generation for Rwanda, Burundi and Democratic Republic of Congo with an evacuation through Kamanyola Substation.

The project is being developed as a public-private partnership (PPP) between Rwanda, Democratic Republic of Congo and Burundi, a consortium of Industrial Promotion Services (IPS) and SN Power through a 25-year concession agreement.

The project is implemented by Ruzizi III Energy Limited (REL), private partner acting in the capacity of investor/developer, who has been awarded a concession, called “the Operator” in the document.

Due to the dam location, the consequences of Ruzizi III dam break would impact assets and groups of individuals in Rwanda, Democratic Republic of Congo and Burundi. Therefore the Ruzizi III Dam EPP should take into account the national dam safety requirements of Rwanda, Democratic Republic of Congo as well as Burundi.

The document specifies the roles and responsibilities of stakeholders when failure becomes imminent and when expected operational flow release threatens downstream life, property or economic activities during construction and operation.

This detailed framework defines primary principles for the definition of:

- The roles and responsibilities of the stakeholders and administrations;
- The identification, evaluation and classification of the Ruzizi III dam emergency situations via the definition of 3 alert levels;
- Preventive measures for an emergency situation;
- Preparatory measures for an emergency situation (evacuation routes and meeting points, response during period of darkness/adverse weather, emergency response materials and equipment, communication systems, alarms);
- The preparation of the Emergency Action Plan.

1.2. Definitions

The following words and expressions shall have the meaning stated below.

- The **Plan** refers to the Ruzizi III Dam Emergency Preparedness Plan.
- The term **Ruzizi III Dam** is intended to include, besides the dam itself, all its appurtenant structures and works – Ruzizi III dam, waterway, powerhouse and switchyard – its foundation and abutments, the electrical and mechanical equipment, and the reservoir.
- A **Dam Failure** refers to an event characterized by the sudden, rapid, and uncontrolled release of impounded water.
- The **Public Authorities** means any public entity involved at a local or national level in the treatment of any emergency situation. This party involves but is not limited to:
  - Governments of Rwanda, Democratic Republic of Congo and Burundi,
  - Ministry in charge of Emergency Management of Rwanda, Ministry of Interior and Security of Democratic Republic of Congo, Ministry of Public Security of Burundi and other relevant ministries of three countries,
  - Public administrations at regional and local levels in Rwanda, Democratic Republic of Congo and Burundi,
  - State civil protection entities of Rwanda, Democratic Republic of Congo and Burundi.

1.3. Plan overview

The Manual is organised in two parts – Introduction and Emergency Preparedness Plan.

Part I- Introduction is organized in several chapters as follows:

1) General Information – present chapter

The purpose of the manual is presented, the terms defined and the Ruzizi III Dam reference documents listed.

2) Relevant Sections of Operation and Maintenance Plan

Ruzizi III dam main characteristics are presented based on general arrangement drawings. The information provided under this section allows for a quick and synthetic understanding of Ruzizi III Dam as industrial facility, the legal framework, the responsibilities and organization for Operation, Surveillance and Maintenance and a summary of the Operation, Surveillance and Maintenance procedures.

3) Alert levels leading to the Implementation of Emergency Preparedness Plan presents the three alert levels proposed per standard practice :

- Alert level 1: Reinforced surveillance
- Alert level 2: Potential failure
- Alert level 3: Imminent failure

Part II - Emergency Preparedness Plan presents first the **Dam Safety Emergency Plan** organized in several chapters as follows:

1) Roles and responsibilities

The role and responsibilities of each party/authority involved in the implementation of the Emergency Preparedness Plan are identified under this section.

2) Emergency identification, Evaluation and Classification

This section includes the definition of the three progressive alert levels through a series of criterion as well as the actions that should be taken.

3) Inundation maps for the various scenarios at Construction Phase and Operational Phase.

4) Preventive measures, 5) Evacuation routes and meeting points, 6) and 7) Response during period of darkness/adverse weather, 8) Equipment and facilities required to respond to emergency

Preventive and preparatory measures are presented together with the detection of an emergency situation and the mitigation of the associated adverse consequence.

9) Emergency Action Plan framework

The Emergency Action Plan is implemented as soon as criteria of alert are checked. For this purpose, notification flow chart are established in order to clearly define the role of each participant in the broadcasting of information, their interaction, and the priority order in mobilizing emergency forces and equipment. The process is prepared in such a way that additional measures are taken into account when the alert level increases.

10) Procedures for periodic review and update are presented for managing changes.

11) Training and awareness are addressed consecutively for staff on site, Public Authorities and population.

Part II shows then the links between the Dam Safety Emergency Plan and the **Disaster Plans** developed by Public Authorities of Rwanda, the Democratic Republic of Congo and Burundi.

1.4. Reference documents

The tables below give a list of the Ruzizi III dam technical reports that shall be used for reference.

- Operation and Maintenance Manual
- Layout drawings
- Instrumentation drawings
- Dam break Report

2. RELEVANT SECTIONS OF OPERATION AND MAINTENANCE PLAN

[This plan describes organizational structure, staffing, technical expertise, training required; equipment and facilities needed to operate, maintain and monitor the dam; Operation & Maintenance procedures, arrangements for funding Operation & Maintenance, including long-term maintenance and safety inspections.]

2.1. Presentation of Ruzizi III Dam

2.1.1. General arrangement

Ruzizi III Hydroelectric Project is located on the Ruzizi river some 32km downstream Lake Kivu, some 29 km downstream Ruzizi I Dam and 13 km downstream Ruzizi II Dam.

The Ruzizi river is the natural border between the Democratic Republic of Congo on the Right Bank, Rwanda on the Left Bank and Burundi some 12km downstream Ruzizi III Dam.

Its purpose is for energy generation for Rwanda, Burundi and Democratic Republic of Congo with an evacuation through Kamanyola Substation.

The project is being developed as a public-private partnership (PPP) between Rwanda, Democratic Republic of Congo and Burundi, a consortium of Industrial Promotion Services (IPS) and SN Power through a 25-year concession agreement.

The project is implemented by Ruzizi III Energy Limited (REL), private partner acting in the capacity of investor/developer, who has been awarded a concession.

The project consists of the following main infrastructures[1]:

- A 51m high embankment dam on the Ruzizi river with a total crest length of about 300m,
- A spillway on Left Bank separated from the dam, with a labyrinth weir and a total discharge capacity of 986m^3/s at FSL,
- A 158/203MW powerhouse downstream of the dam on the Left bank with:
  - a power intake separated from the dam,
  - a 4.2km long waterway incorporated into the dam.

Figure 2-1: General layout of Ruzizi Cascade (source : REG)

[1] As per alternative design from the Conceptual Design Report.

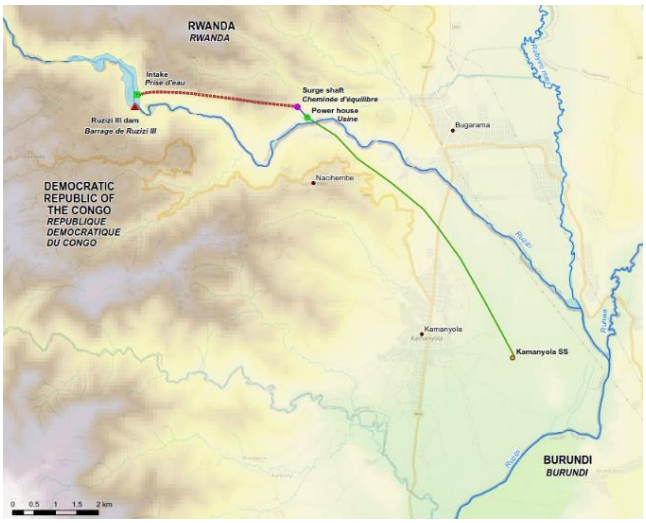

Figure 2-2: General layout of Ruzizi III Dam and Scheme

The following table gives the main characteristics of Ruzizi III Dam.

Table 2-1: Main characteristics of Ruzizi III main dam (from Alternative Design in Conceptual Design Report)

Item	Unit	Quantity
Hydrology		
Mean annual inflows	m^3/s	88
Max. discharge - design flood	m^3/s	986
Max. discharge - safety evaluation flood	m^3/s	1200
Reservoir		
Full Supply Level (FSL)	masl	1145
Minimum Operating Level (MOL)	masl	1130
Reservoir storage at FSL	Mcum	7.72
Active storage	Mcum	5.05
Main structures and equipment		
Dam type		embankment dam
Dam crest level	masl	1150,50
Dam crest length	m	300
Dam crest width	M	8
Dam slopes	H/V	2,5/1 (US and DS)
US Cofferdam crest level	masl	1119
Spillway type		Labyrinth weir (ungated)
Spillway weir crest level	masl	1145
Bottom outlet location, type		Left bank, separated from dam
Bottom outlet level	masl	1110
Discharge capacity (at FSL)	m^3/s	177
Tunnel length (diversion tunnel)	m	180
Power intake and power house		
Installed capacity (3/4 groups options)	MW	157/203
Power intake location, type		Left bank, separated from dam
Tunnel length	m	4200
Power Intake level	masl	1120
Design discharge	m^3/s	150
Powerhouse location, type		Left Bank, Outdoor

2.1.2. Site location and access

2.1.2.1. SITE LOCATION

Figure 2-3: Site location

2.1.2.2. ACCESS TO SITE

The site is accessed from the East by taking the access roads along the Ruzizi river from Kamanyola in DRC and Bugarama in Rwanda[2].

It can be accessed from Bukavu through the DRC N5 national road down to Kamanyola and from Butare or Bugarama through the Rwanda RN5 national road.

[2] The assessment is made that the access roads from Kamanyola in DRC and Bugarama in Rwanda will be finished before the beginning of the works.

2.1.2.3. ESTIMATED TRAVELLING TIME

The estimated travelling time by car from the main cities of Rwanda and Democratic Republic of Congo are as described in the table below:

It is accessed as follows:

Table 2-2 – Estimated travelling time to site by car

From	Direction	Travelling time
Butare (Rwanda)	**East**	**2.5h**
Bugarama (Rwanda)	East	30 min
Bukavu (DRC)	**North**	**1.5h**
Kamanyola (DRC)	South-East	40 min

2.1.3. Dam

The general layout of the dam is shown on following figures.

Th dam is a 51 m high embankment dam (FSL 1145) with clay core founded 7m deep into alluvium riverbed. Upstream and downstream of the rock fills are sloped 2.5H/1V.

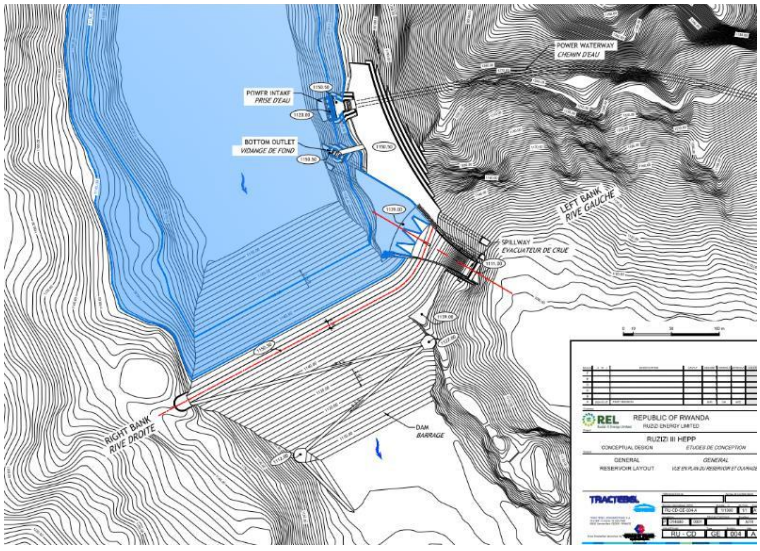

Figure 2-4: Top view of dam

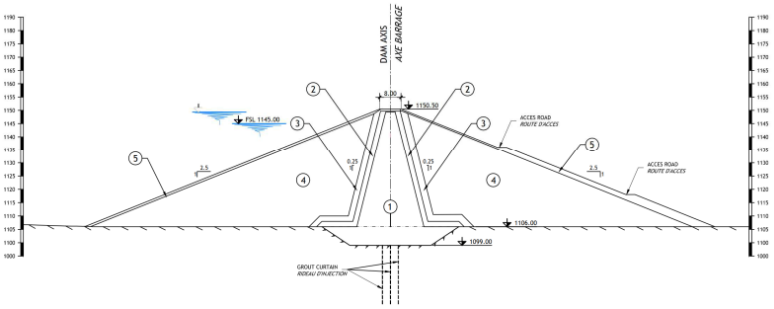

Figure 2-5: Dam cross section

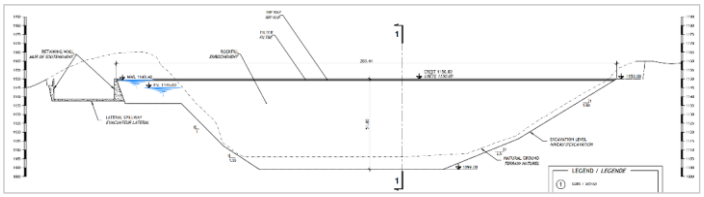

Figure 2-6: Dam US elevation

2.1.4. Spillway

The Spillway is located on left bank of the dam, it is of ungated type equipped with a Labyrinth weir. Due to the low storage capacity, there is no reservoir routing.

- The Design Discharge corresponds to *Ruzizi I maximum discharge + 10000-year flood on intermediate catchment*
- The Safety Evaluation Discharge corresponds to *Ruzizi I max discharge + Probable Maximum Flood on intermediate catchment*

Table 2-3: Design and Safety Evaluation Floods Characteristics

Flood	Discharge (m^3/s)	Reservoir elevation (masl)
Design	986	1148.6
Safety Evaluation	1200	1149.4

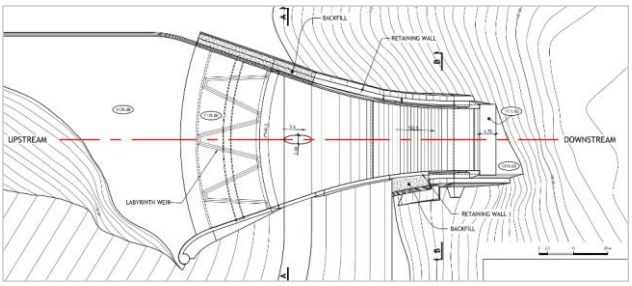

Figure 2-7: Spillway top view

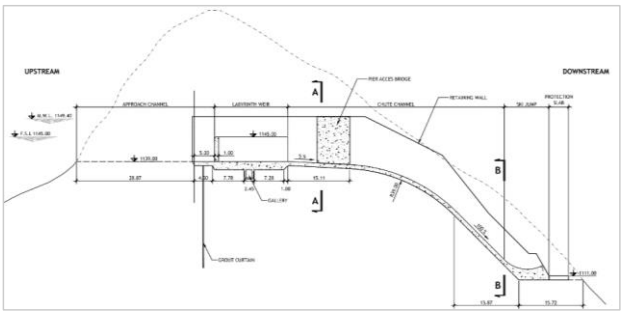

Figure 2-8: Spillway cross section

2.1.5. Bottom Outlet

The bottom outlet is composed of a gated section in tower inside the reservoir with :

- a Service gate: 2.70 x 3.00 m (w x h) radial gate
- an Emergency gate: 2.70 x 3.75 wheel gate
- A free surface flow tunnel (5 m diameter)
- Energy dissipation with ski jump at the tunnel outlet portal in the downstream meander.

The capacity is 177 m^3/s at FSL (H ~35 m) and 131 m^3/s at MOL (H ~20 m).

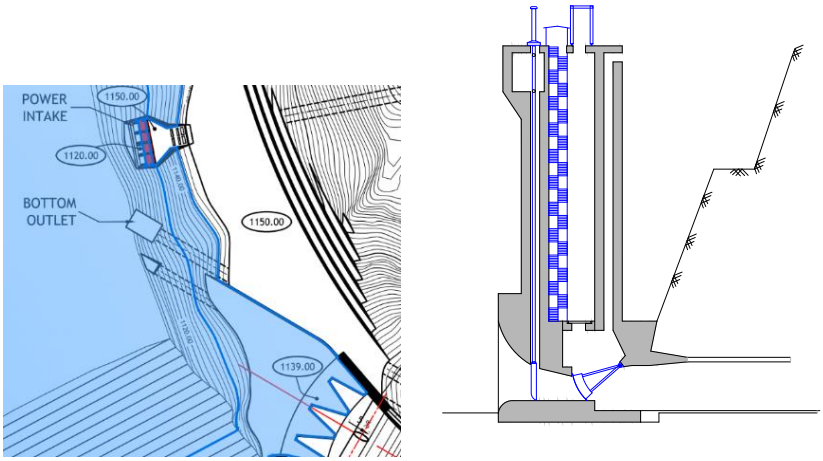

Figure 2-9: Bottom Outlet top view and cross section

2.1.6. Power Waterway and Powerhouse

The Power Waterway consists of:

- A Concrete lined tunnel, 3820 m long, 0.8% slope, internal diameter 6.9 m (flow velocity ~ 4 m/s)
- A Surge shaft, 67 m high, 18 m diameter
- A 110 m high shaft, 5.8 m diameter, steel lined
- A 240 m long tunnel, 5.8 m diameter, steel lined

Ruzizi III dam is equipped with a 158/203 MW power plant on the left bank about 3,5km downstream the dam with a tailrace channel in the Ruzizi river.

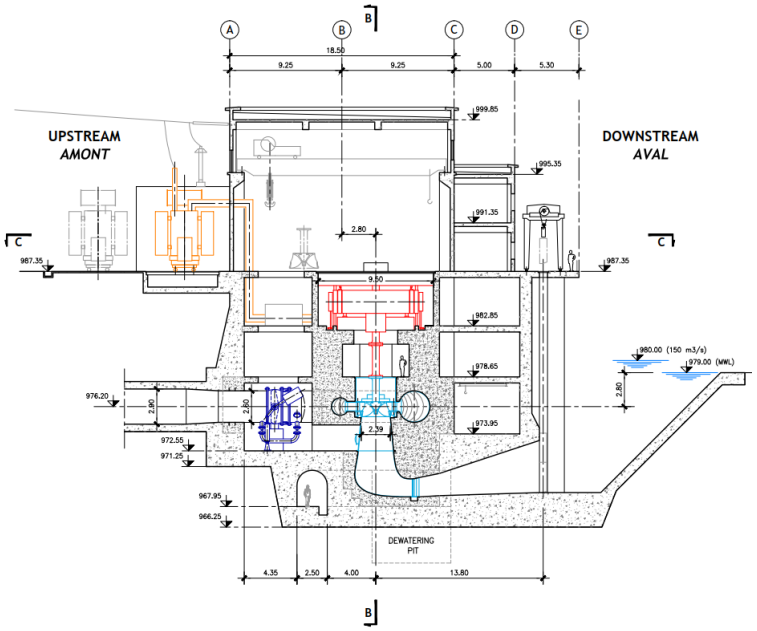

Figure 2-10: Powerhouse cross section

2.2. Legal framework and responsibilities

Construction phase: before handing over the Contractor is responsible for the surveillance of the works.

Operational phase: the Operator is responsible for the operation, surveillance and maintenance of Ruzizi III Dam.

2.3. Organization

Construction Phase

The organization for surveillance of the works as well a the staffing, the technical expertise and the training are described.

Operational Phase

The organization for operation, surveillance and maintenance of dam is described.

The staffing, the technical expertise required and training required are described.

2.4. Summary of Operation Procedures

2.5. Summary of Surveillance Procedures

2.6. Summary of Maintenance Procedures

3. ALERT LEVELS LEADING TO IMPLEMENTATION OF EMERGENCY PREPAREDNESS PLAN

As per standard practice, three alert levels of increasing severity leading to the implementation of Emergency Preparedness Plan are adopted:

- Alert 1 – Reinforced Surveillance
- Alert 2 – Potential Failure
- Alert 3 – Imminent Failure

The alert levels are progressive in accordance with the risk evaluation to the dam safety and are associated with various levels of actions described in the Emergency Preparedness Plan.

Alert 1 is triggered i) when the dam behaviour is not normal but has not yet threatened the operation or structural integrity of the dam, but possibly could if it continues to develop or ii) when Alert 1 is triggered for Ruzizi I Dam or Ruzizi II Dam.

Alert 2 follows Alert 1 and must be triggered i) when the Contractor/Operator realizes that the situation is not totally under control but emergency measures can still be implemented before the dam fails or ii) when Alert 2 is triggered at Ruzizi I Dam or Ruzizi II Dam.

Alert 3 follows Alert 2 and must be triggered i) when the Contractor/Operator has lost the control of the dam, the dam is about to fail, is failing or has failed or ii) when Alert 3 is triggered at Ruzizi I Dam or Ruzizi II Dam.

Table 3-1 : Definition of alert levels (Operational Phase)

Alert	Situation	Objectives of actions at the dam
1 – Reinforced surveillance	In case of Alert 1 triggered at Ruzizi I Dam or Ruzizi II Dam[3] In case of any special event (flood, earthquake…) that can be hazardous for the dam safety In case any abnormal observation and/or monitoring data	**Control the situation by mean of normal measures to restore a safe situation** **Anticipate the second level ahead of time**
2 – Potential failure	In case of Alert 2 triggered at Ruzizi I Dam or Ruzizi II Dam The technical measures taken by the Operator do not improve the dam safety status that tends to deteriorate The probable occurrence of an adverse event gets confirmed (exceptional flood, major slope sliding in the reservoir…) The information available suggests that, under an undefined time, the dam could get out of control of the operator	**Avoid failure by means of special measures to restore a safe situation** **Anticipate the third level ahead** **Anticipate/start evacuation of the Operator's site staff**
3 – Imminent failure	**In case of Alert 3 triggered at Ruzizi I Dam or Ruzizi II Dam[4]** **When the Operator considers that there is no more means to avoid a dam failure** **When the dam failure is effective**	**Evacuate the Operator's site staff**

[3] The EPP having not been yet developped for Ruzizi I and Ruzizi II Dams. it is recommended that Ruzizi I and Ruzizi II Dams Operators define similar Alter Levels as those defined here for Ruzizi III Dam before developping the EPPs.

[4] If the failure of Ruzizi I or Ruzizi II Dam induces the failure of Ruzizi III Dam/Cofferdam – to be confirmed by Dam Break Analysis.

PART II – EMERGENCY PREPAREDNESS PLAN

DAM SAFETY EMERGENCY PLAN

1. ROLES AND RESPONSIBILITIES

1.1. Ruzizi III Dam Personnel Organization

The Operator's organization is displayed in figure below.

Figure 1-1: the Operator Organisational Chart

1.2. Responsibilities

the Operator is responsible for the operation, the surveillance implementing the measures required to mitigate the risks related to Ruzizi III Dam. It is responsible for the preparation, implementation and updating of the EPP.

The Public Authorities in charge of the civil protection are responsible for the protection and safe evacuation of the population at risk.

1.3. Roles

1.3.1. Emergency preparedness

The roles of both the Operator and the Public Authorities at the preparatory stage are listed in the following table:

Table 1-1 - Roles in emergency preparedness

the Operator	Public Authorities
Detection of any abnormal behaviour of Ruzizi III Dam through dam surveillance	Inventory of the population living in this area
Determination of the area potentially affected by a dam break or uncontrolled water releases	Identification of local stakeholders that might be involved in the alert broadcast, resource mobilization and population evacuation
Mobilization of adequate materials to assure communication to Public Authorities under adverse conditions	Secure adequate funding to provide for the required logistics and personnel for alert broadcast, resource mobilization and population evacuation
Cooperation with the Public Authorities	Plan for post disaster management
Periodic update of the Emergency Preparedness Plan and circulation	
Common responsibilities	
Organisation of joint alert exercises (drills) & post facto evaluation of the alert exercises	
Fluid communication of information that might affect the other party planning	

1.3.2. Emergency action

The roles of both the Operator and the Public Authorities during the emergency situation are listed in the following table:

Table 1-2 - Roles and responsibilities during the emergency situation

the Operator	Public Authorities
Communicate the Alert level to the Public Authorities	
Implementation of mitigation measures to return to a safe situation and minimise the consequences	Communication with local stakeholders
Follow up of the situation and reporting to the Public Authorities	Take decision regarding the alert and the population evacuation
Respond to emergencies on site and evacuate the Operator's personnel	Evacuate the population
Declare the end of emergency on site	Coordination of alert measures
Inform the Public Authorities of the end of the alert/return to a lower alert level	Coordination of reintegration of population
Common responsibilities	
Fluid communication of information that might affect the other party planning	

2. EMERGENCY IDENTIFICATION, EVALUATION AND CLASSIFICATION – ALERT LEVELS

As per standard practice, three alert levels are adopted and described here after. They correspond to various levels of emergency of increasing severity.

The alert levels are progressive in accordance with the risk evaluation to the dam safety resulting from Dam Break Analysis and Natural Hazard Assessment Studies and are associated with various levels of actions.

All alerts are initiated by the Operator at Operational Phase or Contractor at Construction Phase and relayed by Public Authorities for the safeguard of the population and assets at risk according to the level.

The three alert levels are presented in the following table for Operational Phase and detailed in the following paragraphs. The actions that should be taken for each alert level are presented in the following chapter.

For Construction Phase the table and the paragraphs are the same with “cofferdam” replacing “dam”, “Contractor” replacing “the Operator” and “Contractor Site Staff” replacing “the Operator Site Staff.

Table 2-1 : Definition of alert levels (Operational Phase)

Alert	Situation	Objectives of actions at the dam
1 – Reinforced surveillance	In case of Alert 1 triggered at Ruzizi I Dam or Ruzizi II Dam[5] In case of any special event (flood, earthquake…) that can be hazardous for the dam safety In case any abnormal observation and/or monitoring data	**Control the situation by mean of normal measures to restore a safe situation** **Anticipate the second level ahead of time**
2 – Potential failure	In case of Alert 2 triggered at Ruzizi I Dam or Ruzizi II Dam The technical measures taken by the Operator do not improve the dam safety status that tends to deteriorate The probable occurrence of an adverse event gets confirmed (exceptional flood, major slope sliding in the reservoir…) The information available suggests that, under an undefined time, the dam could get out of control of the operator	**Avoid failure by means of special measures to restore a safe situation** **Anticipate the third level ahead** **Anticipate/start evacuation of the Operator's site staff**
3 – Imminent failure	**In case of Alert 3 triggered at Ruzizi I Dam or Ruzizi II Dam[6]** **When the Operator considers that there is no more means to avoid a dam failure** **When the dam failure is effective**	**Evacuate the Operator's site staff**

5 The EPP having not been yet developped for Ruzizi I and Ruzizi II Dams. it is recommended that Ruzizi I and Ruzizi II Dams Operators define similar Alter Levels as those defined here for Ruzizi III Dam before developping the EPPs.

6 If the failure of Ruzizi I or Ruzizi II Dam induces the failure of Ruzizi III Dam/Cofferdam – to be confirmed by Dam Break Analysis.

2.1. Alert 1 – Reinforced Surveillance

Alert 1 is triggered when the dam behaviour is not normal but has not yet threatened the operation or structural integrity of the dam, but possibly could if it continues to develop or when Alert 1 is triggered for Ruzizi I Dam or Ruzizi II Dam.

The situation requires further analysis and investigation with a reinforced dam surveillance.

Here-below is a non-exhaustive and indicative list of trigger criteria for this alert level:

- Alert 1 is triggered at Ruzizi I Dam or Ruzizi II Dam,
- Upstream water level getting higher than Full Supply Level (Operational Phase) or higher than the level expected at the current construction stage (Construction Phase)
- Sudden elevation or drop of the upstream water level,
- Heavy rains, strong wind,
- Earthquake near the site,
- Unusual observation on the dam/cofferdam and its surroundings or around the reservoir such as for example:
  - seepage/erosion in the dam, its foundation or its surroundings (for example erosion of upstream face of the dam from wave action),
  - deformation of the dam or its surroundings,
  - cracks/deformation of the spillway structure (labyrinth weir, walls, chute),
  - vortex in the reservoir,
  - activation of landslides around the reservoir,
  - and others
- Abnormal monitoring measurements possibly reflecting an unsafe behaviour of the dam/cofferdam and its surroundings (beyond pre-defined values, not in line with previous ones in terms of values or evolution, etc.)
- And others.

2.2. Alert 2 – Potential Failure

Alert 2 follows Alert 1 and must be triggered when the Operator realizes that the situation is not totally under control or when Alert 2 is triggered at Ruzizi I Dam or Ruzizi II Dam. Alert 2 is appropriate for the situation as long as the estimated remaining time before failure is long enough to continue implementing emergency measures at the dam (if not go directly to Alert 3).

- Conditions are developing at the dam which could lead to a dam failure.
- Time is still available for analyses, decision and actions to moderate or alleviate failure.

Here-below is a non-exhaustive and indicative list of trigger criteria for this alert level given:

- Alert 2 is triggered at Ruzizi I Dam or Ruzizi II Dam,
- The reservoir level getting higher than Maximum Water Level (Operational Phase) or higher than the Design Flood Level (Construction Phase),
- Development of unusual observations on the dam, its surroundings or the reservoir such as for example:
  - increasing erosion in the dam, in the foundation and surroundings
  - new or increasing seepage with cloudy water and regressive erosion at dam toe or in the banks,
  - sudden or rapidly evolving deformation or crack in the spillway structure,
  - spillway flowing with retrogressive erosion (scouring),
  - diminished discharge capacity leading to exceeding MOL,
  - sudden or rapidly evolving sliding of the dam or the banks,
  - rapidly evolving vortex in the reservoir,
- Any other observation that could lead to dam failure.
- Monitoring measurements of the dam and its surroundings evidencing an unsafe behaviour.

2.3. Alert 3 – Imminent failure

Alert 3 follows Alert 2 and must be triggered i) when the Contractor/Operator has lost the control of the dam, the dam is about to fail, is failing or has failed or ii) when Alert 3 is triggered at Ruzizi I Dam or Ruzizi II Dam.

Here-below is a non-exhaustive and indicative list of trigger criteria for this alert level given:

- Dam failure is imminent
- Dam failure is on-going
- Dam failure occurred
- Alert 3 is triggered at Ruzizi I Dam or Ruzizi II Dam

3. INUNDATION MAPS

The inundation maps resulting from the Dam Beak Analysis for the various scenarios cofferdam failure during construction, dam break during operation with flood wave heights, flood wave travel times are appended to the document.

4. PREVENTIVE MEASURES

4.1. Surveillance and Anomaly Detection

Construction Phase:

The Surveillance Procedures during Construction Phase to detect failure mechanism of cofferdam, dam and other structures or conditions possibly affecting the safe diversion of water and discharge of flood are described.

They are based on

- the survey of hydro-meteorological conditions (in-flows and weather forecast),
- periodic visual inspection and monitoring of the works and their surroundings during construction Phase.

Operational Phase:

Dam surveillance plays a key role in disaster risk reduction considering that the earlier abnormal dam behaviour is detected or conditions possibly affecting the safe discharge of flood, the better the chances are to minimise the risks and avoid failure. It gives the opportunity to implement measures to either lower the probability of failure or reduce its consequences.

Dam surveillance allows detecting the failure mechanism in progress through the dam soon enough for the dam to keep an acceptable level of risk. Emergency situations can either be identified following a visual inspection or after monitoring data analysis.

Detailed procedures regarding dam surveillance including visual inspections and instrumentation monitoring are documented in the O&M Plan (see Part I- 2 Relevant sections of Operation and Maintenance Plan).

In particular, any restriction to flooding downstream of dam shall be searched periodically for alterations in land use or obstruction of flood plain and/or possible damage from flooding to life and property, with attention to alterations that may have occurred since construction of the dam and that may not be compatible with the design discharge capacity.

4.2. Flood Forecasting and Early Warning System

Construction Phase:

The systems to be implemented during Construction Phase are described:

- The communication system and communication procedures with Ruzizi II to know the released flow.
- The Flood forecasting system for Ruzizi river.

Operational Phase:

The systems to be implemented during Operational Phase are described:

- The communication system and communication procedures with Ruzizi II to know the released flow.
- The Flood forecasting system for Ruzizi river.

5. EVACUATION ROUTES AND MEETING POINTS

The evacuation routes and meeting points are shown on the figure below.

The meeting points are defined for each stage of the works during Construction Phase.

At Operational ¨Phase, the meeting points at Dam site are located on both banks above El. 1160 (to be confirmed), the meeting point at powerhouse site is above El. 1000 (to be confirmed) on Left Bank as shown on following figure.

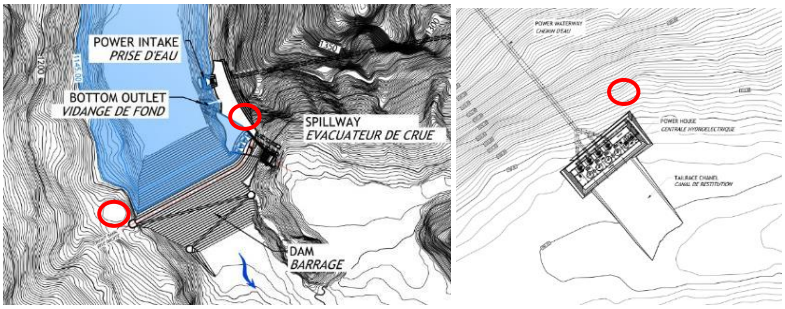

Figure 5-1: Provisional Meeting Points at Dam Site (left) and Powerhouse Site (right)

The evacuation routes from dam and from powerhouse use the green road on Left Bank from Dam Site to Powerhouse Site and the blue road on Left Bank from Powerhouse Site to Bugarama, as shown on following figure.

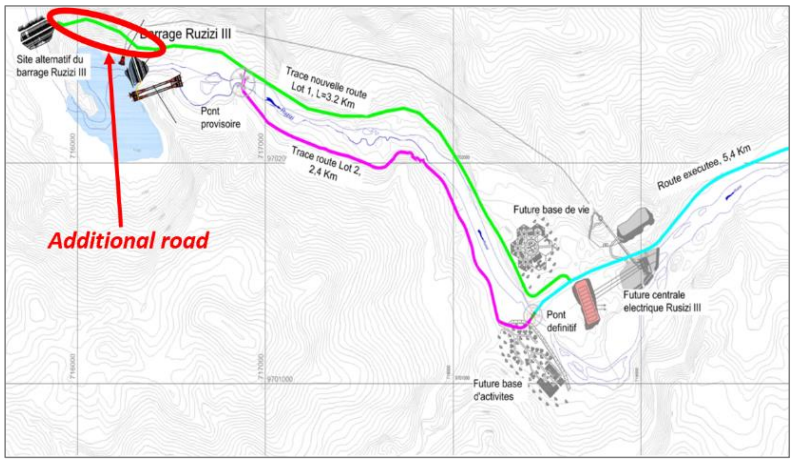

Figure 5-2: Evacuation routes

The Contractor/Operator maintains the signs indicating the route to follow to the safe meeting points on site.

6. RESPONSE DURING PERIOD OF DARKNESS

The emergency lighting systems for Construction Phase and Operational Phase functioning with emergency power sources (cf. Sub-Section 8.3) are described. They light the works and their surroundings, the routes to meeting points and the meeting points.

The Contractor/Operator maintains the emergency lighting systems.

7. RESPONSE DURING PERIOD OF ADVERSE WEATHER

The access to or from the site with travelling time during period of adverse weather are described. The risks of submersion by flood or landslides along the roads are examined.

The availability of equipment and facilities to respond to emergency during period of adverse weather is examined, in particular emergency power sources, emergency lighting, stockpiling supplies and materials, communication system and alarms.

8. EQUIPMENT AND FACILITIES REQUIRED TO RESPOND TO EMERGENCY

8.1. Sources of equipment

The materials and equipment required for rescuing the Contractor/Operator Site Staff are provided and implemented under the responsibility of Contractor/Operator respectively for Construction Phase and Operational Phase.

The materials and equipment required for population rescuing are provided and implemented under the responsibility of the Public Authorities (light boats, vehicles, sandbags, civil engineering materials and engines).

8.2. Stockpiling Supplies and Materials

Provisions of materials and equipment to place the materials (bulldozers, dumpers, trucks,…) made available in the vicinity of cofferdam/dam, stored above the level reached by the floods and dam break wave and protected from adverse weather conditions are described for Construction Phase and Operational Phase :

- Volume and storage location of fine material (clay) for dumping over the upstream face in case of uncontrolled seepage,
- Volume and storage location of draining materials (gravel) stockpiling for dumping over the downstream face in case of uncontrolled seepage,
- Volume and storage location of sand bags and sand to control an erosion initiation observed at the dam toe,
- Number and characteristics of bulldozers, dumpers, trucks, storage location.

8.3. Emergency Power sources

Backup diesel generators shall be provided and made permanently available during Construction Phase and Operational Phase for equipment essential for safe management of water, communication, alarms and emergency lighting.

Number, characteristics and location of diesel generators for Construction Phase and Operational Phase.

8.4. Communication systems

Communication systems between the actors of the Plan should be adapted in such a way that communication will be ensured under all reasonably predictable circumstances including severe emergency situations.

At least two separate communication modes independent of each other should be in operation simultaneously between all control and operating units. In addition to mobile phones, it is highly recommended that satellite phones be readily available at the dam site.

Permanent surveillance should be exercised on normal operating as well as emergency communication systems. Especially, risk of dysfunction of the GSM network within the exposed area shall be analysed with the mobile operators concerned.

The Contractor/Operator maintains the communication devices (radios, phones) made available to the exposed Contractor's/Operator's personnel.

Describe the Communication system of the Contractor at Construction Phase and of the Operator at Operational Phase.

8.5. Location of alarms and schedule of maintenance

A proposition for the location of alarms at operational Phase is made below. Whether a sirens network is relevant for Construction Phase needs to be confirmed from the Dam Break Analysis.

Operational phase:

In Ruzizi Valley within 6 km downstream the dam the population is directly alerted through sirens as there is no time to alert the population through the Public Authorities.

A number of 3 sirens located on the figure below is considered.

The alert is triggered from the control buttons of the sirens network located in the dam control room and in the powerhouse control room.

The signal is made of a succession of sound (2 seconds) and silence (3 seconds) for at least 2 minutes.

The alert system is tested every quarter with a shorter signal (2s sounding -3s silent -2s souding - 3s silent – 2s sounding).

The alert system is maintained every year (preventive maintenance).

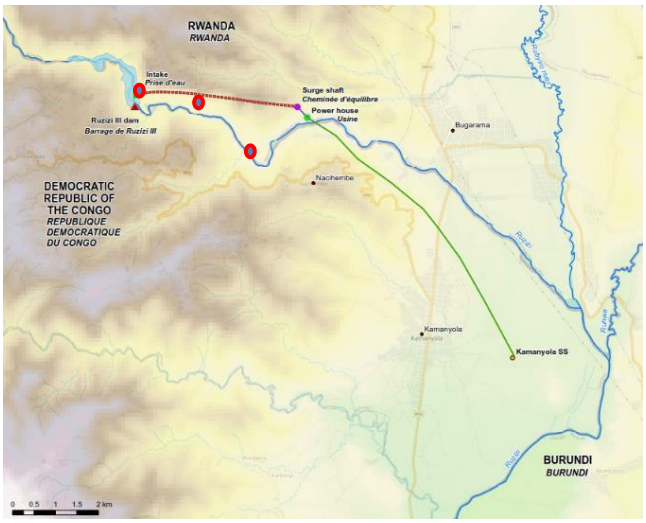

Figure 8-1: General layout of sirens network

9. EMERGENCY ACTION PLAN FRAMEWORK

The present chapter sets the framework for the development of an Emergency Action Plan Framework with provision of guidelines.

The framework is given for the Operational Phase. It is valid for the Construction Phase provided that "the Operator" is replaced by "the Contractor", "dam" is replaced by "cofferdam".

9.1. Alert stage 1

9.1.1. Notification flow chart and description

Table 9-1 : Alert level 1 action plan

Ruzizi III Dam **By the Operator**	**The Operator implements the following measures:** **-Inform the Public Authorities as per the communication system established** **-Take adequate measures to avoid dam failure and return to a safe situation.** **-Activate the dam lighting system** **-Implement a surveillance team on site 24 hours per day (shift work)** **-Manage the floods as per dedicated procedures** **-Record the situation in an alert log**

9.1.2. Post Alert Measures

Following an Alert level 1, the measures recommended are listed in the table below. These measures must be implemented when the emergency situation is managed (no alert level in progress).

Table 9-2 : Post Alert Measures - Alert level 1

Ruzizi III Dam **By the Operator**	The Operator implements the following measures: -Check the integrity of the dam structures; -Check the integrity of the HEM equipment; -Assess the instrument status and corresponding data. -Preparation of incident report -Preparation of post-alert evaluation report

9.2. Alert stage 2

9.2.1. Notification flow chart and description

Table 9-3 : Alert level 2 action plan

Assistance to civilian populations **By Public Authorities**	Information of the administrations and local authorities Preventive information dedicated to population Deployments of police forces at the local level if deemed required Closure of education centres and health centres in the exposed area if applicable Evacuation of fragile populations within the exposed zone (children, pregnant women, disabled /invalid person and attendants). Relocation of public administrations in the exposed area if applicable Preparatory steps for a possible population evacuation
Traffic management **By Public Authorities**	**Securing of dam access roads** **Traffic on dam access roads limited to emergency and evacuation vehicles** **The routes used for people evacuation are regulated to be fully available for evacuation purposes**
Ruzizi III Dam **By the Operator**	**The Operator put in place the measures required to avoid dam failure in consultation with a senior dam safety engineer and relevant stakeholders.** **Such measures are evaluated together with the internal and external technical staff mobilized to manage the crisis.**

9.2.2. Post Alert Measures

Following an Alert level 2, the measures recommended are listed in the table below. These measures must be implemented when the emergency situation is managed (no alert level in progress).

Table 9-4 : Post Alert Measures - Alert level 2

Assistance to civilian populations **By Public authorities**	The Civil Authorities undertake the following activities: -Inform population, public security and media about the end of emergency operations; -Preparation of post-emergency evaluation report
Ruzizi III Dam **By the Operator**	**Securing of dam access roads** **Traffic on dam access roads limited to emergency and evacuation vehicles** **The routes used for people evacuation are regulated to be fully available for evacuation purposes**
Ruzizi III Dam **By the Operator**	**The Operator implements the following measures:** **-Check the integrity of the dam structures** **-Check the integrity of the HEM equipment** **-Assess the instrument status and corresponding data** **-Preparation of incident report** **-Preparation of post-emergency evaluation report**

9.3. Alert stage 3

9.3.1. Notification flow chart and description

Table 9-5 : Alert stage 3 action plan

Assistance to civilian populations **By Public authorities**	Alert the citizens to evacuate by any means required Complete evacuation of the exposed populations School evacuation arranged by the professors if applicable Evacuation of health centres arranged by the medical staff if applicable Deployment of the police forces: prevention of looting Provision of reception centres by Public Authorities First aid treatment wherever necessary
Traffic management **By Public authorities**	**Transit ban on flooded roads** **Traffic regulation along the evacuation routes**
Ruzizi III Dam **By the Operator**	**The Operator ensures permanent liaison with the Public Authorities in order to keep all emergency management organisations informed on the situation** **The Operator's personnel evacuates Ruzizi III Dam and gather in an meeting point properly defined**

9.3.2. Post-Alert Measures

Following an Alert level 3, the measures recommended are listed in the table below. These measures must be implemented when the emergency situation is managed (no alert level in progress).

Table 9-6 : Post Alert Measures - Alert level 3

Assistance to civilian populations **By Public authorities**	The Civil Authorities undertakes the following activities: -Check the security of flooded access (roads, streets, ways, bridges); -Wash the flooded accesses (roads, streets, ways, bridges); -Start the extermination of rats in the flooded areas, take measures to gather the dead rats and animals, and clear the alive rats; -Fixe an hour of reintegration and inform the population; -Check the complete sewer network and remove all the materials embarrassing the water flow; -Check the drinkable network conditions; -Check the drinkable water quality (specialized organism involved); -Proceed to the progressive reintegration of population; -Remove progressively the security barriers and emergency signing; -Proceed to the cleaning and checking of public building and drain the flooded underground; -Examine the food in shops and restaurants; -Inform population about the hygiene measures; -Close the temporary accommodations; -Summarize the damages for citizens and companies; -Advise the victims about the help services available. If necessary, organize public meetings; -Inform population, public security and media about the end of emergency operations; -Preparation of post-emergency evaluation report
Ruzizi III Dam **By the Operator**	**The Operator implements the following measures:** **-Check the integrity of the dam structures** **-Check the integrity of the HEM equipment** **-Assess the instrument status and corresponding data** **-Preparation of incident report** **-Preparation of post-emergency evaluation report**

9.4. Emergency contacts, communication protocols, procedures for interaction with the Public Authorities

The emergency contacts to be called with the associated communication protocols and the procedures for interaction with the Public Authorities in case of a dam safety emergency at Ruzizi III Dam at Construction Phase or Operational Phase are appended.

9.5. Post-facto evaluation

Following any emergency situation, an evaluation must be formalised. A feedback meeting gathering all the emergency plan stakeholders must be held and documented in an event report. The following points shall be addressed:

- Emergency situation detection: input data, analyse, decision
- Alert broadcasting: who?, when?, how?;
- Potential mitigation measures: dates, hours, effects observed
- Decisions taken by the different stakeholders: Contractor/Operator, Public Authorities
- Effects of the latter decisions
- Consequences of the emergency situation: flooded area, damages, injuries

For any of the items listed above, a factual report shall be accompanied by an analysis of the strengths and weaknesses. Such analysis shall be accounted for in the periodic update of the EPP.

10. PROCEDURES FOR PERIODIC REVIEW AND UPDATE

The present Emergency Preparedness Plan is prepared and updated under Contractor's responsibility during Construction Phase and Operator's responsibility during Operational Phase.

Any institutional, operational and administrative change calls for an update of the Plan. Moreover, the severity of the consequences of possible dam accidents evolve with the development of population settlement and activities in the Ruzizi River valley downstream of Ruzizi III.

Ruzizi III Dam Emergency Preparedness Plan must therefore be reviewed at least every year during Construction Phase and once in 5 years for the need of updating and for adaptation to alterations of the physical and social environment whichever is relevant.

11. TRAINING AND AWARENESS

Awareness and training action shall be planned by Contractor at Construction Phase and Operator at Operational Phase in close cooperation with the Public Authorities. The content of these awareness sessions shall address the following items:

- Emergency Action Plan presentation;
- Alert signals presentation (flags, sirens, speakers, message content…);
- Emergency communication system;
- Review and validation of the response measures (emergency routes, meeting points…).

11.1. Contractor / Operator staff

A Safety Officer should be appointed within the Contractor organization at Construction Phase and the Operator organization at Operational Phase. Part of his mission would be to establish an annual training program dedicated to the Contractor's/Operator's personnel involved in the emergency preparedness and response.

This training should aim at preparing the site personnel to the cofferdam/dam surveillance, alert and emergency measures in close collaboration with Contractor's/Operator's executive management.

- The site personnel is in charge of the first steps of the alert procedure. It is therefore essential that these personnel are experienced with the communication procedures in order for any anomaly to be transmitted to the appropriate manager as quickly as possible.
- The site personnel must be trained to react appropriately to any emergency situation. Such preparation allows for reducing the improvisation of the operation team facing an emergency situation.
- The site personnel must be familiar with the evacuation procedures.
- Awareness and training action must emphasize on the essential need for continually recording, storing and making information concerning the dam safety easily accessible.

11.2. Public Authorities

A counterpart to the Contractor/Operator Safety Officer should be appointed in the public authorities involved in the Emergency Action Plan.

In close collaboration with Contractor/Operator, these personnel would establish an annual training program dedicated to the Public Authorities and civil society stakeholders involved in the emergency preparedness and response.

This training should aim at preparing the Public Authorities and civil society stakeholders to receive and relay the alert and undertake the appropriate emergency measures in the field.

11.3. Population

The population information and education on the dam failure risk is a key step in an emergency plan implementation. Dam failure is a complex phenomenon and its consequences are difficult to apprehend. It is therefore imperative that the exposed people be properly aware of the possible emergency situations and be consulted during the elaboration of the Emergency Action Plan.

An awareness program should be developed jointly by Contractor/Operator and the public authorities together with public consultations.

11.4. Warning exercises

In addition to the different trainings separately held within the entities described above, joint warning exercises shall be planned, coordinated and analysed by Contractor/Operator and the public authorities.

Every warning exercise shall result in an evaluation incorporating stakeholder's feedback. The lesson learned from the latter analysis shall be accounted for in the periodic Plan update.

Several levels of warning exercise should be planned:

- Annual seminar: seminar gathering the different stakeholders in order for them to get familiar with the procedures and responsibilities arising from the EPP. Validity of communication chart and associated contact details are checked at this occasion.
- Simulation of the Operator's staff evacuation on site.
- In office simulation: this exercise consists in all stakeholders meeting in a so-called crisis cell in Contractor/Operator's office. The exercise starts with a description of the simulated event. It is followed by discussions on the response proposed in the EPP when facing such a situation in terms of event coordination and stakeholder's responsibilities.
- Full scale simulation: this exercise is a full-scale simulation which implies the field deployment of the resources foreseen in the Plan, the implementation of all instructions and procedures required in the Plan. This exercise aims at evaluating the response capacities, the smooth flow of information and the coordination between all participants of the different entities involved

DISASTER PLANS

This part shows the links between the Dam Safety Emergency Plan and the Disaster Plans developed by Public Authorities of Rwanda, the Democratic Republic of Congo and Burundi.

1. RESPONSIBILITIES

The responsibilities of the Public Authorities of Rwanda, the Democratic Republic of Congo and Burundi in the Disaster Plans implemented in case of a dam safety emergency at Ruzizi III Dam at Construction Phase or Operational Phase are described.

2. NOTIFICATION PROCEDURES

The notification procedures used in the implementation of the Disaster Plan in case of a dam safety emergency at Ruzizi III Dam at Construction Phase or Operational Phase are described.

3. WARNING SYSTEMS

The warning systems used to alert the population in case of a dam safety emergency at Ruzizi III Dam at Construction Phase or Operational Phase are described.

APPENDICES

APPENDIX A: MAIN REFERENCE DRAWINGS

[to be completed]

APPENDIX B: INUNDATION MAPS

[from Dam Break Analysis, to be completed]

APPENDIX C: EMERGENCY CONTACTS

[to be completed]

Name of Stakeholder	Location	Name	Designation	Phone No	Email
Ministry in charge of Emergency Management of Rwanda					
Ministry of Interior and Security of Democratic Republic of Congo					
Ministry of Public Security of Burundi					
Public administrations at regional level in Rwanda					
Public administrations at regional level in Democratic Republic of Congo					
Public administrations at regional level in Burundi					
Public administrations at local level in Rwanda,					
Public administrations at local level in Democratic Republic of Congo					
Public administrations at local level in Burundi					
State civil protection entities of Rwanda					
State civil protection entities of Democratic Republic of Congo					
State civil protection entities of Burundi					

APPENDIX D: COMMUNICATION PROTOCOLS WITH PUBLIC AUTHORITIES

[to be completed]

APPENDIX E: PROCEDURES FOR INTERACTION WITH PUBLIC AUTHORITIES

[to be completed]

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TRACTEBEL ENGINEERING S.A.

HEAD OFFICE
5, rue du 19 mars 1962
92622 – Gennevilliers CEDEX – France
tractebel.engie.fr

Nadia FEKNOUS / Cristian NIETO
tel. +33 1 41 85 03 69
fax.+33 1 41 85 03 74

Annex F – Ongoing Basin-Wide Studies and Programmes

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Introduction

Information of the Lake Kivu and Ruzizi River Basin context and existing basin-wide plans developed and implemented by government agencies is provided in the following subsections.

The information is provided to inform readers of the ESMP of the ongoing basin-wide management initiatives.

The Lake Kivu and the Ruzizi River Basin, where the Project is located, faces many challenges related to the unsustainable use of water, land and related resources. The basin suffers from high environmental degradation, extreme soil erosion, low regulatory compliance, insufficient access to electricity and drinking water supplies for a rapidly growing population, high poverty rates and vulnerability to the impacts of climate change. Competing and increasing demands for resources (for agriculture, drinking water, energy generation, commercial activities, the environment), are increasing pressure on the resources (through pollution, changing land use patterns and a growing population), and subsequently changing their state (with the degradation of water, soil and habitat quality). This impacts public and environmental health, economic development, biodiversity, etc. (AHT Group, 2022).

Integrated Water Resources Management

In the frame of an objective to develop in the future an Integrated Water Resources Management Plan, the Lake Kivu and the Ruzizi/Rusizi River Basin Authority (ABAKIR) has prepared as Strategic Action Plan (SAP) for the basin (see Box next page).

The SAP includes several subplans and components that address waste management, prevention of soil erosion and protection of biodiversity, which are also of concern for the Ruzizi-III Project. Subplans which address and/or include components that address these themes, are described in the following paragraphs.

Pollution Prevention and Waste Management

One of the challenges faced by the Ruzizi-III Project is the management of domestic waste that originates from the upstream catchment area, and which is carried to the Ruzizi River by runoff, and then carried downstream by the river. The current situation is that vast quantities of floating domestic waste, comprising mostly plastic waste (bottles, sandals, shoes, bags, etc) accumulates in the reservoirs of Ruzizi-I and -II and represent a human health risk and a risk to the turbines and power generation. SNEL and SINELAC, the respective operators of the Ruzizi-I and -II hydropower schemes, do their best to remove the waste from the reservoir and either eliminate the waste at official landfills or burn the waste. However, this management measure is constrained by the availability of funds and some waste continues downstream. It can be anticipated that when the Ruzizi-III Project is implemented, floating domestic waste will also collect in Ruzizi-III reservoir. The Ruzizi-III Project has anticipated this problem and there are provisions to remove and manage the reservoir trash (see Section 4.11).

The SAP includes the Pollution Prevention and Waste Management of Lake Kivu, Bukavu Basin and Ruzizi River Project, implemented by the *Université Officielle de Bukavu* and financed by ABAKIR/GIZ/EU. The project components comprise the following:

- Protection of the watershed and coastline of Lake Kivu and the Ruzizi River by developing a waste management plan.
- Restoration of aquatic plants in places where they have been destroyed.
- Promotion of knowledge of the values or importance of the service and goods provided by Lake Kivu and the Ruzizi River, once well protected against pollution.

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Integrated Water Resources Management / Strategic Action Plan

On July 6, 2011, the Republic of Burundi, DRC and the Republic of Rwanda agreed to create the Lake Kivu and the Ruzizi/Rusizi River Basin Authority, "ABAKIR". And on November 4, 2014, the Member Countries signed an international convention establishing ABAKIR as a transitional body. ABAKIR's mission is to contribute to the sustainable development and stabilization of the Great Lakes Region by stimulating economic development through the integrated management of water resources in all dimensions (energy, agriculture, lake transport, tourism, biodiversity, etc.). ABAKIR is responsible for implementing the cooperation and development policy for the protection and conservation of the shared water resources in the Basin.

In July 2022, the first Strategic Action Plan (SAP) for the Lake Kivu and the Ruzizi River Basin was published. The SAP was prepared under the auspices of ABAKIR as part of the project "Support to the integrated management of water resources of Lake Kivu and Ruzizi River", financed by the European Union (EU Delegation to Rwanda) and the German Federal Ministry for Economic Cooperation and Development (BMZ), and implemented under a delegation agreement by the *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ). The project aims at improving the hydrological and operational management of the Lake Kivu and the Ruzizi River Basin.

The SAP comprises a series of 5 Strategic Priorities and objectives for the basin, as listed below.

Strategic Priorities of the SAP	Objectives
SP 1: Adapt to and mitigate the impacts of climate change in the basin	Ecosystems and human societies are sufficiently resilient to adapt to the impacts of climate change and variability and mitigation measures to reduce GHG emissions in energy and other production systems are identified and put in place
SP 2: Ensure water availability and access for socio-economic development and to safeguard water, energy and food securities	Improved knowledge on the availability and state of the water resources enables competent management approaches that consider the interactions, synergies and trade-offs of water, energy and food for socio-economic development
SP 3: Preserve and protect the environment and ecosystem health	Critical habitats are protected, and ecosystems are stabilised and restored through conservation measures and sustainable land management practices
SP 4: Develop stakeholder capacity for integrated water resources management	Stakeholders are aware of the importance of water and land management and their role in it and take appropriate measures to address challenges arising at their level
SP 5: Develop institutional and organisational capacity of the Basin Authority	ABAKIR is recognised as a capable coordinating authority for all interventions regarding water and land management in the Lake Kivu and Ruzizi River Basin and the active management of relevant information and data from across the basin

For each Strategic Priority, planned and financed or ongoing projects in the basin from different implementing actors have been identified that contribute to the objective of the priority. This is to ensure that activities are already financed for the plan and to avoid delays related to lack of financing.

Financing the SAP

Securing sufficient financing remains a challenge for many action plans. For this reason, the measures proposed within the SAP have either completely secured financing or are planned with initial financing secured. The GEF/AfDB Project has a total budget of nearly USD 32 million (with around USD 6 million provided by AfDB as a grant). The additional USD 26 million is considered mobilised from various other co-financing possibilities (such as the corporate social responsibility (CSR) funds from private companies and the in-kind contributions from member state countries) but may take time before this funding become available. For additional financing for new projects or for co-financing, financing may be mobilised through a variety of sources, including:

- Funding from National Budgets, through a line ministry.
- Grants and / or Budget Support from bilateral and multilateral donors.
- Concessional loans from International Finance Institutions.
- Blending Grants with Concessional Loans.
- Polluter pays – Water User pays for Ecosystem Services.

Source: AHT Group (2022)

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- Training of the local population and local administrative authorities on the management and recycling of waste.
- Establishment of a remote sensing and GIS (geographic information system) system which will identify areas sensitive to erosion and the implementation of remedial measures.

Reduction of Soil Erosion

Reduction of soil erosion is a cross-cutting theme across the SAP's 5 strategic priorities. The key subplans are as follows:

- Projet de reboisement national « EWE BURUNDI URAMBAYE » The main objective of the project is to reforest all denuded areas throughout the national territory in order to protect terrestrial ecosystems and forests. The project is implemented by the Ministry of Interior Affairs, Community Development and Security; Public Ministry of National Defense and War Veterans; Ministry of Environment, Agriculture and Livestock; Ministry of Finance
- Piloting watershed management in Rutsiro-Rwanda and Kalehe-DRC for the resilience to climate change and improving livelihoods of smallholder farmers in Lake Kivu basin. The project involves capacity building for smallholder farmers and implementing appropriate agroforestry and water management options to reduce soil erosion and enhance food, water and energy security the implementation zone and Kalehe district in DRC. The outcomes comprise: (i) Soil and water management best practices piloted to stabilize erosion affected landscapes and restore the fertility of degraded farms, (ii) Fruit production for improved nutrition and income generation for smallholder farmers. (iii) The capacity of smallholder farmers improved to address land degradation, improve farm productivity and generate income from fruit production, and (iv) Scaling up of success stories. The project is financed by the World Agroforestry / ABAKIR / GIZ / EU

Biodiversity Preservation

The key subprojects related to protection of biodiversity are as follows:

- Biodiversity conservation, sustainable land management and enhanced water security in Lake Tanganyika basin (active in part of the Kivu-Ruzizi Basin). The project is implemented by UNEP/GEF. The objective is to enhance transboundary cooperation and LTA-SAP implementation through sustainable fisheries co-management, biodiversity conservation and restoration of degraded landscapes in selected key biodiversity areas of Lake Tanganyika. Outcomes are as follows:
  - A regional network of community ased co-managed fisheries areas is established and operationalized, and demonstrate their efficacy as a viable mechanism for the sustainable conservation, improved livelihoods, and utilization of fishery resources in Lake Tanganyika,
  - Improved protection and enhanced delivery of ecosystem services from the core conservation zones of three protected areas,
  - The adoption of sustainable natural resource harvesting approaches and sustainable agricultural crop and livestock practices in targeted villages in protected area buffer zones contributes to reducing anthropogenic pressures on the core conservation areas of three protected areas,
  - Improved coordination and information-sharing among riparian countries, the LTA, donors and other key stakeholders leads to more effective partnerships in the implementation of the SAP and NAPs
- DUKINGIRE IBIDUKIKIJE - Conservation and enhancement of natural ecosystems and their biodiversity for green growth of rural communities in Burundi. The project is implemented by Burundian Agency for Water and Sanitation in Rural Areas (AHAMR) and is funded by the EU. The objective is to Promote the conservation and enhancement of biodiversity and sustainable and equitable socio-economic development in Burundi. The outcomes is that the ecosystem services of the Rusizi River catchment are protected and enhanced.

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Institutional Capacity Building

The SAP includes the Strategic Priority 5: Develop institutional and organisational capacity of the Basin Authority (ABAKIR). The objective is that ABAKIR is recognised as a capable coordinating authority for all interventions regarding water and land management in the Lake Kivu and Ruzizi River Basin and actively manages relevant information and data from across the basin.

Subprojects targeting this objective comprise the following:

- Support to the Integrated Management of Water Resources of Lake Kivu and Ruzizi River, implemented by ABAKIR with financing from GIZ / EU / BMZ. The objective is to improve the hydrological and operational management of Lake Kivu and the Ruzizi River. Outcomes are: (i) Preparation of a strategic action plan for the basin, based on the basin's baseline study (ii) improving the hydrological and operational management of Lake Kivu and the Ruzizi River
- Lake Kivu and Rusizi River Basin Water Quality Management Component 1: Enhancing regional and national cooperation, financed by AfDB / GEF. The objective is to improve water quality, environmental and economic services and practices of lake Kivu through improved transboundary cooperation. The outcome is strengthened collective management of Lake Kivu and River Rusizi Basin through institutional, policy, and legal reforms.
- Lake Kivu and Rusizi River Basin Water Quality Management Component 4: M&E and Knowledge management, financed by AfDB / GEF. The objective is to improve water quality, environmental and economic services and practices of lake Kivu through improved transboundary cooperation. The outcome is (i) Assessments conducted to supplement TDA and SAP, and better guide decision-making (ii) Effective M&E, learning and exchange at all levels underpin implementation.

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Integrated Water Resources Management / Strategic Action Plan

On July 6, 2011, the Republic of Burundi, DRC and the Republic of Rwanda agreed to create the Lake Kivu and the Ruzizi/Rusizi River Basin Authority, "ABAKIR". And on November 4, 2014, the Member Countries signed an international convention establishing ABAKIR as a transitional body. ABAKIR's mission is to contribute to the sustainable development and stabilization of the Great Lakes Region by stimulating economic development through the integrated management of water resources in all dimensions (energy, agriculture, lake transport, tourism, biodiversity, etc.). ABAKIR is responsible for implementing the cooperation and development policy for the protection and conservation of the shared water resources in the Basin.

In July 2022, the first Strategic Action Plan (SAP) for the Lake Kivu and the Ruzizi River Basin was published. The SAP was prepared under the auspices of ABAKIR as part of the project "Support to the integrated management of water resources of Lake Kivu and Ruzizi River", financed by the European Union (EU Delegation to Rwanda) and the German Federal Ministry for Economic Cooperation and Development (BMZ), and implemented under a delegation agreement by the *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ). The project aims at improving the hydrological and operational management of the Lake Kivu and the Ruzizi River Basin.

The SAP comprises a series of 5 Strategic Priorities and objectives for the basin, as listed below.

Strategic Priorities of the SAP	Objectives
SP 1: Adapt to and mitigate the impacts of climate change in the basin	Ecosystems and human societies are sufficiently resilient to adapt to the impacts of climate change and variability and mitigation measures to reduce GHG emissions in energy and other production systems are identified and put in place
SP 2: Ensure water availability and access for socio-economic development and to safeguard water, energy and food securities	Improved knowledge on the availability and state of the water resources enables competent management approaches that consider the interactions, synergies and trade-offs of water, energy and food for socio-economic development
SP 3: Preserve and protect the environment and ecosystem health	Critical habitats are protected, and ecosystems are stabilised and restored through conservation measures and sustainable land management practices
SP 4: Develop stakeholder capacity for integrated water resources management	Stakeholders are aware of the importance of water and land management and their role in it and take appropriate measures to address challenges arising at their level
SP 5: Develop institutional and organisational capacity of the Basin Authority	ABAKIR is recognised as a capable coordinating authority for all interventions regarding water and land management in the Lake Kivu and Ruzizi River Basin and the active management of relevant information and data from across the basin

For each Strategic Priority, planned and financed or ongoing projects in the basin from different implementing actors have been identified that contribute to the objective of the priority. This is to ensure that activities are already financed for the plan and to avoid delays related to lack of financing.

Financing the SAP

Securing sufficient financing remains a challenge for many action plans. For this reason, the measures proposed within the SAP have either completely secured financing or are planned with initial financing secured. The GEF/AfDB Project has a total budget of nearly USD 32 million (with around USD 6 million provided by AfDB as a grant). The additional USD 26 million is considered mobilised from various other co-financing possibilities (such as the corporate social responsibility (CSR) funds from private companies and the in-kind contributions from member state countries) but may take time before this funding become available. For additional financing for new projects or for co-financing, financing may be mobilised through a variety of sources, including:

- Funding from National Budgets, through a line ministry.
- Grants and / or Budget Support from bilateral and multilateral donors.
- Concessional loans from International Finance Institutions.
- Blending Grants with Concessional Loans.
- Polluter pays – Water User pays for Ecosystem Services.

Source: AHT Group (2022)

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- Training of the local population and local administrative authorities on the management and recycling of waste.
- Establishment of a remote sensing and GIS (geographic information system) system which will identify areas sensitive to erosion and the implementation of remedial measures.

Reduction of Soil Erosion

Reduction of soil erosion is a cross-cutting theme across the SAP's 5 strategic priorities. The key subplans are as follows:

- Projet de reboisement national « EWE BURUNDI URAMBAYE » The main objective of the project is to reforest all denuded areas throughout the national territory in order to protect terrestrial ecosystems and forests. The project is implemented by the Ministry of Interior Affairs, Community Development and Security; Public Ministry of National Defense and War Veterans; Ministry of Environment, Agriculture and Livestock; Ministry of Finance
- Piloting watershed management in Rutsiro-Rwanda and Kalehe-DRC for the resilience to climate change and improving livelihoods of smallholder farmers in Lake Kivu basin. The project involves capacity building for smallholder farmers and implementing appropriate agroforestry and water management options to reduce soil erosion and enhance food, water and energy security the implementation zone and Kalehe district in DRC. The outcomes comprise: (i) Soil and water management best practices piloted to stabilize erosion affected landscapes and restore the fertility of degraded farms, (ii) Fruit production for improved nutrition and income generation for smallholder farmers. (iii) The capacity of smallholder farmers improved to address land degradation, improve farm productivity and generate income from fruit production, and (iv) Scaling up of success stories. The project is financed by the World Agroforestry / ABAKIR / GIZ / EU

Biodiversity Preservation

The key subprojects related to protection of biodiversity are as follows:

- Biodiversity conservation, sustainable land management and enhanced water security in Lake Tanganyika basin (active in part of the Kivu-Ruzizi Basin). The project is implemented by UNEP/GEF. The objective is to enhance transboundary cooperation and LTA-SAP implementation through sustainable fisheries co-management, biodiversity conservation and restoration of degraded landscapes in selected key biodiversity areas of Lake Tanganyika. Outcomes are as follows:
  - A regional network of community ased co-managed fisheries areas is established and operationalized, and demonstrate their efficacy as a viable mechanism for the sustainable conservation, improved livelihoods, and utilization of fishery resources in Lake Tanganyika,
  - Improved protection and enhanced delivery of ecosystem services from the core conservation zones of three protected areas,
  - The adoption of sustainable natural resource harvesting approaches and sustainable agricultural crop and livestock practices in targeted villages in protected area buffer zones contributes to reducing anthropogenic pressures on the core conservation areas of three protected areas,
  - Improved coordination and information-sharing among riparian countries, the LTA, donors and other key stakeholders leads to more effective partnerships in the implementation of the SAP and NAPs
- DUKINGIRE IBIDUKIKIJE - Conservation and enhancement of natural ecosystems and their biodiversity for green growth of rural communities in Burundi. The project is implemented by Burundian Agency for Water and Sanitation in Rural Areas (AHAMR) and is funded by the EU. The objective is to Promote the conservation and enhancement of biodiversity and sustainable and equitable socio-economic development in Burundi. The outcomes is that the ecosystem services of the Rusizi River catchment are protected and enhanced.

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Institutional Capacity Building

The SAP includes the Strategic Priority 5: Develop institutional and organisational capacity of the Basin Authority (ABAKIR). The objective is that ABAKIR is recognised as a capable coordinating authority for all interventions regarding water and land management in the Lake Kivu and Ruzizi River Basin and actively manages relevant information and data from across the basin.

Subprojects targeting this objective comprise the following:

- Support to the Integrated Management of Water Resources of Lake Kivu and Ruzizi River, implemented by ABAKIR with financing from GIZ / EU / BMZ. The objective is to improve the hydrological and operational management of Lake Kivu and the Ruzizi River. Outcomes are: (i) Preparation of a strategic action plan for the basin, based on the basin's baseline study (ii) improving the hydrological and operational management of Lake Kivu and the Ruzizi River
- Lake Kivu and Rusizi River Basin Water Quality Management Component 1: Enhancing regional and national cooperation, financed by AfDB / GEF. The objective is to improve water quality, environmental and economic services and practices of lake Kivu through improved transboundary cooperation. The outcome is strengthened collective management of Lake Kivu and River Rusizi Basin through institutional, policy, and legal reforms.
- Lake Kivu and Rusizi River Basin Water Quality Management Component 4: M&E and Knowledge management, financed by AfDB / GEF. The objective is to improve water quality, environmental and economic services and practices of lake Kivu through improved transboundary cooperation. The outcome is (i) Assessments conducted to supplement TDA and SAP, and better guide decision-making (ii) Effective M&E, learning and exchange at all levels underpin implementation.

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