PUBLIC NOTICE

SUMMARY

Environmental and Social Impact Statement (ESIS) and Resettlement Action Plan (RAP) for the Proposed Rusumo Run-of-River (RoR) Hydropower Project and associated Transmission lines

01. INTRODUCTION

1.1 Project Background

The Governments of Burundi, Rwanda and Tanzania in collaboration with the Nile Basin Initiative/ Nile Equatorial Lakes Subsidiary Action Program (NBI/NELSAP) with SPV/NELSAP as the implementing agency, have agreed to construct a 80mW Hydropower Plant at Rusumo Falls where the Akagera River forms the boundary between Tanzania and Rwanda, and about 2 kilometres downstream of the river's confluence with the Ruvubu River.

The Regional Rusumo Falls Hydro-Electric Project (RRFHP) is one of the many multinational projects implemented by NELSAP and consists of the following components: i) the construction of the 80 MW hydroelectric power plant (HPP) at Rusumo Falls (Akagera River) and; ii) the construction of three high voltage (HV) transmission lines running from the Rusumo Falls substation towards the load centres of the national grids in Burundi, Rwanda and Tanzania.

1.2 Project Justification

Lack of electricity is a key constraint hampering economic development and livelihood improvement in Burundi, Rwanda, and Tanzania. Current electricity demand exceeds supply with persistent load shedding. Most urban and rural households rely on biomass for their cooking and heating needs, leading to deforestation. The access rate to electricity remains very low in the three countries with Burundi having an access rate of10% while Rwanda and Tanzania stand at 16 and18 per cent respectively.

The lack of access to reliable power supply services hampers the countries' growth potential, contributes to the poverty and isolation of rural populations, and affects provision of other key services, such as water supply, health and education. It is also a major constraint for commercial and industrial development. The deficit in power supply is rapidly increasing due to increasing population growth and electricity demand for industrialization, despite governments efforts.

Investments in new power generation plants, transmission/distribution lines and substations as well as the rehabilitation of existing facilities are greatly needed. Regional power development and interconnections through the East Africa and South Africa Power Pools,

along with national thermal and national hydro plants are expected to make major contribution to filling such significant and rapidly increasing deficits in power supply.

The Rusumo Falls Hydropower project will play a major role in increasing regional generation and transmission links to help meet national demand.

1.3 Legal and Policy Framework

The Environmental and Social Impact Assessments (ESIA) and Resettlement Action Plans (RAP) are based on the relevant national and international requirements, policies and legislation of Burundi, Rwanda and Tanzania. According to the decree on Environmental Impact Assessment (2010) and Environmental Code (2000) of Burundi; Environmental Management Act (2004) of Tanzania and the Organic Law No. /04/2005 of 08/04/2005, the proposed project requires undertaking of the Environmental and Social Impact assessment studies before being implemented. Additionally, the development partners including the World Bank (WB) and the African Development Bank (AfDB) require environmental assessment (EA) of projects to ensure that they are environmentally sound and sustainable. Based on the World Bank categorisation, the project is classified as a *Category A* project, owing to the potentially significant environmental and social impacts, and it triggers a full environmental assessment.

The ESIA and RAP findings of the Run-of-River (RoR) Development Scheme of the dam and power plant component indicate that most of the significant impacts will be experienced at the project construction site, Rusumo due to civil works during construction. Affected land will be residential, land used for business and small areas of agricultural land. Land take will result in the permanent change of current land use. A total of 223 households in Rwanda and Tanzania will be affected by power plant construction activities.. Other significant impacts will be associated with permanent flooding during the dam operations and will be experienced up to 5 km upstream of the Akagera river from the dam site. A total of 441 households will lose their arable marshland (351 in Rwandan villages and 90 in Tanzanian villages) during power plant operations. The key potential impacts associated with the transmission lines construction and operations include land acquisition for the Right of Way (ROW) and construction of pylons/towers. The ROW will traverse gardens, wetlands and forests whose woody vegetation will have to be cleared. The impacts will be greatly minimised if the recommended mitigation measures in the ESMPs and compensation approaches outlined in the RAPs are implemented for both the power generation plant and transmission lines. The SPV/NELSAP, will work closely with all relevant authorities in Tanzania, Burundi and Rwanda including the Rwanda Development Board (RDB), Rwanda Environment Management Authority (REMA), National Environment Management Council (NEMC) of Tanzania to ensure that the Environment and Social Management Plan (ESMP) and Resettlement Action Plan (RAP) recommendations are implemented in order to minimise the adverse environmental and social impacts.

This non-technical summary of the proposed project presents a description of the proposed project and its justification, baseline environmental and social conditions in the project area, outline of project impacts, mitigation options and an overview of the environmental and social management and monitoring plans.

02. PROJECT DECRIPTION

2.1 Power Generation Plant

The power plant and station will be situated at the Rusumo Falls where the Akagera River forms the boundary between Tanzania and Rwanda, and about two kilometres downstream of the river's confluence with the Ruvubu River (Figure 1).

The dam will be located just upstream of the falls and oriented perpendicular to the river channel. The power facilities, except for the substation, will be located on the right bank of the Akagera River on the Tanzanian side, while the river diversion works will be located on the left bank, on Rwandan side. The main project features include: an intake structure, a headrace tunnel, a surge tank, a tunnel trifurcation, a surface powerhouse and a tailrace channel.

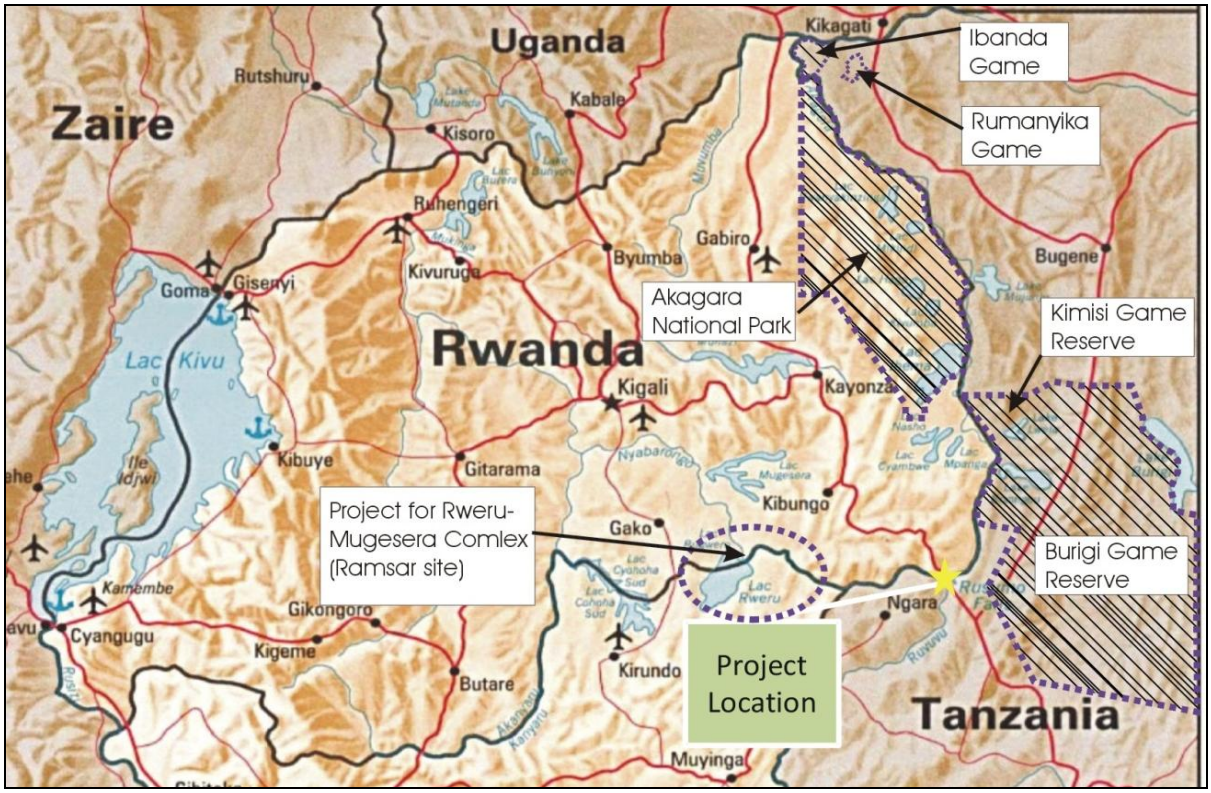

Figure 1: Location of proposed Hydropower plant

2.1.1 Power generation Plant Structures

Dam and Spillway: The dam will be located just upstream of the falls and oriented perpendicular to the Akagera River channel. The dam will operate with a maximum normal water level of 1,320 metres asl. The structure will operate as a run-of-river, which means that there will be no storage of water and consequently there will be no impounding of a reservoir upstream from the dam.

Water Intake: The water intake will be located on the right bank of the Akagera River (Tanzania side). A rock face will be excavated to develop the headrace tunnel portal and the concrete structure will be built in this excavation.

Headrace Tunnel: The headrace tunnel at the intake is aligned almost perpendicular with the right bank and parallel with the dam axis.

Manifold and Penstocks: Concrete manifold will make the transition between the headrace tunnel and the three penstocks. The three penstocks will extend approximately 30 metres from the manifold to the powerhouse.

Surge Chamber: A surge chamber upstream of the powerhouse will be excavated and will be above ground, circular, and unlined with no concrete walls.

Power House: The powerhouse will be located at the rock cliff overlooking the Mitako basin, on the south side of the rapids on the right bank of the Akagera River. The powerhouse will comprise three turbines (Kaplan units) and three generators with a total maximum capacity of 80 MW. The step-up transformers will be located at the downstream side of the power station.

Tail Race Channel: The tailrace canal will be located at the Mitako basin and is oriented N-NE. The total length of the tailrace will be around 250 metres, the width will decrease from 55 to 45 metres.

Substation: The projected site for the substation is located on the Rwandan side, on a summit plateau overlooking Akagera River left bank, downstream of the falls.

2.1.2 Generation Plant Construction activities

The construction activities described are described in the following subsection.

Temporary River Diversion Works and Cofferdam: A temporary diversion of the river will be necessary for the duration of construction of the upstream structures. To minimise length, the temporary diversion channel will be constructed on the left bank (Rwandan side of the river).

Closure Dike: A closure dike will be constructed when the construction of the spillway (or alternatively, the powerhouse and tailrace) is completed and the upstream cofferdam is dismantled. The main purpose of the closure dike is to prevent water from flowing through the diversion channel following completion of the powerhouse.

Tailrace Cofferdam: In order to proceed with the excavation of the powerhouse and the tailrace channel in dry conditions, a cofferdam will be constructed.

Access Tunnel: A tunnel is planned during construction to access the headrace tunnel and remove excavated material (construction adit). The proposed access tunnel is located on the right bank of the Akagera River.

2.2 Transmission lines

The project will consist of erection of three overhead lines (OHL) including the associated substations following the routes shown in in Figure 2 below.

2.2.1 Technical design

The following technical designs are proposed for the transmission lines:

Voltage: 220kV operating voltage for the transmission lines and substation in Rwanda, Tanzania and Burundi; single circuit transmission lines; steel lattice towers; average span is 350m; height of towers is 37.5 – 49.5m; phase conductor is AAAC; with two overhead ground wires: one in steel and another in aluminium with optic fibre.

A total of 1,041 towers will be erected for the entire transmission line (293 in Burundi, 334 in Rwanda and 414 in Tanzania).

2.2.2 Proposed routing

The following transmission line routing is proposed:

1) 164 km 220 kV line between the Rusumo Falls power station and Gitega sub-station (Burundi) passing through, Tanzania for 56km, to) the future high voltage station at Muyinga (Burundi);

2) 115 km 220 kV line between the Rusumo Falls power station and Shango (Kigali) substation (Rwanda); with an extension of 8km to the Substation at the Kigali New Airport (Rwanda);

3) 93 km 220 kV line between the Rusumo Falls power station and Nyakanazi substation (Tanzania).

The area to be affected under the Right of Way (ROW) of 30m width for the entire transmission line corridor for the three lines is 1116 ha. and the total length, including bypasses is 380km.

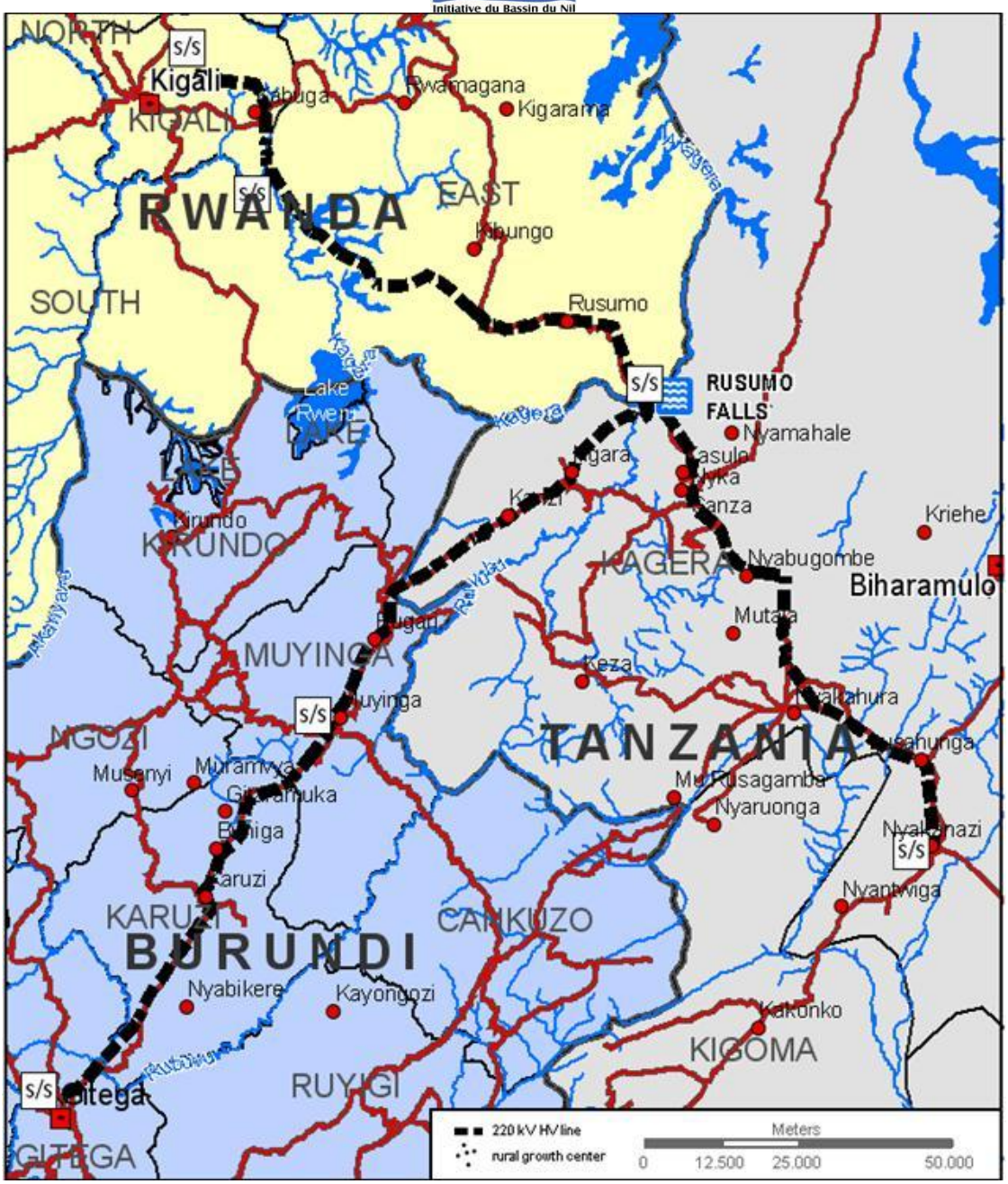

Figure 2: Line routing of proposed overhead lines

2.2.3 Substation sites

The planned transmission line in Burundi will be connected to the future high voltage Muyinga substation and will end at the existing Gitega Substation, which will be upgraded to 220 kV.

In Rwanda, a new 220 kV Rusumo Falls Substation will be constructed. This substation will be linked to the Rusumo Falls Hydroelectric generation plant and will be the starting point for the planned transmission lines in Burundi, Rwanda and Tanzania. The planned transmission

line in Rwanda will be linked to Bugesera Substation. The endpoint of the transmission line will be the new 220 kV Shango substation, which will also be the endpoint of the Gisenyi-Goma-Kigali transmission line.

The new 220 kV Nyakanazi Substation will be constructed as the endpoint of the planned transmission line in Tanzania.

03. BASELINE CONDITIONS IN PROJECT AREA

3.1 Biophysical and social setting of the Project area

3.1.1 Biophysical setting

Power Generation Plant

The power generation plant is located in Kigarama Sector and Nyamiyaga Ward in Rwanda and Tanzania respectively.

The dominant feature of the Akagera Valley upstream from the Rusumo Falls is the vast seasonally flooded marshes which fill the bottom of the valley. Most of the valley bottom is occupied by marshes dominated by *Cyperus papyrus*, however there are some ponds, which are depressions filled with water and some loamy sand raised beds which constitute favourable habitats for the development of vegetation and wildlife communities.

The lower part of Akagera Valley, from the Rusumo Falls benefits from the flow of some small rivers and creeks of less importance. It is characterized by more or less large marshes and a complex system of lakes located in the Akagera National Park.

Transmission lines

In Burundi, the transmission lines will traverse the Central Plateaus in the natural areas/ ecological zones of Kirimiro and Bweru, which are known for their farming activities. It crosses three districts/ provinces, namely: Gitega, Karuzi and Muyinga, and more specifically, the following communes: i) Gitega and Giheta in Gitega District/ Province; ii) Shombo, Buhiga and Gitaramuka in Karuzi District/ Province; and iii) Muyinga and Butihinda in Muyinga District/ Province. Some of the areas to be traversed by the transmission lines have gallery forests dominated by *Syzygium parvifolium* and *Dodonea viscosa*.

In Rwanda, the transmission lines will be located in the extreme southern part of the country and will extend from the Northeastern extension zone of the City of Kigali to the Tanzanian border consisting of the Akagera River, on which the dam and the Rusumo Hydropower Plant (HPP) will be erected. The area is located in the Eastern Province to the town of Kigali and crosses Kirehe, Ngoma, Bugesera, Rwamangana, Kicukiro and Gasabo Districts. The area shows a diversity of vegetation communities modified by farming activities. These include pasture lands, woodland, swampy areas often in natural state, hill crops mixed with agroforestry species, etc. Some relics of natural forests or wooded savannas can also be

found. The most common agroforestry include fig trees (*Ficus* sp), *Markhamia lutea*, Bambusa sp, etc. Non-native species include *Grevillea robusta, Cedrela* sp. and *Cordia* sp.

In Tanzania, the transmission lines will be located in Akagera region in the northwestern corner of Tanzania. Akagera region comprises the following eight administrative districts: Bukoba Urban, Bukoba Rural, Misenyi, Muleba, Karagwe, Ngara, Chato, and Biharamulo. The transmission lines will traverse Ngara and Biharamulo Districts.

The vegetation is dominated by *Hyparrhenia rufa, Combretum* and *Acacia* spp. wooded grasslands with minimal cultivation and livestock farming. The dominant woody species include *Combretum* spp., *Pterocarpus tinctorius, Pterocarpus angolensis, Terminalia mollis, Swatzia madagascariensis, Brachystegia spiciforms* and *Pericopsis angolensis.*

Biharamulo Central Forest Reserve and Burigi Game Reserve in Biharamulo District are located outside the impacted area and will not be affected by the project activities.

3.1.2 Socio-economic setting

General overview: Burundi, Rwanda, and Tanzania have some of the lowest per capita Gross Domestic Product (GDP) in the world though comparable with most of the countries in Sub-Saharan Africa. This can partially be attributed to the agricultural oriented economy which is still mainly based on rain fed subsistence production (non-irrigated). In Burundi and Rwanda, additional factors are the decreasing sizes of cultivable area per inhabitant and the low productivity of the agricultural systems. Whereas there is low agricultural productivity, in the western Districts of Tanzania, land scarcity does not constitute a major challenge for the next decades. So far, settlements and farms are mainly concentrated near roads while the hinterland provides enough reserves of arable land.

In the three countries, less than 20% of the population has access to electricity, and yet the area has a vast reservoir of energy resources, including hydroelectricity which is still untapped. The populations that access electricity in Burundi constitute 10% of the total population whereas in Rwanda and Tanzania, only 16% and 18% respectively are able to access electricity. All three countries depend considerably on the agricultural sector. Between 85 % (Tanzania) and more than 90% (Burundi and Rwanda) of the population live by subsistence farming. However, agricultural and animal husbandry practices are still traditional, and modern inputs are almost completely lacking and yields per land unit are low.

Plots in marshlands are usually of small dimension, with an average of 0.05 ha. When in proximity of extensive wetland areas, like in Kigarama sector, an average of three plots in marshlands is owned by the same household. However, unlike the situation in Rwanda, there is no shortage of land in Ngara District in Tanzania. Hence, there is no intensive marshland use.

3.2 Climatic conditions in Project area

Precipitation in the Akagera River Basin is characterized by significant spatial and temporal variability. The precipitations vary from less than 800 mm in the central part of the catchment basin (Rusumo area) and up to 1,800 mm in the mountainous regions of the West (Rwanda) and the South (Burundi), where the majority of runoff water is generated.

The project area is located near the Equator and temperatures are consequently fairly constant. The climate is moderated by the trade winds and altitude. The average temperature is around 24°C during the day and around 10°C at night. Maximum temperature of approximately 34°C is observed during the day. The annual average temperature ranges between 25-29°C

3.3 Hydrology

The Akagera River Basin with the exception of the area west of Lake Victoria is characterized by discontinuous aquifers overlain by unconsolidated deposits and areas of fractured rock.

The continuous aquifers are mainly located in the sandy alluvial deposits located in the valley bottoms of the major tributaries. There are also continuous aquifers in the colluvium pockets located at the base of the hills. The Akagera River catchment basin is located in the Great Lakes region between the Lakes Victoria, Tanganyika and Kivu. The Akagera River drains a total area of 59,800 km^2 encompassing areas in Burundi, Rwanda, Tanzania and Uganda.

3.4 Noteworthy Fauna and Flora

According to the IUCN red list of globally threatened species, some of the notable fauna of special conservation concern, known to occur further south of the project area especially in Akagera National Park and associated marshes include the Hippopotamus (*Hippopotamus amphibious*), Papyrus Yellow Warbler (*Chloropeta gracilirostris*), Lesser Kestrel (*Falco naumanni*) and the Shoe Bill *(Balaeniceps rex*). Among the globally threatened fish are the Victoria stonebasher (*Marcusenius victoriae*), Matthes' barb (*Barbus acuticeps*) and Rwanda ruandae (*Synodontis ruandae*). Two of the rare timber trees species (*Pterocarpus angolensis* and *Pterocarpus tinctorius*) recorded in the project area in Biharamulo District are on the list of reserved tree species for Tanzania and protected by law. *Prunus africana* recorded in some of the gallery forests of the Biharamulo district ROW impacted area is a globally threatened plant species according to IUCN (2013).

Details of the biological and socio-economic baseline can be found in the ESIA and RAP reports.

04. POTENTIAL IMPACTS AND MITIGATION/ENHANCEMENT MEASURES

Impact prediction and analysis utilised a project lifecycle approach: identifying and analysing impacts from design, construction, through operation (post-construction) phases. Impact analysis aimed at developing recommendations that maximise benefits and avoid/reduce/minimise adverse environmental and social impacts.

4.1 Summary of key impacts and mitigation measures

Type of Impact	Impact description	Project component	Extent/location	Proposed mitigation/control/Enhancement measures
Construction phase				

Type of Impact	Impact description	Project component	Extent/location	Proposed mitigation/control/Enhancement measures
a) Physical Environment				
Impact on Hydrology	No flow over Rusumo Falls and along bypassed section of river	Power Generation Plant	Rusumo Falls and 100m stretch of Akagera River downstream	An environmental flow (of 10% of the rivers average flow rate) is recommended.
Impact on Land Use	Change in land use	Power Generation Plant	61 ha located at Rusumo West, Rusumo East and Rusumo villages	Minimisation of construction area footprint
	Loss of woody vegetation due to transmission lines ROW clearance	Transmission lines	About 18,600 trees will be felled to create the Right of Way (ROW) of 30m in Rwanda (4,400 trees), Burundi (6500 trees) and Tanzania (7,700 trees). Another 114 ha of agricultural land, mainly banana plantations, will be cleared.	1) To determine precisely the location of towers and their distance among them to mitigate deforestation and clearing at edges of forests; 2) Minimisation of width of ROW to a minimum required for stringing of conductors when the transmission line crosses groups of trees and plantations; 3) Training of all site workers to restrict clearing to indicated areas and not to harvest forest produce illegally; 4) Reforestation program in liaison with government authorities
	Access road construction	Transmission lines	To access the ROW areas	1. Existing access roads will be used to the extent possible 2. Limit width to 2.5m
	Resettlement	Transmission lines	A total of 382 households to be displaced in Rwanda (134), Burundi (166) and Tanzania (82).	See RAP for details
	Loss of land due to tower construction	Transmission lines	A total of 10.4ha of land will be lost due to construct 1041 towers in Rwanda, Burundi and Tanzania	See RAP for details
	Impacts on wetlands	Transmission lines	Wetlands will be affected during construction of towers	1) Proper HSE construction site management, 2) the use of well-maintained vehicles 3) controlled disposal of hazardous waste
Impact of sediment load	Rainwater runoff transporting	Power Generation	River area around Rusumo Falls and downstream (2 –	1) Contractor E&S specifications

Type of Impact	Impact description	Project component	Extent/location	Proposed mitigation/control/Enhancement measures
	sediment into river due to construction activities	Plant	3 km)	2) Management of spoils 3) Erosion and sediment control 4) Supervision of construction works v) Monitoring
Impact on water quality	Discharge of polluting substances into Akagera River	Power Generation Plant and Transmission lines	Akagera River downstream from Falls	1) Contractor E&S specification 2) Hazardous substance management 3) Accidental spill and preparedness and response plan 4) Water quality monitoring and control 5) Supervision of construction works
Impact from noise and vibration	Noise and vibrations	Power Generation Plant	Vicinity of Rusumo West, Rusumo East and Rusumo villages	1. Contractor E&S specification 2. Management of noise and vibration 3. Management of road traffic and access 4. Noise and vibration monitoring and control 5. Supervision of construction works
Impacts on air quality	Dust and exhaust emissions	Power Generation Plant	Vicinity of Rusumo West, Rusumo East and Rusumo villages	1. Contractor E&S specification 2. Management of dust and air quality 3. Management of road traffic and access 4. Air quality and dust monitoring and control 5. Supervision of construction works
Impact from waste	Inappropriate waste management/disposal	Power Generation Plant and Transmission lines	Vicinity of Rusumo West, Rusumo East and Rusumo villages; Transmission lines ROW	1. Contractor E&S specification 2. Waste management plans 3. Supervision of construction works
Impacts from site works	Soil erosion	Transmission lines and power plant	Entire transmission lines routing in particular, steep slopes and crossings of rivers Power plant construction	1. Implementation of the Drainage and Erosion Control Plan. 2. Use of existing access roads (roads, tracks, trails) as much as possible;

Type of Impact	Impact description	Project component	Extent/location	Proposed mitigation/control/Enhancement measures
			site	3. Avoid localizing campsites and establish access tracks on steep slopes, on fragile soils or along rivers.
	Management of quarries and borrow pits	Transmission lines and power plant	Entire ROW, selected, registered quarry sites	1. The Contractor shall establish a management plan for quarries 2. Soil pollution by oil leaking from quarry vehicles shall be avoided
	Watercourses and water pollution, access roads	Transmission lines	In all ROW areas and work sites as well as campsites	1) Avoid having the transmission line layout along riverbeds and lakeshores. 2) Observe a distance of at least 20 m from the flooded zone or 50 m from lakeshores. 3) Avoid placing towers on fringes of watercourses or in their immediate vicinity in order to limit soil erosion risk to the watercourses.
b) Biological Environment				
Impacts on natural habitat and flora	Loss of terrestrial natural habitat	Power Generation Plant	Rusumo West and East Rwanda (2 ha) Rusumo, Tanzania (27 ha)	1. Contractor E&S specification 2. Site flora and fauna protection plan 3. Quarries management plan access 4. Site re-vegetation and rehabilitation 5. Supervision of construction works
	Degrading / loss of habitat	Power Generation Plant	Rusumo Falls spray zone	1. Environmental flow equipped with spray system to maintain spray conditions 2. Supervision of construction activities 3. Biodiversity monitoring
		Power Generation Plant	Akagera River downstream from Falls – 500 m	Environmental flow (included in design)
	Loss of rare and globally threatened species including	Transmission line	Between Lusahunga and Nyakanazi and between Nyakahura and Lusahunga	1. Conduct thorough biodiversity surveys and mapping before clearance for

Type of Impact	Impact description	Project component	Extent/location	Proposed mitigation/control/Enhancement measures
	Prunus africana			the ROW. 2. Preserve rare and threatened species were possible during construction of the transmission lines. 3. While crossing areas serving as habitats for such rare/ threatened species, the layout of the transmission lines could be adapted to preserve their habitats.
	Spread of invasive plant species	Transmission lines	In all ROW areas and work sites	1) Conduct a rigorous inspection and clean-up of construction machines before driving them to the forest to avoid any introduction of invasive plant species. 2) The source of construction materials will have to be indicated in order to follow up and avoid dissemination of invasive species and different contaminations.
Impacts on fauna	Physical disturbance, loss of terrestrial habitat	Power Generation Plant	Vicinity of Rusumo West, Rusumo East and Rusumo villages	1. Contractor E&S specification 2. Site flora and fauna protection plan 3. Quarries management plan access 4. Site re-vegetation and rehabilitation 5. Supervision of construction works
		Transmission lines	Along transmission lines routing especially in Rwanda and Tanzania particularly in natural vegetation areas	1) The tower sites spread along the line routing, which makes the impact low in scale in a particular place. 2) Control poaching 3)Ensure that vegetation along the transmission lines be cut up to a certain height that allows small animals to cross on both sides of the line (biological corridor)

Type of Impact	Impact description	Project component	Extent/location	Proposed mitigation/control/Enhancement measures
	Loss of aquatic habitats	Power Generation Plant	Rusumo Falls spray zone and 500 m stretch of downstream river	1. Environmental flow equipped with spray system to maintain spray conditions 2. Biodiversity monitoring
Socio-economic environment				
Land acquisition for the project components	Loss of land, livelihood, assets etc. broader socioeconomic impacts prior to project commencement	Power generation plant and Transmission lines	Rusumo and entire ROW	See RAPs for details
Direct employment opportunities	Temporary employment for local people for construction work	Power Generation Plant and Transmission lines	Up to 1,000 temporary jobs – priority to be given to local people at the dam site; and many others on the transmission lines	1. Contractor E&S specification (recruitment policy and procedure) 2. Workforce recruitment plan 3. Supervision of construction works
Induced and indirect employment	Work for service companies – creation of job opportunities	Power Generation Plant and Transmission lines	Induced employment of between 100 – 200 jobs, and which could create up to 600 indirect jobs at the dam site and many others on the transmission line routing	1. Contractor E&S specification (recruitment policy and procedure) 2. Plan for contracting service companies 3. Supervision of construction works 4. Local Area Development Plan (LADP) implemented as part of the Resettlement Action Plan (RAP)
Socio-economic benefits associated with the economic development of the Project site	Increased income of local people	Power Generation Plant	Villages around Rusumo site	As for direct employment and induced/indirect employment above
Indirect socio-economic benefits associated with rural electrification	Improved livelihood of local people	Transmission lines and generation plant	Regional scale	See LADP for details
Assistance to farms through LADP	Assistance to improve farming practices and crop production yields	Power Generation Plant and Transmission lines ROW	In the Districts of Ngara in Tanzania, Kirehe, Biharamulo, and Ngoma in Rwanda and Giteranyi commune in Burundi	See LADP for details
Impact on peoples' livelihoods	Impact on houses, business and livelihoods	Power Generation Plant and	Rusumo East, Rusumo West and Rusumo (affected PAPs)	See RAPs for details

Type of Impact	Impact description	Project component	Extent/location	Proposed mitigation/control/Enhancement measures
		Transmission lines		
	Loss of arable marshland	Power Generation Plant	Eight villages to be affected: six in Rwanda and two in Tanzania (affected PAPs)	See RAP for details
Spontaneous settlements	Influx of workers seeking work	Power Generation Plant	Villages around Rusumo site	1. Plan for management of spontaneous settlements 2. Contractor E&S specification (recruitment policy and procedure) 3. Plan for recruiting 4. Supervision of construction works
Public health and safety related to construction work	Nuisances – air quality, road traffic, noise	Power Generation Plant	Villages around Rusumo site	1. Contractor E&S specification 2. Public health management plan 3. Supervision of construction works
Infectious diseases	Increased prevalence of HIV and AIDS and other STDs	Power Generation Plant	Villages around Rusumo site	1. Contractor E&S specification 2. Public health management plan 3. Supervision of construction works 4. Plan to increase sensitization on HIV, AIDS & sexually transmitted diseases
Waterborne diseases	Increased habitat for waterborne disease vectors	Power Generation Plant	Villages around Akagera valley extending from dam to 15 km upstream	Monitoring of water related disease vectors
Workforce health and safety	High accident rates	Power Generation Plant	Construction workforce	1. Contractor E&S specification 2. Workforce health and safety plan – and other plans also addressing H&S 3. Supervision of construction works
Impact on tourism industry	Bypassing of Rusumo Falls and physical presence of dam	Power Generation Plant	Rusumo Falls area	None
Impacts on physical cultural heritage	Chance find and disturbance of physical cultural heritage resources	Power Generation Plant	Rusumo Falls area	1. Contractor E&S specifications 2. Chance find procedure

Type of Impact	Impact description	Project component	Extent/location	Proposed mitigation/control/Enhancement measures
Operation Phase				
Physical Environment				
Hydrology	No flow over Rusumo Falls and along bypassed section of river	Power Generation Plant	Rusumo Falls and 100 stretch of Akagera River downstream	Environmental flow of 10%
	Loss of arable marshland	Power Generation Plant	Between 187 – 700 ha	See RAP and LADP for details
	Change in seasonal marshland flooding regime	Power Generation Plant	Akagera valley marshlands extending 15 km upstream	None
Impact of sediment load	Reduced electricity production and operating life	Power Generation Plant	N/A	Sediment transport (and adaption to dam design if necessary)
	Reduced sediment load causing modification to river morphology	Power Generation Plant	Akagera river downstream from Falls	1. Adaption to dam design to minimise trapping of sediment 2. Monitoring of sediment deposition and changes in river morphology
Impacts on climate	Reduced GHG emissions on regional scale	Transmission lines and power generation plant	Regional	N/A
Visual impact	Change in landscape and no water flowing over waterfalls	Power Generation Plant	Vicinity of Rusumo West, Rusumo East and Rusumo villages	Environmental flow (included in dam design)
	Presence of the transmission lines/ ROW	Transmission lines	Along transmission lines	1) Camouflage by vegetation between viewpoints e.g. by planting tree hedges; 2) Rehabilitation of new access roads not needed anymore after having finalized the construction
Substation sites and transformers	Management of cooling oils	Transmission lines	All substations	The substations shall be locked and guarded in order to prevent any burglary or stealing of cooling oils and other equipment

Type of Impact	Impact description	Project component	Extent/location	Proposed mitigation/control/Enhancement measures
	Hazardous waste, Hydrocarbons	Transmission lines	All substations	Oil pits with oil separator systems beneath the transformers will be installed at all substation sites
	Transformer fires	Transmission lines	All substations	1) Fire walls between the transformers will be installed 2) Control buildings at substations will be equipped with a sufficient number of fire extinguishers. 3) Staff will be trained how to handle fire within a substation.
Power transmission	Electric and magnetic fields (EMF)	Transmission lines	Electric and magnetic fields (EMF)	1) Substations and conductors will be designed following latest international standards. 2) At substations the strength of the electric and magnetic field will be measured when in operation and zones with high fields will be marked with possible restrictions for allowed working hours. 3) Minimum safety distance from houses to closest conductor of 7 m has to be respected
Seismic activities	Effect on towers and substations	Transmission lines	Contractor	The loads for substations and towers are calculated with a horizontal acceleration of 0.1 g and a vertical acceleration of 0.05 g.
Biological Environment				
Impacts on natural habitat and flora	Change in seasonal marshland flooding regime – creation of permanent flooded and additional flooded areas	Power Generation Plant	Akagera valley marshland extending 15 km upstream from the dam	None
Impacts on fauna	Change in seasonal marshland flooding regime – change in habitat	Power Generation Plant	Akagera valley marshland extending 15 km upstream from the dam	Biodiversity monitoring
	Animal corridors	Transmission lines	All areas with natural vegetation along transmission line routing	During maintenance and ROW clearance, ensure that vegetation is cut up to a height that allows animals to cross on both sides. Leave in place the

Type of Impact	Impact description	Project component	Extent/location	Proposed mitigation/control/Enhancement measures
				shrub layer as far as possible.
	Biodiversity	Transmission lines	In forest galleries and wetlands	Undertake regular monitoring of threatened species (birds, monkeys) of the area.
	Avian mortality	Transmission lines	Along transmission lines especially in Gahinga	To support a program for inventory of migratory birds by installation of a migration camp in Gihinga.
Presence of ROW	Vegetation control and protection	Transmission lines	Along transmission lines	1) Maintenance operations will have to be restricted to the ROW and should not damage the surrounding vegetation. 2) The manual or mechanical control of vegetation within the ROW must be encouraged. Vegetation removal must be mechanically and no use of herbicides to control vegetation.
Socio-economic environment				
Land use change	Permanent flooding of arable marshland due to dam operations	Power Generation Plant	Akagera valley marshland upstream to 5 km from dam	RAP & LADP for details
	Change in availability of upstream marshlands	Power Generation Plant	Akagera valley marshland upstream to 5 km from dam	LADP for details
Impacts from noise and vibration	Noise emissions	Power Generation Plant	Vicinity of Rusumo West, Rusumo East and Rusumo villages	Design of power plant
Decommissioning phase				
Site rehabilitation/Restoration	Hazardous materials from substations / Scrap metal	Transmission lines	Substations / tower locations	1) Site rehabilitation, removal and treatment of hazardous substances and re-vegetation shall be done by the operator 2) Decommissioning and site rehabilitation shall be included in waste management plan established by operators for long term management of the line

Type of Impact	Impact description	Project component	Extent/location	Proposed mitigation/control/Enhancement measures
	Dam structures	Power plant	Rusumo Dam components	1) The tail race and head race tunnels will be blocked with concrete plugs. The electromechanical equipment will be dismantled, and scrap iron and steel recycled. 2) Buildings will be destroyed and the waste materials disposed of according to regulations. 3. All other equipment will be removed and disposed of, or recycled where possible.
Employment	Loss of jobs	Dam and Transmission lines	Project areas in Rwanda, Burundi and Tanzania	1. Prepare a demobilisation plan and communicate to the employees/sub contractors/community dependents (for their livelihood on the Project); 2. Work with affected employees/community to find alternative income generation resources and develop a post project community development plan.

4.2 Summary of Positive Impacts

i) Increased electricity generation, reducing electricity rationing and the associated costs of alternative thermal generation;
ii) Create conditions to attract direct foreign investments to the three countries of Burundi, Rwanda and Tanzania;
iii) Increase productivity and lower costs for government, education, health, business and industry;
iv) Direct employment of people during construction and operation of the project;
v) Indirect employment and trade, in industries and commercial activities, which become established as a result of the greater availability of electricity;
vi) Improvement of livelihoods of people in the project area;
vii) Hydropower is a fuelled by water, so it's a clean fuel source and renewable. Hydropower doesn't pollute the air like power plants that burn fossil fuels, such as diesel or natural gas.
viii) Electricity produced by RoR systems do not produce green house gases.

05. IMPLEMENTATION ARRANGEMENTS

5.1 *Institutional Arrangements*

The Contractor(s) will be required to prepare a standalone ESMPs linking the environmental and social activities to dam and transmission line construction works in line with guidance from SPV/NELSAP.

The primary oversight role to ensure mitigation measures are implemented will rest with the SPV/NELSAP/RUSUMO Project Implementation Unit (Safeguards section) who will work in liaison with the District authorities to have a regulatory, supervisory and monitoring role.

SPV/NELSAP/RUSUMO PIU will require the contractor to comply with this ESMP and assign a full time Environmental Officer to undertake environmental supervision during construction.

The SPV/NELSAP will confer the mandate to the Supervising Engineering Consultants (i.e. Owners Engineers) to supervise the power plant and Transmission line construction activities on a day-to-day basis. Supervising Engineering Consultants overseas all the work of the contractor in collaboration with the Safeguards section of the PIU. This section of the PIU will guide the contractor's full time Environmental Officer in undertaking own responsibilities including reporting.

5.2 Contractor Obligations

The dam construction contractor will be expected to develop a contractor's environmental and social management plan (CESMP). SPV/NELSAP/RUSUMO PIU will enforce the implementation of provisions through the Supervising Engineer and Contractor. In addition to monitoring of implementation of environmental provisions by the Supervising Engineer's environmental personnel, SPV/NELSAP's Safeguards Section under the RUSUMO PIU will oversee effective implementation of measures suggested through the Supervising Engineer and Contractor. At field level, the Contractor's Environmental and Health and Safety Officer will be responsible for implementing the CESMP.

06. CONCLUSIONS

Overall, the environmental and social impacts for the Rusumo Hydropower Plant and Transmission lines will not be significant if the proposed mitigation measures and compensation are undertaken.

Project benefits include generation of hydropower to stimulate economic development in the countries of Burundi, Rwanda and northern Tanzania; direct and indirect employment; improved local economies; livelihood enhancement due to the LADP.

Copies of the ESIS and RAP Reports can be found or accessed from the following places:

a TANZANIA

1 National Library, Dar es Salaam
2 Ministry of Energy Offices
3 TANESCO Library
4 NEMC Library
5 District Executive Director's Office (Ngara & Biharamulo districts)

b RWANDA

1 National Library, Kigali
2 Ministry of Infrastructure, Kigali
3 Rwanda Environment Management Authority (REMA), Kigali
4 Kirehe District Offices, Eastern Province
5 Nile Basin Initiative/NELSAP Library, Kigali

c BURUNDI

1 National Library, Bujumbura
2 Ministry of Energy Offices, Bujumbura
3 REGIDESO Offices, Bujumbura
4 Ministry of Environment Offices, Bujumbura
5 National University Library, Bujumbura

The public is further notified that the outcome of the public review will contribute to the finalisation of the reports. Comments and views should reach the undersigned not later than **15 days** from the date of first appearance of this notice in the papers.

Views or enquiries should be addressed or hand-delivered to:
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