

7.2.3.12 Negative impacts resulting from irrigation

- Reduction of agricultural land through digging of canals. This is **low negative** as more land will be opened up through irrigation;
- Destruction of crops. This is **low negative** as it will be limited and could be done when crops have been harvested;
- Possibility of increase in water born diseases and malaria;
- Some plants will be destroyed but this is **low negative** as the area is small;
- Some animals including Small Mammals, Reptiles and Amphibia will be killed and some will be forced out of the area but this is **low negative** as the area is small and many animals can migrate and escape;
- There will be loss of nesting, foraging and feeding grounds for birds but this is **medium negative** as the birds can migrate;
- There will be stockpiles of earth materials and ponding due to accumulation of still water. This is **low negative** as there will be adequate restoration;
- Digging and excavation will upset the drainage pattern in the area. This is **low negative** as digging of dykes and canals will be done professionally;
- Some foot paths and crossings will be destroyed. This is **low negatives** as better bridges and feeder roads will be built.
- Soil erosion will increase. This is **low negative** as proper restoration works will be done;
- Damage to cultural heritage sites uncovered by accident- This is **low negative** as any artefacts will be properly taken care of if found.

- **Mitigation measures**
- All national requirements for the approval of earthworks and excavations will have to be met;
- The owners of the land and crops will be adequately compensated;
- Trees will be felled selectively;
- Wildlife including birds can migrate to neighbouring areas;
- Restoration of the land to its former state through back filling, grassing and planting trees;
- Proper drainage to be done to avoid soil erosion;
- Provision of mosquito nets,
- Provision of clean portable water for domestic use;
- Removal of all garbage, derelict materials and broken down machinery and materials;
- Demobilize work camps, equipment and staff, taking care to prevent adverse impact on the environment.

7.2.3.13 Aquaculture development

This development mainly has positive impacts;

Further, after construction of the project, it will be possible for fish farming to be undertaken by the local people. Fish farming can be done for both home consumption and commercial purposes and this will improve the nutritional status, livelihoods and incomes of the local people. However, fish farming was ranked low by the local people as compared to other priority purposes. Although the benefit is long term and can easily boost people's income, it is not considered as critical and therefore not many may engage in it, thus the magnitude of the impact is expected to be **medium positive**.

Enhancement measures

- Continuous sensitization about fish farming and its advantages
- Provide potential farmers with fish stocks
- Training and capacity building in modern fish farming methodologies

7.2.3.14 Impacts related to Water supply

The following positive impacts of water supply in the project area are long term and affect many people of the area. Hence, they are all **high positive** impacts.

Positive impacts

- Availability of clean water for domestic use;
- Availability of water for livestock;
- Possibility of better health service delivery systems;
- Reduction in intestinal worms;
- Reduction in diarrhoeal diseases;
- Better education facilities.

Enhancement measures

- Proper planning, construction and maintenance of water supply system;
- Adequate funding of maintenance of water supply system;
- Establishment of practical management structure to oversee the maintenance of the water supply system;
- Formulation of bye-laws and regulations for the management of the water supply system;
- Good enforcement mechanisms for management of the water supply system;
- Establishment of good bye-laws and security strategies for the management of the water supply system;
- Provision of adequate points for accessing domestic water supply from the main transmission lines.

Potential negative impacts

Land take

Land will be required for the water supply pipes to the different designated areas and also for the different tanks. Hence, land will be required for the different water storage tanks. These impacts will be of short term, temporary and will cover very small areas. Land taken for construction of tanks

will be adequately compensated. Hence, the magnitude of the impact is expected to be **low negative**. This is because the impact is permanent, irreversible and will affect many people due to the length of water supply routes.

Destruction of crops

There are crops in the proposed area for the water supply transmission route that might be destroyed by construction works. The crops that will mainly be affected include bananas, maize, beans, cassava, coffee and yams. In addition, trees like eucalyptus will also be destroyed. Although many families will be affected, the width of the land required is small. The magnitude of the impact is expected to be **low negative** since the areas to be affected are very small and the impact will be of short duration.

Other negative impacts that may arise include the following:

- There will be stockpiles of earth materials and ponding due to accumulation of still water. This is **low negative** as there will be adequate restoration;
- Digging and excavation will upset the drainage pattern in the area. This is **low negative** as digging and laying of pipes will be done professionally;
- Soil erosion will increase. This is **low negative** as proper restoration works will be done;
- Damage to cultural heritage sites uncovered by accident-This is **low negative** as any artefacts will be properly taken care of if found.
- There will be loss of nesting, foraging and feeding grounds for birds but this is **low negative** as the birds can migrate;
- Change in land use through digging and excavation. This will be **low negative** as it will be short lived and cover small areas;
- Reduction of agricultural land through digging of canals. This is **low negative** as it will be short lived and cover small areas;
- Destruction of crops. This is **low negative** as it will be very limited;
- Some animals including Small Mammals, Reptiles and Amphibia will be killed and some will be forced out of the area but this is **low negative** as the area is small and many animals can migrate and escape.

▪ **Mitigation measures**

- Compensate all affected people who have lost land.
- Compensate all affected property
- Construction activities should time the harvesting period for seasonal crops to enable PAPs harvest their crops.
- All national requirements for the approval of earthworks and excavations will have to be met;
- The owners of the land and crops will be adequately compensated;
- Trees will be felled selectively;
- Wildlife including birds can migrate to neighbouring areas;
- Restoration of the land to its former state through back filling, grassing and planting trees;
- Proper drainage to be done to avoid soil erosion;
- Removal of all garbage, derelict materials and broken down machinery and materials;
- Demobilize work camps, equipment and staff, taking care to prevent adverse impact on the environment.

7.2.3.15 Impact of water abstraction for irrigation, water supply and fish farming on environmental flow

In an event of severe drought, water available from the dam will go low beyond expectations. Under such a situation competition between water use for water supply, irrigation and environmental flow will be high. The community will tend to use the little water that will be available for water supply as a first priority followed by irrigation. There will be a tendency to neglect water requirement for environment. Although the severe drought is not expected to take a longtime the magnitude of impact is expected to be **high negative** as there is likely to be a change in ecosystem even after the flow has been restored

Migation measures

A compromise regarding the use of water during the drought will have to be made by the community in Taba-Gakomeye and the local authorities under the guidance of the environment officer.

7.2.3.16 Overall Risk of Climate change

The occurrence of extreme events due to climate change will have negative impacts as follows: Severe floods will completely fill the dam and may lead to water overtopping the dam embankment. The overtopping of the dam will cause dam failure which will result in severe consequences of destruction to the infrastructure and life downstream. On the other hand, severe drought will result in high competition in the use of water for water supply, irrigation and the environment.

7.2.4 Cumulative impacts related to the transboundary river system

The Taba-Gakomeye project has several componenets including construction of the reservoir, irrigation, water supply and aquaculture. The construction of the reservoir will have negative transboundary impacts during consrtruction because the river will be impeded and its flow will be negatively affected. The construction of the dam on the Mwogo River will theoretically obstruct movement of fish up and down the river. There is also a ppossibility of introduction of fertilizers and pesticides into the Mwogo River water system as these may be used in the irrigated farm lands as well as in the aquaculture fish ponds. These could cause eutrophication (over fertilization) of the river water thereby causing over production of algae leading to de-oxygenation and death of aquatic animals and fish; severe algal blooms; proliferation of blue green algae; loss of species richness; decline in smaller bodied macro-invertebrate grazers; severe de-oxygenation accompanied by loss of habitat for aerobic fauna and over all decline in productivity. The agrochemicals in themselves could end up as toxic substances in the water which could cause fish kills. This has negative transboundary impacts as the Mwogo River feeds into the Kagera River which is part of the international River Nile

system. There could also be a possibility of increase in water born diseases such as malaria. Further, digging and excavations could upset the drainage pattern in the area and even cause soil erosion. Another concern is that water weeds particularly the Water Hyacinth, Pistia and the Duck weed could be introduced into the water system of the river and this could lead to proliferation of invasive weeds. These weeds have huge capacity to proliferate and spread through out the catchments thereby causing enormous harm to fish and the quality of the water.

There will therefore be need to mitigate these impacts and this could be done through the following:

- allowing for entry/ exit 'gates' in the construction of the dam embankment;
- careful and appropriate use of agrochemicals;
- prohibition of introduction of non endemic flora and fauna;
- physical removal of all foreign plants and vegetation from the water system;
- application of all national requirements for the construction of earthworks and excavation restoration of the land to its former state through back filling, grassing and planting trees;
- Implementing proper drainage to avoid soil erosion
- ;removal of all garbage, derelict materials and broken down machinery and materials;
- demobilizing work camps, equipment and staff, taking care to prevent adverse

7.2.4.1 Cummulative impacts of other developments on the environmental flow

The dam to be constructed is meant to meet the water demands considered in the design of the dam. Other water developments that will be undertaken within the area will constraint the amount of water allocated for the environmental. Other development projects should not be allowed at the detriment of constraining the environmental flow.

7.2.5 Decommissioning

Decommissioning of the construction site is generally rehabilitation by the contractor in which a decommissioning plan is provided on campsites, temporary access roads, borrow areas, quarry mines if any, crushing plant if any, material stock pile, general site rehabilitation etc. The decommissioning of the dam structure after its life (25yrs) is related to its operation and management. A draft decommissioning proposal has therefore been proposed in Dam Safety Report (Appendix 6)

Although Ministry of Natural Resources/NELSAP has the overall responsibility of environmental compliance but at the project level the Contractor will be responsible for decommissioning. The sections below give the decommissioning plan.

Campsites: The campsite which will be located in Cyinyana village in Kamegeri Sector is expected to be made of temporary material mainly iron sheets, timber, metal bars and other fabricated material as the construction period may be less than 1 year. In case permanent structures are put up, it will be an agreement between the land owner or the community and the contractor so that the

structures are left for the land owner /community to use. The structures could either be used as school facilities or houses for rent.

In the case where temporary structures are constructed the materials will be salvaged and either sold or taken for re-use at other sites on project completion. The water supply system could be handed over to the local authorities to be used by the neighbouring communities.

Most sanitary facilities on contractors' camps are pit latrines; in case a septic tank is used, the septic tank should be emptied with cesspool emptier and the pit backfilled.

Temporary access roads: In case some temporary access roads have been created, these will be blocked shall be rehabilitated through top soiling and grassing. In a cases where campsite structures are left for the community or the land owner, the temporary access roads have to be left to continue in use..

Burrow areas and quarry mines: The burrow pits and quarry areas (where necessary) created by the project will have to be covered. The proposed site at Rebo hill is a new site so the project will be solely responsible for its rehabilitation. This can be done by utilizing the soil spoil obtained through the widening of the access road from Huye-Nyamagabe dam site. Top soiling and planting of trees should be done. This will be part of the tree planting progamme for catchment protection.

Crushing plant

Decommissioning activities at the crushing plant area include: removal of all unused materials; restoration of all opened up areas through top soiling and re-vegetation; Compensation of any affected neighbors and disassembling of crusher components and removal.

Material stockpile areas

Areas that have been used for temporary storage of materials shall be leveled after materials have been used. Such areas shall be restored through grassing.

Fuel Station/bulk storage

The dam site is over 10km from Huye where reliable fuel stations are found. .It may be necessary to establish a small fuel station at the camp site in Taba-Gakomeye.

This should be de-commissioned as follows;

1. Initial soil tests for Volatile Organic Compounds (VOCs)
2. Cordoning off of site.
3. Dismantling of surface installations e.g. pipes, pumps, canopies, electrical systems etc
4. Draining of tanks, pipes
5. Safe transportation of residual products and pipes
6. Tank exhumation by specialized contractor in presence of supervising Environmental
7. Consultant, REMA etc
8. Haulage of tank to appropriate storage
9. Soil and groundwater sampling and testing etc.

Decommissioning of the dam structure and reservoir at the end of its life will very much depend on the detailed design when the kind of structures to be put in place are clearing known.

8 ENVIRONMENT AND SOCIAL MANAGEMENT PLAN (ESMP)

8.2 INTRODUCTION

8.2.4 Purpose of ESMP

The purpose of the Environmental and Social Management Plan (ESMP) is to mitigate and, wherever possible, prevent adverse environmental and social impacts of a project on the communities as well as on the environment. The impacts and mitigation measures have already been discussed in chapter 7 and summarised under section for Mitigation measures in **Table 8-2** together with estimated costs and responsible persons; these form part of the ESMP. ESMP also aimed at helping to maximize positive impacts of the project. The ESMP further aims to ensure implementation of mitigation measures whilst identifying the necessary resources and budgets required for its implementation as well as identifying responsibility schedules of various stakeholders who will be involved in its implementation. The Contractor will be provided with a copy of the ESMP.

8.2.5 Objectives

The ESMP objectives are to ensure:

- i) that the activities of the project are carried out following all legal requirements of the Republic of Uganda as well as regional (EAC) regulations and guidelines including those of the world Bank and those of other funding partners;
- ii) that the health, safety and wellbeing of workers and people living in the neighborhood are taken good care of;
- iii) that the environment and ecosystems of the project area and its neighborhood are not harmed but are conserved in every way;
- iv) that mitigation measures, corrective and compensation measures are taken quickly whenever needed;
- v) that stakeholders are properly identified at Government, district, local, community and agency level to handle appropriate responsibilities during and after implementation of the project;
- vi) that there is free flow of information to all stakeholders of the project to enable informed decision making and implementation of projects activities in a timely and coordinated manner;
- vii) that the Resettlement Action Plan (RAP) is properly implemented.

8.2.6 Structure of the ESMP

The proposed ESMP has the following sections.

- i) Key responsibilities and management structures
- ii) Mitigation Plan and Costs;
- iii) Environmental and Social Monitoring Plan and costs;
- iv) Implementation Schedule and Budget for the Environmental and Social Monitoring Plan.
- v) Reporting

8.3 KEY RESPONSIBILITIES

8.3.4 *Ministry of Natural Resources (MINIRENA) and Ministry of Agriculture (MINAGRI)*

The Ministry of Lands, Environment, Forestry, Water and Mines /Ministry of Natural Resources (MINIRENA) is the overall coordinator and supervisor of all the ministries responsible for the water sector. The Ministry determines policy, coordinates project activities, provides guidelines and helps acquire funding for the project and coordinates water issues at national and regional level. It is presumed that Ministry of Lands, Environment, Forestry, Water and Mines /Ministry of Natural Resources (MINIRENA) under Water and Sanitation Corporation together with Rwanda Water Resources / NELSAP will take the overall responsibility for the development and management of the Taba-Gakomeye Multipurpose dam project. MINIRENA will oversee the development and management of the dam in collaboration with other sectoral users of the dam such as MINAGRI together with REMA which will play a major role in monitoring the implementation of the ESMP and auditing the project. The Districts of Huye and Nyamagabe where the project occurs will be key implementers of the project. Although overall management of the dam will be under MINIRENA, which will also be in charge of monitoring water flows and abstractions, the irrigation component of the project will be managed by MINAGRI again with the full cooperation of the Districts of Huye and Nyamagabe where the irrigation component falls.

Although the Contractor will have the primary roles in delivering on the measures set out in the ESMP, MINIRENA and REMA will have the ultimate responsibility for ensuring that measures to mitigate any negative impacts are delivered. In this respect, MINIRENA will review and approve Contractor plans for delivery of the actions contained in the ESMP and subsequently during project implementation, will review Contractor performance through monitoring, audits and inspection. During preparation, Construction and operation of the Taba-Gakomeye Dam project, Environmental Specialist (ES) (who will be part of the Consultant's Team) will be responsible for ensuring that the overall objectives of the environmental and social mitigation measures are met, while a Community Liaison Officer (CLO) will be responsible for overall achievement of socio-economic objectives and engagement with stakeholders. The CLO will work closely with the Social Welfare and Protection Officers on Huye and Nyamagabe while ES will work closely with MINIRENA's Environmental Specialist. The Water Users Association or any other committees set up to represent the community will work with the Contractors Environment Manager, the ES, the CLO and Contractors Liaison Officer.

When working on site, the ES and CLO will report to the Site Engineer (part of the Consultant's Team) who has the power to stop the work at any time should the actions established in the ESMP or otherwise required are not adhered to. Monthly reports shall be submitted to the Client by the Consultant and these will include detailed environment, social and Occupational Health Safety (OHS) issues. ES will also prepare Annual Monitoring report on behalf of (MINIRENA to be submitted to REMA so that they can monitor compliance.

8.2.2 *Watershed Management Committee (WMC) for the Mvogo River Catchment*

Watershed Management Committees were established under the Water Law and Ministerial Decree. In regard to the Taba-Gakomeye project, watershed management committees will be formed under

the Districts of Huye and Nyamagabe to carry out management functions as stipulated in the Water Law and Ministerial Decree establishing watershed management committees. The following topics are suggested to be undertaken as the responsibilities of the Watershed Management Committee.

- i) Implement decisions and recommendations from the Ministry of Natural Resources (MINIRENA) and Ministry of Agriculture (MINAGRI) and from REMA;
- i) Ensuring adherence of national regulations and guidelines;
- ii) Facilitation of water permit procedures;
- iii) Ensuring implementation of mitigation measures;
- iv) Ensuring implementation of Resettlement Action Plan;
- v) Receiving grievances from Sub county Committee;
- vi) Facilitate training for the project;
- vii) Identifying and scrutinizing prospective employees for the project;
- viii) Participating in training programs;
- ix) Prevention and fighting against HIV-AIDS and other STDs;
- x)** Controlling migrants to the reservoir;
- xi)** Prepares reports for MINIRENA, MINAGRI and Districts of Huye and Nyamagabe;
- xii) Review all reports from the Contractor and Consultant and identify specific issues to be resolved.

The Watershed Management Committee (WMC) should meet quarterly and submit reports to MINIRENA, REMA and to MINAGRI as well as to the Districts. The WMC should have the following Sub committees to implement management plans which take care of specific sectors which will include the following:

a) *Health and Safety Sub committee*

This sub committee will look after the health and safety aspects of employees and all those associated with the project and people living in the neighborhood of the project who in one way or other are impacted by the project and the dam. It will also undertake activities to prevent and fight against HIV/AIDS and STDs in general. This Sub committee will be chaired by the Huye and Nyabagabe District Health Director/Health Officer and draw membership from the District Environment Officer, District Medical Officer, District Entomologist, District Water Officer, District Engineer, District Information Officer, District Council Chairman, Area Councilors and NGOS working in Huye and Nyamagabe Districts. This sub committee will meet monthly and submit reports to the Watershed Management Committee.

b) *Worksite Rehabilitation and Demobilization Sub committee*

This sub committee will look after rehabilitation and restoration of earthworks, excavation quarries and borrow pits; air quality, dust control, noise and vibration, surface and groundwater protection, control of erosion and sediment discharges into watercourses, management of contaminated soil and waters. This Committee will be chaired by the District Engineer from Huye or Nyamagabe and draw membership from the District Environment Officer, District Health Officer, District Medical Officer, District Water Officer, District Agricultural Officer, District Livestock Officer, District Community Development Officer, District Information Officer, District Councils Area Sector

Councilors and representatives of NGOs. This sub committee could meet monthly and submit reports to the Watershed Management Committee.

c) *Environment Protection Sub committee*

This sub committee will look after environment conservation matters which will include protection of flora, protection of wildlife, water and basic sanitary facilities, management of domestic wastes, hazardous materials and wastes, protection of cultural heritage sites emergency preparedness and response planning, hydrology and ground water, erosion, afforestation, wetland vegetation monitoring and management, fisheries, aquaculture, mammals, reptiles and amphibians monitoring and management of biodiversity. This sub committee will be chaired by the District Environment Officer of Hue or Nyamagabe and could have member from District Fisheries Officer, District Wildlife Officer, District Water Officer, District Health Officer, District Medical Officer, District Water Officer, District Agricultural Officer, District Livestock Officer, District Community Development Officer, District Information Officer, District Councilors, Sector Councilors and representatives from NGOs. This sub committee will meet monthly and submit reports to the Watershed Management Committee.

d) *Resettlement Action Plan Implementation Sub Committee*

This sub committee will take care of all issues regarding resettlement and compensation and grievance management. This sub committee will be chaired by the District Community Development/ Rehabilitation Officer from Hue or Nyamagabe and draw members from District Fisheries Officer, District Wildlife Officer, District Water Officer, District Health Officer, District Medical Officer, District Water Officer, District Agricultural Officer, District Livestock Officer, District Information Officer, District Councilors, Sector Councilors NGOs operating in Hue and Nyamagabe Districts. This sub committee will meet monthly and submit reports to the Watershed Management Committee.

8.2.3 *Water User and Irrigation Associations*

In Rwanda, there is a platform for citizens participation in water governance through Water User Committees and Irrigation Committees. Therefore, Water User committee and Irrigation committee will be formed for this project. Water User committees will participate in the management of water supply for domestic use, animals and fisheries activities. Irrigation Committee will participate in the management of irrigation activities. A summary of their roles is indicated in table 8-1 No. 18.

It is also proposed that Water User Associations should be formed under the Watershed Management Committees in the Districts. Their roles will be carrying out the following:

- i) Implement decisions from Watershed Management Committees and from its Sub Committees;
- ii) Enforcing by-laws and regulations;
- iii) Overseeing health and safety issues;
- iv) Oversees security matters;
- v) Control access to the reservoir;
- vi) Checks out permits;
- vii) Checking out implementation of mitigation measures;
- viii) Checking out implementation of Resettlement Action Plan;
- ix) Receiving grievances from Village Committee;

- x) Identifying trainees for the project;
- xi) Identifying and scrutinizing prospective employees for the project;
- xii) Participating in training programs;
- xiii) Prevention and fighting against HIV-AIDS and other STDs;
- xiv) Controlling migrants to the reservoir;
- xv) Prepares reports for the Watershed Management Committee.

The Water User Associations will meet monthly and submit reports to the Watershed Management Committee. The Water User Associations will derive membership from Sector and Colline Councilors, representatives of women, NGOs and CBOs working in the area.

7.1.4 *The Contractor*

During site preparation, installation and operation and decommissioning the Contractor will be responsible for ensuring compliance with all relevant legislation (high lighted in section 3.0 of this report) as well as adherence to all environmental and socio-economic mitigation measures specified in the ESMP. The Contractor is also responsible under the contract for managing the potential Environmental, socio-economic, safety and health impacts of all contract activities whether these are undertaken by themselves or by their sub-contractors.

Regarding Occupational Health and Safety, the Contractor will have in place an OHS Policy and the OHS Guidelines that comply with OHS Act of 2000. The Contractor also has to have in place guidelines that comply with HIV & AIDS policy of Rwanda as well as all the relevant legislation already indicated in the earlier section.

The contractor will also be expected to demonstrate commitment to the ESMP included in Environment and Social Impact Statement (ESIS) at all levels in the contractor's management structure. The Contractor will also be required to prepare a standalone ESMP as a tool to assist in planning of Environment and Social management activities to be implemented alongside construction activities. The Contractor is further required to have in place individuals responsible for overall environment management (including community liaison) and, safety and health management. The Contractor's community liaison team will be required to work with Consultant's CLO to implement the stakeholder engagement plan. The Contractor will be required to undertake regular environmental and socioeconomic Inspections and provide reports to ES and CLO to monitor and evaluate performance against the measures and objectives established in the ESMP. Detailed monthly reports including detailed environment and social issues shall be submitted to the Consultant.

8.3.5 *Stakeholder Involvement*

MINIRENA should continue to engage with the stakeholders throughout the project cycle. The implementation of the Taba-Gakomeye Dam Environmental and Social Monitoring Plan (ESMP) will require the full participation of key players from a number of ministries and other stakeholders (see **Table 8-1**).

A system should be established with the stakeholders to ensure that stakeholders receive information on the progress of work and its implications, employment and others. The stakeholders who will be involved in the project were identified at scoping level and more discussion in institutional framework is in section 3.3. Stakeholders include different government departments both at national and local levels, NGOs and the communities. They include institutions like REMA, MINIRENA particularly Water and Sanitation Corporation & Rwanda Water Resources, Rwanda Development Board, Ministry of Agriculture & Animal Resources, Nyamagabe and Huye District Local Governments, Kamegeri Sector in Nyamagabe district, Maraba and Kigoma Sectors (source of stones and gravel) in Huye district as well as the villages of Cyinyana, Gakomeye, Kagarama of Kamegeri sector, Gitwa, Kinombe and Taba of Maraba sector etc. The Water User Association will form part of the stakeholders. Grievance Redress Committee which will participate in handling grievances during RAP implementation will also form part of the stakeholders. Grievance Redress Committee structure shall be fully established when Resettlement Action Plan (RAP) and has been completed and the actual affected people are known as they form part of this structure. Grievances shall be handled through the structure that will be established by the project and the existing system as has been discussed in Preliminary RAP.

8.3.6 Project Management Committee

Rwanda's water sector is governed under a complex institutional framework. Taba-Gakomeye multipurpose dam project will therefore be managed under the same framework. It is proposed that MININFRA and MINAGRI form one Project Implementation Unit whilst MINIRENA and MINALOC will perform regulatory functions to give guidance to the Project Implementation Unit. **Table 8-1** shows Institutions that will participate in this development and have been categorised into policy and oversight institutions, management and implementation institutions, service provision institutions and regulatory institutions. An organization chart for the management of the dam is shown in Figure.8-1.

Table 8-1

No.	Institution	Function and responsibilities related to WRM
<i>Policy and Oversight Institutions</i>		
1	Ministry of Natural Resources (MINIRENA)	Formulation of Water resources management policy, strategic planning, coordination, quality assurance, monitoring, evaluation and capacity building. Put in place legal and regulatory framework.
2	Ministry of Local Government (MINALOC)	Establishment, development and facilitation of the management of efficient and effective decentralized government systems capable of law enforcement and delivery of required services to the local communities.
3	Ministry of Agriculture, Animal Resources (MINAGRI) and affiliated agencies	Development, planning and coordination of the implementation of agricultural development policy in the country including irrigation, fishery and livestock.
4	Ministry of Infrastructure (MININFRA)	Development of institutional and legal frameworks, national policies, strategies and master plans relating to water supply and sanitation, energy and transport subsectors.

No.	Institution	Function and responsibilities related to WRM
5	Ministry of Health (MINISANTE)	Policy formulation and promotion of hygiene and public health.
6	Ministry of Family and Gender Promotion (MIGEPROF)	Coordination of gender, promotion and mainstreaming and family planning activities.
7	Ministry of Education (MINEDUC)	Promotion of education including/capacity building and curricula development relating to water sciences and research on water resources management in schools and other educational institutions.
8	Ministry of Commerce (MINICOM) and affiliated agencies	Policy formulation and promotion of investments by the private sector in water resources management/industries and manufacturing.
9	Ministry of Foreign Affairs And Cooperation (MINAFFET)	Foreign and diplomatic relations including regional and international cooperation over shared waters.
<i>Financing Institutions</i>		
10	Ministry of Finance, Planning and Economic Development (MINECOFIN)	Mobilization and allocation of financial resources for water resources development.
11	Development partners	Provision and mobilization of financial and technical
<i>Regulatory Institutions</i>		
12	Rwanda Environment Management Authority (REMA)	Develop regulations and ensure protection and conservation of the Environment and natural resources across the Country.
13	Rwanda Utilities Regulatory Agency (RURA)	Enforcement of compliance by public utilities with the laws governing their activities.
14	Rwanda Bureau of Standards (RBS)	Provision of standards based solutions for Consumer Protection and Trade promotion for socio-economic growth in a safe and stable environment.
15	Rwanda Natural Resources Authority (RNRA)	Autonomous agency responsible for management of natural resources including water resources management and allocation
<i>Management/ service Institutions</i>		
16	Energy ,Water and Sanitation Authority (EWSA)	Autonomous agency responsible for the delivery of water supply and sewerage services in the major towns and large urban centres including provision of oversight and support services to the local communities and other water supply service providers.
17	Rwanda Development Board (RDB)	Facilitation of investment and support services to investors.
18	User Communities	Management of water resources in the course of their productive and consumptive activities on a day to day basis
19	Districts	Implementation of the government policies and laws
20	Private Sector	Design, construction, operation and maintenance of water resources management infrastructure. Conduct training and capacity building for both central and local

No.	Institution	Function and responsibilities related to WRM
		government staff. Provision of other commercial services.
21	Non Governmental Organizations (NGOs)	Supplement the public sector efforts in water resource

Source: Rwanda IHP Country Report, 2012

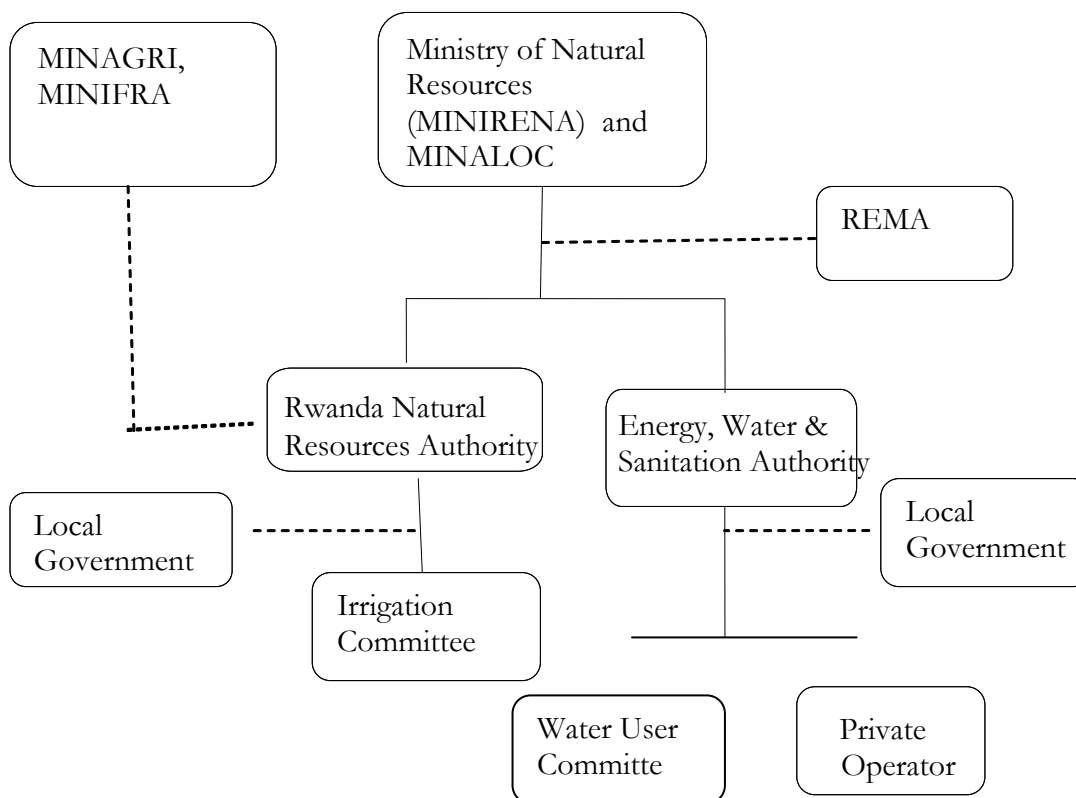


Figure 8-1: Key stakeholders participation Structure for Taba-Gakomeye Dam Project

8.4 MITIGATION PLAN

Table 8-1 gives a summary of both positive and negative environmental and social impacts of the proposed project; proposals for enhancement of positive impacts; proposals for mitigation of negative impacts; estimated costs of enhancement and mitigation and the responsibility centre for each activity. Enhancement and mitigation measures have only been proposed for impacts with medium magnitude and above (Significant impacts)

Table 8-2: Summary of environmental and social Impact of the proposed project in the Taba-Gakomeye Dam area and proposals for the mitigation

Potential Positive Impact	Enhancement measures	Cost Description /unit	Total Cost (USD)	Responsible Entity	Implementer
Creation of employment opportunities	<ul style="list-style-type: none"> - Sensitization of communities and information dissemination on the existing job opportunities; and - Priority for local labour from the project area. 	a. Sensitisation meetings and capacity building for communities& local authorities,and all other sensitisation programs	<ul style="list-style-type: none"> • During construction 10,000; and • One year after construction and during dam operation, 5,000. 	MINIRENA, Districts local government (Huye and Nyamagambe) <ul style="list-style-type: none"> • Maraba sector in Huye District Kamegeri sector of Nyamagab 	<ul style="list-style-type: none"> • Consultant, • Contractor Districts local government (Huye and Nyamagambe) • Maraba sector in Huye District Kamegeri sector of Nyamagab
Construction phase	-	b.	-		
Skills development	<ul style="list-style-type: none"> - On job training programs for the unskilled and semi-skilled workers 	-	-	MINIRENA	Consultant & Contractor
Improved access roads	<ul style="list-style-type: none"> - Periodic maintenance of the access roads 	Maintenance costs	In the contractors BOQs	MINIRENA	Contractor
Gender opportunities	<ul style="list-style-type: none"> - Women be considered for job opportunities available 	Number of women employed in the project	-	MINIRENA	Contractor and developer
Employment opportunities	<ul style="list-style-type: none"> - Sensitization of communities on the existing job opportunities on the project. - Priority should be given to local labour from the project area. 	Budget already included above	-	MINIRENA	Consultant , Contractor & local authorities
Operation and Maintenance	-				
	-	c.	•	•	•

Potential Positive Impact	Enhancement measures	Cost Description /unit	Total Cost (USD)	Responsible Entity	Implementer
Improvement in safe water supply and sanitation facilities in operation	<ul style="list-style-type: none"> - Put in place water and sanitation facilities; - Sensitization of the communities in maintenance of water and sanitation facilities; - Regular maintenance programs for the water facilities; and - Facilitation for water user and maintenance committees 	This is one of the project component thus be in the project budget	-	<ul style="list-style-type: none"> • MINIRENA 	<ul style="list-style-type: none"> • Water officers for both Huye & Nyamagambe Districts, • Maraba and Kamageri Sector leaders •
Potential for fish farming and aquaculture for better incomes	<ul style="list-style-type: none"> - Potential fish farmers should be provided with fish stocks; and - Training and capacity building in fish farming methodologies. 	Cost includes fish procurement and training	20,000	<ul style="list-style-type: none"> • MINIRENA 	<ul style="list-style-type: none"> • Environmental Officer, • Maraba and Kamageri Sector leaders
Creation of habitats for Fauna (Birds, amphibians, fish & dragon flies)	<ul style="list-style-type: none"> - Sensitization & training in fisheries and aquaculture - Planting trees and other vegetation around the reservoir for bird roosting. 	-		<ul style="list-style-type: none"> • MINIRENA , 	<ul style="list-style-type: none"> • Environment Officer • The Contractor.
Improved agriculture through irrigation	<ul style="list-style-type: none"> - Capacity building and sensitisation 	Training sensitisation materials	10,000	<ul style="list-style-type: none"> • Rwanda Natural Resources Authority, Ministry of Agriculture and Animal resources, 	<ul style="list-style-type: none"> • Local leaders of Huye and Nyamagambe Districts • Maraba and Kamageri Sector leaders

Potential Negative Impacts	Mitigation	Cost Description /unit	Total Cost (USD)	Responsibility	Implementer
Preconstruction phase/Planning					
Social expectations generated by disclosure and information to the community.	- Information dissemination, Community sensitization about the project and available opportunities.	a. Sensitization meetings; and b. Media (Radio programmes and flyers)	10,000	• MINIRENA	• Consultant and
Construction phase					
Influx of people	-Prepare workers recruitment plan to determine local staff employment percentage; -Strengthened Local authorities to deal with the increased cases of indiscipline; -Contractor should have separate facilities at workers camp e.g. sanitary facilities, health facilities and water facilities.	Sensitisation of local authorities Budget for facilities be included in the Contractor's budget.		• MINIRENA	• Contactor • Huye and Nyamagambe Districts leaders • Maraba and Kamegeri Sector leaders

Potential Negative Impacts	Mitigation	Cost Description /unit	Total Cost (USD)	Responsibility	Implementer
Increased risk of Communities to diseases like malaria and HIV AIDS	<ul style="list-style-type: none"> - Distributing mosquito nets and sensitization of communities especially the affected villages - Cover pools of water immediately after they have been created to avoid conducive habitat for mosquitoes e to project work - Make condoms available to project workers 	<ul style="list-style-type: none"> a. Cost of awareness campaigns on quarterly basis for about 1 year b. Distribute about 800 mosquito nets to about 200 households, (5 nets per household) each net at USD 5 = 5000; and c. Cost for HIV for workers included in the contactors budget, Awareness programs; and d. Make condoms available for project workers 	<p>5,000</p> <p>5,000</p> <p>8,000</p>	<ul style="list-style-type: none"> • Ministry of Health; 	<ul style="list-style-type: none"> • Developer; • Consultant; • NGOs • Maraba and Kamageri Sector leaders • Contractor
Pressure on Health infrastructure and educational services	<ul style="list-style-type: none"> - Where possible the project should support health centres which are nearer to contain the health challenges for both the community and the workforce; - The project management should consider setting up 	<p>Purchase some laboratory equipment to 2 immediate health centre</p> <p>Cost of clinic under the contactors budget</p>	10,000	<ul style="list-style-type: none"> • MINIRENA/Ministry of Health/ 	<ul style="list-style-type: none"> • NGOs /contractor Huye and Nyamagambe Districts leaders

Potential Negative Impacts	Mitigation	Cost Description /unit	Total Cost (USD)	Responsibility	Implementer
	its own clinic to cater for its workers; - Adequate social amenities (water and sanitation) should be constructed at workers' camp and construction site; and - Support at least one school with scholastic materials	a. Water and sanitation already catered for b. Cost of scholastic materials	3,000		
Pressure on Water facilities	- Set up better water distribution facilities	Cost of setting up water facility	-	MINIRENA	Developer and contractor
Impact on sanitation	- Provide additional sanitation facilities to its workers eg dust bins, toilets etc. - Bins for waste collection be provided at the workers camps	Part of the Contractors BoQs		MINIRENA	Contractor and Developer
Conflicts	- Local labour be given priority in job allocation - Close cooperation with local administrators such as police and lcs	Awareness sensitisation	Sensitisation already budgeted for	Developer	Consultant Local authorities at District and Sector level

Potential Negative Impacts	Mitigation	Cost Description /unit	Total Cost (USD)	Responsibility	Implementer
Loss of residential structures	<ul style="list-style-type: none"> - Full compensation and sensitisation of the affected people - Livelihoods Restoration programmes be instituted 	A amount to be included in the RAP report		MINIRENA	Consultant
Impact on agriculture and minning	<ul style="list-style-type: none"> - Full compensation and sensitisation of the affected people - Livelihoods Restoration programmes be instituted 	Compensation and livelihood restoration programmes, Budgeted for in RAP		MINIRENA	Consultant
Loss of land	<ul style="list-style-type: none"> - RAP preparation and implementation - Put measures to encourage PAPs to accept inkind compersation 	A mount of land taken in terms of hectares – to be included in RAP	-	MINIRENA	Consultant
Impact on infrastructure(Bridges, footpaths and TL)	<ul style="list-style-type: none"> - Avoid inundation of community road and/or replace with alternative route - Alternative crossings to acces villages be considered - 	The number of routes/bridges to be replaced-		MINIRENA	Contractor
Destruction of vocational school structures	<ul style="list-style-type: none"> - Design to try to avoid the school structures - Compensation be in kind 	Number of structures destroyed	RAP budget	<ul style="list-style-type: none"> • MINIRENA; 	Developer and consultant
Occupational Health and Safety:	<ul style="list-style-type: none"> - Training of workers in safe operating procedures 	Cost to purchase personnel protective	-	<ul style="list-style-type: none"> • MINIRENA; 	<ul style="list-style-type: none"> • Developer, • Consultant; and

Potential Negative Impacts	Mitigation	Cost Description /unit	Total Cost (USD)	Responsibility	Implementer
	<ul style="list-style-type: none"> - Provision of appropriate Personal Protective Equipment - Labelling of danger zones and hazardous materials - Restrictions/control of access to potential danger zones or usage of hazardous chemicals - Instituting, enforcing and disseminating procedures to be followed when blasting 	equipment under the contactors budget			<ul style="list-style-type: none"> • Contractor.
Increased traffic and its associated consequences	<ul style="list-style-type: none"> - Widen existing access roads for transportation of both personnel and materials; - Recruit properly trained drivers; - Safe speed limits should be instituted and enforced; - Warning signs should be installed; and - Flag men employed to control traffic. 	Contractor's budget	-	<ul style="list-style-type: none"> • MINIRENA; 	<ul style="list-style-type: none"> • Contractor • Consultant • Developer • Traffic Police • district works department
Impact on vulnerable groups	<ul style="list-style-type: none"> - Fairly compensate the Project Affected vulnerable people; 	RAP budget		<ul style="list-style-type: none"> • MINIRENA, 	<ul style="list-style-type: none"> • Developer; • Consultant; Soical welfare and Protection Officers for

Potential Negative Impacts	Mitigation	Cost Description /unit	Total Cost (USD)	Responsibility	Implementer
	<ul style="list-style-type: none"> - Give vulnerable people livelihood restoration activities; and - Consider vulnerable people for employment 				Nyamagabe and Huye, and <ul style="list-style-type: none"> • /NGOs.
Impact on gender	<ul style="list-style-type: none"> - Jobs should be equitably distributed to both women and men; - Information dissemination about dangers of social relationships and HIV/AIDS; and - The parents should advice their girls against indulging in any kind of relationships with the workers. 	Cost considered under awareness programmes		<ul style="list-style-type: none"> • MINIRENA, 	<ul style="list-style-type: none"> • Consultant • Contractor; Social Welfare and Protection Officers • NGOS
Noise generation and flying stones	<ul style="list-style-type: none"> - Limiting blasting and crushing to day time - Wet crushing - Informing communities of blasting activity so as to move to safe zones 	Part of contractors budget		<ul style="list-style-type: none"> • MINIRENA, 	<ul style="list-style-type: none"> • Consultant Contractor and District Environment perssoneel
Air pollution	<ul style="list-style-type: none"> - Watering of dusty areas - Crushing of wet stones - Trucks carrying granular materilas be covered 	Part of contractors BoQ	Part of the contractors Boq	<ul style="list-style-type: none"> • MINIRENA, 	<ul style="list-style-type: none"> • Contractor and District Environment personnel of both Huye and Nyamagambe Districts
Increased Risk of	<ul style="list-style-type: none"> - Remove loose soils from 	Cost included in the		<ul style="list-style-type: none"> • MINIRENA, 	<ul style="list-style-type: none"> • Contractor;

Potential Negative Impacts	Mitigation	Cost Description /unit	Total Cost (USD)	Responsibility	Implementer
Soil Erosion and Siltation	the worksite as soon as possible. - Proper drainage along access roads; - Install sediment runoff control devices to control erosion - Install on-site silt traps to regulate storm runoff; and - Rehabilitate areas not in use.	Contractor's budget		<ul style="list-style-type: none"> • MINIRENA, 	<ul style="list-style-type: none"> • Consultant; • Developer; and
Effects on chance finds archaeology	- Rescue the chance finds and take to the national museums - Sensitize workers about archaeology	Part of Contractors budget		<ul style="list-style-type: none"> • Ministry of Culture and Community development of both Huye and Nyamagabe 	<ul style="list-style-type: none"> • Contractor/Developer
Post Construction/ Operation and Maintenance					
Risk of drowning	- Plant trees and other vegetation around the reservoir - Sensitise the residents on emergency plans - Provide safe watering	Cost for fencing and its materilas	Part of the contractors BoQs	<ul style="list-style-type: none"> • MINIRENA, 	<ul style="list-style-type: none"> • Developer and contractor • Sectors personnel in charge of community affairs

Potential Negative Impacts	Mitigation	Cost Description /unit	Total Cost (USD)	Responsibility	Implementer
	points for animals				
Risk of water and insect borne diseases	<ul style="list-style-type: none"> - Encourage community to sleep under mosquito nets - Distribute mosquito nets 	Cost of nets	Already budgeted for	<ul style="list-style-type: none"> • MINIRENA, 	<ul style="list-style-type: none"> • Developer
Impact of HIV/AIDS and other STDs	<ul style="list-style-type: none"> - Continuous HIV/AIDS sensitization and awareness programs at all levels and also in schools; - Equip health centers at all levels with HIV/AIDS testing kits and HIV/AIDS Counsellors so as to be able to provide free testing and counselling services to the communities; and - Condoms should be available at all health centres and should be accessed at no cost by the communities. 	Cost to be included in the annual budgets for both districts	10,000	<ul style="list-style-type: none"> • Ministry of Health 	<ul style="list-style-type: none"> • Huye District Health officials • NGOs • CBOs
Impacts related to dama safety and Flooding	<ul style="list-style-type: none"> - Warning systems put in place as part of emergency procedure (Dam s - Any destroyed property as a result of dam breakage should be compensated; - There should be coordination of the different 	<ul style="list-style-type: none"> a. Annual budget for Emergency, could be included on district budget; and b. Meetings to develop a disaster plan. 	<p>10,000</p> <p>3,000</p>	<ul style="list-style-type: none"> • MINIRENA, 	<ul style="list-style-type: none"> • Officials from the two Districts in charge of disaster management • Officials from the two sectors • Developer/consultant

Potential Negative Impacts	Mitigation	Cost Description /unit	Total Cost (USD)	Responsibility	Implementer
	institutions in case such an event occurs; and - Sensitization of the community of an emergency plan of action in case of a disaster should be done continuously.				
Loss of site vegetation	Restoration/ re-vegetation along the reservoir periphery Planting of grass on the dam embankment (<i>Paspalum notatum, Pennisetum sp</i>)	Buy (<i>Paspalum notatum, Pennisetum sp</i> and plant)	5,000		Developer District Environment personnel
Reduced floral species richness.	Restrict clearance of vegetation to the areas needed for the project; and the works to be undertaken under the guidance of the Contractor's Environmental Specialists is undertaken.	In Contract	Contractor		Developer/Consultant Contractor
Impacts of materials extraction (rock, murrum and sand) in and around material source areas.	Restoration of sites after extraction of materials. The Contractor(s) are to restore the sites at the end of the project. Carry out survey on all structures before quarrying activity	Rehabilitation; Assume there will be 1 large borrow pit & quarry area. For a large borrow pit, Two weeks leveling (Dossier), 2 weeks grassing & 1month watering (watering tank) are needed.	37,000		Sector leaders of the two affected sectors Contractor

Potential Negative Impacts	Mitigation	Cost Description /unit	Total Cost (USD)	Responsibility	Implementer
	<p>Institute speed limit for vehicles ferrying aggregates</p> <p>Further consultation with people to avoid quarry where there are cultural sites</p> <p>Restore land to its former state</p> <p>Demobilize equipment and staff carefully to prevent environmental damage</p>	$(14 \times 1,500,000) + (20 \text{ acres} \times 30,000) + (800,000 \times 20)$ = UGX 37,300,000 Cost of rehabilitating the stone quarries will be estimated after their environmental assessments have been carried out.			
Loss of carbon sequestration potential And decomposition of vegetation	<p>The adjacent communities be encouraged to plant trees on some pieces of their land; and Provide seedlings</p>	Cost of seedlings to be provided to community	10,000		Developer/Consultant
Soil erosion concerns	Restoration of the opened up areas for the works to avoid any loose soils around the site.	Cost of turf grass to be planted and cost for labor	Contractor	MINIRENA	Developer/Consultant
Change in local species composition	Monitor the invasion of other species in the area	Cost of regularly visiting site and monitor for the invasive plants	5,000	MINIRENA	District Environment officers

Potential Negative Impacts	Mitigation	Cost Description /unit	Total Cost (USD)	Responsibility	Implementer
Negative impacts on fisheries	Form Water user committee to regulate fishing Educate and train community on better fishing methods	Training cost on fishing particularly better fishing methods	5,000	MINIRENA	Developer
Change of flow regimes downstream of the dam and quality of water changes	Environmental flow of annual average of 3.94Mm ³ has been estimated to keep the ecosystem of down stream areas	Part of the contractors BoQ Cost for water quality tests	-	MINIRENA	Contractor/Developer/consultant
			<u>=161,000</u>		

Total cost for the Implementation of the mitigation measures excluding compensation and resettlement has been estimated at USD 161,000.

8.5 ENVIRONMENTAL AND SOCIAL MONITORING AND MANAGEMENT PLAN

Monitoring is one of the important elements of an Environmental Social Management Plan (ESMP) and serves a number of functions including:

- Providing a check on the implementation of proposed mitigation measures and ESMP recommendations; and
- Identifying corrective measures or the redesign of mitigation measures, if the originally planned mitigation measures are not sufficiently effective. Because monitoring is essential to identify undesirable trends, high quality and, if possible, quantified baseline information is needed. Only when the base situation is established can changes be identified through monitoring.

The specific requirements for monitoring will differ with the type of project, the environment in which the project is located and with the severity of the potential impacts identified by the environmental assessment process. Monitoring is particularly important in the cases where:

- Environmental impacts cannot be predicted with certainty;
- The success of mitigation measures proposed is uncertain; and
- Impacts on the health, safety and livelihoods of local communities are uncertain.
- In the case of the Taba-Gakomeye Dam project, environmental impacts have been assessed as being relatively limited except in a few cases and consequently the monitoring requirements need to be appropriately matched.

The majority of the indentified and described impacts will occur in the construction phase which is the period where most of the monitoring activities will be carried out.

8.5.4 Construction phase monitoring

Monitoring will include both the biophysical and the human environment. Subjects and areas for monitoring will include, but not be limited to:

- i. Accommodation camps (if established)
- ii. Sanitary facilities at Site in the accommodation camps
- iii. Workshop and storage facilities where hydrocarbons are handled or used as well as
- iv. hydrocarbon spill areas
- v. Dust and noise emissions
- vi. Waste management
- vii. Water quality in river Mwogo and other sources
- viii. Land to be used on temporary basis
- ix. Construction areas (including issues like accidents)
- x. The compensation payment process; and
- xi. Grievances made and resolved.

8.5.5 Longterm / Operation and maintenance

Monitoring will also be carried out for a certain period of time after construction is finished and the project has moved into the operational phase. This monitoring will focus on the long term effects of the Potential environmental impacts. MINIRENA will have the main responsibility for monitoring these impacts but the District Environmental Officers of Nyamagabe and Huye as well as the community should also be involved. Issues to monitor may include;

- i. Safety of the community in relation to drowning and dam safety like dam break and subsequent disaster
- ii. Environmental Flow
- iii. De-silting
- iv. Ecological changes
- v. HIV/AIDS (a continuation from contraction)
- vi. Degradation resulting from increased need for firewood resources (from contraction)
- vii. Catchment management

An Environmental and Social monitoring Plan is proposed in **Table 8-3**. A budget for monitoring construction activities is provided in **Table 8-4**. Monitoring during operation and maintenance budget is expected to be part of the annual districts budgets.

Table 8-3: Environment and Social monitoring and Management Plan

Potential Positive Impact	Enhancement measures	Environmental monitoring indicator	Frequency of monitoring	Responsible Entity	Implementor
Pre- Construction and Operation Phase					
Creation of employment opportunities	<ul style="list-style-type: none"> - Sensitization on jobs - Priority for local labour from the project area 	The number of local members employed by the project	<ul style="list-style-type: none"> • Monthly 	<ul style="list-style-type: none"> • Ministry of Natural Resources /MINIRENA , Huye and Nyamagambe Districts • Maraba and Kamegeri sectors 	<ul style="list-style-type: none"> • Consultant and Contractor
Improvement in safe water supply and sanitation facilities	<ul style="list-style-type: none"> - Put in place water and sanitation facilities and sensitisation 	Types and number of water and sanitation facilities	monthly	<ul style="list-style-type: none"> • Water officers for both Huye & Nyamagambe Districts, • Maraba and Kamageri Sector leaders 	<ul style="list-style-type: none"> • Water officers for both Huye & Nyamagambe Districts, • Maraba and Kamageri Sector leaders
Enhancement of aquaculture /commercial fishing	<ul style="list-style-type: none"> - Continuous sensitizations about fish farming; - Potential fish farmers should be provided with fish stocks 	Number of farmers stocking fish	annually	<ul style="list-style-type: none"> • Ministry of Natural Resources /MINIRENA , Huye and Nyamagambe Districts 	<ul style="list-style-type: none"> • Developer • Environmental Officer, • Maraba and Kamageri Sector leaders
Creation of habitats for Fauna	<ul style="list-style-type: none"> - Sensitization 		Annually	<ul style="list-style-type: none"> • MINIRENA 	<ul style="list-style-type: none"> • District Environment Officers
Improved agriculture through irrigation	<ul style="list-style-type: none"> - Capacity building and sensitisation 	How many farmers have improved farms	annually	<ul style="list-style-type: none"> • MINAGRI 	<ul style="list-style-type: none"> • Agriculture and Production officers of Huye and Nyamagambe Districts
Construction Phase					

Potential Positive Impact	Enhancement measures	Environmental monitoring indicator	Frequency of monitoring	Responsible Entity	Implementor
Skills development	- On job training for the unskilled and semi-skilled workers	No. being trained	Quarterly	• Huye- Nyamagambe District leaders	• Contractor
Improved access roads	- Periodic maintenance of the access roads	How many access roads are improved	Bi-annually	• Huye- Nyamagambe District leaders	• Contractor
Gender opportunities	- Women be considered for job opportunities available	Number of women employed in the project	Monthly	Huye- Nyamagambe District leaders	Contractor and developer

Potential Negative Impacts	Mitigation	Environmental monitoring indicator	Frequency		Implementer
Preconstruction phase/Planning					
Social expectations generated by disclosure	- Information dissemination	c. Sensitization meetings; and d. Media programmes (Radio and flyers)	Quarterly	• Consultant and • Huye and Nyamagambe Districts leaders •	• Consultant and • Huye and Nyamagambe Districts leaders
Construction phase					
Influx of people	- Increase the infrastructure e.g. health facilities and water facilities.	The number of health infrastructure improved by the project in the area	Annually	• MINIRENA , Consultant, Contactor • Huye and Nyamagambe Districts leaders	• MINIRENA , Consultant, Contactor • Huye and Nyamagambe Districts leaders
Unfulfilled community expectations	-Put in place a clear and precise employment policy; and	Existence of clear employment policy	Quarterly	• Consultant;/Developer; and • Maraba and Kamageri Sector leader	• Consultant;/Developer; and • Maraba and Kamageri Sector leader
Increased risk of diseases like malaria and HIV/AIDS	- Distributing mosquito nets and sensitization of communities	Number of households that have received nets	Quarterly	• Developer/Consultant;	• Developer/Consultant; • NGOs

Potential Negative Impacts	Mitigation	Environmental monitoring indicator	Frequency		Implementer
	especially the affected villages			<ul style="list-style-type: none"> • NGOs • Maraba and Kamageri Sector leaders 	<ul style="list-style-type: none"> • Maraba and Kamageri Sector leaders
Pressure on Health	- Support health centres and school within the area and set up its own clinic	No of schools and health centres supported	Bi-annually	Developer/Ministry of Health/ NGOs /contractor	Developer/Ministry of Health/ NGOs /contractor
Pressure on Water facilities	- Set up better water distribution facilities	Facilities set up	quarterly	Developer and contractor	Developer and contractor
Impact on sanitation	- Provide additional sanitation facilities to its workers and bins	Number of dust bins and toilets set up in the camps	Monthly	Contractor and Developer, Local authorities	Contractor and Developer, Local authorities
Conflicts	- Local labour be given priority in job allocation	Number of conflicts recorded by LCS/Police regarding the project	Quarterly	Developer/Consultant Local authorities at District and Sector	Developer/Consultant Local authorities at District and Sector
Loss of residential structures	- Full compensation and sensitisation of the affected people	The number of structures to be demolished	monthly	Developer and Consultant	Developer and Consultant
Impact on agriculture and mining	- Compensation and Livelihoods Restoration programmes	People compensated and no of restoration programmes running	Quarterly	Developer and Consultant	Developer and Consultant
Loss of land	- RAP preparation and implementation	PAP compensated	Quarterly	Developer and Consultant	Developer and Consultant
Impact on infrastructure(Bridges)	- Alternative crossings to acces villages be created	The number of alternative routes/bridges created	Bi-annually	Developer and Contractor	Developer and Contractor
Destruction of school structures	- Compensation be in kind	Number of structure replaced in kind	Bi-annually	Developer/consultant	Developer/consultant

Potential Negative Impacts	Mitigation	Environmental monitoring indicator	Frequency		Implementer
Occupational Health and Safety:	- Provision of appropriate Personal Protective Equipment	How any workers wear PPEs	Monthly	<ul style="list-style-type: none"> • Developer/Consultant; and • Contractor, District Environment Officers 	<ul style="list-style-type: none"> • Developer/Consultant; and • Contractor, District Environment Officers
Increased traffic and its associated consequences	<ul style="list-style-type: none"> - Warning signs should be installed; and - Flag men employed to control traffic. 	The number of labelled signs put in within the work area	monthly	<ul style="list-style-type: none"> • Contractor/Consultant • Developer 	<ul style="list-style-type: none"> • Contractor/Consultant • Developer
Impact on vulnerable groups	- Consider vulnerable people for employment	No of vulnerable people employed by the project	Monthly	<ul style="list-style-type: none"> • Developer;Consultant; and • /NGOs. 	<ul style="list-style-type: none"> • Developer;Consultant; and • /NGOs.
Impact on gender	- Jobs should be equitably distributed to both women and men;	Cost considered under awareness programmes		<ul style="list-style-type: none"> • Developer/Contractor, Welfare and Social Protection officer; 	<ul style="list-style-type: none"> • Developer/Contractor, Welfare and Social Protection officer;
Noise generation	- Limiting blasting to acceptable times during day			<ul style="list-style-type: none"> • Contractor and District Environment personnel 	<ul style="list-style-type: none"> • Contractor and District Environment personnel
Air pollution	<ul style="list-style-type: none"> - Watering of dusty areas - Trucks carrying granular materials be covered 	Existence of watering trucks on site	weekly	<ul style="list-style-type: none"> • Contractor and District Environment 	<ul style="list-style-type: none"> • Contractor and District Environment
Increased Risk of Soil Erosion and Siltation	<ul style="list-style-type: none"> - Remove loose soils from the worksite. - Install sediment runoff control devices to control erosion 	Existence of sediment run-off control devices	Monthly	<ul style="list-style-type: none"> • Contractor; Consultant • Developer, local authorities 	<ul style="list-style-type: none"> • Contractor;Consultant • Developer, local authorities
Effects on chance finds archaeology	- Rescue the chance finds and take to the national museums	A mount of chance finds rescued	Quarterly	<ul style="list-style-type: none"> • Contractor/Developer 	<ul style="list-style-type: none"> • Contractor/Developer

Potential Negative Impacts	Mitigation	Environmental monitoring indicator	Frequency		Implementer
Loss of site vegetation	Restoration/re-vegetation/tree plants	No of trees planted	Quarterly	Developer/contractor/consultant	Developer/contractor/consultant
Borrow pits impacts	Restoration of extraction sites	Restored sites of excavation	Quarterly	Developer/Consultant, Contractor, District Environment Officers	Developer/Consultant, Contractor, District Environment Officers
Post Construction/ Operation and Maintenance					
Risk of drowning	- Fence off the reservoir - Provide safe watering points for animals	Fence and safe watering points	Quarterly	• Developer and Local authorities	• Developer and Local authorities
Risk of water and insect borne diseases	- Encourage community to sleep under mosquito nets - Distribute mosquito nets	Cost of nets	Bi-annually	• Developer, Health department	• Developer, Health department
Impact of HIV/AIDS and other STDs	- Sensitisations on HIV/AIDS awareness and equip some nearby Health centres	Number of sensitisation meetings held and number of Health centres supported	Quarterly	• Developer, Health department	• Developer, Health department
Impacts related to dam safety and Flooding	- Warning systems installation as part of emergency preparedness and compensate destroyed property	c. Presence of warning signals in case of disaster	Quarterly	• Officials from the two sectors • Developer	• Officials from the two sectors • Developer
Change in local species composition	Monitor the invasion of other species in the area	Check out for any invasive species in the area	Monthly	District Environment Officers	District Environment Officers
Negative impacts on fisheries	Form Water User committees to train and regulate locals that fish	Existence of active committees	Monthly	Developer, Fisheries department at the Districts	Developer, Fisheries department at the Districts

Potential Negative Impacts	Mitigation	Environmental monitoring indicator	Frequency		Implementer
Regime flow changes downstream and water quality	Guarantee water release downstream (environmental flow)	Levels of water flow downstream and quality of water	Daily flows	Developer	Developer

Table 8-4: Budget for Environmental and Monitoring Plan

Table 8.3 Estimated Budget for Implementation of Environment and Social Management Plan (ESMP) - Taba-Gakomeye					
1. Construction					
a) Fees /allowance					
Staff /Monitors	No.of staff	Days of work per month	Total Days for year	Unit cost (USD)	Total Cost (USD)
1. Environment Management Specialist (EMS)	1	10	120	300	36000
2. Community Liaison Officer (CLO)	1	20	240	150	36000
3. Site Environmental Officer (SEO)	1	20	240	150	36000
4. District Environmental Officers (DEO) & other Officials	2	2	24	70	1680
Total					109,680.00
b) Reimbursible					
Item	No of trips	Unit cost per trip (USD)			Total
Transport	12	500			6000
Perdiem EMS	12	280			3360
Perdiem SEO	4	280			1120
Perdiem CLO	4	280			1120
Water quality	4	1,500			6000
Miscilleneous					1000
Total					18,600.00
2. Liability Period					
a) Fees /allowances					
Staff	No.of staff	Days of work/y	Total days	Cost /day	Total cost
EMS	1	5	30	300	9000
Total					9,000.00
Reimbursable					
Item	No. of trips/trip	Cost per trip			Total
Transport	6	500			3000
Perdiem	6	280			1680
Total					4,680.00
Total fees					118680
Total Reimbursible					23280
Grand Total					141,960.00
The cost of environmental monitoring is estimated at USD141,960					

Draft Final feasibility study report was silent about construction period but we have allowed a period of 1 year. Consultant/Environment Management Specialist (EMS), Community Liaison Officer (CLO), Contractors' Senior Environment Officer (SEO) as well as Environment Officers of Nyamagabe and Huye and, other stakeholders will participate in monitoring whenever necessary.

Therefore this is the core staff the monitoring budget has taken into consideration.

8.5.6 Total Budget for Environment and Social Management Plan (ESMP)

The total budget for ESMP will consist of the budget for Mitigation plan and that of Environment Monitoring Plan. Mitigation plan cost was estimated at **USD 161,000** while that of monitoring plan has been estimated at **USD 141,960**. Therefore a budget of **USD 302,960** has been estimated for the ESMP for Taba-Gakomeye Multipurpose Project excluding RAP costs which are detailed in Preliminary RAP report.

Project Auditing will also be required as already stated and will be carried out by REMA. An estimated budget of USD 20,000 has been provided for this. Therefore the total cost of ESMP will be about **USD 322,960**.

8.6 REPORTING

Monthly progress report accompanied by environmental monitoring reports that include illustrations and records shall be prepared by the Consultant (EMS) and submitted to MINIRENA for purposes of review of environmental management performance of the Contractor. Annual reports containing all data obtained during the environmental monitoring throughout the year shall be submitted to REMA by MINIRENA up to end of construction period. During operation and maintenance MINIRENA, the District Environment Officers will provide the status of environment in their annual reports to REMA. This should include information about the project from Health department and social welfare and Protection offices of Nyamagabe and Huye Districts.

9 CONCLUSION AND RECOMMENDATIONS

9.2 CONCLUSIONS

With the implementation of mitigation measures, most of the negative impacts will either be minimized or small negative except a few like social expectations, displacement/ loss of housing, loss of land, HIV /AIDS etc.

Mitigation and monitoring of these residual impacts will therefore continue even during operation and maintenance together with activities like catc hment protection, servailance around the reservoir to reduce risk of drowning, fishing activities, environmental flow etc.

The main conclusion of this Environment Impact Assessment is that there is no environmental obstacle to implementation of the project, if the proposed mitigation measures inter alia are implemented.

9.3 RECOMMENDATIONS

9.3.4 Institutional Cooperation

A number of institutions will be involved in this project in all phases as was indicated in stakeholder involvement. In order to enhance implementation of the proposed mitigation measures there is need for collaboration between MINIRENA, NELSAP and relevant Districts Departments including Environment, Social welfare and Protection, water, , health, Infrastructure and others. It is therefore necessary to have their roles streamlined before construction activities start.

9.3.5 Sensitization

Continuous sensitization should be carried out during project Construction, Operation and Maintenance. Key issues for emphasis during sensitization include but not limited to; Health and safety, HIV /AIDS, opportunities, Compensation issues, Grievance Procedures, cathment protection, gender issues and others

9.3.6 Employment Opportunities

The active work force has not yet been estimated for this dam site, but there will be both skilled and non-skilled/casual labourers. It is recommended that workers should be recruited from the local communities, especially in non-skilled positions, whenever possible. Employing local people will not only benefit the communities but also eliminate or reduce the costs of providing housing and logistics. Local people should be given priority and proper consideration should be made to ensure that some manual work being ' flag women' is given to women as well as work in the traditionally female areas of cooking and market activities.

9.3.7 Physicla - Cultural Resources and Archaeology

During consultation and field surveys, a few archaeological finds were identified in the Taba-Gakomeye area, which include a pottery piece belonging to Late Iron age. Not much more was found due to limited excavations. However it is expected that a lot of excavations will be carried out during construction. Therefore, it is recommended that archaeologists from National University of Rwanda or staff from the Museum could be involved especially before construction to sensitise the workers so that they do not miss the chance finds. Once these are found, the museum officials should be

Informed and the finds delivered to the museum.

9.3.8 *Planning and Co-ordination with Local Authorities*

Throughout all phases of the project, local authorities should be informed of the decisions taken by MINIRENA and consulted whenever possible. This will ensure good cooperation with the communities and avoid misunderstandings. Committees with representatives from the Districts, Lower local Governments and Communities have already been proposed under management and RAP and should be established in order to ease communication during construction.

7.1.5 *Resettlement Action Plan (RAP) and Property Valuation*

During this ESIA study, a preliminary RAP was being prepared alongside and indicative property likely to be affected and types of Assets in the affected area have been worked out. This is in line with Annex A of the Involuntary Resettlement Policy of African Development Bank. A RAP detailing individual affected persons, sizes of land and other individual property, grievance procedures, eligibility and criteria, payment mechanism and others will need to be carried out in the next phase of this study. Actual valuation of property and crops to be affected should be done before construction. During construction, if any damage that was not envisaged is experienced, the valuation of such should be done. This will ensure that the process of compensation is prompt and fair

REFERENCES:

Fiddes, D., 1976. The TRRL East African Flood Model, Department of the Environment, TRRL706, Crowthorne.

Renard KG, Foster GR, Weesies GA, McCool DK, Yoder DC. 1997. Predicting soil erosion by water: A guide to conservation planning with the Revised Universal Soil Loss Equation (RUSLE). Agriculture Handbook. No. 703. U.S. Department of Agriculture.

Wall, G.J., D.R. Coote, E.A. Pringle and I.J. Shelton (Editors). 2002. RUSLEFAC – Revised Universal Soil Loss Equation for Application in Canada: A Handbook for Estimating Soil Loss from Water Erosion in Canada.

Wischmeier, W.H., and D.D. Smith. 1978. Predicting rainfall erosion losses - a guide to conservation planning. The USDA Agriculture Handbook No. 537.

Wischmeier, W.H., C.B. Johnson and B.V. Cross. 1971. A soil nomograph for farmland and construction sites. J. Soil and Water Cons. 26:189-193.

Mughanda, M. 1989. Étude du peuplement piscicole du lac Ihema (Rwanda) et de l'exploitation des Tilapias spp. A.SMITH 1840 (pisces, cichlide) et de clarias gariepinus BURCHELL 1822 (pisces, clariidae) en relation avec quelques variables abiotiques et biotiques. Louvain La Neuve, 222 p. plus annexes.

Musahara, H. and C. Huggins. September.

Kagera River Basin Monograph (Basin Development Report); NBI 15 July 2008.

Plan Directeur Pêches et Aquaculture, 1993 ; Rapport annuel 2006 et Rapport mois d'Août 2007, PAIGELAC-MINAGRI.

African Bird Club (2012). Tanzania Important Bird Areas.

www.africanbirdclub.org/countries/Tanzania/ibas.html)

BirdLife International (2012a) IUCN Red List for birds. Downloaded from <http://www.birdlife.org> on 30/06/2012.

BirdLife International (2012b). Species factsheet: *Balearica regulorum*. Downloaded from <http://www.birdlife.org> on 0/06/2012.

BirdLife International 2012c) <http://www.birdlife.org/datazone/sitefactsheet.php?id=6977>).

Clausnitzer, V., Dijkstra, K.B. and Kipping, J. (2011) Globally threatened Dragonflies (Odonata) in the Eastern Africa and its implications for conservation. *Journal of East African Natural History* 100 (1 &2): 89-111.

IUCN 2007. en.wikipedia.org/wiki/List_of_mammals_in_Tanzania).

Meine, C. and Archibald, G. (Eds) (1996). *The Cranes. Status, survey and conservation action plan*. IUCN Gland Switzerland and Cambridge, UK.

Schiøtz, A. & Drewes, R. 2004. [Hyperolius rubrovermiculatus](#). [2006 IUCN Red List of Threatened Species](#).

Stattersfield, A., Crosby, M. J., Long, A. J. and Wege, D. C. (1998) *Endemic Bird Areas of the world: priorities for biodiversity conservation*. Cambridge, UK: BirdLife Intern

Mughanda, M. 1989. Étude du peuplement piscicole du lac Ihema (Rwanda) et de l'exploitation des *Tilapias* spp. A.SMITH 1840 (pisces, cichlide) et de *clarias gariepinus* BURCHELL 1822 (pisces, clariidae) en relation avec quelques variables abiotiques et biotiques. Louvain La Neuve, 222 p. plus annexes.

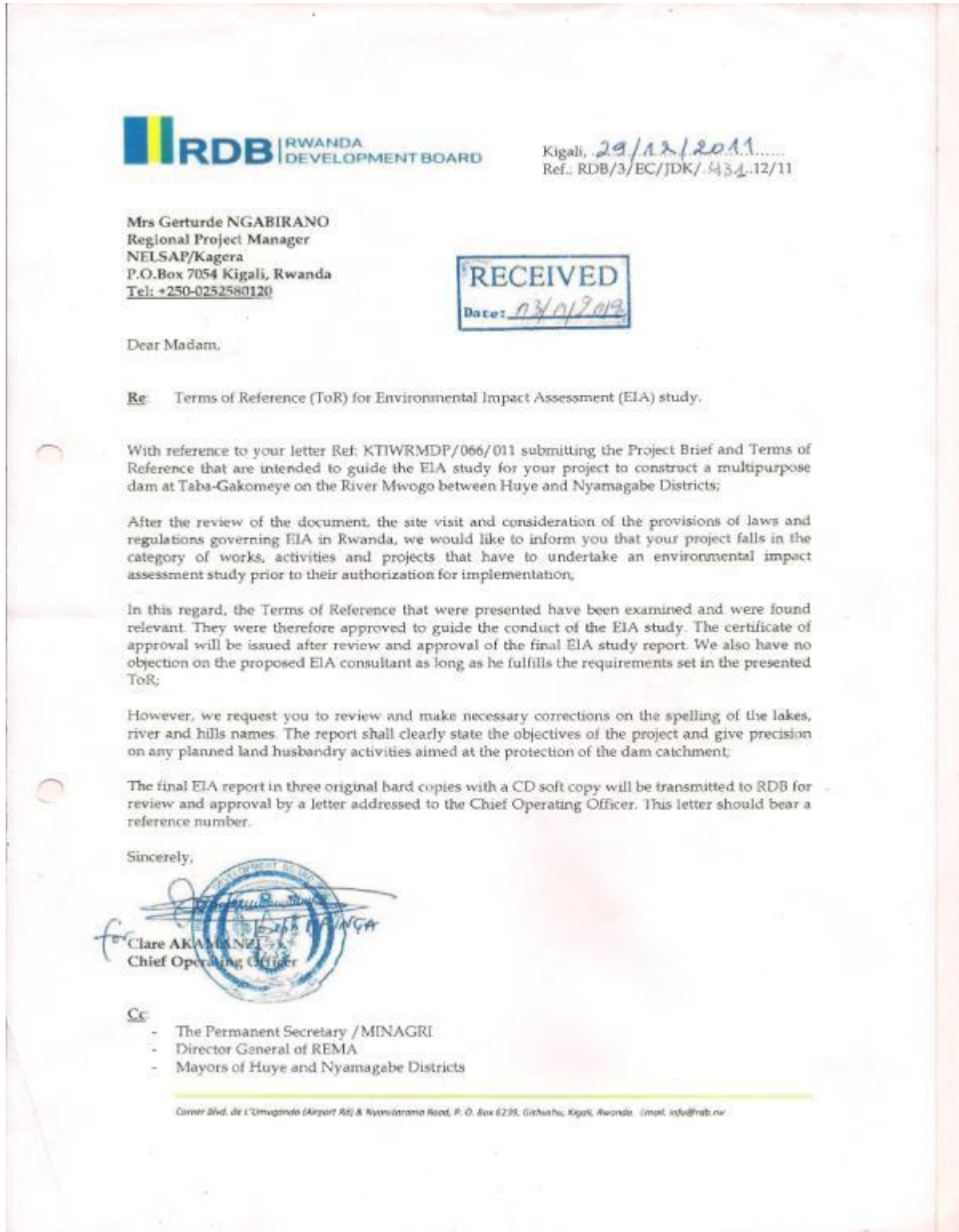
Musahara, H. and C. Huggins. September.

Kagera River Basin Monograph (Basin Development Report); NBI 15 July 2008.

Plan Directeur Pêches et Aquaculture, 1993 ; Rapport annuel 2006 et Rapport mois d'Août 2007, PAIGELAC-MINAGRI.

APPENDICES

APPENDIX 1: APPROVAL LETTER FOR THE TERMS OF REFERENCE.



Code for sex 1-male 2- female

Code for relationship with HH head: 1-Household head 2-Wife 3-son 4-Daughter 5-Granchild 6-Sister 7- Brother 8- Nephew/Niece 9-no blood relation 10-Other relations (specify)

Code for education 1-None 2-Primary 3-Secondary 4-Tertiary 5-University 6- Other (specify)

Code for marital status 1-Married monogamous 2-Married polygamous 3-Single 4-Widowed 5-Divorced 6-Cohabiting 7-Other (specify)

Code for religion 1-Protestant Traditional 2-Catholic 3-Seventh Day Adventist 4-Moslem 5-No belief 6- 7-Other

Code for income earner 1-Yes 2-No

Code for source of livelihood 1-Peasant farmer 2-Commercial farmer 3-Salaried worker 4-Trader 5-Service provision (e.g. salon, hotel, transport) 6- Casual laborer 7--Other (specify)

Is there any member of the household who is disabled? 1 Yes 2 No

If yes, what is the type of disability?

- Physical lameness 1
- Blind 2
- Mental 3
- Other (specify) 4

What was the cause of the disability?

.....

Are there orphaned children in your household? 1 Yes 2 No

If yes, what was the cause of death of their parents?

.....

If farming is a source of income answer questions 18-23

Type of farming (Multiple answers acceptable)

- Crop farming 1
- Animal husbandry 2
- Mixed farming 3
- Fish farming 4
- Tree cropping 5
- Hunting 6
- Others (Specify) 7

Type of crops grown

Cash crops.....
 Food crops.....

If you rear animals, what type of animals do you rear? (Multiple responses possible)

Sheep	1	Number.....
Goats	2	Number.....
Cattle	3	Number.....
Pigs	4	Number.....
Poultry	5	Number.....
Other (specify other animals)	6	Number.....

Do you sell some of the crops you grow?

Yes	1
No	2

Do you sell some of the animals?

Yes	1
No	2

If you do fish farming, do you sell some of the fish caught?

Yes	1
No	2

If yes to questions 21-23, answer questions 25-27 below

Where do you sell your products?

Crops

Animals.....

Fish

What is the distance to the main marketing point for your products?

Less than 500ms	1
500-1km	2
Above 1km	3

What problems do you encounter when marketing your commodities?

.....

SECTION 3: LAND OWNERSHIP, TENURE AND USE

Do you own land?

Yes	1
No	2

Under what tenure system is your land? (Only one answer)

Customary	1
Leasehold	2
Freehold	3

Communal 4
Other (specify) 5

Average land size owned (in acres).....

How do you utilise this land? (Multiple answers acceptable)

Crop farming 1
Livestock farming 2
Brick making 3
Buildings 4
Grazing land 5
Fish farming 6
Tree planting 7
Others (specify) 8

SECTION 4: HOUSING

Type of the residential house

Permanent 1
Semi permanent 2
Temporary 3

Ownership of the residential house

Self owned 1
Rent 2
Others (specify) 3

SECTION 5: ASSETS OWNED

Assets owned by the household (Multiple answers acceptable)

Radio 1
TV 2
Bicycle 3
Motorcycle 4
Car 5
Cell phone 6
Land 7
House 8
Animals (cattle, pigs, goats, sheep, poultry)9
Others 10

SECTION 6: EXPENDITURE

What items/services take up most of your expenditure? Please **rank** them in order of highest expenditure by assigning them numbers from 1-9.

Item	Rank
Food	
Transport	
Medical bills	
Clothing	
Rent	
Energy	
Water bills	
School fees	
Other (specify)	

On average how much do you spend on the following items/services every month?

Item	Amount (month)
Food	
Transport	
Medical bills	
Clothing	
Rent	
Energy	
Water bills	
School fees	
Other (specify)	

SECTION 7: SOURCE OF ENERGY AND FUEL

What kind of fuel do you use for cooking at home? (Multiple responses)

- Firewood 1
- Charcoal 2
- Paraffin/Kerosene 3
- Electricity 4
- Gas 5
- Solar 6
- Biogas 7
- Others 8

What kind of fuel do you use for lighting at home? (Multiple responses)

- Firewood 1
- Charcoal 2
- Paraffin/Kerosene 3
- Electricity 4
- Gas 5
- Solar 6
- Biogas 7
- Others 8

SECTION 8: ACCESS TO INFORMATION

How do you access information about different aspects? (Multiple answers acceptable)

Radio	1
TV	2
Newspapers	3
Community meetings	4
Village public speakers	5
Telephones	6
Place of worship	7
Neighbor	8
Internet (email)	9
Other (specify)	10

SECTION 9: FOOD SECURITY

In the last 12 months, are there days when your household did not have lunch or supper or did not eat to satisfaction because of lack of enough food?

Yes	1
No	2

If yes, what were the reasons for the food shortage (not being enough)? (Multiple answers acceptable)

Land not enough for food production	1
The yield was poor due to poor weather, pest, diseases, soil fertility, rodents, other animals	2
Poor seeds used in planting	3
Sold most of the produce	4
Did not plant enough	5
The crops were destroyed due to too much rain/flooding	6
Other reason (specify)	7

SECTION 10: EDUCATION

Is there any member of your of household who is of school going age but does not go to school?

Yes	1
No	2

If yes, why isn't he/she in school?

What is the distance to the nearest primary school?

Less than 500ms	1
500-1km	2
1-3kms	3
Above 3kms	4

What is the distance to the nearest Secondary school?

Less than 500ms	1
500-1km	2
1-3kms	3
Above 3kms	4

Has any member of this household received any other training (skills)?

Yes	1
No	2

If yes, specify

Do you know how to read and write in the following languages?

Official language	Yes	1	No	2
Any local language	Yes	1	No	2

SECTION 11: HEALTH

Which nearest health centre do you go to in case of an emergency?

.....

Which referral hospital do you mainly use?

.....

What is the distance to the nearest health center?

Less than 500m	1
500-1km	2
1km- 3kms	3
3-5kms	4
6km+	5

What is the distance to the nearest referral health unit?

Less than 500m	1
500-1km	2
1km- 3kms	3
3-5kms	4
6km+	5

What do you think of the services offered by the nearest health center?

Very good	1
Good	2
Average	3
Poor	4

Give reasons for your answer above

.....

.....

Have you heard of HIV/AIDS?

Yes	1
No	2

What are the major causes of HIV/AIDS?

.....

.....

SECTION 12: WATER SUPPLY

What is the main source of water for your household?

Public boreholes	1
Privately owned boreholes	2
Rain Water harvesting	3

Protected Spring/well	4
Unprotected Spring/well	5
River, Lake, stream, swamp	6
Valley Tank/Earth dam	7
Stand post	8
Others (specify)	9

Apart from domestic use, what else do you use the water for?

Brick making	1
Watering animals	2
Fish farming	3
Agricultural use / Irrigation	4
Local beer brewing	5
Other (Specify)	6

How sufficient is this water?

Throughout the year	1
Insufficient during dry season	2
Insufficient throughout the year	3
Others (specify)	4

What is the distance from your home to the water source?

Less than 500m	1
500-1km	2
1km- 3kms	3
Above 3kms	4

How much time per day do you spend fetching water on a single trip?

Less than 30 minutes	1
30 minutes to 1 hour	2
1 to 2 hours	3
More than 2 hours	4

How many jerry cans of water do you use per day?

Domestic
Other uses

What problems do you encounter with the water source? (multiple responses accepted)

Too steep	1
Expensive	2
It dries up	3
Long distance	4
None	5
Others (Specify)	6

What do you think of the quality of water delivered?

Taste:	1 Good	2 Average	3 Poor
Smell:	1 Good	2 Average	3 Poor
Color:	1 Good	2 Average	3 Poor
Hardness:	1 Good	2 average	3 Poor

SECTION 13: SANITATION

Do you have a toilet/latrine?

Yes	1
No	2

What type of latrine does your household use?

Traditional pit latrine	1
Flush toilet	2
VIP	3
Ecosan	4
Shallow pits	5
Others (specify)	6

If you do not have a toilet, where do you go?

Neighbor	1
Public toilet	2
Bush	3
Others (specify)	4

What are the reasons that inhibit you from owning a latrine?

.....

If a toilet was constructed in your area, would you use it?

Yes	1
No	2

If no, give reasons

.....

How does your household dispose of the solid wastes? (Multiple responses acceptable)

Open dumps	1
Burning	2
Shallow pits	3
Scatter in gardens	4
Others (specify)	5

Are there any public garbage disposal areas in designated by the local authorities or the government?

Yes	1
No	2

SECTION 14: GENDER ISSUES

Does your wife own land?

Yes	1
No	2

Is your wife allowed to make decisions on issues regarding land?

Yes	1
No	2

What are the roles of the women in this household?

What are the roles of men in this household?

What are the roles of children in this household?

Boys -----

Girls -----

SECTION 15: EXPECTATIONS AND FEARS FROM THE PROJECT

What are your expectations of the project?

What are your fears in regard to the project?

Please give suggestions on how these fears can be overcome or mitigated

THANK YOU

APPENDIX 3A : LIST OF PERSONS CONSULTED

List of Persons consulted

Name	Designation	Date
Mr. Vincent Kabalisa	Deputy Director General Rwanda Water Resources	17 -01- 2012
Mr. Remy Mugunga	Transboundary Water Coordinator, TAC member	17 -01- 2012
Mr. Xavier Ndekezi	Hydrological Engineer, Rwanda Water Resources	17 -01- 2012
M/s Jacqueline Nyirakamana	National Liaison Officer, Rwanda	17 -01- 2012

Ms. Karangwaire Ancille	Environmental Officer, Nyamagabe	16-01-2012
Mr. Butera Martin	Environmental Officer, Huye	16-01-2012
Mr. Kanjirange Muheke	Mayor Huye	17-01-2012
Mr. Godfrey Sengendo	Deputy Project Manager, Water Resources Kagera Basin	17-01-2012
Mr. Innocent Kabenga	Deputy Project Manager, Planning and Management Kagera Basin	17-01-2012
Innocent Sibomana	Nyamagabe District Education Officer	24-03-2012
Uwamariya Agnes	Social Welfare and Protection Officer, Nyamagabe District	25-03-2012
Karangwayire Ancille	Environmental Officer, Nyamagabe District	25-03-2012
Obed Muhiirwa	In charge of GIS & land survey, Nyamagabe District	28-03-2012
Bonaventure Nshimiyimana	Ag. Infrastructure Officer, Nyamagabe District	28-03-2012
Sylvestre Hategimana	Health Monitoring and Evaluation Officer, Nyamagabe District	28-03-2012

APPENDIX 3B: ATTENDANCE LISTS & MINUTES

NBI/NELSAP – Kagera River Basin Project
 Environmental and Social Impact Assessment and Development of Resettlement Policy Framework for 4 proposed
 small Multi-Purpose Dams

COMMUNITY MEETING ATTENDANCE LIST 12 Local VILLAGERS

Country.....RWANDA.....District.....IRYK.....
 Sector.....Paraba.....Cell.....GASURU.....Village.....ITABA (GITWA, KINOMBE)
 Date.....March 22, 2012.....Venue.....Gasuru Cell.....Time.....5:10 pm - 6:13 pm

No.	Name	Gender		Designation/Occupation	Signature
		M	F		
17	M. Semera Fortunée 0782956007		F	Umuhingi CITABURE	
18	Mgenzi Pierre Célestin 0725692938	M		Umuhingi Kinombe	
19	Mbanzambizi Innocent	M		Umuhingi Kinombe	
20	Minani Apurhin	M		Umuhingi Taba	
21	Kamanirwa Anastase	M		Umuhingi Taba	
22	Mukandiinda Tereza		F	Umuhingi Kinombe	

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COMMUNITY MEETING ATTENDANCE LIST | LOCAL VILLAGERS

Country... RWANDA District... Huye

Sector... Tabara Cell... Gakoma Village... (Tabara, Gikoma, Kinombe)

Date: March 27, 2012 Venue: Gakoma cell office Time: 5:10 pm + 6:13 pm

No.	Name	Gender	Designation/Occupation	Signature
9	Minani Frédéric	<u>M</u> ✓ F	Umuhingi Gitabura	
10	Nsanzimana Jean Paul	<u>M</u>	Umuhingi Gitwa	
11	Mpayimana Léonard	<u>M</u> <u>M</u>	Umuhingi Gitwa	
12	Bacamunikiye daniel 0782763056	<u>M</u>	umuhingi TABARA	
13	Nyandwi eliyajali	<u>M</u>	Umuhingi Kinombe	
14	Ndebeya ho-Venuste	<u>M</u>	Umuhingi Kinombe	
15	Kubwimana Herena 0725563106	<u>F</u>	Kinombe, Umuhingi	
16	Nkurunziza Emmanuel 07824113394 0725420770	<u>M</u>	Umuhingi GITWA	

NBI/NELSAP – Kagera River Basin Project
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COMMUNITY MEETING ATTENDANCE LIST / *LOCAN VIKWAZU*

Country... *RWANDA* District... *KUYE*

Sector... *NARABA* Cell... *GASIMBA* Village: *(Taba, Gitwa, Kimwabe)*

Date: *March 28, 2012* Venue: *GASIMBA cell office* Time: *5:10pm - 6:13pm*

No.	Name	Gender		Designation/Occupation	Signature
		M	F		
1	<i>Kalisa Emmanuel</i> <i>0782034831</i> <i>0726410436</i>	M		<i>Umuhingi</i> <i>Umuhingi w'umukuru</i>	<i>[Signature]</i>
		M		<i>Taba</i>	
2	<i>Mukuriye Pascal</i>	M		<i>Umuhingi</i> <i>Taba</i>	<i>[Signature]</i>
3	<i>Mukayaramba Ntonya</i>		F	<i>Umuhingi</i> <i>Kabwimbe</i>	<i>[Signature]</i>
4	<i>Zibiya Saguye</i>		F	<i>Umuhingi</i> <i>Gitabure</i>	<i>[Signature]</i>
5	<i>Mukantwari Pasikaziya</i>		F	<i>Umuhingi</i> <i>Taba</i>	<i>[Signature]</i>
6	<i>Mukamusoni Anyesi</i>		F	<i>Umuhingi</i> <i>Gitabure</i>	<i>[Signature]</i>
7	<i>Mukeshimaha Domieene</i>		F	<i>Umuhingi</i> <i>Gitabure</i>	<i>[Signature]</i>
8	<i>Mukarushema Agnès</i>		F	<i>Umuhingi</i> <i>GITWA</i>	<i>[Signature]</i>

NBI/NELSAP – Kagera River Basin Project
Environmental and Social Impact Assessment and Development of Resettlement Policy Framework for 4 proposed small Multi-Purpose Dams

COMMUNITY MEETING ATTENDANCE LIST | WOMEN

Country: RWANDA District: NYARAGIWE & KIRI

Sector: KATEGEHE & PARABA Cell: KIZA & GAKOMEYE Village: TRAMINGI CENTER

Date: March 28, 2012 Venue: KIRI VOCATIONAL TRAINING CENTER Time: 2:30 pm - 5:00 pm

No.	Name	Gender		Designation/Occupation	Signature
		M	F		
1	MUSA YIBIRE M. Vestine 0788840145 / 072213088		X	C.N.F / Coordinator	<i>[Signature]</i> Cellele / Gashu Umuhungu = G
2	MUKABAGIRE Christine		X	C.N.F / Economique	<i>[Signature]</i> Ki Gashu Umuhungu = G
3	Mukamukindwa M. Umantal 0785647916		X	C.N.F U.P GAKOMEYE	<i>[Signature]</i> Ki Zi
4	MUKAREMERA Fortunée 0782956001		X	C.N.F Imibereho myiza GITABURE	<i>[Signature]</i> Gashu
5	MUKANKUSI Christine		X	C.N.F / Conseillère GITWA	<i>[Signature]</i> Gashu
6	MUKAKARISA perpetue		X	Participant GAKOMEYE	<i>[Signature]</i> Gashu
7	MUKIZYIMANA victoire		X	C.N.F Umwanditsi	<i>[Signature]</i> Sasumba
8	MUKABIRASA Marie grâce 0782955999		X	C.N.F Imibereho myiza	<i>[Signature]</i> Gashu
9	MUKAWAMUKINDWA Fortunée		X	C.N.F ubutabera	<i>[Signature]</i> Gashu Ki Zi
10	MUKAWAMUKINDWA Marie		X	C.N.F / Présidente	<i>[Signature]</i> Gashu TABA

NBI/NELSAP – Kagera River Basin Project
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 small Multi-Purpose Dams

COMMUNITY MEETING ATTENDANCE LIST | WOMEN

Country: RWANDA District: NYATAGIASE & HUYE

Sector: KARÉ, EN & NATANSA Cell: KIKI & GASUMBA Village:

Date: Nov 28, 2012 Venue: KIZI VOCATIONAL TRAINING CENTER Time: 9:00 am - 5:00 pm

No.	Name	Gender		Designation/Occupation	Signature
		M	F		
11	Mukawemeye Verena 0782906245		✓	C.N.F. Inyobareze	Gasumba KINOMBE
12	Mukeshimana Madeirena		✓	C.N.F. Inyobareze	Gasumba KINOMBE
13	Umuhozo Uvise		✓	C.N.F. Umungo- mabanga	Gasumba KINOMBE
14	Mukamukeli'za M. Rose 0782411733		✓	C.N.F. Umuhuzabikoro	Gasumba Kinombe
15	Mukamana Vestine		✓	Akagali' Kizi	Gakomeye
16	Mukansana Yvonne		✓	Akagali' Gasumba	Kinombe
17	Mukantwari Liberate		✓	Akagali' Gasumba	Kinombe
18	Mukitwara Domitise		✓	Akagali' Gasumba	Kinombe
19	Mukarutezi Geraldine		✓	Akagali' Gasumba	Kinombe
20	Bampira Gammelitte		✓	Akagali' Gasumba	Kinombe
21	Mukamushema Agnes		✓	Akagali' GASUMBA	BITWA
22	Mukaritego Belata		✓	Akagali' GASUMBA	TABA
23	Mukankwisi Jacqueline		✓	Akagali' GASUMBA	KINOMBE
24	Mukamushimimana Marguerite		✓	Akagali' GASUMBA	Kinombe
25	Mukamukenge Anita		✓	Akagali' Gakomeye	Kizi
26	UMutoniwase Jeanne		✓	Akagali' Kizi	Gakomeye
27	Mukamushimana Victoire		✓	Akagali' Gasumba	Kinombe

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 Environmental and Social Impact Assessment and Development of Resettlement Policy Framework for 4 proposed small Multi-Purpose Dams

COMMUNITY MEETING ATTENDANCE LIST / WOMEN

Country... RWANDA District... NYATAGANZA & GUYE

Sector... KATEGEZA PARISH Cell... KIT & GASUNYA Village:.....

Date: Month 28, 2022 Venue: KIT VOLUNTARIAL TRAINING CENTER Time: 2:30 pm - 5:30 pm

No.	Name	Gender		Designation/Occupation	Signature
		M	F		
28	Uwimana odette			Akagali kizi	Gakomeye
29	Mukamuganda Julia		✓	Akagali Gasamba	Biteza
30	Mukamana christine		✓	akagali kizi	Gakomeye
31	Mukamusingizandekwe alphonse		✓	akagali kizi	Gakomeye
32	Ahibameye charlotte		✓	Gasamba: Biteza	Signature 078290624-1
33	Mukamusoni daniyana		✓	Gasamba: Biteza	Signature

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NBI/NELSAP – Kagera River Basin Project
 Environmental and Social Impact Assessment and Development of Resettlement Policy Framework for 4 proposed
 small Multi-Purpose Dams

COMMUNITY MEETING ATTENDANCE LIST / **LODAN VILLAGERS**

Country... RWANDA District... NYUNYUNZU

Sector... KARURU Cell... KI 21 Village... KI 21 (GAKOMEYE,
 CUMYANA,
 KAGAMANA)

Date... March 29, 2011 Venue... Ubi Primary School Time... 3:20 pm - 4:30 pm

No.	Name	Gender	Designation/Occupation	Signature
1	Rusobakwira Fredrick 0785511031 - 0725750230	M	KINYANA HINZI	[Signature]
2	Kagobonyana 0786875752	L	ginyana umunzi	[Signature]
3	UMIMANA Josephine		Gakomeye Umunzi	[Signature]
4	SIBOMANA J. pierre 0785283220 / 0725314172	V	Gakomeye Umunyeshuri	[Signature]
5	Mukantaga Kansilide	V	Kinyana HINZI	[Signature]
6	HABERIMANA Alexandre 0725057338	V	HINZI Kinyana HINZI	[Signature]
7	Sinbayigaya Emmud L	L	Rinyana	[Signature]
8	Sinbayigaya Anas	V	HINZI Gakomeye	[Signature]
9	SINDIMANA Emmud	V	Gakomeye	[Signature]
10	Habimuna Pesi Hore	V	Gakomeye	[Signature]
M	Uyandui Hsiri	V	Gakomeye	[Signature]

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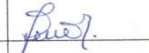


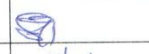


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 Environmental and Social Impact Assessment and Development of Resettlement Policy Framework for 4 proposed
 small Multi-Purpose Dams

COMMUNITY MEETING ATTENDANCE LIST (LOLAH VILLAGERS)

Country.....RWANDA.....District.....NYATARA.....

Sector.....KARURU.....Cell.....KI 77.....Village:.....(GAKOMEYE, OMIYANA,
KALIRAMA)

Date:.....March 29, 2012.....Venue:.....Mt. Primary school.....Time:.....3:20 pm - 4:30 pm

No.	Name	Gender		Designation/Occupation	Signature
		M	F		
17	Twagiramana		✓	umukinzi	
	No 0782080413			kingana	
18	Niyitegeka Euphrasie		✓	umukoranyi	
	0782904723			Kagarama	
14	Twagikurukiza U	✓		umukoranyi	
15	Hajyeri imana	✓		kingana	
16	Rwamesha jozepi	✓		umukinzi	
				kingana	
19	HAVUGIMANA Alexandre	✓		GAKINGA	
	0726486026			GAKOMEYE	
18	Twagira ye uprotas			GAKOMEYE	
	0785260385				
19	TABALO JESUVE			GAKOMEYE	
20	MSEBUKAGIWE			KAGALAMA	
21	Sabimana Francois			GAKOMEYE	
22	MUKAMPALIMPAKA			kingano	
23	MAKUSU JAKWIME			GAKOMEYE	

NBI/NELSAP – Kagera River Basin Project
Environmental and Social Impact Assessment and Development of Resettlement Policy Framework for 4 proposed small Multi-Purpose Dams

COMMUNITY MEETING ATTENDANCE LIST / LOCAL VILLAGERS

Country... RWANDA District... NYATAGANZE

Sector... KARURURU Cell... K121 Village... (GAKOMEYE, CYIMYANA, NAGARATIA)

Date... March 29, 2022 Venue... Umuhiyimana Time... 3:20pm - 4:30pm

No.	Name	Gender		Designation/Occupation	Signature
		M	F		
1	MURAKMULIFE MARIE LOUISE		<input checked="" type="checkbox"/>	KAGABAMA UMUHINZI	
2	MURANDUNGUSE EDEWEDA Umu 0782904727		<input checked="" type="checkbox"/>	GAKOMEYE UMUHINZI	
3	MUSABIMANA BERNADETTE 0782904726		<input checked="" type="checkbox"/>	Kinyana (Umuhiyimana) umuhinzi	
4	MUBANA GASTON	<input checked="" type="checkbox"/>		Kinyana MAGON	
5	NTAWURUSHIGAREMYE 0788643500			KAGABAMA rebuhinzi	
6	KAREMERA VINCENT 0725244295	M		GAKOMEYE Umuhiyimana	
7	KAMYEMERA 0789846501		<input checked="" type="checkbox"/>	GAKOMEYE umuhinzi	
8	MUKARUNSIGIRIHANDA		<input checked="" type="checkbox"/>	GAKOMEYE umuhinzi	

NBI/NELSAP – Kagera River Basin Project
 Environmental and Social Impact Assessment and Development of Resettlement Policy Framework for 4 proposed
 small Multi-Purpose Dams

COMMUNITY MEETING ATTENDANCE LIST LOCAL VILLAGERS

Country: RWANDA District: NYATAGANZE

Sector: KARAGI Cell: KI 21 Village: KI 21 (GAKOMEYE, UMIYANI KALAZATA)

Date: March 29, 2012 Venue: UWA Primary School Time: 3:20 pm - 4:30 pm

No.	Name	Gender		Designation/Occupation	Signature
		M	F		
9	Mwirangendabimana Sperance		<input checked="" type="checkbox"/>	Umuhizi	
	-			Kinyana	UPA
10	Maugara Félix	<input checked="" type="checkbox"/>		Kinyana	Zkior
	-			Umuhizi	
11	ujimama wa Kasi	<input checked="" type="checkbox"/>		Kagarama	
	04 262 6894			umuhizi	
12	Twagi rageru Prosa	<input checked="" type="checkbox"/>		umuhizi	Fup
	0785260385			umuhizi du Gakomeye	
13	Kukantaba Shwa Leonie		<input checked="" type="checkbox"/>	udegu du Kinyana	tttttt
	078633436			umuhizi	
14	Munyanké ko Andené	<input checked="" type="checkbox"/>		Kinyana	mu
	-			umuhizi	
15	MUTOZA Jean	<input checked="" type="checkbox"/>		Kinyana	tt
	0725360360			umuhizi	
16	GASARAS' mazi SERI		<input checked="" type="checkbox"/>		tt
	-			umuhizi	

NBI/NELSAP – Kagera River Basin Project
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COMMUNITY MEETING ATTENDANCE LIST / Local Villagers

Country... RWANDA District... NYATAGARU

Sector... KARURU Cell... K.I.E.I Village... (GAKOMEYE, KIMYAMA, KAGAZIMBA)

Date: Month 29, 2012 Venue: K.I.E.I Primary School Time: 3:20 pm - 4:30 pm

No.	Name	Gender		Designation/Occupation	Signature
		M	F		
1	NYiraromba Benadete		F	Umuhinzi	
2	NYirankusa Bernadete		F	Umuhinzi	
3	Kamana J. Clode	F		Umurwayi	
4	Mukantaganda Libecathe		F	Umuhinzi	
5	NYiranziza Viviana		F	Umuhinzi	
6	Twagirayezu Sprien	F		Umuhinzi	
7	Muhawenimana Prodonthe		F	Umuhinzi	
8	Uwimana Clodina		F	Umuhinzi	
9	Mukamushaka Francine		F	Umuhinzi	
10	Ntibibaza Venustin	F		Umuhinzi	
11	Mukanyamwasa Marie		F	Umuhinzi	
12	Uwimana Odete		F	Umuhinzi	
13	Mukakarisa Perepotwasa		F	Umuhinzi	
14	Mukanyambo Josephine		F	Umuhinzi	
15	Mukeshimana Josephine		F	Umuhinzi	
16	Niragire Trifine		F	Umuhinzi	
17	NYiranziroresa Speransie		F	Umuhinzi	
18	Mukeshimana Anastasie		F	Umuhinzi	
19	Mukarukundo Vestina		F	Umuhinzi	
20	Uzakuriko Celestin	F		Umuhinzi	
21	NYirampayimana Rose La Komeye		F	Umuhinzi	

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NBI/NELSAP – Kagera River Basin Project
 Environmental and Social Impact Assessment and Development of Resettlement Policy Framework for 4 proposed
 small Multi-Purpose Dams

COMMUNITY MEETING ATTENDANCE LIST

LOAN KENDEN

Country: *RWANDA* District: *NYANZIGARU* *NYE*

Sector: *KAMUKUNDA* Cell: *KIZI* *GASUMBA* Village: *.....*

Date: *March 27, 2012* Venue: *mti Primary School* Time: *12:00 - 2:00 pm*

No.	Name	Gender		Designation/Occupation	Signature
		M	F		
1	<i>Rwivundo theogene</i> <i>0783194342</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>SIE GASUMBA</i>	<i>[Signature]</i>
2	<i>Rwasibo Joseph</i> <i>0722230584</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<i>SES KIZI cell</i>	<i>[Signature]</i>
3	<i>Rutayirine Albert</i> <i>0788642795</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<i>TABA</i>	<i>[Signature]</i>
4	<i>Munganyinka Vestine</i> <i>0788630551</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<i>CNF / GASUMBA</i> <i>CITABURE</i>	<i>[Signature]</i>
5	<i>INGABIRE Claudine</i> <i>0786124483</i> <i>0726111138</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<i>CNF</i> <i>GASUMBA</i>	<i>[Signature]</i>
6	<i>Isabimana Charles</i> <i>0762262485</i> <i>0725402618</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>Chef wumudugudu</i> <i>GIZI GASUMBA</i>	<i>[Signature]</i>
7	<i>NRUNGIMANA FABIZH</i> <i>0725681943</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>CNF</i> <i>RESIDUARI WANYAMANA</i>	<i>[Signature]</i>
8	<i>NTUNGUYIMANA Innocent</i> <i>0725142476/0785062492</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>Umuystari</i> <i>WUMUDUGUDU</i>	<i>[Signature]</i>

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NBI/NELSAP – Kagera River Basin Project
 Environmental and Social Impact Assessment and Development of Resettlement Policy Framework for 4 proposed
 small Multi-Purpose Dams

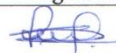


COMMUNITY MEETING ATTENDANCE LIST

Local members 2

Country: RWANDA District: NYATACIASE & IUYE

Sector: KAMEGEZI & PARABA Cell: KIZI & GASHURU Village:

Date: March 27, 2012 Venue: Kizi primary school Time: 12:00 - 2:00 pm

No.	Name	Gender		Designation/Occupation	Signature
		M	F		
9	Uzakirihho Alexis 0725793593	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Kizi Abikorera	
10	Kanyandekwe Emmanuel 0725695835	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Kizi Umukuru w. umudugadu	
11	Muhawemana Frodonate	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Kizi-abagarariye abagac	
12					
13					
14					

MINUTES- FGD WITH LOCAL LEADERS OF KIZI AND GASUMBA CELLS

Agenda: (Ref. to the 13 titles below)

Start time:

End time:

1. Ranking of expected uses of dams to be constructed

The ranking came up with the following results:

Use	Rank
Potable water supply	1
Irrigation	2
Hydropower generation	3
Flood control	4
Fish farming	5

When comparing the preference and relevance of hydropower and irrigation use, people from both cells, Kizi and Gasumba, support irrigation use, one of the reasons for the joint support being that the former use is not critical in Kizi because it is easier for people in this cell to get electrical power without necessarily getting it from the dam; there are other facilities in place.

2. Concerns/fears of villagers from the construction phase up to the operation phase

- i. Reduction of the size of plots of land for cultivation. This land is government-owned land but the activities are for villagers.
- ii. Famine due to food shortage: The watershed is far more fertile than uphill land. So, the production may be decreased due to the decrease in land size.
- iii. Needed materials for construction may be taken from villagers' plots of land (rocks, etc)
- iv. Imported labour instead of local labour: Workers should be taken from local villagers because this may be also regarded as a sort of compensation given that the activities during and after the construction will affect these people.

3. Mitigation measures

- i. Payment for expropriation: Taking into account the value of properties of villagers in place. In addition, in case of sustainable management of the land, if there have been efforts done with potential sustainable results in the future, this is not to ignore, it has to be paid out.
- ii. Compensation for the transition phase: Activities may be delayed disfavoring land tenant.
- iii. Paying for materials taken from plots of land of villagers is also essential.
- iv. Employing first people whose land would have been exploited before recruiting outsiders.

4. Advantages of the project

- i. Agricultural activities may be favored: Irrigation can cover the period between 2 seasons and then have 3 farming seasons instead of 2.
- ii. The supply of potable water would reduce water-related diseases occurrences.
- iii. Villagers in this area think that if they are provided with another place to live in, this is an advantage for them as it is not good to live near watersheds.

5. Disadvantages

The project has to foresee potential harms to the community: By digging deep, this may cause accidents, people may fall in.

6. Conflicts

The most prominent ones are:

- i. Land-related conflicts
- ii. Family-based conflicts (Infidelity, etc)
- iii. Drunkenness

7. Resolution mechanisms

In this area, conflicts are handled in community meetings at village, cell or sector level. The committee helps villagers solve their problems, but also villagers themselves take part in resolving their own conflicts like drunkenness-based conflicts, etc. When it is about gender-based conflicts, women administrative committees intervene. AMI (Association Modeste et Innocent) intervene in conflict resolution with focus on genocide-related ones, like those related to damaged properties during the Genocide against the Tutsi in 1994.

8. Social values

The social values in this area are hereby presented: respect of time, quick service delivery, kindness and generosity towards customers, hard work, mutual respect. In addition to these values, people integrate the following in their social values: obeying national policies like crop intensification policy and other government regulations like wearing shoes for all villagers. The above-mentioned values are strengthened by don'ts, as expressed by local people. Those are incest, taking alcohol during business time and killing a person.

9. Water and sanitation management

WASH (Water, Sanitation & Hygiene) project built standposts; there are also boreholes but they are not enough with regard to Kizi cell size. In Gasumba cell, there is one borehole in Gitwa and Kinombe villages, but no one in Taba, that was granted by the cooperation with Germany. There is a committee in charge of Management of these sources of water including sanitation, use, safety, etc. Besides, there is a cooperative, youth cooperative 'Tubungabunge isoko ya Nil' which has got water management in its objectives.

10. Infrastructure likely to be damaged

Among infrastructures likely to be damaged during the construction phase are: irrigation canals, roads, poultry housing, vocational training center buildings.

11. Security

The community policing "Inkeragutabara" assures security in Kizi and Gasumba. There are also Local Defense Force and police post.

12. Development organizations operating in the research area

Name of organization	Area of intervention
World Vision	<ul style="list-style-type: none"> - Paying school fees, - Support to farmers by providing them with improved seeds and fertilizers, - Livestock provision (mostly cattle),
Care International	Training of heads of households about saving and credit and linking them with banks
DUHAMIC-ADRI, Association for integrated rural development	Provision of fertilizers and improved seeds
SDA (Services for the Development of Associations) Iriba	Construction of animal feed plant

13. Tourism

There are no touristic attractions in this area.

Appendix 4.3B: Minutes Fgd Local Leaders Karambi-Downstream Part
Socioeconomic impact assessment of the construction of dams

Agenda: (Ref. to the 13 titles below)

Date: March 28, 2012

Start time: 12:00

End time: 1:30pm

14. Ranking of expected uses of dams to be constructed

The ranking came up with the following results:

Use	Rank
Irrigation	1
Potable water supply	2
Flood control	3
Hydropower generation	4

Hydropower generation is ranked the last because people in Karambi have already got electricity. All the first three uses as ranked above are critical. These people are affected by floods mostly in April, and the floods highly affect Kigarama, Nyarunyinya and Gituntu villages, which destroys houses and damage crops. These three villages are the ones likely to be affected by floods during construction of the dams. So, villagers of Karambi wish they had flood control means.

15. Concerns/fears of villagers from the construction phase up to the operation phase

- v. Loss of plots of land for cultivation.

- vi. Damage of crops
- vii. Decrease of water which would negatively affect the production

16. Mitigation measures

- v. Compensation for the damages
- vi. Communication in advance to the local people so that they get ready.

17. Advantages of the project

- iv. Agricultural activities may be favored: Irrigation would increase agriculture production
- v. The supply of potable water
- vi. Employment for local people

18. Disadvantages

The project has to foresee potential harms to the community: The bridges can be damaged, and floods can be provoked by the construction of dams because of the topography of the downstream part; then, the three villages as mentioned above may be affected.

19. Conflicts

The most prominent ones are:

- iv. Land-related and other property-related conflicts
- v. Family-based conflicts (Infidelity, etc)
- vi. Drunkenness.

20. Resolution mechanisms

Conflicts are handled at different levels:

- The conflicting parties themselves
- Families and neighbours

- Local authorities
- Abunzi

21. Water and sanitation management

There is an association for water management where villagers pay FRw100 on a monthly basis for its operations.

22. Infrastructure likely to be damaged

Among infrastructures likely to be damaged during the construction phase are: Nyarunyinya bridge, electricity line, water pipes. One person may be affected by the construction of dams, he may be displaced as he is close to the site A where it is likely to construct a dam.

23. Security

The community policing “Inkeragutabara” and police assures security in Karambi.

24. Development organizations operating in the research area

Name of organization	Area of intervention
World Vision	<ul style="list-style-type: none"> - Paying school fees, - Support to farmers by providing them with improved seeds and fertilizers, - Livestock provision (mostly cattle),
DUHAMIC-ADRI, Association for integrated rural development	Provision of fertilizers and improved seeds

25. Tourism

Kinyamakara forest.

26. Agricultural cooperatives and their production

The major crops cultivated in this region are maize, potatoes and beans.

One of the cooperattive of maize and potatoes harvested 5 tonnes of maize and 13.6 tonnes of potatoes in 2011/2012 season, and they were sold to Nyamagabe, Huye and Kigali cities. Potatoes were sold atFRw140/kg. There is another cooperative “Duteze imbere amasaka na Kawa” (Promoting sorghum and coffee), and women massively participate in this cooperative. The cooperative has got 536 members where 353 are women. In addition, most of the cooperatives in this area are led by women.

Attachment: List of attendees.

Appendix 4.3C: Minutes-Fgd with Women of Kizi and Gasumba Cells

Socioeconomic impact assessment of the construction of dams

Agenda: (Ref. to the 10 titles below)

Date: March 28, 2012

Start time: 2:50pm

End time: 5:00pm

27. Roles and responsibilities of women

In Kizi and Gasumba cells, women are involved in family's daily domestic activities but they also participate in income-generating activities for their families. For this, women are massively involved in cooperatives, the their percentages are generally higher than men`s. Their main income-generating activities are agriculture and handicraft. But

28. Roles and responsibilities of men

- Husbands have as first responsibility to look for food for theirs families
- They take the lead in family planning
- Building houses and milking cows

29. Roles and responsibilities of children

Children go to school and help their parents in their daily domestic activities like fetching water, sweeping, etc.

30. Land and other properties ownership and decision making at a household level

Both men and women have equal rights on land and other properties; so, when they want to sell their land, both have to sign on a paper taken as authorization for sale of property. However, the fact that men have to consult women before taking any decision in the household, this result in misunderstandings because most of them have not yet understood well gender principles.

31. Conflicts

The most prominent ones are:

- vii. Land-related conflicts
- viii. Family-based conflicts (Infidelity, gender based conflicts, etc)
- ix. Drunkenness

The causes of those conflicts are most of the time the following:

- Alcohol abuse

- Poverty, expressed by lack of enough food for the family
- Sometimes, husbands leave their families for young girls.
- Misunderstanding based on gender
- Poverty related problems
- Lies

Among the above mentioned conflicts, the most frequent ones are property-based and drunkenness

32. Resolution mechanisms

Conflicts are handled at different levels:

- The conflicting parties themselves
- Families and neighbours
- Local authorities
- Abunzi
- CNF (Conseil National des Femmes-National Women Council)

33. Access to maternal care

When these villagers have medical insurance, they are well treated at health centres and hospitals.

34. Access to loans

Most of women don't have access to loans because they lack mortgage which is a precondition.

35. Social values

The common social value of women is to be model women to others.

36. Membership in women's cooperatives

Cooperative name	Main activity
KIRA (Soja and potatoes agriculture association)	Agriculture (Cultivation of soja and potatoes)
ABISHYZEHAMWE N0 4	Agriculture
DUHUZIMBARAGA	Agriculture
DUSASIRANE	Providing mattress to the poor

ABASHYIRAHAMWE	Agriculture
TWISUNGANE MUNYARWANDAKAZI	Agriculture
TWITE KU BUZIMA BW'ABANA	Child health care
TWAMBUTSANYE	Credit and saving
TERIMBERE MUGORE	Credit and saving
ABADASIGANA	Credit and saving

APPENDIX 4: HYDROLOGY REPORT (ATTACHED SEPARATELY)

APPENDIX 5: FLORA & FAUNA SPECIES RECORDED IN TABA-GAKOMEYE PROJECT AREA

List of Flora Species

Family	Identification	Life form	Plot
Acanthaceae	<i>Acanthus pubescens</i>	Shrub	2
	<i>Asystasia gangetica</i>	Herb	1
	<i>Hygrophila auriculata</i>	Herb	1
Amaranthaceae	<i>Achyranthes aspera</i>	Herb	5
Anacardiaceae	<i>Rhus vulgaris</i>	Shrub	4
Apiaceae	<i>Centella asiatica</i>	Herb	2
Araliaceae	<i>Polyscias fulva</i>	Tree	2
Asteraceae	<i>Ageratum conyzoides</i>	Herb	1
	<i>Aspilia africana</i>	Herb	general
	<i>Bidens pilosa</i>	Herb	1
	<i>Bothriocline nyungwensis</i>	Herb	1
	<i>Conyza scabrida</i>	Herb	2
	<i>Conyza sumatrensis</i>	Herb	1
	<i>Conyza welwitschii</i>	Herb	4
	<i>Crassocephalum montuosum</i>	Herb	1
	<i>Crassocephalum vitellinum</i>	Herb	8

	<i>Emilia juncea</i>	Herb	3
	<i>Galinsoga parviflora</i>	Herb	1
	<i>Gynura scandens</i>	Herb	8
	<i>Helichrysum foetidum</i>	Herb	1
	<i>Helichrysum globosum</i>	Herb	general
	<i>Laggera alata</i>	Shrub	1
	<i>Microglossa pyrifolia</i>	Shrub	4
	<i>Siegesbeckia orientalis</i>	Herb	5
	<i>Tagetes minuta</i>	Herb	1
	<i>Tithonia diversifolia</i>	Herb	5
	<i>Vernonia amygdalina</i>	Shrub	general
	<i>Vernonia kirungae</i>	Shrub	2
Betulaceae	<i>Alnus serrulata</i>	Tree	5
Bignoniaceae	<i>Spathodea campanulata</i>	Tree	8
Caesalpiniaceae	<i>Caesalpinia decapetala</i>	Liana	4
	<i>Cassia floribunda</i>	Shrub	general
Caryophyllaceae	<i>Cerastium indicum</i>	Herb	2
	<i>Drymaria cordata</i>	Herb	2
	<i>Uebelinia kiwuensis</i>	Herb	6
Celastraceae	<i>Maytenus heterophylla</i>	Tree	4
Commelinaceae	<i>Commelina africana</i>	Herb	10
	<i>Commelina benghalensis</i>	Herb	2
	<i>Commelina diffusa</i>	Herb	general
Convolvulaceae	<i>Ipomoea cairica</i>	Liana	general
Crassulaceae	<i>Kalanchoe velutina</i>	Herb	general
Cucurbitaceae	<i>Momordica foetida</i>	Liana	1
			general
Cyperaceae	<i>Cyperus dilatatus</i>	Sedge	1
	<i>Cyperus dives</i>	Sedge	1
	<i>Cyperus rigidifolius</i>	Sedge	8
	<i>Cyperus rubicundus</i>	Sedge	3
			5
	<i>Eleocharis atropurpurea</i>	Sedge	general
	<i>Kyllinga odorata</i>	Sedge	1
	<i>Kyllinga pumila</i>	Sedge	4
	<i>Pycneus niger</i>	Sedge	1
			general
	<i>Pycneus nigricans</i>	Sedge	8
			11
Dennstaedtiaceae	<i>Pteridium aquilinum</i>	Fern	5
			11

			general	
Dracaenaceae	<i>Dracaena fragrans</i>	Shrub		1
			general	
Dryopteridaceae	<i>Dryopteris manniana</i>	Fern	general	
Euphorbiaceae	<i>Clusia abyssinica</i>	Shrub	general	
	<i>Erythrococca bongensis</i>	Shrub		5
	<i>Euphorbia tirucalli</i>	Tree	general	
	<i>Phyllanthus fischeri</i>	Shrub		1
Fabaceae	<i>Adenocarpus mannii</i>	Shrub		4
	<i>Crotalaria brevidens</i>	Shrub		5
	<i>Dalbergia lactea</i>	Shrub		5
	<i>Desmodium salicifolium</i>	Shrub		1
	<i>Erythrina abyssinica</i>	Tree		4
	<i>Indigofera atriceps</i>	Shrub		4
			general	
	<i>Kotschya aeschynomoides</i>	Shrub		1
			general	
	<i>Kotschya africana</i>	Shrub	general	
	<i>Sesbania sesban</i>	Shrub		2
	<i>Trifolium usambarense</i>	Herb	general	
	<i>Vigna luteola</i>	Herb		1
	<i>Vigna parkeri</i>	Herb		2
Flacourtiaceae	<i>Dovyalis abyssinica</i>	Shrub	general	
Gramineae	<i>Ischaemum fasciculatum</i>	Herb	general	
Hypericaceae	<i>Hypericum scioanum</i>	Herb		9
Juncaceae	<i>Juncus oxycarpus</i>	Sedge		6
Lamiaceae	<i>Leonotis nepetifolia</i>	Shrub		1
	<i>Leucas urundensis</i>	Shrub		5
	<i>Ocimum gratissimum</i>	Shrub		1
	<i>Satureja simensis</i>	Herb		1
Lauraceae	<i>Persia americana</i>	Tree	general	
Lobeliaceae	<i>Monopsis stellaroides</i>	Herb		3
Malvaceae	<i>Hibiscus cannabinus</i>	Shrub		1
	<i>Pavonia procumbens</i>	Shrub		5
	<i>Sida cordifolia</i>	Shrub		1
Melastomataceae	<i>Calvoa orientalis</i>	Shrub		1
				2
	<i>Dissotis brazzae</i>	Shrub		1
	<i>Dissotis ruandensis</i>	Shrub		2
	<i>Tristemma leiocalyx</i>	Shrub		2
	<i>Tristemma mauritianum</i>	Shrub		2

Melanthaceae	<i>Bersama abyssinica</i>	Tree	8
Menispermaceae	<i>Stephania abyssinica</i>	Liana	general
Mimosaceae	<i>Albizia gummifera</i>	Tree	8
Moraceae	<i>Ficus brachypoda</i>	Tree	general
	<i>Ficus sur</i>	Tree	8
Myrsinaceae	<i>Maesa lanceolata</i>	Tree	8
Myrtaceae	<i>Eucalyptus globulus</i>	Tree	5
	<i>Psidium guajava</i>	Tree	2
Oleaceae	<i>Jasminum pauciflorum</i>	Liana	general
Onagraceae	<i>Ludwigia abyssinica</i>	Shrub	1
Oxalidaceae	<i>Biophytum helenae</i>	Herb	4
Passifloraceae	<i>Adenia globosa</i>	Liana	4
Pedaliaceae	<i>Sesamum angustifolium</i>	Herb	11
Phytolaccaceae	<i>Phytolacca dodecandra</i>	Liana	general
Pinaceae	<i>Pinus patula</i>	Tree	general
Poaceae	<i>Brachiaria decumbens</i>	Grass	general
	<i>Cynodon dactylon</i>	Grass	1
	<i>Digitaria abyssinica</i>	Grass	1
	<i>Digitaria longiflora</i>	Grass	general
	<i>Digitaria thouaresiana</i>	Grass	3
	<i>Diheteropogon amplexans</i>	Grass	general
	<i>Echinochloa pyramidalis</i>	Grass	6
	<i>Eleusine indica</i>	Grass	1
	<i>Eragrostis aethiopica</i>	Grass	general
	<i>Eragrostis cilianensis</i>	Grass	general
	<i>Eragrostis ciliaris</i>	Grass	1
	<i>Eriochloa procera</i>	Grass	6
	<i>Hyparrhenia collina</i>	Grass	4
			6
	<i>Hyparrhenia filipendula</i>	Grass	4
	<i>Hyperthelia dissoluta</i>	Grass	4
	<i>Leersia hexandra</i>	Grass	1
	<i>Melinis repens</i>	Grass	4
	<i>Panicum hochstetteri</i>	Grass	5
	<i>Paspalum scrobiculatum</i>	Grass	1
	<i>Pennisetum purpureum</i>	Grass	1
	<i>Perotis patens</i>	Grass	4
	<i>Phragmites mauritianus</i>	Grass	2
	<i>Setaria kagerensis</i>	Grass	1
	<i>Setaria sphacelata</i>	Grass	1
	<i>Sporobolus pyramidalis</i>	Grass	general

	<i>Themeda triandra</i>	Grass	general
Polygonaceae	<i>Harpagocarpus snowdenii</i>	Shrub	general
	<i>Polygonum setosulum</i>	Shrub	1
	<i>Rumex usambarensis</i>	Herb	2
Primulaceae	<i>Ardisiandra sibthorpioides</i>	Herb	1
Proteaceae	<i>Grevillea robusta</i>	Tree	general
Rhamnaceae	<i>Maesopsis eminii</i>	Tree	general
Rosaceae	<i>Rubus apetalus</i>	Liana	4
			6
Rubiaceae	<i>Kohautia longifolia</i>	Herb	2
			4
	<i>Pavetta troupinii</i>	Shrub	6
	<i>Pavetta urundensis</i>	Shrub	4
	<i>Pentas schumanniana</i>	Herb	8
	<i>Psychotria mahonii</i>	Tree	general
	<i>Spermacoce princeae</i>	Herb	2
	<i>Virectaria major</i>	Herb	6
Scrophulariaceae	<i>Lindernia subracemosa</i>	Herb	2
Solanaceae	<i>Solanum aculeastrum</i>	Shrub	1
	<i>Solanum terminale</i>	Shrub	8
Thelypteridaceae	<i>Thelypteris dentata</i>	Fern	2
Thymelaeaceae	<i>Peddiea fischeri</i>	Tree	5
Tiliaceae	<i>Triumfetta cordifolia</i>	Shrub	general
	<i>Triumfetta rhomboidea</i>	Shrub	2
Ulmaceae	<i>Trema orientalis</i>	Tree	8
Verbenaceae	<i>Clerodendrum capitatum</i>	Liana	2
	<i>Lantana camara</i>	Shrub	2
Violaceae	<i>Viola eminii</i>	Herb	2
Vitaceae	<i>Cyphostema bambuseti</i>	Liana	2
	<i>Rhoicissus revoli</i>	Liana	8

List of Fauna Species

List of Bird Species recorded in Taba-Gakomeye Project Area

Species	HC	TC	PS	AS
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