

Feasibility Study for the Implementation of the Forest Landscape Restoration in Mayaga Region

Ref. RFP/UNDP/RWA/2020/018 Final Report









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Client Rwanda Environmental Management Authority (REMA)

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LIST OF ACRONYMS AND ABBREVIATIONS

ARCOS	Albertine Rift Conservation Society
BOPs	Best Operating Practices
CSA	Climate Smart Agriculture
CSO	Civil Society Organization
DDP	District Development Plan
DDS	District Development Strategy
DFMP	District Forest Management Plan
ESMP	Environmental and Social Safeguards Management Plan
FGD	Focus Group Discussion
FLR	Forest Landscape Restoration
FS	Feasibility Study
GEF	Global Environment Facility
GoR	Government of Rwanda
ha	Hectares (1 ha = 2.47 acres)
НІМО	Haute Intensite de Main d'Ouvre (National labour intensive public works strategy)
IDA	International Development Assistance
JADF	Joint Action Development Fora
KII	Key Informant Interviews
M&E	Monitoring and Evaluation
MINAGRI	Ministry of Agriculture and Animal Resources
MININFRA	Ministry of Infrastructure
MoE	Ministry of Environment
NF	Natural Forests
NGO	Non-Government Organization
NIRDA	National Industrial Research and Development Agency
PFM	Participatory Forest Management
PMU	Project Management Unit
RAB	Rwanda Agricultural and Animal Resources Development Board
REMA	Rwanda Environment Management Authority
RFA	Rwanda Forestry Authority
RLMUA	Rwanda Land Management and Use Authority
ROAM	Restoration Opportunity Assessment Methodology
RSB	Rwanda Standards Board
RWRB	Rwanda Water Resources Board
S&E	Social and Environmental
SEDO	Social and Economic Development Officer
SES	Social and Environmental Standards
SFM	Sustainable Forest Management
s/h	Stakeholder
SLM	Sustainable Land Management
SRM	Stakeholder Response Mechanism

SWOT	Strengths, Weaknesses, Opportunities, and Threats
tCO2e	Tonnes of Carbon Dioxide equivalent
ToRs	Terms of Reference
UNDP	United National Development Program
USAID	United States Agency for International Development
VSLA	Village Savings and Loan Association
WB	The World Bank



Figure 1 Typical views from Mayaga region in 2020



Photos (above) showing hill-tops, with some areas identified for afforestation -Nyanza District

Figure 2 Additional pictures from Mayaga region in 2020

EXECUTIVE SUMMARY

Introduction to the Study

A consortium of UNIQUE forestry and land use GmbH and GreenWise Consult Ltd. were contracted to undertake a feasibility study for the Forest Landscape Restoration (FLR) Mayaga project. The FLR Mayaga project is operating in four Districts of Rwanda's Southern Province – namely, Kamonyi, Ruhango, Nyanza and Gisagara. This report covers the background and the methodology of the feasibility study; it also presents the key findings and recommendations to guide the FLR Mayaga project towards achieving its targets over its six-year timescale. The study was in part a desk-based review of relevant documents but was strongly supported by field visits to all four Districts and many interviews and meetings undertaken with key stakeholders.

The Mayaga region

The Southern Province is the most vulnerable of Rwanda's Provinces, in terms of health and access to electricity and also has high sensitivity to - and low adaptive capacity – with regard to climate change. Population pressures and a huge dependency on woodfuel for energy, have resulted in widespread deforestation and over-cultivation of the much of the land in the project's area. This has resulted in reduced soil fertility and – with over 90% of the region having sandy soils - severe erosion in places too. The situation is compounded by climate change. The site visits highlighted the generally low agricultural productivity and the poor condition of the majority of the woodlots too.

FLR activities and goals

A review of the background documentation revealed that the project's FLR activities and targets are generally in line with local District strategies as well as the Government of Rwanda's vision for improving people's livelihoods. The focus is on improving agricultural and forestry practices whilst concurrently strengthening the participation of the private sector and women and youth in particular. The core activities currently being supported by the project include agroforestry, afforestation, fruit trees planting, trenches creation, participatory management of natural forests and the promotion of green cookstoves. This study identifies other areas that could make a positive impact – for example, rain-water harvesting from houses, promoting livestock (pigs and goats) for manure production.

Environment and social issues

The environmental and social (E&S) issues within the project were given a high priority of the Consultants throughout this assignment. Improvements to stakeholder ownership, increasing the involvement of women and youth and promoting more sustainable practices for agriculture and forestry, are stressed throughout this report. It was found that youth have not been involved in the planning and that women were under-represented in decision-making for the Mayaga project to date. In addition, it was found that a grievance redressal mechanism was not in place. Recommendations are made to tackle these shortcomings as well as additional recommendations for project accountability, following UNDP's accountability mechanisms.

Project planning and budgeting

Based on an approved 2020/2021 (Phase I) budget, the FLR Mayaga project signed four Memoranda of Understanding (MoUs) with each target District in August 2020: these covered a range of activities. Thus the project start activities on the ground late in 2020 and some good progress has been made in all project's Districts, with many more activities planned for 2021. This study presents detailed Work Plans and expected budgets for the field activities for both Phase I and Phase II (2022-2026): these are based on field visits, discussions with stakeholders and focus on the priority objectives for the project. The budgeting was kept within the core funding of the project (US\$ 7.2 M over 6 years), corresponding to GEF's and UNDP's contribution. Plans can be expanded by PMU accordingly if additional funds are made available from GoR. A separate budget spreadsheet has been completed as part of this study, which will enable PMU to refine in the light of other costs not known to the consultant.

Project management and capacity building

It is clear that due to the complexity and magnitude of the FLR Mayaga project, the project management team is currently under-resourced. Recommendations for four new, full-time staff positions are made in the report. There is also a substantial capacity building requirement to introduce and support the many improved practices being recommended in this report. The importance of collaborating with existing fora is stressed but also building their capacity of where necessary: e.g. community structures (e.g. CBOs, cooperatives, women and youth groups) and selected educational institutions (e.g. the School of Forestry and Agroforestry of University of Rwanda in Huye), as it is likely to lead to more cost-effective capacity building in the long run.

Awareness and communication

From the field visits and meetings held in the Districts, it became clear that there is a vital need to sensitize/raise awareness of local communities to the benefits of this project, in order to enhance uptake on job opportunities, and other livelihoods options included in this project. Despite GoR's efforts to promote agroforestry, uptake in the project's region has been disappointing. As with capacity building, the use of existing communication channels at both District level and at community level, is strongly recommended – e.g. JADF, *Umuganda, Inteko z'abaturage and umugoroba w'ababyeyi*. In some cases, there is also a need to manage the expectations of local leaders and communities.

Labour

A major issue to date with the project has been a shortage of local labour needed to carry out most of the project's activities. This is due partly to the timing, with the more labour-intensive activities such as digging trenches and fodder production, generally being carried out at the same time as farmers are engaged in the cultivation of their fields. In addition, some alternative rural labour sources are paying more than the project, which needs to be addressed by considering not just the project's wage rates but also by looking at offering other incentives such as training opportunities and investment into local communities.

Plant supply

The supply of planting material in the project's area was also identified as a major constraint. Tree seedlings, fruit trees and even cassava seed supplies in the project area are insufficient to meet the local demand. The project must tackle this issue as a priority if it is to achieve its targets: it also presents an opportunity for involving local cooperatives as well as women and youth groups. Support will be needed for tree nursery establishment, to identify additional suppliers of fruit trees as well as improving the supply and quality of tree seeds from the National Tree Seed Centre in Huye District.

Alternative energy

Reducing reliance on fuelwood and charcoal is an important objective of the project and whilst the project is planning to supply 60,000 cookstoves to the target areas, we found that there is a high risk of low uptake of stoves (as well as other alternatives such as LPG, solar or biogas) without incentives and technical support. The issues of affordability, supply, awareness raising and maintenance support need addressing if the project is to make in-roads in this objective.

Livelihoods

The Mayaga region is well suited to growing of a wide range of agricultural crops – including fruits and vegetables. Most growers, however, struggle to access markets. The project needs to look into options to improve the value chains for selected commercial crops.

Monitoring and evaluation (M&E)

Drawing up an M&E plan for the project has been largely the responsibility of NEMUS, who undertook a baseline survey in 2018 and also carried out an updated survey in parallel to this assignment in 2020. Whilst it was not possible to interact closely with NEMUS during this assignment, their (draft) report contains a full list of indicators with recommendations for frequency of monitoring and responsible institutions for each activity.

Challenges

The timing of the feasibility study was not ideal, particularly with the project having already started before the study began – in August 2020. The various activities should ideally be done within the framework of FLR District Plans, which have not yet been drawn up. The budget for the first two years (Phase I) had already been agreed in early 2020 as well as MoUs that had been signed with four Districts. COVID-19 also restricted the travel of UNIQUE's experts to Rwanda but the locally-based GreenWise experts were able to travel to the field as well as conduct the required meetings.

Finally, the FLR Mayaga project is a large and ambitious project, involving numerous activities and covering a wide target area. The short timescale and limited budget for this feasibility study restricted the amount of time that could be spent, particularly in the field and in rounds of discussions with the Client. Based on the information presented in this report, however, the PMU have the basis for more detailed planning.

1.1 Project background and context

Rwanda's economic and social well-being is strongly linked to natural resources, underpinned by its biological diversity. Over 65% of Rwandans are directly reliant on these biological resources for their livelihoods, including agriculture, forestry, and tourism (NISR, 2016). Biodiversity supports and underpins goods and services that Rwandans rely on. In order to ensure a sustainable development pathway that protects these natural resources, Rwanda has committed to the protection, sustainable use, and equitable sharing of benefits from these biological resources. Rwanda's geographic location along the Albertine Rift bestows rich biological diversity across a variety of biomes.

However, Rwanda's future climate change could be exacerbated by the impact of climate variability that might lead to new risks if no efforts are done to restore and protect natural resources. Climate change models project an increase in temperature of ~1°C to 2.5°C by the middle of the century. Owing to a relatively moderate climate, with average annual temperatures of around 20°C, there is an increasing impact of climate change on agricultural performance. The country has two rainy seasons (with two dry seasons in between) and average annual rainfall of 1,250 mm. There are large differences across the country with cooler, mountainous regions in the north, and warmer, low-lying south-western valleys and drier Eastern flatlands. These differences cause strong discrepancies in rainfall from year-to-year and consequently, the country experiences periodic floods and droughts.

Rwanda is largely dependent on agriculture dominated by small-scale, subsistence, rain-fed farming. The reliance on traditional technologies and practices, however, renders the sector particularly vulnerable to rainfall variability. A combination of rain-dependent, small-scale agriculture, high rainfall levels, and steep terrain also leads to very high soil erosion rates. Prolonged droughts limit the availability of water particularly in the eastern and southern provinces. This increases vulnerability to diseases and ultimately reduces production. There are projected increases in the number of hot days and increasing heavy precipitation. The projected changes could potentially cause large impacts on agriculture and thus the livelihoods for a critical mass of Rwandans.

The Mayaga Forest and Land Restoration (FLR) project also known as Green Mayaga, is set to reverse the impact of climate change by restoring over 263,000 ha across four districts in the Southern Province - Kamonyi, Ruhango, Nyanza and Gisagara. Since its opening in August 2020, the project has commenced activities to improve biodiversity through landscape rehabilitation, forests and biodiversity restoration of the Kibirizi-Muyira and Busoga Forest Reserves, enhancing sustainable land management in the agricultural lands in the landscape, increasing productivity of an expanded plantation forest, and reducing the negative impacts of household energy systems on the forests by introducing improved cook stoves for households and institutions as well as sustainable charcoal production.

The FLR Mayaga project has three main target outcomes to be completed by the end of the project:

- 1. FLR plans covering 263,000 ha across four Districts;
- 2. Enhanced capacity (individuals and institutions) to implement FLR plans;
- 3. Implementation of FLR plans specifically to deliver:
 - Improved biodiversity and protection of 555 ha of natural forests (NF);
 - Bringing 300 ha of NF under Participatory Forest Management (PFM);
 - Establish 1,000 ha of plantations via community outreach program (co-financed by private sector);
 - Increased productivity of 25,000 ha of agricultural land and 1,000 ha of plantation forests;
 - Reduced wood consumption by at least 25%;
 - Avoided emissions of 4.7 M tCO2e in five years; 13 M tCO2e in indirect GHG emissions in ten years.

1.2 Description of Mayaga Region Project

The Mayaga Forest and Land Restoration (FLR) project also known as Green Mayaga, is set to reverse the impact of climate change by restoring over 263,000 ha across four districts in the Southern Province - Kamonyi, Ruhango, Nyanza and Gisagara (see Figure 3).

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Figure 3: FLR Project Area in Rwanda's Southern Province

(Maps produced with ArcMap10.2 using available spatial data for the administrative boundaries of Rwanda)

The Mayaga region covered by the FLR project includes 20 Sectors – as follows:

- Kamonyi District: Mugina, Nyamiyaga, Rugarika, Nyarubaka
- Ruhango District: Ruhango, Kinazi, Mbuye and Ntongwe.
- Nyanza District: Muyira, Kibirizi, Busoro, Ntyazo, Kigoma and Busasamana.
- Gisagara District: Ndora, Save, Gigonko, Gishubi, Mamba and Musha.

1.3 Forest Landscape Restoration (FLR)

A review of the most relevant publications and background documents was undertaken in order to better understand the rationale for the project and to highlight the priority areas that the project should be targeting for maximum impact.

Since the development of Vision 2020 in 2000, policy development in Rwanda has been impressive. Forests are recognized for their multi-purpose nature – providing fuelwood, timber and NTFPs, as well as playing a vital role in biodiversity conservation, providing ecosystem services and also ecotourism.

In 2011 Rwanda committed 2 million hectares of degraded land to the Bonn Challenge, which triggered work to identify how this might come to fruition. The ROAM report (GoR MINIAGRI, 2014) identified the following important issues in Rwanda:

- Low input: low output agricultural practices;
- Depleted soil nutrients;
- Land prone to severe erosion (compounded by climate change);
- Loss of natural forests;
- Poor management (especially over-cutting) of forestry plantations and woodlots;
- Low productivity of planted forests;
- Low species diversity in planted forests and
- Poor genetic material of planted forests.

The main opportunities for restoration - based on a landscape approach – were seen as:

- Agroforestry for both crops and livestock to improve soil fertility and stability, produce fuelwood, timber and green manure: terracing is also important on steep sloping land.
- Restoration of degraded natural forests, especially in and around protected areas.
- Improved management of existing woodlots and plantations (for fuelwood and timber) through better silviculture.
- Protection of sensitive areas such as steep slopes, riparian zones, wetland buffer zones and ridge-tops.

The ROAM report also identified a number of constraints – namely:

- The lack of shared vision and coordination in GoR;
- Lack of quality seed is a major limitation;
- Knowledge gaps and lack of capacity;
- Poor understanding of farmers especially with regard to the use of native species;
- Lack of emphasis on the role of private sector e.g., financial models.

The 2018 Forest Policy and Forest Sector Strategic Plan (2018-2024), both highlighted the importance of agroforestry as the most wide-reaching restoration opportunity and also emphasized tree planting and improved management of both natural and planted forests. The role of the private sector was highlighted especially in forest management and processing.

An IUCN (2015) report focused on private sector investment opportunities and noted that: *"Smallholder farmers will be a key source of private investment if they adopt commercially viable FLR activities at scale while still balancing their food security needs".*

The need to strengthen the private sector's role is also emphasized in GoR's agricultural strategy (GoR, 2018). This document also highlighted the need to embrace a shift in the GoR's role towards creating an enabling environment rather than having a direct involvement in production, processing and marketing.

The Forest Investment Program (FIP, 2017) document stressed three target areas – namely:

- 1. Support for sustainable agriculture via agroforestry;
- 2. Support for sustainable landscape management and sustainable forest management;
- 3. Increasing efficiency and value addition of wood supply chains.

With regard to fuelwood, there have been two important documents published: the analysis of production and consumption (FAO, 2011) – known as the WISDOM report and GoR's supply Master Plan (GoR 2013), which updated the FAO report. The Master Plan predicted a deficit of 2.1 million tonnes of woodfuel by 2020 and recommended a combination of increasing supply and reducing demand. Increasing supply can come through a combination of better management of planted forests, thereby increasing productivity plus expanding new planting – through plantations, agroforestry and trees outside forests. Reducing fuelwood demand can be achieved by increasing efficiency of charcoal production and expanding the use of improved cooking stoves. The GoR policies and highly relevant reports as summarized above, provided the foundation for the FLR Mayaga project.

1.4 The FLR project activities underway or planned in Project Region

Based on the FLR project's current (and first) Work Plan (UNDP, 2019), the consultants' experience and the field visits to the project areas as part of this FS, there are a number of key activities currently being supported by the FLR project in the Mayaga region. These include afforestation on degraded areas and roadsides/banks, agroforestry in conjunction with fruit trees and water trenches, and riverbank protection. Following is a brief description of these core activities.

Agroforestry (Output 3.3.1): this activity involves constructing terraces (where necessary), planting multi-purpose trees and also grasses to control erosion. The most common trees are *Grevillea robusta* and various fruit trees – such as avocados (Haas variety), mangoes and citrus. The main grass used to stabilize the terraces is *Penissetum sativum*.

Tree planting (Output 3.2.1): In addition to agroforestry, other tree planting activities are also in progress or planned: these include afforestation of degraded areas, hill-tops and uncultivated land. *Eucalyptus* spp. will feature prominently in these plantings due to their ability to grow fast and produce useful products: *E. microcorys* is currently the preferred species due to its apparent

resistance to pests¹. Also being prioritized is tree planting along road-sides (where *Maesopsis eminii* will be largely used) and to create buffer zones along riverine areas, using mostly Bamboo spp.

In addition to these core activities, the FLR project has planned to conduct a number of other activities in support of its SLM and SFM goals – including improving agricultural and forestry practices aimed at production and protection. Also included is support for the distribution and adoption of improved cook-stoves. In all cases the focus is on improving livelihoods and ensuring the activities are designed and actioned in a highly participatory manner. Capacity building and raising awareness of the selected, improved practices are important components of the project's plans. The detailed planning and budgeting for the additional activities have been described in more detail as part of this study.

¹ The main *Eucalyptus* species planted in Rwanda have traditionally been *E. grandis* and *E. maidenii*, both of which have proven to be susceptible to 'new' pests and diseases spreading throughout the region in recent years.

2 BACKGROUND AND METHODOLOGY

2.1 Background to the Feasibility Study

This Feasibility Study (FS) was commissioned by REMA (the Client), who contracted the services of the Consulting Team, which is a partnership between the Germany-based UNIQUE forest and land use GmbH and the Rwanda-based GreenWise Consult Ltd. Expertize within the team covered all the key focus areas FLR project – namely, project management and planning, agriculture, forestry, forest landscape restoration (FLR), as well as environmental and social (including gender) issues.

The overall objective of this FS is to provide guidance and tools for the staff and overseers of the of FLR Mayaga project to prioritize, effectively implement and monitor the key activities that are necessary in order to achieve the outcomes listed earlier.

2.2 Feasibility Study timeline

The FS was carried out over three phases, namely:

- Phase I Inception: This included engaging with the client, a desk review of key documents, identifying key stakeholders for subsequent meetings, and preparations for the field visits. Detailed questionnaires were compiled in advance of the field visits and meetings held under Phase II. Also during this phase, a reconnaissance visit was carried out by the team to one District Ruhango in order to better understand the project's activities, progress and its challenges. This visit also provided sound guidance for the subsequent field visits, meetings and data collection under Phase II. An Inception verification meeting organized by the Client was attended (remotely) by the consultants, to discuss and refine the preparations for the subsequent work.
- Phase II Data collection (field work and interviews): Members of the consulting team organized and attended numerous meetings and conducted interviews with identified stakeholders mostly within the four Districts covered by the FLR project. Additional interviews and discussions were held with key players identified during the earlier Inception Phase. These visits and interviews provided the data and recommendations for the final FS report.
- Phase III Analysis and reporting: This work pulled together the findings and recommendations from the first two phases.

2.3 Description of methods employed

Overview

The consultancy team engaged with a wide network of stakeholders over the course of the three study phases. This included government officials from REMA and RFA, district level representatives from the four project areas, community groups and private sector. The full list of stakeholders can be found in the Annex. Stakeholders were engaged using various methods: through the administration of questionnaires, expert and semi-structured interviews, as well as formal and informal discussions with the PMU and Client. A questionnaire was compiled prior to the various interviews (in Kigali and beyond) and the field visits to the four Districts: the questions were targeted at the main stakeholder groups – namely, national level GoR officials, District officials, Sector leaders and single farmer/project/cooperative level (see Annex).

Following an extensive literature review, the team used consultative tools to discuss with and interview a broad range of stakeholders in the four districts and at the national level. Thereafter, the team collected field data at district, sector, cell and community levels in order to understand context specific activities and suggest adaptive mechanisms and activities to address factors behind encroachment – for protecting and promoting community ownership and accountability of restored agro-forest land.

Sampling

Key Informant Interviews (KIIs) were chosen at the national level and in each of the four districts and sectors covered by FLR Mayaga project. Eleven sectors were chosen to host the study: two sectors in Kamonyi District (Mugina and Nyamiyaga), three in Ruhango (Mbuye, Kinazi and Ntongwe), three in Gisagara (Gishubi, Save and Mamba) and three in Nyanza (Muyira, Kigoma, Kibirizi). At the national level KIIs were selected among institutions with mandates on agriculture and environmental protection. They include MININFRA, REMA, REG, the Water board, RAB, NAEB, One Acre Fund. At the district level, KIIs comprised of the Vice-Mayor in charge of Economic Development, Director of Agriculture, District Agronomist, District Forest Officer, Cash Crops Officer, Veterinary, JADF, Gender and Family, and Youth. At Sector level, KIIs comprised of Sector Agronomists and Sector Forest Officers. At cell and community level, KIIs were SEDOs, Farmers Promotors and Facilitators, Women representatives, youth representatives and other farmers taken randomly for the composition of focus-groups discussions (FGDs) of 12 persons per cell. The Annex contains the full list of KIIs.

Interviews

For each of the above mentioned KIIs at national, district and sector levels, interviews were conducted to inform context adapted activities. Current COVID restrictions were observed during interviews. These KIIs were held in-person and phone interviews were done with key informants who were not reachable in person (for various reasons including social distancing). The interviews focused on current FLR activities, other needed activities to be included, priorities, challenges, improvements needed, needs in capacity building, accountability, community involvement and ownership, women and youth involvement, the sustainability of established activities, and stakeholders.

Meetings

FGDs (12 persons) were held adhering to current COVID restrictions. The FGDs focused on the potential community resources and public labour opportunities for forest land restoration, livelihood opportunities to promote ownership and accountability of this project, and potential activities to be included, priorities, challenges, needs in capacity building, women and youth involvement, and sustainability of established activities.

3 TECHNICAL FEASIBILITY

3.1 Introduction

This section analyses the feasibility of technical components and thematic feasibility by Identifying and analyzing the needs in forest cover, agroforestry, climate change vulnerability, socioeconomic development, employment, income generation, biodiversity conservation and valorization. The evidence is a combination of desk review of key documents and information gathered from the field.

3.2 Context background of issues in the Mayaga region

The Southern Province where the Green Mayaga Project is implemented, is the most vulnerable among the four Provinces and the City of Kigali. The climate change vulnerability report indicates that two of the targeted districts Gisagara and Ruhango, are among the four most vulnerable in all Rwanda's 30 Districts. The Southern Province has the lowest percentage of access to electricity with only 14% usage. Only 44 % of the households are living within 500 meters from an improved drinking water source. Some challenges of the challenges highlighted in the desk analysis, generally resonate with communities in the Southern Province. These challenges have been identified through literature review and discussions with communities/citizens and local leaders in the Mayaga region.

- Kamonyi has been ranked high in terms of vulnerability to health across all the 30 Rwandan districts due to high exposure of households to malaria. Kamonyi has a history of flooding from year to year and in most recent years 2016, 2018, roads, bridges, houses, land, crops and lives in some sectors were lost or damaged.
- 2. **Ruhango** (as well as Gisagara) rank second to Huye in terms of low capacity to adapt to climate sensitivity with a high sensitivity and low adaptive capacity, Ruhango lacks safe and clean water including drinking water and water storage capacity of households; it also lacks alternative energy sources including electricity in homes; has limited citizens' engagement in adaptation activities; lacks the capacity for sustainable agriculture, access to land and food security; limited infrastructure, most especially roads and bridges to access clinics, schools and markets. These factors make it more vulnerable to climate-shocks.
- 3. **Nyanza** is reported among the highly exposed districts due to the highest perceived variability in temperature and perceived variability in heat waves. Nyanza district has humid climate and experiences alternate rainy and dry season. The western part being mountainous, registers relatively low temperatures and plenty of rainfall compared to the Eastern part which has low altitude and an average annual temperature of about 20°C and over the course of the year, the temperature typically varies.
- 4. **Gisagara** is among the most exposed districts due to having the highest values for perceived change in river water level and physical vulnerability of house and farm plots located on steep hillsides or near the river. Eight of Gisagara district sectors touch the Akanyaru river, and statistics indicate that 55.6% live below the poverty line and over 25.6% of its population live in extreme poverty which is above the national level of 38% and 16% respectively.

Most of the people of Gisagara District depend on rain-fed subsistence agriculture (85%) and in recent years, rainfall has become more erratic and less predictable with floods, landslides and erosion affecting communities surrounding the river.

Project planning and preparation of activities

While most farmers, men/women and youth have at least heard about climate change, evidence from field visits indicate that there have been some gaps in messaging. In some sectors and villages, there's a recognition of the benefits of the project as evidenced through discussions with communities and local leaders. However, it was not clear how involved they were in planning of activities. In some of parts, there is need to increase awareness of the Green Mayaga Project, especially among the citizens and leaders regarding demarcated project sites to avoid ambiguity, and promote ownership.

At the time of the field visits, a minimal number of local leaders as well as farmers were not fully aware of the expectations from them related to planned activities, which could easily create an over-anticipation or perhaps reservations or a reluctance to cooperate due to fear of losing land or of the unknown. While some of the activities are to be done on their farms, it is necessary to obtain local leaders' and citizens' buy-in. While it might be too early to expect full-scale knowledge among citizens, it is important for immediate beneficiaries of this project to understand the benefits, the activities and expectations from them in order in order to enhance the sustainability of the project's impact during and beyond the project period.

3.3 Project Implementation

Overview of Phase I implementation

In August 2020, four MoUs were agreed between REMA and each of the Districts under the project. Based on the FLR Mayaga project's first budget, five main activities are being implemented in the four Districts during the first phase of 2 years (2020 – 2021) are the following:

- 1. Afforestation of degraded uphill and uncultivated area (14 ha in Ruhango District, 129 ha in Gisagara and 77 ha in Nyanza). *Eucalyptus microcorys* constitutes the main tree species to be used for restoration of the area due to its quality to resist on diseases. Tree nurseries were established and managed for this purpose.
- 2. Afforestation of road banks for protection (68 km in Ruhango District, 45 km in Kamonyi and 64 km in Nyanza). *Maesopsis eminii* was the indigenous tree species selected for protection of road banks.
- 3. Agroforestry and fruits trees in farmers' fields plantation (1,250 ha in Ruhango District, 336 ha in Kamonyi, 1,250 ha in Gisagara and 1,250 ha in Nyanza). *Grevillea robusta*, Citrus spp, Avocado (Hass var) and mango are being multiplied for distribution.
- 4. Agroforestry and trenches for water retention and erosion control activities. *Grevillea robusta* and *Penissetum sativum* on trenches edge (French cameroon² will be substituted with *Penissetum sativum* due to its resistance on virus).

² French Cameroon is a variety of Napier grass.

5. River-banks protection by creation of buffer zones. Bamboo will be used for buffer zones.

Table 1 presents a breakdown of activities (as per district MOUs) and costs related to each specific activity. The table also indicates additional activities scheduled for implementation at District level including monitoring and evaluation (M&E).

Activity	Unit	Kamonyi	Ruhango	Nyanza	Gisagara	RWF
Agroforestry	На	336	1,250	1,250	1,250	
Fruit trees	Ha [*]	40	40	40	40	- 873M
Trenches etc.	На	129	129	129	129	
M&E	RWF	3.48M	3.48M	3.48M	3.48M	13.9M
Training	RWF	4.224M	4.224M	4.224M	4.224M	16.9M
Awareness	RWF	5.8M	5.8M	5.8M	5.8M	23.2M
		136.6M	262.9M	262.9M	262.9M	927.4M

Table 1: Summary of activities by District as indicated in the MoUs

* Based on 240 trees per ha; <u>Note</u>: Some of these activities were already covered in the project's plans and are recommended to be added to future government plans and budgets.

3.4 Phase 1 Progress: Technical oversight of implementation

Based on the scheduled activities (Table 2), activities have commenced within some of local communities. The contracted implementer has been able to a) coordinate with local leaders to mobilize labour among local communities b) establish nursery beds within demarcated sectors to provide a consistent flow of tree species c) commence land restoration activities including planting trees and fodder, along with digging trenches for water retention and erosion control.

The tasks and timelines are monitored by district officials including REMA staff at district level, project coordinator, agronomists and forests and environment officials at district and sector levels. Oversight of the daily activities on the ground are monitored by agronomists at the sector level. However, activities began with a few challenges related to capacity and pay (daily wage) that were effectively dealt with. In terms of technical capacity on the ground, it is worth mentioning that even with limited training, there is a general consensus on the benefits of this project will achieve.

Based on farmers' needs for seedlings and tree per ha to be reached, the ability to set up new tree nurseries, considering the time for raising and delivering seedlings to the field this constitute one of the major shortcomings of the development of agroforestry systems and viability of planted trees. It was observed that in some areas (Gisagara) seedlings have not survived due to drought. Therefore the need to time the tree planting early in the rainy season needs to be improved.

Table 2 shows the scheduled activities for Phase 1 that commenced with implementation of reserve force to implement activities.

No.	Activity	Detail			
A	A. Re-forestation and protection of natur	ral forests			
1	Tree planting on hill-tops and unculti- vated areas	Mostly Eucalyptus microcorys			
2	Tree planting on road-sides for protec- tion	Mostly Maesopsis eminii			
E	3. Soil conservation and/or erosion contr	rol measures			
3	Agroforestry	Inc. Grevillea robusta and fruit trees - 260 trees/ha			
4	Agroforestry plus manual construction and stabilization of trenches	Inc. planting Grevillea robusta and Penissetum sa- tivum			
5	Tree planting on riverine areas	Creating buffer zones for protection with bamboo species			
6	Tree nursery establishment and maintenance	Producing seedlings for 5 activities above			
C	C. Reduced wood consumption and emis	ssions			
7	Cookstoves purchase	Improved cookstoves – REMA to procure 40,000 in 2020/21 budget			
8	Cook stove distribution and training on use	Training CBOs			
9	Capacity building for farmers				
10	Establishment of farmer task forces and Working Groups	Farmers task force groups established at both at site level and under JADF			
C). Livelihoods support to communities				
11	Sensitisation and awareness raising of local leaders, women and youth representatives				
12	Cascade training of women and youth leaders (as ToTs)	Livelihood (income generating activities): each representative and cell leader trained at district level			

Table 2: Scheduled implementation of Phase 1 activities (2020-2021)

3.4.1 Re-forestation and protection of natural forests

Kamonyi

The project is expected to implement activities that tackle the issues faced by communities who have greatly suffered huge losses of as a result of demographic pressure, seasonal rains that are heavy, due to steep slopes and land use/land cover changes. Seasonal rains have impacted communities following busted river-banks from Nyabarongo river and Akanyaru river that consistently ravage several marshlands - Rwabashyashya, Kibuza, Bishenyi, Gikoro, Kayumbu, Mpomboli, Kivogo, Kavunja, Akanyaru, Mukunguli, Barama, Ruvubu. This project is scheduled to implement activities in Kamonyi 67 Ha of natural forests and 45 km of roadside have been scheduled to afforestation in Mugina and Nyamiyaga. Nursery beds have been established and transplanting is taking place for some of these demarcated areas.

Discussions with communities and local leaders in Kamonyi indicated that the land in Kamonyi is potentially productive, but there is productivity decline caused by dryness following the deforestation, environmental degradation, demographic pressures and unimproved agricultural practices. It was also noted that two additional Sectors Rugarika and Nyarubaka need to be included in the project area as they are part of Amayaga region. It was also noted that there are a number of forests that were harvested years ago which need to be restored instead of looking for new areas for afforestation, these areas as mentioned by local leaders should be prioritized for afforestation purposes. Also the local communities mentioned Kamonyi district being the common area where sand for construction activities is sourced due to a lot of erosion in their area, more emphasis is needed in trenches creation as a way of controlling erosion.

Ruhango

Ruhango has had a fair share of loss of lives and infrastructure due to torrential rains, consistent flooding of Nyabarongo and Akagera rivers and lakes and very strong winds that have caused landslides such as Bweramana sector and have over time depleted soils. Through discussions, it was made clear that communities have limited alternative sources of energy to biomass usage, limited knowledge and skills on environmental health, and expressed their needs for alternative energy sources (biogas and stoves) and other low energy/saving systems. The project therefore intends to implement afforestation activities where some have begun to reforest 14 Ha of uphill and uncultivated areas in Ntongwe sector and afforestation of 68 km of roadsides in Ntongwe, Kinazi, Ruhango and Mbuye sectors and protection of river-banks using bamboo species.

Discussions with communities and local leaders in Ruhango indicated that land cover and productivity in Ruhango degraded due to the dryness, deforestation, demographic pressures and poor soil conservation measures. High degradation of forests occasioned the lack of biomass for cooking energy thus relying on cassava trees at harvest; the main crop in the area. FGDs indicate that Ruhango's major issue relates to erosion caused by non-functional road side drainages and rain water that is not properly harvested. This issues have led to soil erosion mainly rills and gullies Road drainages especially on the newly constructed road are lacking and rain water harvesting in homes is not a norm practiced in the District which ends up destroying homes, farms and depletes soils.

Nyanza

Nyanza is endowed with generally fertile soils, however, the humid climate exposes to experience alternate rainy and dry seasons. The western part of Nyanza specifically being mountainous, registers relatively low temperatures and plenty of rainfall compared to the Eastern part which has low. The Project has progressed in afforestation of the 77 Ha of forests in Ntyazo and activities for roadside afforestation of 64 kms of sectors on Busoro, Kibirizi, Kigoma, Muyira, and Ntyazo had begun by November 2020.

Discussions with district officials, local leaders and community groups indicated that swamps in Nyanza have the potential to improve productivity, however, the yet to be fully utilized land prepared for farming and hill sides largely lay bare caused by deforestation, over exploitation and demographic pressures. The natural ecosystems having mostly disappeared, leaving room for artificial forest plantations (Kibirizi) forest (mainly *Eucalyptus* spp.), degraded shrub lands if

not any and mainly crops, which mostly consist of large banana plantations with the combination of avocado, mangoes, sweet potatoes, etc.

Gisagara

Gisagara witnesses consistent landslides and soil erosion along the Akanyaru river, which affects communites in Mamba, Gishubi, Muganza, Mugombwa, Mukindo, Kansi and Nyanza sectors that slope directly fall in the Akanyaru river. Steep slopes cause high erosion that affect soil productivity with steep watersheds that limits vegetation growth hence depleting soil quality due to eroded top soil, sedimentation into the river that exacerbates productivity and contributes to the pollution of adjacent watercourses, wetlands and Cyamwakizi lake.

The project has commenced activities for afforestation of 129 Ha natural forests in Mamba-Gishubi sector. With regard to forests, districts officials and communities mentioned the lack of quality seeds and seedlings, limitations in accessing nursery beds to provide the needed trees and diverse species (beyond *Eucalyptus*).

They also highlighted a gradual disappearance of indigenous trees (Imisave, Imiyigi, Imirama) that have impacted the biodiversity of Gisagara; the over-exploitation of forest, for cooking energy; and land shortages that do not allow communities to have their own woodlots for livelihoods and forest protection.

3.4.2 Soil Conservation and erosion control measures

In Rwanda, over 66% of all agricultural households practice erosion control measures to in order to protect soils from depletion due to steep hills and unprotected river-banks. About 76% of agricultural households use cover plants/grasses, followed by 44% that use trenches, while 12% utilise beds/ridges, 10% have progressive terraces and about 9% use radical terracing. Efforts to promote soil conservation indicate that about 90% of farmers (in 2020) practice erosion control, where over 50% prefer to use cover plants for anti-erosion control measures.

Field visits indicated the need for outsourced labour due to labour intensity and low-level participation in conservation and terracing activities. In order to attract a localized labour force needed for creation of trenches/digging ditches, the project has had to make minor increments to the daily wages, given that the initial offer was far less than alternatives wages earned elsewhere – including wages for VUP public works. Most citizens prefer to receive standardized wages commensurate to a pre-set working schedule that offers them the opportunity to concentrate on their own domestic activities, notably on subsistence farms or household chores.

There are also seasonality clashes: thus whilst project activities commenced in September/October 2020, this is also a critical period in the agricultural season for planting crops - just after resumption of rains. To prevent clashing with the planting season, project activities - most especially those that are non-agriculture related - should be scheduled after the planting schedule and before planting for agriculture related activities such as creation of trenches.

3.4.3 Agroforestry

Over time, the Mayaga region has faced challenges related to population pressures which have often forced people to over harvest natural resource especially deforestation, over cultivation and poor settlement techniques. The USAS annual report 2020 indicates that across Rwanda, 32% of farmers practiced agroforestry. The Southern region specifically suffers the most with the majority of landscape largely lying bare. Despite of the government efforts to promote increase in agroforestry, challenges have remained.

This project has made progress in integrating land-use systems and practices to incorporate woody perennials that are deliberately integrated with crops and/or animal farms on the same land in order to conserve soils and manage the climatic and population pressures on limited land resources. This is expected to increase soil fertility, agriculture productivity and incomes that could be generated from the region. This region mainly focuses in production of cassava, coffee, maize, rice, beans and vegetables. Coffee and Cassava being the major crops and followed by maize and rice.

In **Kamonyi** over 336 Ha of land have been demarcated for agroforestry activities in Mugina (168 ha) and Nyamiyaga (168 Ha). While in **Ruhango**, agroforestry activities have begun for planting tree species in Ntongwe (350 Ha), Kinazi 400 Ha, Ruhango 180 Ha and Mbuye 320 Ha. In **Nyanza** activities were already in advanced stages where especially in Muyira over 545 Ha had been completed and with good progress in Kibirizi where 96 Ha had commenced. Other sectors such as Ntyazo 215 Ha, Kigoma 300 Ha and Busoro 100 Ha were just beginning and on track with good progress.

In **Gisagara** plans were underway to implement agroforestry activities in Ndora 420 Ha, Gishubi 200, Musha 400 kms, Gikonko 200 Ha and Save 230 Ha. It was evident in most parts of the district where these activities are being implemented that this region's potential to tackle climate-related and agriculture productivity, could produce significant results – namely: retaining soil, increase in soil fertility and thus agriculture productivity, which could potentially generate income for the region and reduce the high levels of poverty.

3.4.4 Reduced wood consumption and emissions

While the Rwandan government initiated Improved Cook Stoves (ICS) to combat deforestation, various models were introduced since 2009. Despite of these efforts, the cost per cost stove has remained moderately high compared to a non-green cookstove. Programs to promote production and distribution of 'improved' cookstoves have been in place since, however, for many rural households and in particular the southern province, clean cookstoves are yet to reach households due to relatively high cost of purchasing and maintenance. A clear policy and strategy to reduce carbon emissions in Rwanda has been established to reduce use of firewood that accounts for at least 86% of energy consumption. The primary cooking fuel for of rural households accounts to 98%³.

³ https://marketplace.goldstandard.org/products/cleaner-cook-stoves-rwanda

Production and distribution of fuel-efficient cook stoves reduces the amount of wood burning in households, which means less harmful smoke, less indoor air pollution, and fewer greenhouse gas emissions. Discussions with district officials, local leaders and community groups indicate that besides the cost being high, fuel-efficient cook stoves are either not available or accessible within their communities. Senior officials at national level indicate limitations in production due to a) lack of appetite or low uptake from private sector producers b) low or no profitability c) strict regulations in standards for producers. At local level, communities and local leaders attribute challenges to limitations in local penetration and lack of ownership or buy-in on the side of citizens. Citizens expect government to support them in maintenance of these cook stoves which has high costs associated.

The major issue identified here is that the project has planned to distribute 40,000 cookstoves in FY 2020/21. However, there is no indication of a corresponding budget in the MoUs. While the implementation plan lays out the need to procure and distribute clean cookstoves, it is still unclear who will pick up this cost at the district level and how this cost could be shared with households.

3.4.5 Livelihoods Support: Potential opportunities of this project to improve the livelihood of the community beneficiaries

Due to threats to biodiversity, as a result of increasing population and poverty, people's capabilities, assets, income and activities are slowly diminishing and people are unable to secure the necessities of life, hence the need for economic incentives to support this loss or compensate them through other natural and conservation activities such as woodlots, beekeeping, mushroom farming etc.

3.4.6 Cross-cutting issues observed

Institutional capacity

Conflicting needs/demands in the medium term: To citizens who believe that fruit trees are not expected to yield in the medium term, there is a need to repackage messaging and manage expectations. With the current mixed approach, it becomes easy to be misled if no efforts are made to monitor behavior and follow up project activities. The introduction of livestock fodder as a border crop needs to be managed in a way that citizens see the benefits for such an integrated approach whilst managing potential tradeoffs that might push citizens into extremes (e.g. prioritizing money from fodder over crops or livestock or trees) and enhancement of livestock/food security at household levels. Farmers engaging in mixed farming systems (e.g. livestock integrated with crops and agroforestry) should be supported to enhance nutrient recycling, to reinforce soil conservation and pest/disease management.

Markets

Markets for the agricultural produce especially fruits and vegetables are lacking. Whilst the Mayaga region is among the areas where fruits and vegetables grow well, they lack markets for these perishables, and farmers in this particular region face severe loss of income and wastage in produce due to this limitation. Some farmers do not have information or the means for long distance transportation to main cities where they could potentially access markets. Efforts need to be made to improve access for locals to benefit from specific markets as a part of this project.

Another key market issue relates to accessibility to plant variety and market accessibility. Agroforestry in crop production contributes significantly to soil health and fixation. Efforts should be increased to expand on tree/crop/soil interfaces, provide quality seeds from a variety of fruit tree species that are suitable/appropriate to soil quality, to market demands and also address nutritional needs.

Monitoring and evaluation

Conflicting needs/demands in the medium term: To citizens who believe that fruit trees are not expected to yield in the medium term, there is a need to repackage messaging and manage expectations. With the current mixed approach, it becomes easy to be misled if no efforts are made to monitor behavior and follow up project activities. The introduction of livestock fodder as a border crop needs to be managed in a way that citizens see the benefits for such an integrated approach whilst managing potential tradeoffs that might push citizens into extremes (e.g. prioritizing money from fodder over crops or livestock or trees) and enhancement of livestock/food security at household levels. Farmers engaging in mixed farming systems (e.g. livestock integrated with crops and agroforestry) should be supported to enhance nutrient recycling, to reinforce soil conservation and pest/disease management.

Youth specific constraints

The youth represent a big part of Rwanda's society, they are indispensable for quality and sustainable development. The problem faced by youth and its future is the core of the Rwandan Government's concern. However, youth participation in community development is still not taken into account. They have to be included as reliable partners when it comes to planning and implementing community development programmes. Discussions with key officials and FGDs in communities confirmed that youth were not involved in Mayaga Project planning.

While the majority of youth rely on agriculture to meet their needs, their role is critical, particularly in ensuring that they safeguard environmental protection and forest conservation for they will be future owners/farmers and agripreneurs/entrepreneurs. There is a need to involve them into advanced technologies as they are uniquely positioned for exploration of new technologies and practices that are key to conservation and soil fertility. The reverse is also true, that if they are not involved, they are likely to lead to considerable destruction of forests in search for their own livelihoods for instance, illegal cutting of trees for wood and charcoal.

As land continues to become smaller and smaller, due subdivision by families in adherence to inheritance laws, land is being rationally used by the youth, who employ anachronistic agriculture techniques that deplete land and soil quality. This is the reason why Mayaga project should promote youth employment targeting value chain activities such as bee keeping, leather works, bicycle repairing, construction, electricity, value addition through advanced technologies, or market information access, agricultural electronics and other activities that require greater labour force (such as HIMO, trench excavation, terracing etc.) that will have a positive Impact on

natural resources regeneration and conservation on Mayaga. Their role as stakeholders, needs to be enhanced as one of the preventive measures for soil quality improvement, forest protection and biodiversity.

Another key issue identified is the fact that the youth in these areas lack information on the importance of the environment. Thus their role is undermined and as they seek for income, the environment becomes their easiest target (wood harvesting, charcoal burning) which contributes to degradation; they lack of self-confidence that is key to finding alternative innovations; they also lack guidance to alternative livelihood options - they do not value hard work; education does not provide the practical know-how needed for them to push themselves at a later stage; while some may be illiterate.

Gender specific constraints

Various literature sources indicate that despite of the fact that 70% of Rwandan women are engaged in farming, they do not have the same access to or control over land yet land tenure reforms have improved land rights, they have no control over production inputs, or finances or markets as men and as a result, women farmers are mostly relegated to subsistence farming. Women play a critical role in the field of environment, especially in the management of plants and animals in forests, arid areas and wetlands. Rural women in particular maintain an intimate interaction with natural resources, the collection and production of food products, fuel biomass, traditional medicine and raw materials.

Literature also indicates that women headed households are still disproportionally affected by poverty – for example in 2013/14, 19.5% of female headed households were in extreme poor while only 14.6% male headed households were extreme poor. Moreover, the Southern province has the highest percentage of households headed by females – at 28%4. 50% of female headed households derive their incomes from agriculture and their participation in the more lucrative/value added activities is limited and hence affecting the potential to increase incomes and improve their livelihoods.

Despite progress on women representation in decision making at the national level, at grassroots level women continue to be underrepresented in decision-making and their voices often remain unheard. Moreover, women are also disproportionately vulnerable to many development challenges and in climate change, women have fewer resources to adapt, while being more dependent on diminishing natural resources for their survival⁵.

Accountability, ownership and maintenance challenges

Discussions from the field indicate that expectations are high and little knowledge has been passed to the local leaders and citizens. The project under implementation, needs to do more in raising awareness, sensitization and citizen engagement if project benefits are to be sustained in the medium and long term.

⁴ EICV 5 2016/17

⁵ IUCN, 2017

3.5 Recommendations to tackle technical gaps in implementation:

3.5.1 Re-forestation and protection of natural forests

Environmental clubs should be included/ formed in the communities, these clubs will assist in managing and taking care of natural resources. The environmental clubs will the care take of the environment and by doing this forests and other natural resources will be will managed. These clubs should involve youth to be sensitized on the importance of conserving natural resources.

The project should provide a diversity of improved seeds and tree nursery beds, which should be at least in every cell. This will assist farmers to easily access the trees in case there are required. This was requested for by the local people who feel the urge of planting trees but fail to get the seeds in time.

3.5.2 Soil Conservation and agriculture improvement

Water management and River degradation has been noted to be on issue in this region. The project should consider following for soil conservation and agriculture improvement:

- Trenches creation: The project should attract localized labour force for trenches creation/ditches' digging by making incensements to the daily wages at 500 FRW for a 4 m ditch or at 1,750 FRW for Person Day (PD); standardized wages commensurate to a pre-set working schedule that offers them the opportunity to concentrate on their own domestic activities (on subsistence farms or household chores). To prevent clashing with the planting season, ditches' digging should be scheduled before planting.
- Plantation of Agroforestry trees on trenches edge: Grevillea robusta and Penissetum sativum should be used (French cameroon should be substituted with Penissetum sativum due to its resistance on virus).
- River-banks protection by creation of buffer zones. Bamboo should be used for buffer zones. Agriculture practices in swamps/valleys should include the drainage and irrigation systems.
- Water Harvesting: This study proposes employing and promoting rain-water harvesting on all the institutional infrastructures. The study also suggests that the project should incentivize affordable solutions for water harvesting most especially for the majority of citizens who are unable to afford water tanks in order to reinforce protection land and surrounding rivers. Rainwater harvesting and storage infrastructure, could include community dams, as an important reservoir to support them in drought. Additionally, the project should look into creation of other water holding/retention technologies in order to manage the severe drought issues faced by farmers in this region. This could include creation of reserve water dams for irrigation. Moreover, rain-water from house structures causes of erosion in the farmer's fields. This study also suggests that the project sensitizes communities on rainwater harvesting from their structures, with affordable solutions that affordable (such as water sheeting), bearing in mind that only few people in this region can afford water tanks.
- Cash crops, fruits and vegetables should be improved (value chain) in the FLR project areas: macadamia, coffee, avocado, mango, orange, mandarin, onions, tomatoes.

- The project should support the provision of cassava seeds: Support access markets for yields and agro-industries for processing shall also be included.
- Manure production for use in soil management: Training of farmers on compost making shall be supported. Provision of livestock (pigs and goats) for manure production should be supported.

3.5.3 Reduced wood consumption and emissions

This project could offer incentivized cookstoves and establish clear roles and responsibilities for their maintenance as well as future sustainability.

Incentivizing production

While there are numerous producers across Rwanda (with at least one production centre per district), there are limitations in production that prevent the private sector from consistent production. Out of a total of 32 approved producers, only 18 companies have remained in this business due to constraints in market demands and limitations in business profitability.

Incentivizing consumption/citizen incentives

Incentives for affordability, maintenance and ownership will be key. In partnership with its stakeholders, Rwanda Energy Group (REG) has extensively embarked on improving cooking technologies to reduce the use of firewood in households from 80% to 42% (by 2024). Through awareness campaigns, REG is promoting use of safe, effective and clean cooking technologies to ensure Rwanda reduces the use of biomass energies to cook in households, reduce environmental implications and reduce cutting of forests and woodlots to meet household demands for charcoal and firewood. The energy policy proposes more efficient production and use of biomass energy by households and that this should be complemented by promoting other sources of energy, including biogas, pellets, briquettes and LPG.

Improved cook stoves have up to three times efficiency compare to the traditional 3-stone stoves and can reduce biomass consumption by anywhere between 68-94%. If costs are well managed or incentivized, promotion of improved cook stoves has more chances of up increasing uptake. This could potentially free up the time spent by women and children in collecting firewood, giving them more time to study and undertake more productive commercial activities and decrease use of charcoal or firewood for cooking. In order to increase conservation of forests and woodlots, the public needs to embrace the use of modern cooking gas and stoves reduce demand on charcoal/firewood that fosters cutting of trees.

3.5.4 Agroforestry

The lack of local agroforestry producers in the districts of intervention needs to be addressed with support of the Tree Seed Center (RAB Huye) to ensure quality seeds and seedlings are introduced. REMA and its implementing agencies, should liaise with RAB, RNRA (Tree Seeds Unit) and seek guidance regarding importing exotic agro-trees (e.g. from Kenya) as well as identify

some of the indigenous tree seeds for multiplication (in a research centre e.g. in Huye). A combination of imported exotic and indigenous tree species could enhance diversity among agroforestry species.

Additionally, there is need for knowledge sharing, training and dissemination on tree management during the agricultural training of farmers to promote specific species that have been resisted by farmers. For instance, in Gisagara, a case was noted where *Cedrela serrata* species were not properly promoted to farmers and as a result these species were not preferred by the local farmers. The introduction of best practices for tree establishment in both an agroforestry and woodlot situation, would greatly benefit the project's target farmers: a Training of Trainers (ToT) approach is recommended (and described further in section 4.4).

The project should support local private nursery owners in multiplication and production within identified sites in order to help them connect to farmers and farmers' groups easily. They understand farmers' needs and are able to produce seedlings near to the planting sites which makes distribution and follow-up easy.

3.5.5 Livelihoods Support

Below are a number of livelihood opportunities options that could be implemented by the youth and women the Mayaga region.

- **Bee Keeping:** Bee keeping remains a good and largely viable project mostly for youth and women as alternative livelihood that is eco-friendly.
- Buffer zone crops: Sugar cane and bamboo planting will not only protect the natural reserves but also bring income to the households surrounding these natural reserves.
- Kanyaru area Irrigation project: Given the proximity of the Mayaga region and the endowment of the Kanyaru River, it would be best to also provide or attract investors/grants in order to introduce solar powered pumps that would irrigate farms that stretch across hillsides that are stretched along the Mayaga region environs. This could ultimately increase productivity of the region, provide jobs and increase incomes to the locals within this region.
- Rehabilitation of clean water springs: Given the consistent water shortages and the prolonged droughts during dry season, the rehabilitation of clean water springs could provide some relief to citizens within the demarcated areas.
- Increased penetration of good agricultural practices
- Nursery beds for youth and women: Through cooperatives, the youth in Mayaga region have the opportunity to run nursery beds that could potentially provide access to tree and other crops for composition during and after this project.
- Trade opportunities: While the region has good and fertile soils, they lack access to markets for their produce as well as access to infrastructure that is key to linking local farmers to other wider markets.
- Crop diversity: The Mayaga region is famous for production of cassava and has potential for producing other crops such as pineapples, coffee and bananas. Vegetables including tomatoes have successfully yielded in the past but as a perishable crop, the area lacks refrigerated storage facilities, good infrastructure for transportation, and no localized factory to for value addition. In order to increase production, create jobs and increase incomes,

other opportunities such as reclaiming some of the swamps have remained untilled for the benefit of local citizens. These swamps would be beneficial not only for productivity but for access to seasonal crops that are largely affected by prolonged dry spells during summer periods. It has been GoR's policy to permit cooperatives to use selected wetlands for food security reasons.

3.5.6 Other cross-cutting issues raised

Ownership, maintenance and accountability

There is a need for consistent messaging to project beneficiaries in order to manage expectations. It is imperative that the project raises awareness through sensitization within local leaders and communities in order to improve accountability and promote ownership and sustainability of the project benefits, whilst giving opportunities to citizens the right to seek information and raise grievances where necessary.

Conflicting needs/demands in the medium term

Economic returns on trees can be long term, hence the need to package messaging and manage expectations most especially for citizens who are expected to maintain trees (including harvesting fruit trees). With the current mixed approach, it becomes easy to be misled if no efforts are made to monitor behavior and follow up project activities. The introduction of livestock fodder as a border crop needs to be managed in a way that citizens see the benefits for such an integrated approach whilst maintaining potential tradeoffs that might push citizens into extremes (e.g. prioritizing money from fodder over crops or livestock or trees) and enhancement of livestock/food security at household levels. Farmers engaging in mixed farming systems (e.g. livestock integrated with crops and agroforestry) should be supported to enhance nutrient recycling, to reinforce soil conservation and pest/disease management.

Plant variety and market accessibility

Agroforestry in crop production contributes significantly to soil health and fixation. Efforts should be increased to expand on tree/crop/soil interfaces, provide quality seeds from a variety of fruit tree species that are suitable/appropriate to soil quality, to market demands and also address nutritional needs.

Recommendations

Coordination and community engagement should utilize existing structures:

- Utilize district level joint action for development forums (JADF) for planning and reporting.
- Utilize community level structures for messaging, coordination and capacity building:
 - Umuganda monthly meeting to convey messages
 - Umugoroba w'ababayi parents' evenings (as desired) for planning and follow-up,
 - Inteko z'abaturage community meetings (once a week),
 - Farmer field schools for capacity building and monitoring

- Daily VUP meetings for messaging and capacity building
- Other volunteer sessions such as community health workers (in nutrition), social workers (for livelihoods), for planning, monitoring and reporting (and reaching out to households).
- *Inshuti z'umuryango* Friends of family for capacity building or sensitization on gender, child protection, education and other social sectors.

4 CAPACITY NEEDS ASSESSMENT FOR PROJECT BENEFI-CIARIES

4.1 Overview

Under-utilization of labour is leading to low levels of participation and productivity

Key segments of the population are left out or are not participating to their full potential. Women dominate in agricultural production; however, they face significant barriers in accessing inputs or even participating in activities higher up in the agricultural value chain. This was confirmed in discussions with participants in various group discussions – where it was made clear that women face constraints in accessing inputs and are dependent on men when it comes to post harvest such as transporting produce to markets or handling finances.

The composition of youth in the agricultural sector is declining and yet there are opportunities for them to effectively participate in other segments of the value chain outside production. Some of the local government officials mentioned the constraints of getting groups of youth to participate and/or commit to agriculture production – the youth are largely inconsistent, not dependable, impatient and unavailable when called upon to support areas production or finding markets for produce.

Weak forward and backward linkages

Weak linkages are observed between the agriculture sectors and other sectors (e.g. trade and commerce, infrastructure). Weak alignment of demand and supply means that farmers are not producing for the markets and hence have limited access to both domestic and export markets. FGDs stated constraints including inaccessible roads, limitations in collection points (except milk collection) and the lack of market-places that are well-constructed to attract domestic and export traders.

Reliance on rain-fed agriculture hence susceptible to climate shocks

The low-level use of water resources for irrigation makes agricultural production unpredictable from one season to another. Residents and leaders stressed that over the years, dependence on rain and has led to food shortages especially in prolonged dry seasons.

Small plots of land

Due to the small nature of plots of land, it difficult to achieve economies of scale or develop commercial agriculture. The pressure of a growing population also has a negative effect on land availability. Focus group discussions stated constraints they have due to farming on small plots, expressed the desire to form be allocated consolidated plots or marsh lands as groups in order to maximize gains from group or cooperative efforts.
Topography of the land increasing the cost of cultivation and soil conservation

Around 90% of the Mayaga region, lies on the steep hill sides/slopes with the consequent effect of soil loss, erosion and decreasing fertility.

Low levels of on farm mechanization and post-harvest losses

These are key challenges to communities. Discussions with communities indicates losses made (Nyanza), as a result of limiting factors such as roads and lack of storage facilities. Of the total food produced, communities indicated that only a third reaches the market which severely impacts farmer incomes and their productive capacity.

Low levels of on farm value addition and weak agro-processing capacity

The reasons for unexploited processing capacity lie in lack of appropriate technologies such as advanced irrigation schemes, storage facilities for produce, financing incentives and infrastructure (electricity, roads and clean water), which are impeding productivity of communities.

Capacity Building and systems for monitoring activities

Localized M&E System for project activity tracking is recommended. While there have been numerous projects actively implemented in this region, there is no central repository for tracking the progress of these projects and no monitoring system to support in data collection and geotracking activities on the ground. As Nyanza District has plans to establish such systems but lack funding for it, we recommend the FLR Project will be able to support this initiative.

4.2 Opportunities for women

Combating constraints into opportunities for Women

Some of the identified constraints relate to the scarcity of alternative cooking fuels and wood that increases the burden on women, forcing them to walk longer distances to collect wood, hence are unable to engage in income-generating activities. In the process of collecting fire-wood, women and girls become vulnerable to gender-based violence (e.g. rape and defilement), as they trek unsafe places. Furthermore, female-headed households are typically poorer in Mayaga, which exacerbates their vulnerability to deforestation and land degradation, as well as to climate change, as noted in the climate change vulnerability report⁶. Children are also affected by longer times for collecting fuel wood, getting to school late, not attending it regularly or even dropping out of it. A case has been recorded in Gisagara, where the collapse of a bridge led children to walk longer, arriving late to school and passing through unsafe paths such as swamps.

⁶ Gender Analysis and Action Plan report (June 2018)

Building capacity of women/women groups

Distribution of energy-efficient cook-stoves is needed to reduce pressure on forest resources. Improved cookstoves could enable women to engage in income-generating activities. This will enable them to concentrate and work in improving their livelihoods hence protecting landscape and forests.

Capacity Building in Income Generating Activities

Encouraging women to participate in jobs for land consolidation and cash crop growing initiatives, ensuring equal representation of women in the distribution of tree seedlings, engaging them at the different levels of the landscape and forest management value chain and ensuring the project provides flexibility in working hours and tasking. The following trainings are suggested:

- Training in Nursery Bed management: Ensuring VSLAs for Women are prioritized when offering training and capacity building for establishing nurseries (ensuring the project targets women-owned groups).
- Training in Leading and managing associations/cooperatives, business development and finances: This could involve both the creation of new cooperatives and the involvement of more women in existing cooperatives, in higher positions as well as access of women to financial services, in collaboration with the BDF to help them overcome challenges in loan security or collateral.
- Training in Alternative value chains: Encouraging women to venture into sustainable alternative livelihoods, including fruit trees, clean cooking solutions (e.g. production of improved cook stoves), value addition of produce (e.g. coffee, Juice, packaging), forestry trees and fodder trees.

4.3 Opportunities for youths

Establishing crop value chains and value addition

Forming cooperatives aimed at establishing and running nurseries, maintenance of terraces, harvesting, storage, packaging, marketing and transportation of crop yields to markets.

Taking the lead in hi-tech innovations for agriculture

Through groups, youth have opportunities and the power and potential to lead in technological enhancements such as technologies for irrigation - solar-led solutions for lighting houses, for irrigation, establishing other value addition opportunities such as drying tomatoes.

Harvesting solutions for wood and carpentry activities

Through youth cooperatives, and with guidance, youth groups are trained in proper harvesting of wood and in carpentry.

Job creation opportunities

Opportunities in bee keeping, value addition and production of honey, tree seedlings production, leather works, and cycle repairing (addressing transport needs for farmers) are feasible and recommended.

4.4 Other opportunities to build capacity

Training needs: Capacity building activities are needed and in collaboration with CSOs and NGOs on the ground. Some of these needs could be met through:

- training local leaders and citizens in protection activities
- building citizens capacity to form groups;
- training communities and groups in financial management, credit/loan management;
- leading cooperatives and entrepreneurships to help them self-finance activities through savings and/or operating other credit schemes – linking farmers to banks, MFIs and SAC-COS, negotiating low interest rates and credit security;
- Training communities and local leaders in improved agricultural practices such as irrigation, post-harvest handling, packaging, storage and harnessing markets from neighboring towns or cross border trade.

Forestry and agroforestry: specific training in forestry and agroforestry could be done in collaboration with existing institutions (e.g. the School of Forestry and Agroforestry in Musanzi): a Training of Trainers (ToT) approach is recommended, targeting lead farmers and key District officials who are involved with the project. UNIQUE carried out such ToT for tree planting and tree harvesting in 2014 at Musanzi and also published practical guidelines for Rwanda (UNIQUE, 2015a&b).

SBCC forums for mobilization, and sensitization activities: Local leaders, through the existing forums such as *Umuganda, Inteko z'abaturage* and *umugoroba w'ababyeyi,* need to sensi-tize/raise awareness of local communities to the benefits of this project, enhance uptake on job opportunities, and other livelihoods options included in this project.

4.5 Project management and coordination

As it has been noted the current project management is made up of Project Manager, two field officers covering two districts each. This team is supported by various members for technical support from the relevant stakeholder at a national level and District levels, this is in addition to support on finance and other coordination by the Donor team at UNDP.

Based on the complexity and the magnitude of the project, we propose a more robust Project management structure that encompasses the structure illustrated in Figure 4, with the positions being described in Table 3.



Figure 4: Proposed Project management structure and personnel for Amayaga Project

These roles are described in Table 3.

Table 5. Description of management structur	Table	3:	Description	ו n of	management	structure
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Organ or Position	Who and what	Activity
National Technical	This would consist of representative	To ensure that:
Support team	from all the key national s/h.	 the PMU meets the national goals
	• RWB	has concurrence with other projects
	• RFA	Guides the PMU on goals and target
	• RLMUA	achievement.
	• RAB	Providing technical support from the
	• REMA	specialized institution
	• FONERWA	Approval of quarterly reports
	• MoE	Approval of Consultancy team re-
	• UNDP	ports

Organ or Position	Who and what	Activity
Project Manage-	Project Manager (one)	In place
ment and coordi-		
nation	District coordinators (4)	Role as currently prescribed – Day to
	Currently they are two coordinators	day coordination of project activities at
	and from the review of the work ac-	the district levels.
	tivities they will greatly be over-	
	whelmed as activities increase and	
	more has to be done.	
	We recommend a recruitment of <i>Two</i>	
	additional District Coordinators to	
	take care of each district	
	Livelihood Support expert	Role – To ensure that Livelihoods and
	The projects aim at supporting and	gender support element are well en-
	improving on the livelihood of the	grained and mainstreamed in the day-
	project beneficiaries but form the	to-day project implementation pro-
	project document and the view in the	grams
	field this is not well supported with	The person would also be the ne under-
	the expert that would guide it.	taking or supervising the train g on Live-
	We recommend the recruitment of a	lihood and gender related issues on the
	Livelihood and Gender Support Coor-	ground
	<i>dinator</i> for the project	
	Agroforestry Expert	The expert would be the one advising
	In order to enhance the Sustainability	the project on the implementation of
	and enhanced focus on the agrofor-	agroforestry and forestry restoration ac-
	estry activities we recommend that	tivities on the ground and would be a
	there be a recruitment of an Agrofor-	support team for training in the area.
	estry Expert	
Training	The project ought to have various ca-	The expert would coordinate the vari-
	pacity building activities and in order	ous capacity building activities within
	to have this being done in a harmo-	the project, working closely with local
	nized manner we recommend that a	institutions and existing community
	there be recruitment of an NGO	groups
	working in the Mayaga region area in	
	the field of <i>Capacity building</i> in Liveli-	
	hood and agroforestry sector to un-	
	dertake this	
Seedling and nur-	The current setup ins where the	A nursery specialist needs to work with
sery management	nursery management is being under-	selected groups (especially women and
	taken by the Association for the De-	youth) to conduct practical training in
	mobilization of Security forces.	BOPs to all the project's Districts.
	What was noted is that the team	Practical training in nursery manage-
	though may not have had previous	ment needs to be organized by the pro-
	experience in this and this becomes a	ject: this could be outsourced to a pri-
	challenge in terms of their day-to-day	vate organization or NGO with sufficient
	operation.	experience in BOPs.

Organ or Position	Who and what	Activity
	In order to capture the aspiration of	Women groups could also be subscribed
	the youth in this project we recom-	to this activity
	mend that the current team of volun-	A review of the NGOs working in the
	teer youths be organize into group	area though they are limited so that
	and be trained in the management of	they can be recruited to undertake the
	tree nurseries which they can take	same above.
	over in the next phase of project ac-	
	tivities. NB. Could be combined with	
	following point on forestry training.	
Improved forestry	We recommend the PMU to identify	To introduce Best Operating Practices
practices	and commission ToT forestry training	for forestry – to include nurseries, spe-
	courses to be undertaken by local in-	cies and seed selection, establishment,
	stitution(s) (likely with international	management and safe harvesting.
	short-term technical assistance). The	
	target people for training would be	
	nursery owners/managers and those	
	involved with overseeing the project's	
	tree planting initiatives – both project	
	staff, local officials and those under-	
	taking substantial tree planting in the	
	region.	

5 SOCIO-ECONOMIC VIABILITY

5.1 Social Economic Gains

This section assesses the socio-economic viability of proposed interventions at each selected site (current and proposed). Climate change has increased the frequency and intensity of rains and drought, which negatively affect agriculture production. This is severe for the case of Mayaga region where most of its population depend on rain for agriculture. The project aims to tackle the impact of deforestation and soil erosion, flooding and low soil productivity in the Mayaga region. Moreover, deforestation has reduced the availability of timber for construction and furniture.

The Mayaga Project aims to rehabilitate forests, the ecosystems restoration and resilience and resilient food production regimes. Forest areas will be protected and reforestation will increase tree based food production – mainly through agroforestry. Some of the natural forests including 354 Ha Kibirizi-Muyira and Karama natural forests will be rehabilitated with over 1,000 ha of public forests scattered over the landscape in the four Districts. The project will also restore forest boundaries and restore degraded soils hence protecting flooding of rivers, landslides, silting and water pollution.

The project has selected key sites and various species that are fast-growing species and will train farmers including women and youth groups in best practices to improve specie composition and productivity of the plantations. In partnership with the Rwanda Agricultural Board (RAB), a selection of improved species composed of genetic material will not only increase productivity but also and income for the communities benefiting from this project.

Other livelihood activities including capacity building and empowerment of community groups (women and youth) with will enhance their operational capacity, in extension services and appropriate technologies (where possible). Through Farmer Field Schools-led the project is expected to improve agricultural production alongside the ecosystem rehabilitation.

Farmers including women and youth groups will be benefit from land consolidation that will enable them to grow cash crops, such as coffee and cassava; adopt climate smart production techniques; establish tree nurseries as well as plant trees on farms and in designated areas for afforestation and reforestation which will enforce protection of land and natural regeneration of forests including protection of river-banks.

Livelihoods with diversified economic opportunities will reduce pressure on natural resources through activities based on the value addition of wood and non-wood forest products, sustainable harvesting, that will potentially generate incomes; incentivised energy options for households that promote use of green technologies e.g. improved stoves or solar, hence reduce wood fuel use for beneficiary households.

The project aims to improve a supply base by working with other respective institutions such as REG and RDB to build a sustainable base and maintain results which will attract the privatesector investments or businesses to establish value chains that are aimed at linking communities to markets. This will in-run increase opportunities for income generating activities (including for expansion of nursery bed businesses that are critical in maintenance and regeneration of forests (where possible owned by local communities).

5.2 Sustainability of socio-economic gains

The project expects to build on existing community structures, leveling the community participation and stakeholder consultations to promote ownership and sustainability of results. The proposed activities will be implemented through community-led structures utilizing decentralized approaches that will:

- Involve youth and women:
 - Women are mostly involved in fields and farms, they should be sensitized on the importance of FLR.
 - Youth should be involved especially the youth volunteer groups, which can be a good vessel for information dissemination and their involvement will affect the project success.
 - Environmental clubs should be included/ formed in the communities, these clubs will assist in managing and taking care of natural resources. The environmental clubs will the caretaker of the environment and by doing this forests and other natural resources will be managed.
- Incentives:
 - A focus on youth and women will enhance labour supply and income generation that are key motivating financial independence, and improved household income.
 - Initiatives like giving out rewards to successful individuals who manage to grow and maintain a number of trees.
- <u>Cascade empowerment of local leaders and community representatives</u>:
 - Involving communities in planning, decision making and involvement into project activities, through a cascade approach will not only empower of local leaders, but also ensure that continuity through a continuous skills transfer from a selection of community representatives (e.g. famer field schools) groups and individual farmers, hence retaining skills and knowledge transfer.

5.3 Proposed participatory approach for successful Project implementation

This approach implies the involvement of the local population from the project start to the end. When people are involved even in the decision making of the project activities, it becomes easy for the implementation of the activities. The project implementers should for committees from the local population who should help in the running of the project activities. This committee should involve Cell Executive secretary, Woman representative, Opinion Leader, Youth Representative and a Village leader. This makes the beneficiaries own the project and become care takers of the project activities. As said above, the importance of this process is that outsiders need the community as their main source of information. In addition, getting their input and having them help decide the nature of a project will develop a sense of ownership that increases the project's chances for success and sustainability over time.

Encouraging a participation process is mainly a matter of creating an enabling environment with appropriate channels of communication and the allocation of resources needed to promote it.

Inform	Consult	Involve	Collaborate	Empower
Provide the pub-	Obtain public	Work directly	Partner with the	Place final deci-
lic with balanced	feedback on anal-	with the public	public in each as-	sion making in
information to	ysis, alternatives	throughout the	pect of the deci-	the hands of the
assist them un-	and decisions	process to ensure	sion including the	public
derstand the		that public con-	development of	
problem, alterna-		cerns and aspira-	alternatives and	
tives, opportuni-		tions are consist-	the identification	
ties and solutions		ently understood	of the preferred	
		and considered	solutions	

Table 4: Purpose of Participation and Citizen Engagement

6 WORK PLANS FOR PHASES I AND II

6.1 Phase I Work plan 2020/21 – 2021/2022 and II (2022-2026)

Following the team's visits to each of the four Districts, the FLR planned activities in each of the 19 sectors for are presented in this section. Based on collected information from KIIs at all levels (national, district, sector, cell and community levels) and consultants' field observations, Table 5 presents a summary description of priority activities for Phase I (2020/21 - 2021/22) that will be supported by the project in the four Districts. They are aligned following the targeted specific project outcomes/deliverables. The exact location of the sites (GPS coordinates) is included in the Annex 11.4.

District	Intervention	Sector	
Kamonyi	Agroforestry 336 Ha	Mugina, Nyamiyaga	
(2 sectors)	Afforestation 67 Ha		
	Afforestation (road-sides) 45 Km		
	Fruits 40 Ha	-	
	Soil conservation measures (trenches and <i>Pennisetum sa-tivum</i>) 129 Ha		
	Agriculture and livestock (compost, cassava, goats and pigs)		
	Capacity building / Trainings		
Ruhango	Agroforestry 1,250 Ha	Ntongwe, Kinazi, Ru-	
(4 sectors)	Afforestation 129 Ha	hango, Mbuye	
	Fruits 40 Ha		
	Soil conservation measures (trenches, Pennisetum sativum		
	and bamboo) 129 Ha		
	Agriculture and livestock (compost, cassava, goats and pigs)		
	Capacity building / Trainings		
Nyanza	Agroforestry 1,256 Ha	Busoro, Kibirizi,	
(5 sectors)	Afforestation (woodlot) 77 Ha	Kigoma, Muyira,	
	Afforestation (roadsides) 64 Km	Ntyazo	
	Fruits 40 Ha		
	Soil conservation measures (trenches and Pennisetum sa-		
	<i>tivum)</i> 129 Ha	-	
	Agriculture and livestock (compost, cassava, goats and pigs)		
	Capacity building / Trainings		
Gisagara	Agroforestry 1,450 Ha	Ndora, Gishubi,	
(6 sectors)	Afforestation 129 Ha		

Table 5: Summary of sectors of intervention in Phase I

Fruits 40 Ha	Musha,	Gikonko,
Soil conservation measures (trenches, <i>Pennisetum sativum</i> and bamboo) 129 Ha		Mamba-
Agriculture and livestock (compost, cassava, goats and pigs)		
Capacity building / Trainings		

Based on collected information from KIIs at all levels (national, district, sector, cell and community levels) and consultants' field observations, Table 6 presents a summary description of priority activities to be supported by FLR project in the Mayaga region for Phase II (2022-2026) in the four Districts. They are aligned following the targeted specific project outcomes/deliverables.

District	Intervention	Sector	
Kamonyi	Agroforestry 2688 Ha	Mugina, Nyamiyaga, Rugarika,	
(4 sectors)	Afforestation 536 Ha	Nyarubaka	
	Afforestation (road-sides) 180 Km		
	Fruits 160 Ha		
	Soil conservation measures (trenches and <i>Pennise-tum sativum</i>) 516 Ha		
	Agriculture and livestock (compost, cassava, goats and pigs)		
	Capacity building / Trainings		
Ruhango	Agroforestry 5,000 Ha	Ntongwe, Kinazi, Ruhango,	
(4 sectors)	Afforestation 56 Ha	Mbuye	
	Fruits 160 Ha		
	Soil conservation measures (trenches, Pennisetum sativum and bamboo) 516 Ha		
	Agriculture and livestock (compost, cassava, goats and pigs)		
	Capacity building / Trainings		
Nyanza	Agroforestry 5024 Ha	Busoro, Kibirizi,	
(6 sectors)	Afforestation (woodlot) 308 Ha	Kigoma, Muyira, Ntyazo,	
	Afforestation (roadsides) 256 Km	Busasamana	
	Fruits 160 Ha		
	Soil conservation measures (trenches and <i>Pennise-tum sativum</i>) 516 Ha		
	Agriculture and livestock (compost, cassava, goats and pigs)		
	Capacity building / Trainings		

Table 6 Summary of interventions in Phase II

Gisagara	Agroforestry 5,800 Ha	Ndora, Gishubi,
(6 sectors)	Afforestation 516 Ha	Musha, Gikonko, Save, Mamba-
	Fruits 160 Ha	Gishubi
	Soil conservation measures (trenches, <i>Pennisetum sativum</i> and bamboo) 516 Ha	
	Agriculture and livestock (compost, cassava, goats and pigs)	
	Capacity building / Trainings	

6.2 Details of project's target areas – Phases I and II

6.2.1 Kamonyi

Figure 5 presents sectors and cells to be covered by the Project in phase I (2020-2021) and Phase II (2022 – 2025) in Kamonyi District. The Sectors of Mugina and Nyamiyaga will be covered in phase I while Rugarika and Nyarubaka will be added in Phase II. All cells of Mugina, Nyamiyaga and Rugarika will be fully covered, and part of Nyarubaka (cells of Kambyeyi, Kigusa and Gitare located in Amayaga region) will be covered. Phase I of the project shall cover cells of Nteko, Mbati, Mugina and Jenda in Mugina sector, and Ngoma, Kidahwe, Kabashumba, Bibungo and Mukinga in Nyamiyaga sector. The remaining cells shall be covered in Phase II.





ArcMap10.2 produced using available spatial data for the administrative boundaries of Rwanda.

6.2.2 Ruhango

Figure 6 presents sectors and cells to be covered by the Project in phase I (2020 - 2021) and Phase II (2022 – 2025) in Ruhango District. All cells of Mbuye, Kinazi and Ntongwe will be fully covered, and part of Ruhango (cells of Tambwe, Munini and Gikoma located in Amayaga region) will be covered. The phase I of the project shall cover cells of Mbuye, Mwendo, Kizibere, Gisanga and Nyakarekare in Mbuye Sector, Gisali, Kinazi and Gitabo in Kinazi Sector, Gako, Kareba, Nyagisozi and Kebero in Ntongwe Sector, and Tambwe and Munini in Ruhango Sector. The remaining cells shall be covered in Phase II.



Figure 6 FLR Project in Ruhango District

ArcMap10.2 produced using available spatial data for the administrative boundaries of Rwanda.

6.2.3 Nyanza

Figure 7 represents Sectors and cells to be covered by the Project in phase I (2020 - 2021) and Phase II (2022 – 2025) in Nyanza District. All cells of Busoro, Kigoma, Muyira, Kibirizi and Ntyazo will be fully covered, and part of Busasamana (cells of Kavumuand Kibinja located in Amayaga region) will be covered. The phase I of the project shall cover cells of Masango in Busoro Sector, Gahombo in Kigoma, Gati, Nyamiyaga, Nyamure and Migina in Muyira, and Rwotso, Cyotamakara, Kagunga and Bugali in Ntyazo Sector. The remaining cells shall be covered in Phase II.



Figure 7: FLR Project in Nyanza District

ArcMap10.2 using available spatial data for the administrative boundaries of Rwanda

6.2.4 Gisagara

Figure 8 presents Sectors and cells to be covered by the Project in Phase I (2020 - 2021) and Phase II (2022 – 2025) Gisagara District. All cells of Gikonko, Mamba, Musha, Gishubi, Ndora and Save will be covered. The phase I of the project shall cover cells of Gasagara in Gikonko, Muyaga in Mamba, Kimana in Musha, Shyamba in Save, Nyeranzi in Gishubi and Mukande and Gisagara in Ndora sector. The remaining cells shall be covered in Phase II.



Figure 7 FLR Project in Gisagara District

ArcMap10.2 produced using available spatial data for the administrative boundaries of Rwanda)

6.3 Phase II Activities (four years: 2022 - 2026)

Detailed activities for Phase II (FY 2022 to 2026) will be a continuation of maintenance of established activities in phase I and extending activities in remaining cells and prioritization will be determined by progress from the 1st two years (phase I) of Implementation.

Based on discussions with officials and community groups, and considering the targeted specific project outcomes/deliverables, the project shall implement the proposed priority activities for this Phase (2022 - 2025) as detailed in Table 7. It should be noted that these activities were drawn up bearing in mind the four MoUs already agreed with the four Districts but with additional recommendations coming from the Consultant's field visits.

Specific FLR project out- comes /deliverables	Activities to be conducted
Forestry and agroforestry - Improved biodiversity and protection of 555 ha of natu- ral forests (NF), and bringing 300 ha of NF under Participa- tory Forest Management (PFM)	 Maintenance of planted trees (woodlot) uphill and roadsides/banks, and first phase. Multiplication of <i>Eucalyptus microcorys</i>, planted uphill, and <i>Maesopsis eminii</i> and filao on roadsides. Protection of the natural forest in Kibirizi Sector and planting <i>Eucalyptus microcorys</i> in surrounding areas, natural forest as buffer zone. Rehabilitation of existing forests plantations in the four Districts. Maintenance of planted agroforestry and fruit trees in farmers' fields and extending into areas not covered in the phase I with fruit trees.
Erosion control measures and agriculture develop- ment - Increased productiv- ity of 25,000 ha of agricul- tural land	 Maintenance of phase I activities - trenches & <i>Grevillea robusta</i> and <i>Pennisetum sativum</i> planted on trenches edge. Extending the activities to areas not covered in phase I. Water harvesting from roofs of houses using affordable storage options. Construction of water retention dams for erosion control and use during dry spells and droughts. Cash crops improvement & value chain support. Support access markets for yields and agro-industries for processing Manure production for use in soil improvement. Training of farmers on compost making. Livelihood options (with Livestock & manure production (cows, pigs, goats).
Reduced wood consumption by at least 25% and avoided emissions of 4.7 M tCO2e in 5 years; 13 M tCO2e in indi- rect GHG emissions in 10 years.	 Support for cooking gas and cook stoves to reduce the use of charcoal and trees.
Enhanced capacity (individu- als and institutions) to imple- ment FLR plans, and estab- lish 1,000 ha of plantations	 Capacity building of farmers on maintenance of established activities (trenches, planted trees, cash crop value chain). Trainings for local leaders and farmers. Establishing community nurseries owned by local farmers at the cell level to increase access to agroforestry and fruit seedlings

Table 7: Priority activities to be supported by FLR project in the Mayaga region for the next 4years (2022 – 2025)

Specific FLR project out- comes /deliverables	Activities to be conducted
via community outreach pro- gram (co-financed by private sector)	 Establishing farmers' committees at site level follow up activities Supporting women cooperatives (with livelihood options) Establishing youth clubs or Environment/biodiversity clubs Transport facilitation of forest sector officer to follow up field activities.

6.4 Summary of the activity plan for the project duration (Phases I and II)

Table 8 summarizes the project's activity Work Plan for both Phases I and II. Given the constraints for the feasibility study, it was not possible to estimate the areas for each specific activity in Phase II: thus the Work Plan for Phase II will have to be refined by the PMU in the light of the results in Phase I and further information being gathered from each District/Sector.

Table 8 Summary of project's activities for Phases I and II

PHASES	FLR PROJECT OUTCOMES /DELIVERABLES	ACTIVITIES TO BE CONDUCTED
PHASE I	Erosion control measures and agriculture development - Increased productivity of 25,000 ha of agricultural land	 Creation of trenches/ digging ditches for water retention and erosion control and plantation of <i>Grevillea robusta</i> and <i>Penissetum sativum</i> on trenches edge. Phase 1 areas to be covered are 129 Ha in Kamonyi, 129 Ha in Ruhango, 129 Ha in Gisagara and 129 Ha in Nyanza. River-banks protection by creation of buffer zones; plantation of Bamboo species.
	Forestry and agroforestry - Improved biodi- versity and protection of 555 ha of natural forests (NF), and bringing 300 ha of NF un- der Participatory Forest Management (PFM)	 Reforestation – planting trees (woodlot) uphill and roadsides/banks, and extending the activities to four Districts (demarcated areas listed below). The <i>Eucalyptus microcorys</i> shall be multiplied and planted uphill, and <i>Maesopsis eminii</i> and filao on roadsides. Rehabilitation of existing forests plantations in the four Districts. Old and damaged forests (government, district and farmers' forests) need to be rehabilitated. Agroforestry: Planting trees including fruit trees into farmers' fields and extending their plantations with diverse species that include oranges, mandarin, citrus, avocadoes, mangoes, passion fruits. Phase 1 areas are: Kamonyi – 336 Ha Agroforestry, 112 Ha afforestation Ruhango – 1,250 Ha Agroforestry, 77 Ha woodlot afforestation, 64kms roadside trees Gisagara – 1,450 Ha Agroforestry, 129 Ha afforestation

PHASES	FLR PROJECT OUTCOMES /DELIVERABLES	ACTIVITIES TO BE CONDUCTED
	Forestry and agroforestry - Improved biodi- versity and protection of 555 ha of natural forests (NF), and bringing 300 ha of NF un- der Participatory Forest Management (PFM)	 Maintenance of planted trees (woodlot) uphill and roadsides/banks, and extending the activity in areas not covered in the first phase. The <i>Eucalyptus microcorys</i> shall continue to be multiplied and planted uphill, and <i>Maesopsis eminii</i> and filao on roadsides. Protection of the natural forest in Kibirizi Sector. This shall require the plantation of <i>Eucalyptus microcorys</i> in the area surrounding the natural forest as buffer zone. Rehabilitation of existing forests plantations in the 4 Districts. Old and damaged forests (government, district and farmers' forests) need to be rehabilitated. Maintenance of planted agroforestry and fruit trees in farmers' fields and extending their plantation on the areas not covered in the first phase. More species shall be introduced including orange, mandarin, citrus, avocadoes, mangoes, passion fruits. All fruit species to be distributed to farmers shall be grafted.
	Erosion control measures and agriculture development - Increased productivity of 25,000 ha of agricultural land	 Maintenance of the established trenches for erosion control and maintenance of <i>Grevillea robusta</i> and <i>Penissetum sativum</i> planted on trenches edge. Extending the activity on the areas not covered in the first phase. Water harvesting from roofs of houses using tanks. This was mentioned as one of the main causes of erosion in the farmer's fields. Water diverted by roads also creates gullies in famers' fields. Construction of water retention dames for erosion control and use of water for crops irrigation (hill irrigation). Cash crops improvement (value chain) in the FLR project areas including coffee, fruits, vegetables (onions, tomatoes, beterave etc.). Macadamia needs to be introduced in the area. The support for the availability of seeds for other crops such as cassava, maize, rice and potato is also needed. Support access markets for yields and agro-industries for processing shall also be included. Manure production for use in soil amendment. Training of farmers on compost making shall be supported.
	Reduced wood consumption by at least 25%, and avoided emissions of 4.7 M tCO2e	 Identify/procure local companies to produce improved cook stoves Set up MoUs with Districts on an incentive structure Support for cooking gas and cook stoves to reduce the use of charcoal and trees.

PHASES	FLR PROJECT OUTCOMES /DELIVERABLES	ACTIVITIES TO BE CONDUCTED
	in 5 years; 13 M tCO2e in indirect GHG emissions in 10 years.	
	Enhanced capacity (individuals and institu- tions) to implement FLR plans, and establish 1,000 ha of plantations via community out- reach program (co-financed by private sec- tor)	 Capacity building of farmers on maintenance of established activities (trenches, planted trees, cash crop value chain). Trainings shall be organized for SEDO and farmers at all sites. Facilitating local farmers to establish tree nurseries on cell level for easy getting agroforestry and fruit seedlings Establishment of farmers' committees at site level for follow up of established activities Support of Women cooperatives (livelihoods) Establishing youth clubs or Environment/biodiversity clubs Transport facilitation of forest sector officer to follow up field activities.

7 ECONOMIC APPRAISAL OF PROJECT COSTS

7.1 Introduction

This chapter presents detailed costs for the field activities for both Phase I and Phase II (2022-2026): these are based on field visits, discussions with stakeholders and focus on the priority objectives for the project.

A separate Excel spreadsheet has been included as part of this study and made available to the Client. This will allow the Client and PMU to modify and update the project budget accordingly: this is important since in the limited time available for this study, it was not possible to determine accurate costs of all the project's planned activities and there are also other likely costs that the consultant was not aware of.

The budgeting was kept around the core funding of the project (US\$ 7.2 M over 6 years), corresponding to GEF's and UNDP's contribution. Plans can be expanded by PMU accordingly if additional funds are made available from GoR.

7.2 Phase I Budget

The table below lists the planned activities in Phase I - for afforestation, agroforestry, soil conservation and agriculture.

District	Activity	Targets	Unit cost (FRW)	Budget
Kamonyi	Afforestation and Agroforestry:			
	Tree nurseries (1 tree nursery / sector)	2 nurseries	4,830,120	9,660,240
	Afforestation (planting, beating up, weeding, coppice reduction, pruning) (Eucalyptus microcorys, Pinus spp.)	67 ha	187,500	12,562,500
	Afforestation roadsides (planting, beating up, weeding, pruning) (<i>Maesopsis eminii,</i> Jacaranda)	45 km	90,000	4,050,000
	Agroforestry (Markhamia lutea, Cedrella ceratta, Grevilea robusta)	336 ha	40,000	13,440,000
	Fruits:			
	Grafted Avocadoes	2500 seed- lings	2,000	5,000,000
	Grafted Mangoes	1750 seed- lings	2,000	3,500,000
	Grafted Oranges/ mandarine	4400 seed- lings	2,000	8,800,000
	Macadamia	3000 seed- lings	5,000	15,000,000

Table 9: Activities and costs in Phase I

District	Activity	Targets	Unit cost (FRW)	Budget
	Soil conservation measures:			
	Trenches creation	12900 Per- son Day	1,750	22,575,000
	Pennisetum sativum plantation on trenches edge	322500 cuttings	30	9,675,000
	Manure production, agriculture and live- stock			
	Compost making	129 com- posts	200,000	25,800,000
	Cassava crop improvement	100 ha	150,000	15,000,000
	Goats	258 goats	30,000	7,740,000
	Pigs	258 pigs	50,000	12,900,000
	Total Kamonyi District			165,702,740
Ruhango	Afforestation and Agroforestry:			
	Tree nurseries (1 tree nursery / sector)	4 nurseries	4,830,120	19,320,480
	Afforestation (planting, beating up, weeding, coppice reduction, pruning) (Eucalyptus micro, Pinus spp.)	14 ha	187,500	2,625,000
	Afforestation roadsides (planting, beating up, weeding, pruning) (<i>Maesopsis eminii,</i> Jacaranda)	68 km	90,000	6,120,000
	Agroforestry (Markhamia lutea, Cedrella ceratta, Grevilea robusta)	1250 ha	40,000	50,000,000
	Fruits:			
	Grafted Avocadoes	2500 seed- lings	2,000	5,000,000
	Grafted Mangoes	1750 seed- lings	2,000	3,500,000
	Grafted Oranges/ mandarine	4400 seed- lings	2,000	8,800,000
	Macadamia	3000 seed- lings	5,000	15,000,000
	Soil conservation measures:			
	Trenches creation	12900 Per- son Day	1,750	22,575,000
	Pennisetum sativum plantation on trenches edge	322500 cuttings	30	9,675,000
	Bamboo for river-banks protection (19 km), seeds production and plantation	19000 seedlings	2,100	39,900,000
	Manure production, agriculture and live- stock			

District	Activity	Targets	Unit cost (FRW)	Budget
	Compost making	129	200,000	25,800,000
	Cassava crop improvement	100 ha	150,000	15,000,000
	Goats	258	30,000	7,740,000
	Pigs	258	50,000	12,900,000
	Total Ruhango District			243,955,480
Gisagara	Afforestation and Agroforestry:			
	Tree nurseries (1 tree nursery / sector)	6 nurseries	4,830,120	28,980,720
	Afforestation (planting, beating up, weeding, coppice reduction, pruning) (Eucalyptus micro, Pinus spp.)	129 ha	187,500	24,187,500
	Agroforestry (Markhamia lutea, Cedrella ceratta, Grevilea robusta)	1450 ha	40,000	58,000,000
	Fruits:			
	Grafted Avocadoes	2500 seed- lings	2,000	5,000,000
	Grafted Mangoes	1750 seed- lings	2,000	3,500,000
	Grafted Oranges/ mandarine	4400 seed- lings	2,000	8,800,000
	Macadamia	3000 seed- lings	5,000	15,000,000
	Soil conservation measures:			
	Trenches creation	12,900 Person Day	1,750	22,575,000
	Pennisetum sativum plantation on trenches edge	322,500 cuttings	30	9,675,000
	Bamboo for river-banks protection (30 km), seeds production and plantation	30,000 seedlings	2,100	63,000,000
	Manure production, agriculture and live- stock			
	Compost making	129	200,000	25,800,000
	Cassava crop improvement	100	150,000	15,000,000
	Goats	258	30,000	7,740,000
	Pigs	258	50,000	12,900,000
	Total Gisagara District			300,158,220
Nyanza	Afforestation and Agroforestry:			

District	Activity	Targets	Unit cost (FRW)	Budget
	Tree nurseries (1 tree nursery / sector)	5 nurseries	4,830,120	24,150,600
	Afforestation (planting, beating up, weeding, coppice reduction, pruning) (<i>Ecalyptus micro, Pinus spp</i> .)	77 ha	187,500	14,437,500
	Afforestation roadsides (planting, beating up, weeding, pruning) (<i>Maesopsis eminii,</i> Jacaranda)	64 km	90,000	5,760,000
	Agroforestry (Markhamia lutea, Cedrella ceratta, Grevilea robusta)	1256 ha	40,000	50,240,000
	Fruits:			
	Grafted Avocadoes	2500 seed- lings	2,000	5,000,000
	Grafted Mangoes	1750 seed- lings	2,000	3,500,000
	Grafted Oranges/ mandarine	4400 seed- lings	2,000	8,800,000
	Macadamia	3000 seed- lings	5,000	15,000,000
	Soil conservation measures:			
	Trenches creation	12,900 Person Day	1,750	22,575,000
	Penniseum sativum plantation on trenches edge	322500 cuttings	30	9,675,000
	Manure production, agriculture and live- stock			
	Compost making	129	200,000	25,800,000
	Cassava crop improvement	100 ha	150,000	15,000,000
	Goats	258	30,000	7,740,000
	Pigs	258	50,000	12,900,000
	Total Nyanza District			220,578,100
Grand Tot	al phase 1			930,394,540
Grand Tot	al + Tax 15% (A)			1,069,953,721

District	Type of intervention	Unit	Targets (quantity)	Unit Cost (FRW)	Budget (FRW)
KAMONYI	Subsidized cookstoves	Number	180	10,000	1,800,000
	Trainings on cooking stoves use				
	Remuneration/Perdiem trainers	Day	10	100,000	1,000,000
	Training venue / room	Day	10	100,000	1,000,000
	Accommodation and food for 30 trainees/sector	Day	10	480,000	9,600,000
	Transport for 30 trainees/sector (2 sessions)	Day	4	300,000	2,400,000
	Training materials				8,000,000
	Trainings on soil conservation, tree nurseries, forests and Agro- forestry management				
	Remuneration/Perdiem trainers	Day	10	100,000	1,000,000
	Training venue / room	Day	10	100,000	1,000,000
	Accommodation and food for 30 trainees/sector	Day	10	480,000	9,600,000
	Transport for 30 trainees/sector (2 sessions)	Day	4	300,000	2,400,000
	Training materials				8,000,000
	Trainings for women and youth cooperatives				
	Remuneration/Perdiem trainers	Day	10	100,000	1,000,000
	Training venue / room	Day	10	100,000	1,000,000
	Accommodation and food for 20 trainees/sector	Day	10	320,000	6,400,000
	Transport for 20 trainees/sector (2 sessions)	Day	4	200,000	1,600,000
	Training materials				8,000,000
	Staff remuneration and transport facilitation				
	District Coordinators of FRL Project	Nonth	12	500,000	6,000,000
	Livelihoods and Gender Sup- port Coordinator	Month	12	400,000	4,800,000
	Transport facilitation for District and Sector technical staff in- volved in FRL Project				

Table 10 Phase I Capacity building, staffing and other costs

District	Type of intervention	Unit	Targets (quantity)	Unit Cost (FRW)	Budget (FRW)
	Transport facilitation for District Agronomist	Month	12	80,000	960,000
	Transport facilitation for District Forest Officer	Month	12	80,000	960,000
	Transport facilitation for Sector Agronomist (2)	Month	12	50,000	1,200,000
	Transport facilitation for Sector Forest Officer (2)	Month	12	50,000	1,200,000
Total Kamo	nyi District				78,920,000
RUHANGO	Subsidized cookstoves	Number	360	10,000	3,600,000
	Trainings on cooking stoves use				
	Remuneration/Perdiem trainers	Day	10	100,000	1,000,000
	Training venue / room	Day	10	100,000	1,000,000
	Accommodation and food for 30 trainees/sector	Day	10	480,000	19,200,000
	Transport for 30 trainees/sector	Day	4	300,000	4,800,000
	Training materials				8,000,000
	Trainings on soil conservation, tree nurseries, forests and Agro- forestry management				
	Remuneration/Perdiem trainers	Day	10	100,000	1,000,000
	Training venue / room	Day	10	100,000	1,000,000
	Accommodation and food for 30 trainees/sector	Day	10	480,000	19,200,000
	Transport for 30 trainees/sector	Day	4	300,000	4,800,000
	Training materials				8,000,000
	Trainings for women and youth cooperatives				
	Remuneration/Perdiem trainers	Day	10	100,000	1,000,000
	Training venue / room	Day	10	100,000	1,000,000
	Accommodation and food for 20 trainees/sector	Day	10	320,000	12,800,000
	Transport for 20 trainees/sector (3 sessions)	Day	4	200,000	3,200,000

District	Type of intervention	Unit	Targets (quantity)	Unit Cost (FRW)	Budget (FRW)
	Training materials				8 000 000
	Staff remuneration and				8,000,000
	transport facilitation				
	District Coordinators of FRL Proiect	Month	12	500.000	6.000.000
	Livelihoods and Gender Sup- port Coordinator	Month	12	400,000	4,800,000
	Transport facilitation for District and Sector technical staff in- volved in FRL Project				
	Transport facilitation for District Agronomist	Month	12	80,000	960,000
	Transport facilitation for District Forest Officer	Month	12	80,000	960,000
	Transport facilitation for Sector Agronomist (4)	Month	12	50,000	2,400,000
	Transport facilitation for Sector Forest Officer (4)	Month	12	50,000	2,400,000
Total Ruhar	ngo District				115,120,000
GISAGARA	Subsidized cookstoves	Number	540	10,000	5,400,000
	Trainings on cooking stoves use				
	Remuneration/Perdiem trainers	Day	10	100,000	1,000,000
	Training venue / room	Day	10	100,000	1,000,000
	Accommodation and food for 30 trainees/sector	Day	10	480,000	28,800,000
	Transport for 30 trainees/sector	Day	4	300,000	7,200,000
	Training materials				8,000,000
	trainings on soil conservation, tree nurseries, forests and Agro-				
	forestry management				
	Remuneration/Per diem trainers	Day	10	100,000	1,000,000
	Training venue / room	Day	10	100,000	1,000,000
	Accommodation and food for 30 trainees/sector	Day	10	480,000	28,800,000
	Transport for 30 trainees/sector	Day	4	300,000	7,200,000
	Training materials				8,000,000

District	Type of intervention	Unit	Targets (quantity)	Unit Cost (FRW)	Budget (FRW)
	Trainings for women and youth cooperatives				
	Remuneration/Perdiem trainers	Day	10	100,000	1,000,000
	Training venue / room	Day	10	100,000	1,000,000
	Accommodation and food for 20 trainees/sector	Day	10	320,000	19,200,000
	Transport for 20 trainees/sector	Day	4	200,000	4,800,000
	Training materials				8,000,000
	Staff remuneration and transport facilitation				
	District Coordinators of FRL Project	Month	12	500,000	6,000,000
	Livelihoods and Gender Sup- port Coordinator	Month	12	400,000	4,800,000
	Transport facilitation for District and Sector technical staff in- volved in FRL Project				
	Transport facilitation for District Agronomist	Mounth	12	80,000	960,000
	Transport facilitation for District Forest Officer	Mounth	12	80,000	960,000
	Transport facilitation for Sector Agronomist (6)	Mounth	12	50,000	3,600,000
	Transport facilitation for Sector Forest Officer (6)	Mounth	12	50,000	3,600,000
Total Gisaga	ara District				151,320,000
NYANZA	Subsidized cookstoves	Number	450	10,000	4,500,000
	Trainings on cooking stoves use				
	Remuneration/Perdiem trainers	Day	10	100,000	1,000,000
	Training venue / room	Day	10	100,000	1,000,000
	Accommodation and food for 30 trainees/sector	Day	10	480,000	24,000,000
	Transport for 30 trainees/sector	Day	4	300,000	6,000,000
	Training materials				8,000,000
	Trainings on soil conservation, tree nurseries, forests and Agro- forestry management				

District	Type of intervention	Unit	Targets (quantity)	Unit Cost (FRW)	Budget (FRW)
	Remuneration/Perdiem trainers	Day	10	100 000	1 000 000
	Training venue / room	Day	10	100,000	1,000,000
	Accommodation and food for 30 trainees/sector	Day	10	480,000	24,000,000
	Transport for 30 trainees/sector	Day	4	300,000	6,000,000
	Training materials				8,000,000
	Trainings for women and youth cooperatives				
	Remuneration/Perdiem trainers	Day	10	100,000	1,000,000
	Training venue / room	Day	10	100,000	1,000,000
	Accommodation and food for 20 trainees/sector	Day	10	320,000	16,000,000
	Transport for 20 trainees/sector	Day	4	200,000	4,000,000
	Training materials				8,000,000
	Staff remuneration and transport facilitation				
	District Coordinators of FRL Project	Month	12	500,000	6,000,000
	Livelihoods and Gender Sup- port Coordinator	Month	12	400,000	4,800,000
	Transport facilitation for District and Sector technical staff in- volved in FRL Project				
	Transport facilitation for District Agronomist	Month	12	80,000	960,000
	Transport facilitation for District Forest Officer	Month	12	80,000	960,000
	Transport facilitation for Sector Agronomist (5)	Month	12	50,000	3,000,000
	Transport facilitation for Sector Forest Officer (5)	Month	12	50,000	3,000,000
Total Nyanz	za District				133,220,000
TOTAL PHS	AE I				478,580,000
TOTAL PHS	AES I + Tax 15% (B)				550,367,000

7.3 Phase II Budget

Table 10 lists the planned activities in Phase II - for afforestation, agroforestry, soil conservation and agriculture.

District	Activity	Targets Phase I	Targets Phase II	Unit cost (FRW)	Budget phase 2
Kamonyi	Afforestation and Agroforestry:				
	Tree nurseries (1 tree nursery/ sec- tor)	2 nurse- ries	2 nurse- ries	3,341,280	6,682,560
			2 new nurseries	4,830,120	9,660,240
	Afforestation (planting, beating up, weeding, coppice reduction, prun- ing) (<i>Eucalyptus micro, Pinus spp</i> .)	67 ha	536 ha	187,500	100,500,000
	Afforestation roadsides (planting, beating up, weeding, pruning) (Maesopsis eminii, Jacaranda)	45 km	180 km	90,000	16,200,000
	Agroforestry (Markhamia lutea, Cedrella ceratta, Grevilea robusta)	336 ha	2688 ha	40,000	107,520,000
	Fruits:				
	Grafted Avocadoes (40 ha)	2500 seed- lings	10000 seedlings	2,000	20,000,000
	Grafted Mangoes (40 ha)	1750 seed- lings	7000 seedlings	2,000	14,000,000
	Grafted Oranges/ mandarine (40 ha)	4400 seed- lings	17600 seedlings	2,000	35,200,000
	Macadamia (40 ha)	3000 seed- lings	12000 seedlings	5,000	60,000,000
	Soil conservation measures:				
	Trenches creation (516 ha)	12,900 Person Day	51,600 Person Day	1,750	90,300,000
	Pennisetum sativum plantation on trenches edge (516 ha)	322,500 cuttings	1,290,000 cuttings	30	38,700,000
	Bamboo for river banks protection (38 km), seeds production and plantation		38000 seedlings	2,100	79,800,000
	Manure production, agriculture and livestock				

Table 11: Planned activities and costs for Phase II

District	Activity	Targets Phase I	Targets Phase II	Unit cost (FRW)	Budget phase 2
	Compost making (1 compost /ha)	129 ha	516 ha	200,000	103,200,000
	Cassava crop improvement	100 ha	200 ha	150,000	30,000,000
	Goats	258	1032	30,000	30,960,000
	Pigs	258	1032	50,000	51,600,000
	Total Kamonyi District				794,322,800
Ruhango	Afforestation and Agroforestry:				
	Tree nurseries (1 tree nursery / sector)	4 nurse- ries	4 nurse- ries	3,341,280	13,365,120
	Afforestation (planting, beating up, weeding, coppice reduction, prun- ing) (Eucalyptus micro, Pinus spp.)	14 ha	56 ha	187,500	10,500,000
	Afforestation roadsides (planting, beating up, weeding, pruning) (Maesopsis eminii, Jacaranda)	68 km	272 km 90,000		24,480,000
	Agroforestry (Markhamia lutea, Cedrella ceratta, Grevilea robusta)	1250 ha	5000 ha	40,000	200,000,000
	Fruits:				
	Grafted Avocadoes (40 ha)	2500 seed- lings	10000 seedlings	2,000	20,000,000
	Grafted Mangoes (40 ha)	1750 seed- lings	7000 seedlings	2,000	14,000,000
	Grafted Oranges/ mandarine (40 ha)	4400 seed- lings	17600 seedlings	2,000	35,200,000
	Macadamia (40 ha)	3000 seed- lings	12000 seedlings	5,000	60,000,000
	Soil conservation measures:				
	Trenches creation (516 ha)	12,900 Person Day	51,600 Person Day	1,750	90,300,000
	<i>Pennisetum sativum</i> plantation on trenches edge (516 ha)	322,500 cuttings	1,290,000 cuttings	30	38,700,000
	Bamboo for river-banks protection (38 km), seeds production and plantation	19000 seed- lings	38000 seedlings	2,100	79,800,000
	Manure production, agriculture and livestock				
	Compost making (1 compost /ha)	129 ha	516 ha	200,000	103,200,000

District	Activity	Targets Phase I	Targets Phase II	Unit cost (FRW)	Budget phase 2
	Cassava crop improvement	200ha	400 ha	150,000	60,000,000
	Goats	258	1032	30,000	30,960,000
	Pigs	258	1032	50,000	51,600,000
	Total Ruhango District				832,105,120
Gisagara	Afforestation and Agroforestry:				
	Tree nurseries (1 tree nursery / sector)	6 nurse- ries	6 nurse- ries	3,341,280	20,047,680
	Afforestation (planting, beating up, weeding, coppice reduction, prun- ing) (Eucalyptus micro, Pinus spp.)	129 ha	516 ha	187,500	96,750,000
	Agroforestry (Markhamia lutea, Cedrella ceratta, Grevilea robusta)	1450 ha	5800 ha	40,000	232,000,000
	Fruits:				
	Grafted Avocadoes (40 ha)	2500 seed- lings	10000 seedlings	2,000	20,000,000
	Grafted Mangoes (40 ha)	1750 seed- lings	7000 seedlings	2,000	14,000,000
	Grafted Oranges/ mandarine (40 ha)	4400 seed- lings	17600 seedlings	2,000	35,200,000
	Macadamia (40 ha)	3000 seed- lings	12000 seedlings	5,000	60,000,000
	Soil conservation measures:				
	Trenches creation (516 ha)	12,900 Person Day	51,600 Person Day	1,750	90,300,000
	Penniseum sativum plantation on trenches edge (516 ha)	322,500 cuttings	1,290,000 cuttings	30	38,700,000
	Bamboo for river-banks protection (60 km), seeds production and plantation	30,000 seed- lings	60,000 seedlings	2,100	126,000,000
	Manure production, agriculture and livestock				
	Compost making (1 compost /ha)	129 ha	516 ha	200,000	103,200,000
	Cassava crop improvement	100 ha	200 ha	150,000	30,000,000
	Goats	258	1032	30,000	30,960,000
	Pigs	258	1032	50,000	51,600,000
	Total Gisagara District				948,757,680

District	Activity	Targets Phase I	Targets Phase II	Unit cost (FRW)	Budget phase 2
Nyanza	Afforestation and Agroforestry:				
	Tree nurseries (1 tree nursery / sector)	5 nurse- ries	5 nurse- ries	3,341,280	16,706,400
	Afforestation (planting, beating up, weeding, coppice reduction, prun- ing) (<i>Ecalyptus micro, Pinus spp</i> .)	77 ha	308 ha	187,500	57,750,000
	Afforestation roadsides (planting, beating up, weeding, pruning) (<i>Maesopsis eminii, Jacaranda</i>)	64 km	256 km	90,000	23,040,000
	Agroforestry (Markhamia lutea, Cedrella ceratta, Grevilea robusta)	1256 ha	5024 ha	40,000	200,960,000
	Fruits:	2500			
	Grafted Avocadoes (40 ha)	2500 seed- lings	10000 seedlings	2,000	20,000,000
	Grafted Mangoes (40 ha)	1750 seed- lings	7000 seedlings	2,000	14,000,000
	Grafted Oranges/ mandarine (40 ha)	4400 seed- lings	17600 seedlings	2,000	35,200,000
	Macadamia (40 ha)	3000 seed- lings	12000 seedlings	5,000	60,000,000
	Soil conservation measures:				
	Trenches creation (516 ha)	12,900 Person Day	51,600 Person Day	1,750	90,300,000
	Penniseum sativum plantation on trenches edge (516 ha)	322,500 cuttings	1,290,000 cuttings	30	38,700,000
	Manure production, agriculture and livestock				
	Compost making (1 compost /ha)	129 ha	516 ha	200,000	103,200,000
	Cassava crop improvement	100 ha	200 ha	150,000	30,000,000
	Goats	258	1032	30,000	30,960,000
	Pigs	258	1032	50,000	51,600,000
	Total Nyanza District				772,416,400
Grand Total phase 2					3,347,602,000
Grand Total + Tax 15%					3,849,742,300
Grand Total + Tax 15% + 10% (C)					4,234,716,530

District	Type of intervention	Unit	Targets (quan- tity)	Unit Cost (FRW)	Budget (FRW)
KAMONYI	Subsidized cookstoves	Num-	360	10.000	
	Trainings on cooking stoves use	ber		10,000	3,600,000
		Day			
	Remuneration/Perdiem trainers	-	20	100,000	2,000,000
	Training venue / room	Day	20	100,000	2,000,000
	Accommodation and food for 30 train- ees/sector	Day	20	480,000	38,400,000
	Transport for 30 trainees/sector (4 sessions)	Day	8	300,000	9,600,000
	Training materials				8,000,000
	Trainings on soil conservation, tree nurseries, forests and Agroforestry management				
	Remuneration/Perdiem trainers	Day	20	100,000	2,000,000
	Training venue / room	Day	20	100,000	2,000,000
	Accommodation and food for 30 train- ees/sector	Day	20	480,000	38,400,000
	Transport for 30 trainees/sector	Day	8	300,000	9,600,000
	Training materials				8,000,000
	Trainings for women and youth coop- eratives				
	Remuneration/Perdiem trainers	Day	20	100,000	2,000,000
	Training venue / room	Day	20	100,000	2,000,000
	Accommodation and food for 20 train- ees/sector	Day	20	320,000	25,600,000
	Transport for 20 trainees/sector	Day	8	200,000	6,400,000
	Training materials				8,000,000
	Staff remuneration and transport fa- cilitation				
	District Coordinators of FRL Pro- ject	Month	48	500,000	24,000,000
	Livelihoods and Gender Support Coordinator	Month	48	400,000	19,200,000

 Table 12 Phase II Capacity building, staffing and other costs

District	Type of intervention	Unit	Targets (quan- tity)	Unit Cost (FRW)	Budget (FRW)
	Transport facilitation for District and Sector technical staff involved in FRL Project				
	Transport facilitation for District Agronomist	Month	48	80,000	3,840,000
	Transport facilitation for District For- est Officer	Month	48	80,000	3,840,000
	Transport facilitation for Sector Agronomist (4)	Month	48	50,000	9,600,000
	Transport facilitation for Sector Forest Officer (4)	Month	48	50,000	9,600,000
Total Kamony	ri District				237,680,000
RUHANGO	Subsidized cookstoves	Num- ber	360	10,000	3,600,000
	Trainings on cooking stoves use				
	Remuneration/Perdiem trainers	Day	20	100,000	2,000,000
	Training venue / room	Day	20	100,000	2,000,000
	Accommodation and food for 30 train- ees/sector	Day	20	480,000	38,400,000
	Transport for 30 trainees/sector (4 sessions)	Day	8	300,000	9,600,000
	Training materials				8,000,000
	Trainings on soil conservation, tree nurseries, forests and Agroforestry management				
	Remuneration/Perdiem trainers	Day	20	100,000	2,000,000
	Training venue / room	Day	20	100,000	2,000,000
	Accommodation and food for 30 train- ees/sector	Day	20	480,000	38,400,000
	Transport for 30 trainees/sector (4 sessions)	Day	8	300,000	9,600,000
	Training materials				8,000,000
	Trainings for women and youth coop- eratives				
	Remuneration/Perdiem trainers	Day	20	100,000	2,000,000
	Training venue / room	Day	20	100,000	2,000,000
	Accommodation and food for 20 train- ees/sector	Day	20	320,000	25,600,000

District	Type of intervention	Unit	Targets (quan- tity)	Unit Cost (FRW)	Budget (FRW)
	Transport for 20 trainees/sector (4	Day	8	200.000	C 400 000
	sessions)			200,000	6,400,000
	Training materials				8,000,000
	staff remuneration and transport fa- cilitation				
	District Coordinators of FRL Pro- ject	Month	48	500,000	24,000,000
	Livelihoods and Gender Support Coordinator	Month	48	400,000	19,200,000
	Transport facilitation for District and Sector technical staff involved in FRL Project				
	Transport facilitation for District Agronomist	Month	48	80,000	3,840,000
	Transport facilitation for District For- est Officer	Month	48	80,000	3,840,000
	Transport facilitation for Sector Agronomist (4)	Month	48	50,000	9,600,000
	Transport facilitation for Sector Forest Officer (4)	Month	48	50,000	9,600,000
Total Ruhange	o District				237,680,000
GISAGARA	Subsidized cookstoves	Num- ber	540	10,000	5,400,000
	Trainings on cooking stoves use				
	Remuneration/Perdiem trainers	Day	20	100,000	2,000,000
	Training venue / room	Day	20	100,000	2,000,000
	Accommodation and food for 30 train- ees/sector	Day	20	480,000	57,600,000
	Transport for 30 trainees/sector	Day	8	300,000	14,400,000
	Training materials				8,000,000
	Trainings on soil conservation, tree nurseries, forests and Agroforestry management				
	Remuneration/Perdiem trainers	Day	20	100,000	2,000,000
	Training venue / room	Day	20	100,000	2,000,000
	Accommodation and food for 30 train- ees/sector	Day	20	480,000	57,600,000
	Transport for 30 trainees/sector	Day	8	300,000	14,400,000

District	Type of intervention	Unit	Targets (quan- tity)	Unit Cost (FRW)	Budget (FRW)
	Training materials				8 000 000
	Trainings for women and youth coop- eratives				6,000,000
	Remuneration/Perdiem trainers	Day	20	100,000	2,000,000
	Training venue / room	Day	20	100,000	2,000,000
	Accommodation and food for 20 train- ees/sector	Day	20	320,000	38,400,000
	Transport for 20 trainees/sector	Day	8	200,000	9,600,000
	Training materials				8,000,000
	Staff remuneration and transport fa- cilitation				
	District Coordinators of FRL Pro- ject	Month	48	500,000	24,000,000
	Livelihoods and Gender Support Coordinator	Month	48	400,000	19,200,000
	Transport facilitation for District and Sector technical staff involved in FRL Project				
	Transport facilitation for District Agronomist	Month	48	80,000	3,840,000
	Transport facilitation for District For- est Officer	Month	48	80,000	3,840,000
	Transport facilitation for Sector Agronomist (6)	Month	48	50,000	14,400,000
	Transport facilitation for Sector Forest Officer (6)	Month	48	50,000	14,400,000
Total Gisagara	a District				313,080,000
NYANZA	Subsidized cookstoves	Num- ber	540	10,000	5,400,000
	Trainings on cooking stoves use				
	Remuneration/Perdiem trainers	Day	20	100,000	2,000,000
	Training venue / room	Day	20	100,000	2,000,000
	Accommodation and food for 30 train- ees/sector	Day	20	480,000	57,600,000
	Transport for 30 trainees/sector	Day	8	300,000	14,400,000
	Training materials				8,000,000
District	Type of intervention	Unit	Targets (quan- tity)	Unit Cost (FRW)	Budget (FRW)
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	Trainings on soil conservation, tree nurseries, forests and Agroforestry management				
	Remuneration/Perdiem trainers	Day	20	100,000	2,000,000
	Training venue / room	Day	20	100,000	2,000,000
	Accommodation and food for 30 train- ees/sector	Day	20	480,000	57,600,000
	Transport for 30 trainees/sector	Day	8	300,000	14,400,000
	Training materials Trainings for women and youth coop-				8,000,000
	eratives Remuneration/Perdiem trainers	Day	20	100,000	2,000,000
	Training venue / room	Day	20	100,000	2,000,000
	Accommodation and food for 20 train- ees/sector	Day	20	320,000	38,400,000
	Transport for 20 trainees/sector	Day	8	200,000	9,600,000
	Training materials				8,000,000
	cilitation				
	District Coordinators of FRL Pro- ject	Month	48	500,000	24,000,000
	Livelihoods and Gender Support Coordinator	Month	48	400,000	19,200,000
	Transport facilitation for District and Sector technical staff involved in FRL Project				
	Transport facilitation for District Agronomist	Month	48	80,000	3,840,000
	Transport facilitation for District For- est Officer	Month	48	80,000	3,840,000
	Transport facilitation for Sector Agronomist (6)	Month	48	50,000	14,400,000
	Transport facilitation for Sector Forest Officer (6)	Month	48	50,000	14,400,000
Total Nyanza	District				313,080,000
TOTAL PHSAE	11				1,101,520,000

District	Type of intervention	Unit	Targets (quan- tity)	Unit Cost (FRW)	Budget (FRW)
TOTAL PHASE	II + Tax15%				1,266,748,000
TOTAL PHASE	II + Tax15% + Contingency10% (D)				1,393,422,800
			•	•	

TOTAL PROJECT BUDGET (A + B + C + D)		
		7,248,460,051

8 SOCIAL AND ENVIRONMENTAL SAFEGUARDS MAN-AGEMENT PLAN (ESMP)

8.1 Overview: ESMP purpose and scope

In accordance with the Social and Environmental Standards (SES) of UNDP and the Global Environment Facility (GEF), and in keeping with UNDP's commitment to quality assurance and risk mitigation, social and environmental sustainability considerations must be mainstreamed into programme planning and implementation. The aim of this sub-report is to aid the Project at the next project implementation stage to reduce and minimize potential risks and adverse social and environmental impacts of the Project within and on bordering populations. Key elements of the SES are listed in Table 11.

Part A: Programming Principles	Part B: Project-Level Standards	Part C: E&S Management System Requirements
Leave No One Behind	Standard 1: Biodiversity Conservation and Sustainable NRM	Quality Assurance and Risk Management
Human Rights	Standard 2: Climate Change and Disaster Risks (Note: previously 'climate change mitiga- tion and adaptation)	Screening and Categoriza- tion
Gender Equality & Wo- men's Empowerment	Standard 3: Community Health, Safety and Security	Assessment and Manage- ment
Sustainability and Resilience	Standard 4: Cultural Heritage	Stakeholder Engagement & Response Mechanism (SRM)
Accountability	Standard 5: Displacement and Resettle- ment	Access to Information
	Standard 6: Indigenous Peoples	Monitoring, Reporting and
	Standard 7: Labour and Working Condi- tions	Compliance
	(Note: A newly introduced standard not considered in previous Project stages).	
	Standard 8: Pollution Prevention and Re- source Efficiency	

Table 13: Social and Environmental Standards (SES) triggered through the Mayaga Project

The SES – originally developed in 2014 – was recently updated in 2019. Standard 7 on 'Labour and Working Conditions' is newly introduced, and this ESMP takes this update into account. The ESMP also builds substantially on the Environmental and Social Safeguards report published in the Baseline Assessment phase of the Project (undertaken in 2018), which is structured along

the 2014 SES guidance⁷. In addition, this plan builds on the findings of the Draft *Baseline Study* and Development of Indicators and Targets for the Forest Landscape Restoration in Mayaga Region Report developed by NEMUS in November 2020.

The social and environmental screening procedure (UNDP's SESP) that was completed as part of this project in the design phase included consultations with implementing partners, local communities, private sector and civil society entities. These discussions were held again in the current Baseline and Feasibility Study phases of the project and updated for the context of the final work plans and budgets currently in the final stages of development. As a result of these consultations, it is confirmed that **five project level standards will be triggered** over the course of project implementation. Of the various potential risks identified, none are classified as high, two risks are rated "moderate" and five are rated as "low". This results in an overall social and environmental risk categorization of "low" for the Project. For those risks identified, mitigation options are presented.

This ESMP is developed on the basis of the project risk categorization and outlines the processes that will be undertaken during the project launch and implementation phases. The plan also details the roles and responsibilities for its implementation.

8.2 Relevant policy-legal framework for the ESMP

A brief review of Rwandan policies, strategies and international commitments relevant for the E&S Plan within the project framework was undertaken as part of the study. A full review may be found the Baseline Study. The most relevant aspects of these policies are summarized below.

Rwandan Constitution 2003 (revised in 2015)

The Constitution of the Republic of Rwanda of 2003 (revised in 2015) provides the following binding legal framework:

- Article 22 on "Right to a clean environment": Everyone has the right to live in a clean and healthy environment.
- Article 53 on "Protection *of the environment*": Everyone has a duty to protect, safeguard and promote the environment. It also indicates that the State ensures the protection of the environment. Lastly, it stipulates that a law that determines modalities for protecting, conserving and promoting the environment.

The instrument lower down in the legal hierarchy is the Environment Organic Law which gives strategic guidance to the main sectors in Rwanda. Specific laws and Ministerial Orders enforce the policies and allow for the formulation of national strategic plans and programs to realize long-term visions and goals of the government.

National Strategy for Transformation (NST1) and Vision 2050

In the medium term, the National Strategy for Transformation, NST1/Seven Years Government Program (2017-2024) sets the priority for a green economy approach in its Economic Transformation pillar that promotes "Sustainable *Management of Natural Resources and Environment*

⁷ Please refer also to Annex 5 of the Baseline Assessment undertaken by Baastel Consultancy.

to Transition Rwanda towards a Green Economy". Moreover, environment and climate change were highlighted in NST1 as cross-cutting areas of policy concern, which can be positively impacted by a range of development activities. Priority is given to agriculture, urbanization, industries and energy. The Mayaga project activities fall under this strategy under the framework of sustainable management of natural resources.

Vision 2050 serves as a critical blueprint for stakeholders in Rwanda to set in motion actions to build climate resilience, agricultural wealth and sustainable development, urbanization and natural resources management. Vision 2050 is implemented through the NST1.

A key goal represented in these documents is the reduction in the number of households depending on firewood as the source of energy for cooking from around 80% to 42% by 2024. The Mayaga Project will contribute directly towards achieving this target.

Nationally Determined Contributions (NDCs)

Rwanda's NDC is builds on the Green Growth and Climate Resilience Strategy (GGCRS) and focuses on adaptation and mitigation. The key sectors identified and prioritized under NDCs include agriculture, forestry, tourism, water, land use, disaster management, climate data and projections, energy, transport, industry and waste. The NDC for Rwanda reflects the national ambition by 2030 to join global efforts towards curbing global temperature rise below 2 °C by 2100, with an aspirational target of 1.5°C.

The major Mayaga Project components (especially afforestation, agroforestry and disaster management) are represented under this policy, are in line with the Sustainable Development Goals (SDGs), and are therefore relevant for this plan.

8.3 ESMP relevant standards triggered

SES Coverage If triggered	l or not
LSS1: BiodiversityThis standard aims to conserve biodiversity, maintain and enhance the benefits of ecosystem services, promote sus- tainable Matu- ral ResourceThis is trigg The project affect biodi rich zones, ing to restor protect nation ovations and practices of indigenous peoples and local com- munities relevant for the conservation and sustainable use of biodiversity and their customary use of biological re- sources. ESS1 also addresses sustainable management of primary production and harvesting of living natural re- sources.This is trigg The project affect biodi rich zones, ing to restor protect nation forests. The ronmental ment procesIn the context of this project, mitigation or compensation measures may be needed to reinforce biodiversity-rich zones, such as protected areas or areas allocated for conser- vation of native species, where in line with the overarching policy and regulatory framework. The development andThis is trigg affect biodi rigg	gered. t does iversity by try- ore and tural e envi- assess- ess of ts and zones tis issue nt, con- e sensi- ch of oject lo-

Table 14: Social and Environmental Standards triggered by the project

SES	Coverage	If triggered or not
	management plan will also guide sub-projects authorized in the protected area and the peripheral zones.	
ESS2: Climate Change and Disas- ter Risks.	This standard ensures that UNDP projects are sensitive to climate change and disaster risks in order to strengthen re- silience, and to achieve sustainable development out- comes. It also aims to reduce project-related greenhouse gas (GHG) emissions and intensity.	This will be trig- gered.
	This standard is a key concern of the proposed project. The project will mainly support and undertake actions foot print- ing this standard. The planting of new forests and manage- ment of existing ones will help mitigate climate change by sequestering carbon and storing it as "biomass". It also con- tributes to climate change adaptation by restoring ecosys- tem service function – more trees will improve water filtra- tion, reduce runoff and erosion, and mitigate the risk of flooding and landslides especially after heavy rain events.	
ESS 3: Community Health and Safety	This standard aims to anticipate and avoid adverse impacts on the health and safety of affected communities during the project life cycle, from both routine and non-routine circum- stances. It also aims to ensure quality and safety in the design and construction of project-related infrastructure, prevent- ing and minimizing potential safety risks and accidents. ESS3 aims to avoid or minimize community exposure to disaster risks, diseases and hazardous materials associated with pro- ject activities. Finally, the standard is in place to ensure that the safeguard- ing of personnel and property minimizes risks to communities and is carried out in accordance with international human rights standards and principles; and to have in place effective measures to address emergency events, whether human- made or natural hazards. The project will positively impact the community in the tar- geted Mayaga region. During implementation, the commu- nity will benefit through job creation mainly during site prep- arations, nursery beds, planting and monitoring. Landscape restoration additionally contributes to almost all Sustainable Development Goals (SDGs).	Yes, this will be triggered. The pro- ject will spur crea- tion of business opportunities from increased agricul- tural yields due to proper land use management and carbon sequestra- tion, thus contrib- uting to incomes and indirectly, to health.
ESS4: Cultural Heritage	This standard aims to protect Cultural Heritage from damage, inappropriate alteration, disruption, removal or misuse; pre- serve and safeguard Cultural Heritage; promote the equitable sharing of benefits from the use of Cultural Heritage; and pro- mote meaningful consultation with stakeholders regarding preservation, protection, utilization and management of Cul- tural Heritage.	No, this will not be triggered. No indi- cations of particu- lar Cultural Re- sources concerns have been identi-

SES	Coverage	If triggered or not
	The project will not support activities that are expected to im- pact physical cultural resources. The substructure investments will be at a very small scale and most of the project area has only recently been settled.	fied during stake- holder consulta- tions.
ESS5: Displace- ment or Resettle- ment	This standard recognizes and respects the prohibition on forced evictions; aims to anticipate and avoid, or, when avoidance is not possible, minimize adverse social and eco- nomic impacts from land or resource acquisition or re- strictions on land or resource use. It aims to enhance and re- store the livelihoods of all displaced persons, and to improve the standards of living and overall socioeconomic status of displaced poor and other displaced groups and to support efforts to progressively realize the rights to adequate hous- ing and adequate standards of living for displaced popula- tions. Finally, it aims to ensure that resettlement activities are planned and implemented collaboratively with the meaningful and informed participation of those affected. The project aims for gazettement of certain areas for protec- tion, as well as the re-establishment of connectivity be- tween forest patches. This may impact communities that have encroached in natural forests. However, the costs im- plied in resettling this number of people will be too high to be covered in this project.	No, this will not be triggered. Dis- placement and re- settlement are un- likely to happen. Even though reset- tlement of house- holds in high-risk zones could be rec- ommended, the project is unlikely to carry out the recommendation itself, given the costs this implies.
ESS6: Indigenous peoples	This standard recognizes the need to consider the livelihood of project-affected parties, including Indigenous Peoples, whose access to, or use of, biodiversity or living natural re- sources may be affected by a project.	This is not trig- gered. There are no populations qualifying as Indigenous within the project target areas.
ESS 8: Labour and working condi- tions	This standard aims to promote, respect and realize funda- mental principles and rights at work ⁵ through: supporting freedom of association and the effective recognition of the right to collective bargaining; preventing the use of child la- bour and forced labour; and preventing discrimination and promoting equal opportunity of workers. It also aims to protect and promote the safety and health of workers, ensure applicable parties comply with employment and labour laws, applicable rules and regulations and inter- national commitments, and strives to leave no one behind by protecting and supporting workers in disadvantaged and vulnerable situations, including a special focus, as appropri- ate, on women workers, young workers, migrant workers and workers with disabilities.	This will be trig- gered. This project will employ people from within the lo- cal communities to undertake many of the project activi- ties, to increase ownership and provide income opportunities. Fair wages must be paid in accordance with updated norms and worker

SES	Coverage	If triggered or not
		organization must be enabled.
ESS 9: Pollution Prevention and Resource Effi- ciency	This standard aims to avoid or minimize adverse impacts on human health and the environment by avoiding or minimiz- ing pollution from project activities; promote more sustaina- ble use of resources, including energy, land and water; avoid or minimize programming-related emissions of short and long-lived climate pollutants and ozone-depleting sub- stances; avoid or minimize generation of hazardous and non-hazardous substances and wastes, and promote a hu- man rights-based approach to the management and disposal of hazardous substances and wastes, and finally, promote safe, effective, environmentally sound pest management.	This will be trig- gered. The project will have an impact on this standard, as it will support activities aiming at reducing green- house gas emis- sions and promot- ing resource effi- ciency.

8.4 Environmental and social impact and mitigation measures

The project is expected to make investments in improving the sustainability of land management, protecting biodiversity resources, and reforesting degraded land. Each of these activities will be carried out with the requisite technical expertise so as to avoid unintended consequences. Furthermore, they are expected to provide substantial environmental benefits and cause no significant negative environmental impacts. Only limited areas of natural habitat remain in the target landscape; the project will protect and restore these areas.

Socio-economic impacts	Environmental impacts	Mitigation Measures
Socio-Economic Benefits	Environmental Benefits	Mitigations for Physical
Employment opportunities	 Reduced impact of Biomass 	Environment & Socio Economic
(higher profitability of agri-	use; reduction of Carbon	Environment
cultural activities);	(GHG) Emissions;	Technical solutions
 Improved food security 	 Better soil erosion control; 	 Proper drainage management
 Transfer of skills (especially 	 Improvement drainage and 	(trenches);
in entrepreneurship);	flood management;	 Proper soil erosion controls in
Stimulation of and improved	 Rehabilitation of planta- 	place;
local economies and induced	tions, woodlots and gar-	 Fast-growing trees and fodder
development including new	dens, increasing revenues	should be planted;
business opportunities;	and ecosystem services;	Ensure increased species diver-
Alternative source of energy.	 Protection of 500 hectares 	sity while planting;
 Impacts on social cohesion 	of natural habitats of high	 Landscaping and planting
and integration;	biodiversity value and	trees.
 Increased resilience of small- 	maintenance of ecosystem	 Technical assistance on cli-
holder farmers vulnerable to	services.	mate- smart agriculture, in-
climate change;		cluding appropriate use of

Table 15: Summary of environmental and socio-economic impacts of the Project

•	Community Health, Safety and Security; Better access to alternative renewable energy source for people living in Mayaga area; Establishment of a financial support path or micro fund- ing's to continue to finance		 seeds, fertilizers and pesticides; No exploitation of high flood and erosion-prone soils; Regular review of climate information and agriculture research; Explore options for PES (payments for ecosystem services).
	activities		Put in place a Grievance Re-
Im	nacts on Socio-Economic	Environmental impacts	dress Mechanism that is well
En	vironment	 Potential influences on eco- 	understood and accessible by
•	Possible impacts on commu-	logical drainage functions;	all citizens;
•	nity water infrastructure. (Impact on downstream river flows and community water sources, Occupational Accidents); Social conflicts on the man- agement of water resources, related to the irrigation ca- nals; Planning, framing and regu- lations that are not compati- ble with local aspirations and contexts; Loss of income for some households from the re- duced trade in fuel wood and charcoal.	 Unintended consequences of erosion; Loss of biodiversity due to the extension of croplands; Contamination of soils and sub-soils due to fertilizers and pesticides and change in soil characteristics due to the introduction of resistant seeds; Increased vulnerability to tree diseases and pests due to reduce species diversity; Shortage of water resources downstream due to increas- ingly intensive use up- stream and inefficient wa- ter infrastructures. 	 Proper training and awareness raising on project activities and infrastructure use/maintenance; Popularization and application of Districts Forest Management plans (DFMP) and FIP; Collective monitoring of compliance with the DFMP; Training in and adherence to integrated and participatory management of water resources at all levels (regional, local/community), including a watershed management approach and a focus on efficient water harvesting, storage and distribution infrastructure; Diversification strategies to compensate rapidly and durably for the "losses" due to the discontinuation or reduction of the use of fuel wood; Nurseries establishment close
			to communities.

Project activities	Positive impacts	Rat- ing	Enhancement measures		
Project area: Adaptation through a sustainable agriculture program and ecosystem-based adapta- tion					
The project plans to im- prove land productivity (through terraces and ir- rigation canals), increase agroforestry, increase the access to improved seeds, especially for short-cycle crops, and organic fertilizers, and diversify crops As the project plans to	 Higher profitability of agricultural activities; Increased food secu- rity; Increased resilience to climate change; Improved social and economic situation. From a biological per- 	HIGH	 No exploitation of high flood and erosion-prone soils; Regular review of climate infor- mation; Integration of agroforestry and agri- culture research results like the inter- cropping systems, canopy structure, roots distribution of trees, the applica- tion of different agronomic measures in distinct ecological context. Training of beekeepers in ecological 		
increase the number of trees in farms, forests plantations, vacant spaces and along roads, apiculture will be much benefiting on this habitat that will be in place	spective: Improved polli- nation; - From a socioeconomic perspective: Income in- crease.		 apiculture; Training in honey transformation; Development of the local honey segment by training farmers on the use of modern hives, efficient mode of honey harvesting and quality honey production. 		
The project is intending to promote a better ac- cess to micro-funding and markets	 Improved management of property by house- holds; Gradual creation of an entrepreneurship cul- ture. 	HIGH	For some adequate areas (based on the context), the project should initi- ate; - supports to community micro-fund- ing such as a "Village Saving Loan" (VSL) e.g. Payment of ecosystem ser- vices or farmers groups' savings initia- tives; - Supports to remove potential bottle- necks (lack of initial funds, administra- tive bottlenecks, etc.).		
Project to scale up the access to drinking water	 Improved health and quality of life for the populations vulnerable to climate change by providing clean water; Reduction of time spent on water collec- tion for both women and children. 	HIGH	 Provision of enough clean water access points for project beneficiaries; Capacity-building for the management of water infrastructure by the beneficiaries through existing water supply actors partnership (e.g. WASAC and/or Water for People). 		

Table 16: Description of project activities and their associated benefits and measures

Project activities	Positive impacts	Rat-	Enhancement measures	
		ing		
Project area: Creation of enabling conditions for reducing and managing climate change risks				
Capacity building to be dispensed at all levels Sectorial and cell plan- ning	- Human resources with the capacities to catalyse efforts to reduce climate risks.	HIGH	The project should use techniques re- lated to climate-smart landscapes for trainings and be shared during local workshops; - Integration of strategies and actions identified in national policies on cli- mate change in regional and local planning; - Creation and provision of capital in-	
			vestments in a trust fund on climate	
Project area: Developmen	t of renewable energy sour	ces in ru	ral areas	
Project to promote alter-	- Reduction of deforesta-	HIGH	- The project shall enhance the private	
native source of energy (Agro-fuel and biofuel, biomass; solar power and/or LPG)	tion and forest degrada- tion, including in natural forests; - Reduction of GHG emissions; - Access to electricity; - Valorisation of waste; - Reduction of time; spent on biomass collec- tion for both women and children.		activities on biomass energy, poten- tially under bio-energy/bio-fuel initia- tives as an alternative energy source; Initiation of Investment funds for re- newable energy facilities in project ar- eas in collaboration with line Ministry of Infrastructure (MININFRA), other governmental agencies (E.g. REG Ltd) projects and other private investors operating in renewable energies.	
Project area: Reduced GH	G emissions from deforestat	tion of fo	prests	
The project prearrange- ments for Restoration, reforestation, protection of natural habitats and development of low- emission agricultural techniques	Effectiveness of REDD+	HIGH	 Comply with verified carbon standards for the GHG reduction efforts in targeted forests and trees in-farms; Investment to develop other REDD+ programs and projects throughout Mayaga, aligned with the governmental REDD+ strategy; Equitable sharing of carbon revenues. 	

Project activi-	Potential adverse impacts	Mitigation measures	Implementing enti-
ties			ties
Adaptation thr	ough a sustainable agriculture p	rogram and ecosystem-based ada	ptation
The project plans to im- prove land (through ter- races and irri- gation ca- nals), in- crease agro- forestry, in- crease the ac- cess to im- proved seeds, especially for short-cycle crops, and or- ganic fertiliz- ers, and di- versify crops RATING: LOW	 Increased pressure on natural resources due to the extension of croplands; Change of soil characteristics due to fertilizers and resistant seeds; Risk of increase of pest plant species from introduced invasive species; Shortage of water resources in streams in dry season due to increasingly intensive use or mismanagement; Loss of water (due to poor irrigation systems) with impact on fish-farming and harvest fishing; Social conflicts on the management of water resources, related to the irrigation canals; Dominance of exotic and specific tree species which might contribute to soil depletion, suppression of native species and decrease of biodiversity. 	 Popularization of develop- ment and management plans (like Districts Forest Manage- ment plans (DFMP) and FIP); Application of FIP guidance's Collective monitoring of com- pliance with the Rwanda Forest Investment Plan (FIP); Technical assistance by the Districts and the project to the communities on organic farm- ing (Biological practices); Reduced use of chemical farm inputs; Integrated management of water resources including the establishment of water supply points. Many dams and reser- voirs already exist across pro- ject areas; Training on efficient irrigation practice; Providing guidance to com- munities on shared water and other resources to prevent conflicts; Prioritization of sub-projects based on a territorial approach and according to an integrated land-use and management plan at the community or village level; Planting of variety of species both economical, native and agroforestry; Maintaining an agricultural in- puts distribution system for major crops, as well as fruits and vegetables wherever possi- ble; 	 Districts according to the relevant sec- tors (Ministry of Ag- riculture is currently already working on many of these is- sues); Local Communi- ties; Conservation enti- ties; Other local part- ner, NGO (Non-Gov- ernmental Organiza- tion); CBOs (Community Based Organiza- tions); Local private de- velopers.

Table 17: Project activities and associated impacts and measures

Project activi- ties	Potential adverse impacts	Mitigation measures	Implementing enti- ties
		 Identify and isolate specific site for conservation of native species. 	
As the pro- ject plans to increase the number of trees in farms, forests plantations, vacant spaces, and along roads, many oppor- tunities can arise for api- culture around pro- ject areas.	Abusive and immoderate practice of "modern" apicul- ture (e.g. frame hives) threatening healthy colonies	-Training farmers on how to mount beehives in trees around the forest and in trees in-farms and how to harvest the honey in a proper way, and assistance in carrying out a quality control of the honey to ensure maximum production The modern beehives facilitate honey harvesting without dis- turbing the queen; -Full integration of livelihoods and forest resources manage- ment in Mayaga FLR project ar- eas, where expected that they will easier adapt to the climate change.	 Ministry of Agricul- ture (MINAGRI); Rwanda Agricul- ture Board (RAB) Specialized NGO Private Sector Federation (PSF) Local communities Local Government
LOW The project is intending to promote a better access to micro- funding and markets RATING: LOW	- Indebtedness due to the lack of knowledge on micro- finance mechanisms	 Mass training in microfinance e.g. through the Livelihoods Project; Encourage interested people to join VSLA groups to learn savings approaches, link with microfinance institutions and undertake group trainings on financial management, business development and entrepreneurship; Link trained groups and members (esp. women and youth groups) to opportunities e.g. in running nurseries, distributing inputs etc. 	-Local microfinance institutions; -Conservation enti- ties (Local, Interna- tional); -NGOs.
Project to scale up the access to drinking wa- ter	 Water contamination; Pressure on water resources; -Competition among users. 	 Protection of water sources; Compliance with technical specifications on the location of sources: minimal distance 	- Ministry of Infra- structure (MININ- FRA),

Project activi- ties	Potential adverse impacts	Mitigation measures	Implementing enti- ties
RATING: LOW		and location from latrines and waste pits; - Increasing local clean water points at a shorter distance for domestic use; - Establishment of irrigation water dam for farm uses.	 Water and Sanitation Authority (WASAC); Specialized NGOs; Local Community; Local Government.
Creation of ena	bling conditions for reducing ar	nd managing climate change risks	
Capacity building to be dispensed at all levels Sectorial and territorial planning RATING: LOW	- Planning, framing and regu- lations that are not compati- ble with local aspirations and contexts	 Participatory development of reference and framework doc- uments; Training modules adapted to the local context . 	 Ministry of land and Forestry (MINILAF), Rwanda Water and Forestry Authority (RWFA); Districts; REMA; Conservation enti- ties (Local & Inter- national); Partners.
Development o	of renewable energy sources in r	ural areas	
Project to promote al- ternative source of en- ergy (Agro- fuel and bio- fuel, biomass; solar power, and/or LPG) RATING: LOW	 Competition with food crops and forest rich in biodi- versity Disturbance of water re- source distribution because of infrastructure: destruction of vegetation cover, loss of forest products (wood, non-timber forest products) Unsustainability of the use of solar power due to the lack of accompanying measures Loss of income for some households from the re- duced trade in fuel wood and charcoal Pollution due to biomass combustion and waste 	 Development and application of the integrated land-use planning and management scheme (land-use, resource ex- ploitation, revenue-activities, food security, application of soil, spatial variability of land- scape, climate, hydrology, veg- etation and fauna, and also in- cludes improvements in land management, such as drainage schemes, terraces and other agro-biological and me- chanical measures); Establishment and implemen- tation of an alternative afforda- ble energy distribution plan for communities/farmers; Social and economic revisions to compensate rapidly and du- rably for the "losses" due to 	 Districts; Private developers; Partners in line with the project.

Project activi- ties	Potential adverse impacts	Mitigation measures	Implementing enti- ties
GHG emissions	from deforestation of forests	the discontinuation or reduc- tion of the use of fuel wood; - Restrictions of all kinds of burning of biomass	
CHC emissions The project prearrange- ments for Restoration, reforestation, protection of natural habi- tats, develop- ment of low- emission agri- cultural tech- niques RATING: MODERATE	 Introduction of exotic species; Disturbance of forest ecosystems; Restriction of arable lands; Reduction of agricultural productions. 	 Application of the Forest Investment Plan (FIP) strategies; Technical assistance provided by Districts and sectors; Conducting studies on appropriate species and planting conditions (already underway though REMA). 	 MINILAF,RWFA; REMA; FONERWA; Districts (Forest and Environment units); Conservation In- ternational; Local NGOs, CBOs; International Part- ners; GEF/UNDP/ UNEP.

In the long run, several strategic risk management efforts must be made by the project to ensure the effects of the suggested mitigation measures are felt sustainably.

Monitoring and evaluation

- Monitoring and evaluation arrangements for the Project (currently being elaborated by the Baseline Study team) and sub-projects in order to observe and understand unexpected impacts and to take corrective measures on time must be maintained. A full list of indicators for M&E purposes is included in the NEMUS report, along with recommendations for frequency of monitoring and responsible institutions for each activity.
- Enforce a joint monitoring and inspections mechanism.
- Strengthen mine inspection and monitoring tools (regulations and standards).

Stakeholder engagement and ownership

- Farmers and other concerned local actors should be fully engaged in the project planning, implementation, monitoring and evaluation.
- Continue engaging strongly with local communities for management and protection of the sites. The project will work with the populations using protection and conflict mitigation measures in order to durably support the investments. It will ensure that the most vulnerable groups are included (cited in component 1).

- The Project will involve local authorities (at the level of the cells) to assess the status of potential migrations and put in place management strategies.
- Encourage ownership at basic local authorities and early decision-making on unlawful exploitation.
- Engage Local community and private partnership in identifying trees species.
- During project implementation, the employment opportunities should prioritize local capacity before outsourcing from other places.
- Strictly the families whose lands will be used for plantation should be priorities for any opportunity. Vulnerable groups if capable to work and PAPs be grouped in groups of savings for stability.

Aligning with regulatory framework

- The sustainable use zones and the usage right zones should be well defined, both inside the areas planned to be protected and farm woodlots and trees in-farm. This will secure the local populations' access to the forest products they need (based on well-defined specifications) and stimulate the local communities to take more protection initiatives.
- Protected areas fall under the prevailing legislation. This legal protection strengthens the application of regulations prohibiting deforestation, mining, and hunting inside the project intervention zones.
- Streamline mineral licensing and decentralize mining technical capacity at lower level.
- The Mining Forests interagency committees to be established by helping solve or reach a consensus in most conflicts in a partnership process.

There is a high risk that the uptake of alternative energy fuels within communities will remain low due to a lack of incentives. Solar and LPG, in particular, are expensive and require maintenance. For example, even after subsidies, LPG can cost up to 1000 Rwandan Francs per kilo. Even among those who can afford LPG, there is resistance for other reasons (lack of awareness and fear of causing fire hazards). Additionally, it is difficult to get a steady supply particularly in rural villages. Currently, in most villages, there is no local, affordable supplier of solar lamps. Biogas has already been promoted within communities but uptake is low due to high cost and effort for maintenance. All in all, it is not enough to promote and provide these materials to communities, but incentives and technical support (through updated regulations) are required to address issues of affordability, access/supply (i.e. increasing profitability for suppliers), awareness raising, and maintenance support.

Scientifically sound planning

- Ensure the identification of right tree species (e.g. fast-growing and good agro-ecological fit, high germination rate, climate variability tolerance and providing multiple functions) and a flexible approach. The planting of all fast-growing tree (including *Eucalyptus spp.*), for example, should not take place in wetlands or within 20 metres of streams.
- To relieve the shortage of arable land and promote the sustainable development of natural resources, the intercropping systems, canopy structure, roots distribution of trees, the application of different agronomic measures and the role they play in the competition process would continue to be the hot spot for project research.

- The integrated land and water resources management (ILWRM) is a sure instrumental in developing adaptive solutions to problems and can also enable stakeholders of upstream and downstream areas with various interests and needs to work together for the better utilization and management of land and water resources.
- For long term water management, rainwater harvesting and storage infrastructure, including a community dam, it is crucial to work in parallel to increase water use efficiency and prevent conflicts over use. At the same time, the project should improve the protection of water bodies, including dams and rivers.

Provision of materials, capacities and resources to communities

- The project shall provide alternative cooking energy to the affected communities prior to respect the project provisions (e.g. tree logging). Promote efficient cookstoves, sustainable production of firewood and alternative sources, including gas and renewable energies, as households in the target area mostly rely on firewood for cooking and lighting.
- Provide a diversity of improved seeds and tree nursery beds, which should be as near as
 possible to avoid long distances and time lose (Fruits and Agroforestry are the ones attracting farmers)
- Training workshops should be conducted to enhance the technical capacity of farmers on sustainable land management, including sustainable forest management and climate smart agriculture.
- Given high levels of poverty, local market development strategies should be promoted, including diversification, and considering the potential for payment for ecosystem services.

Despite the enforcement of such mitigation measures, certain risks are rated as moderately likely to be felt for reasons beyond the project's control. Such issues must be transparently discussed with community members during briefings (see next section) and monitored. These impacts are summarized in Table 16.

Impact	Rationale	Likelihood	Comment
Poverty and	The current level of poverty in	MODERATE	The project is located in rural areas
pressure on	the Project area, population		where inhabitants largely depend on
land	growth, and shortage of produc-		multi-cropping on small plots of land
	tive lands accessible to small-		for basic subsistence.
	holder farmers represent poten-		
	tial risks. These aspects are the		
	main drivers of deforestation		
	and will remain a threat to the		
	Project.		
Risk of Short-	Target households rely on tree	MODERATE	As the primary source of fuel wood
age of fire-	logging for fetching firewood		in the targeted area is tree logging,
wood	and this one is rated as a threat		use of crops residues and wood col-
	to the forest/trees growing and		lection in farms and all kinds of for-
	existence.		est, once the strict management will
			be in place with restrictions, the pro-
			ject affected persons are likely to
			suffer from the shortage of cooking
			energy source.
Risk of water	The use of water upstream for	LOW	If water availability is not increased
shortage in	irrigation purposes might be a		upstream (through water harvesting
upstream	source of water shortage in		and storage methods) and water ef-
and down-	downstream and upstream ar-		ficiency is not increased, increased
stream	eas in the dry season. However,		farming upstream could affect water
	other times, this is not a key is-		availability downstream.
	sue as there are many rivers in		
	the project areas; it is a matter		
	of improving water use and		
	management approaches.		

Table 18: Likelihood of negative impacts beyond project influence

8.5 Policy delivery process and accountability

8.5.1 Internal and external environmental and social monitoring and reporting plan

Monitoring activities should involve the direct participation of affected stakeholders, where possible, and in particular for project activities with potentially significant adverse risks and impacts. For such interventions, UNDP must ensure that periodic reports are provided to the affected communities (preferably through briefings to community leaders) that describe progress with implementation, project management mechanisms and challenges, and action plans. Briefings must also be conducted on issues that the consultation process or grievance mechanism has identified as a concern for the area. Any material changes or additions to the mitigation measures or actions plans must also be communicated to affected communities in a timely manner (i.e. ahead of their operationalization). Reports will be provided at a frequency proportionate to the concerns of affected communities but not less than annually.

8.5.2 Project level accountability and grievance redress mechanism

A project-specific Grievance Redress Mechanism (GRM) is not yet in place, but should be developed early during project implementation. The mechanism must be based on principles set forth in the project documents and ensure that affordable and accessible procedures are in place for third-party settlement of disputes arising during project implementation. It should however be noted that social clusters (ubudehe) – independent of the project – have their own established grievance redress mechanisms in place.

It is recommended that the GRM Committee comprises of the following members: District Representative (1), Implementing Agency Representative (1), Sector Representative (1 per affected Sector), Cell Representative (1 per affected Cell), Umudugudu Leader (1 per affected village), Customary Leader (1), Project Affected Person Representatives (including 1 Woman, 1 Elder and 1 Youth Representative; 3 in total). This committee is provided for in the current resettlement Law that came into force in 2015.

The Expropriation Law (Article 6) assumes that the only grievances likely to arise are those related to monetary compensation. This article has not provided a procedure for complaints about other aspects of expropriation. This may create some confusion on how to approach land authorities, which in turn may result in delay in petitions to the land commission within the legal timeframe. As far as possible, land expropriation grievances are encouraged to be resolved through Cell Land Adjudication Committees, where systematic land registration is available and where the committees are currently in operation. If the grievance is not resolved in this way, local courts (ABUNZI) should be used.

To ensure that the affected parties are fully aware, and to reduce a possible backlog of complaints, it should be noted in advance that most members of the rural communities in question will likely take time to decide to complain when aggrieved by any project activity or impact. As a result, they may miss the 30-day period required to file their complaints. As per international standards, grievances logged outside this timeframe may still be valid and legitimate. Customarily, the government expropriation authorities ensure that all affected people are fully informed, and will issue warnings about the consequences of failure to lodge their complaints in time. Within this customary procedure, affected people are informed of the procedures before their assets are taken (however, this is not a likely scenario assessed for this project).

According to UNDP Standards, project accountability may be secured through two key processes: the Stakeholder Response Mechanism (SRM) and Compliance Review⁸. This includes various elements such as public consultation (incl. with gender, youth) and information disclosure utilizing UNDP accountability mechanisms.

⁸ This process may be used to respond to claims that UNDP is not in compliance with UNDP's social and environmental policies.

Stakeholder Response Mechanism: Corporate grievance, or dispute resolution mechanisms, aligned with existing governance structures, will provide a supplemental, formal avenue for stakeholders to engage with UNDP. The SRM will be available to stakeholders when they believe that a UNDP project may have adverse social or environmental impacts on them. It is also available when they have raised their concerns with Implementing Partners and/or with UNDP through the standard available channels for stakeholder consultation and engagement, and they have not been satisfied with the response. The SRM provides a way for UNDP to address these situations systematically, predictably, expeditiously, and transparently.

Stakeholder engagement standards recognize the importance of open and transparent engagement between the stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation. The propjet activities are foreseen to be implemented especially in people's farms and thus farmers and community members will be involved in project planning and implementation stages. Various consultation meetings have been and will be held with project beneficiaries, the Districts and Sectors officials and other relevant staff of the key implementing partners.

9 KEY RECOMMENDATIONS

This Chapter summarizes the key recommendations made throughout the report.

1. Communication and raising awareness

The main project activities currently underway will need to scale up if the project is to achieve its targets. For this to happen, it is essential for the project to improve its communication in order to raise awareness of the potential benefits of the FLR approach and to achieve local 'buy-in' to the project.

Collaboration with existing structures and organizations is strongly recommended, including JADF, CSOs, cooperatives, Umuganda, Inteko z'abaturage and umugoroba w'ababyeyi. Some of these will require substantial capacity building to succeed too (see point 4).

2. Planning and participation

Whilst this study has identified and costed activities for the duration of the project (Phases I and II), more detailed planning will be needed by PMU for Phase II, especially identifying specific sites as well as refining the unit costs for the various activities, in the light of Phase I's performance.

The FLR District Planning process must be prioritized by the project and local leaders and communities must be involved in this planning and decision-making process. This should increase local ownership as well as greatly improving the chances of achieving the project's objectives.

3. Project management

Due to the scale of the project and the clear need for substantial coordination, technical support and capacity building, we recommend that the project recruits four new staff as soon as possible: two new District Coordinators (to bring the total to four), a Livelihoods and Gender Support Coordinator and an Agroforestry Expert. These people would also need facilitation – e.g. transport and communication means.

4. Capacity building

Substantial training needs have been identified in this study for many of the project's activities. The project must give priority to training and capacity building, preferably in collaboration with existing, local NGOs or CSOs where possible. The use of external service providers is also recommended where necessary – e.g. to improve forestry and tree nursery practices. A Training of Trainers approach is recommended in order to pass the technical knowledge and skills down the line.

5. Women and youth

Women and youth groups must be more involved in all aspects of the Mayaga project and especially the planning and decision making. There are many opportunities within the project to also improve the liveihoods of women and youth and these should be prioritized by PMU: e.g. managing tree nurseries, offering direct employment on project activities and giving technical assistance to improve access to markets for agricultural products.

6. Labour

In order to address the shortage of labour experienced in the first planting season (late 2020), we recommend that the project at least matches the wage rates being paid by other projects in the region but also looks at offering other incentives such as training opportunities and investments into community initiatives.

7. Energy

The current low uptake of improved cookstoves needs addressing and to this end, we recommend the project to consider subsidizing these cookstoves and also working with service providers in order to support their increased supply and maintenance. Where possible, the project should also promote alternative energy sources such as LPG, solar and biogas.

8. Plant and seed supply

In order to address the shortage of tree seedlings, we recommend that the project should support one key nursery in each sector and train local people or community organizations in nursery establishment and management.

To address the shortfall in fruit trees, additional suppliers need to be identified: alternatively, people will need to be trained in grafting techniques (provided an adequate supply of improved genetic material can be sourced).

In addition, tree seed supply from the National Tree Seed Centre needs to be improved (in volume and quality): we recommend that the project should consider building the capacity of this institution.

9. Market access

For various reasons, many farmers in the region struggle to access the best markets or value chains for their produce. The project alone cannot solve this but is well placed to identify and promote priority crops and market opportunities in the Mayaga region.

10. M&E

M&E aspects of the project have been covered in detail by a Baseline Study running parallel with this one, by Nemus. We support the establishment (and enforcement of) a joint monitoring and inspections mechanism: this should be guided by the indicators listed by Nemus, along with recommendations for their monitoring.

We also recommend that the project supports Nyanza District's initiative for monitoring projects.

11. Accountability

Project accountability should be further secured through two key processes: namely, the Stakeholder Response Mechanism and Compliance Review. This includes various elements such as public consultation (including gender and youth representation) and information disclosure utilizing UNDP's accountability mechanisms.

10 KEY REFERENCES

Background documents

FAO (2011): Spatial analysis of woodfuel production and consumption in Rwanda (WISDOM).

- GoR (2013): Rwanda Supply Master Plan for Fuelwood and Charcoal (NB. Update of FAO WIS-DOM report).
- GoR MINIRENA (2014): Forest Landscape Restoration Opportunity Assessment for Rwanda (ROAM Report).

GOR MINAGRI (2018): Strategic Plan for Agricultural Transformation 2018-2024.

GoR (2017): Forest Investment Plan.

- GoR (2018a): Forest Policy.
- GoR (2018b): Forest Sector Strategic Plan 2018-2024.
- IUCN (2015): Rwanda's green well: opportunities to engage private sector investors in Rwanda's Forest Landscape Restoration.
- IUCN (2017): Review of Policies, Programs and Investment Incentives in FLR in Rwanda (draft ARCOS report).
- LAFREC (2014): Environmental and Social Management Framework (ESMF) and Social Assessment.

NISR (2017):

Pedersen A (2019): Tree Reproductive Material Supply in Rwanda.

UNDP (2019): FLR in Mayaga region (Contract document).

UNIQUE (2015a): Tree Plantation Establishment and Management Manual for Rwanda. RNRA under PAREFF Be2 programme.

UNIQUE (2015b): Tree Harvesting Manual for Rwanda. RNRA under PAREF Be2 programme.

The Feasibility Study team has also consulted the following District Plans

- Kamonyi District (2013): District Development Plan (DDP) 2013-2018.
- Kamonyi District (2012): District Profile.
- Ruhango District (2013): District Development Plan (DDP) 2013-2018.
- Ruhango District (2018): District Development Plan (DDP) 2018-2024.
- Ruhango District (2012): District Profile.
- Nyanza District (2013): District Development Plan (DDP) 2013-2018.
- Nyanza District (2012): District Profile.
- Gisagara District (2018): District Development Plan (DDP) 2018-2024.
- Gisagara (2012): District Profile.
- Gisagara (2017): District Forest Management Plan.

11 ANNEXES

11.1 Questionnaire

The guiding questions used for stakeholder meetings are included below.

Preparation:

- Introduction: from Ministry (REMA)
- Prepare summary of our mission Feasibility Study to guide FLR Mayaga Project.
- Arrange interview (tel. or in person).

No	Question	Notes
National	-level Government officials and stakeholders	
1.	Do you know about FLR policies and/or activities in Rwanda and in Southern Province in particular?	Yes or No
2.	If so, what activities are planned or in progress?	
3.	Are you aware of Mayaga FLR project and its plans?	Yes or No
4.	What are the key challenges facing Rwandan tropical forests and other natural reserves?	
5.	How much do existing policies and regulations help to protect these assets?	
6.	What are roles and responsibilities in enforcement of regulations?	
7.	How efficient is the enforcement of these policies and regulation towards these assets? Are there gaps that could be filled in?	
8.	Is there any other room for strengthening the link be- tween district/communities to conservation of natural forests in the Mayaga region? How?	
9.	In what ways could the project strengthen protection of forests in the Mayaga region?	
District C	Officials	
1.	Are there any mechanisms (or fora) for discussion on FLR priorities and/or coordination between the various initiatives in your District?	JADF or other s/h groups?
2.	What extension services are available in your District?	
3.	Are these services appropriate and useful to farmers?	Prompts: access to improved planting material, finance etc.
4.	What do you consider the biggest challenges to achiev- ing successful FLR initiatives in the Mayaga region?	
5.	And how do you see these challenges being overcome?	
6.	Do you have natural forests under threat?	
7.	If so, what do you think can be done to protect them?	

Νο	Question	Notes	
8.	In your view, what should be the priority FLR-related ac-	Prompts could be: agriculture,	
	tivities in the District?	forest management, woodfuel.	
9.	– Agriculture: specific crops? BOPs? Markets?	Producer Associations?	
10.	– Agroforestry & woodlots: improved management?	Wood value chains? Access to bet-	
		ter planting stock?	
11.	 Biomass matters 	Charcoal and/or cook-stoves	
12.	What do you see as the key environmental issues in the	Prompts: climate change? Soil fer-	
	project region?	tility?	
13.	And the key social issues?		
14.	Who are the key stakeholders in the District?	Public and private sector	
15.	What specific needs for capacity building are there?		
16.	And who is best-placed to undertake the capacity build-		
	ing?		
17.	To what extent is the Civil society is involved in the de-		
	cision making in the conservation of Tropical forests		
18	Are there opportunities for private sector investments		
10.	and engagement? What kind?		
Sector level			
1.	Do you know about FLR is all about?		
2.	Are you aware of Mayaga FLR project?		
3.	Have you been involved in any discussions or meetings		
	regarding FLR Mayaga project to date?		
4.	What FLR-related initiatives are underway (or planned)	Agriculture, forestry, fuelwood	
	for your District?	etc.	
5.	What are the main challenges for these initiatives?		
6.	And how could these challenges be overcome?		
7.	In your view, what should be the priority FLR-related ac-		
	tivities in the project's Sector?		
8.	- Agriculture: specific crops? BOPs? Markets?		
9.	- Agroforestry & woodlots: species? BOPs?		
10.	- Biomass matters	Charcoal and cook-stoves	
11.	- Soil conservation practices		
12.	What extension services are available in your District?		
13.	Are these services appropriate and useful to farmers?	e.g. access to improved planting material, finance etc.	
14.	Do you have natural forests under threat?		
15.	If so, what do you think can be done to protect them?		
16.	What do you see as the key environmental issues in the project region?	Prompts: climate change? Soil fer- tility?	
17.	And the key social issues?		

No	Question	Notes
18.	Who are the key stakeholders in the Sector?	Public and private sector
19.	What specific needs for capacity building in the Sector are there?	
20.	And who is best-placed to undertake the capacity build- ing?	
21.	What are the SWOT in your Sector?	
Single pr	oject/initiative/farmer & farmer Coop level	
1.	What is your initiative doing?	Scale, timescale, results to date?
2.	In your view, what should be the FLR-related activities in the project's sites?	Prompts: Agriculture, forestry ma- nagement, fuelwood etc.
3.	- Agriculture: specific crops? BOPs? Markets?	Producer Associations?
4.	- Agroforestry & woodlots: species? BOPs?	Wood value chains? Access to bet- ter planting stock?
5.	- Biomass matters	Charcoal and cookstoves
6.	- Soil conservation practices	
7.	Do you have natural forests under threat?	
8.	If so, what do you think can be done to protect them?	
9.	What are the benefits of cooperatives to members?	
10.	Are there forest associations or NRM groups operating in your district?	
11.	Can coops be useful for sustainability of implemented FLR activities in your project's sites?	
12.	What are your thoughts on gender issues in the FLR ac- tivities on your sites? Are male and females equally re- presented?	
13.	What specific needs for capacity building are there?	
14.	What are the SWOT at your site?	
15.	Who is best placed to undertake the capacity building?	
16.	In what ways could the project strengthen protection of natural forests in the Mayaga region?	
17.	To what extent is the Civil society is involved in the de- cision making or conservation of Mayaga's forests?	
18.	What can be done to better conserve Mayaga'd for- ests?	
19.	What is the linkage between the conservation of Tropical forests and natural biodiversity and the development?	

11.2 List of consulted persons at District level

No	Name	Institution	Position
1	Burezi Eugene	Ruhango District	JADF
2	Munyampirwa Francois	Ruhango District	District Agronomist
3	Rugendo Byiringiro Jean	Ruhango District	Gender & Family promotion Offi-
4	Hakizimana Emmanual	Pubango District	Cash Crop officer
4	Puiringire Emmanuel	Ruhango District	
5	Byiringiro Emmanuer	Ruhango District	Dir. Agriculture
0		Ruhango District	District Forest Officer
/	Bosco	Runango District	hango
8	Rusilibana J M Vianney	Ruhango District	V. Mayor FED
9	Uwamariya Claire Antoi- nette	Mbuye Sector	SEDO / Mwendo cell
10	Masengesho Isaie	Mbuye Sector	SEDO / Mbuye cell
11	Giraneza Micheal	Kinazi Sector	Agronomist
12	Niyonzima Telesphore	Kinazi Sector	SEDO / Rutabo cell
13	Hategekimana Eric	Ntongwe Sector	Sector Forest Officer
14	Mukamurara Virginie	Ntongwe Sector	Sector Agronomist
15	Sinamenye Marcel	Ntongwe Sector	SEDO / Kebero cell
16	Hitimana Diogene	Ntongwe sector	SEDO / Kayenzi cell
17	Thadee Tuyizere	Kamonyi District	V. Mayor FED
18	Murerwa Marie	Kamonyi District	Gender & Family promotion Offi- cer
19	Kamana Oswald	Kamonyi District	JADF
20	Mwumvaneza Ferdi- nand	Kamonyi District	Veterinary officer
21	Habiyakare Sylvester	Kamonyi District	District Agronomist
22	Munyarugamba Olivier	Kamonyi District	Project Implementer District Ka-
			monyi
23	Eric Nsengiyumva	Mugina Sector	Sector Agronomist
24	Sylvester Ntakirutimana	Mugina Sector	Sector Forestry Officer
25	Murwanashyaka Lau- rent	Mugina Sector	SEDO Kabugondo cell
26	Kwizera J Baptiste	Mugina Sector	SEDO Mbati Cell
27	Uramutse Francois Xa- vier	Nyamiyaga Sector	Sector Agronomist
28	Albert Kimana	Nyamiyaga Sector	Sector Forestry Officer
29	Karegeya Jean Bosco	Nyamiyaga Sector	SEDO / Kabashumba cell
30	Dushimimana Anastase	Nyamiyaga Sector	SEDO / Mukinga cell

11.3 List of consulted persons at National Level

No	Name	Institution	Position
1	Mark Manyifiki	MoE	Dir. Natural Resources Management
2	Samuel Mporanzi	RSB	Dir. Engineering & Standards
3	Mugabo J. Pierre	RFA	Director RFA
4	Faustin Munyakazi	REMA	Deputy Director REMA
5	Pamela Ruzigana	RWB	Catchment Restoration & Erosion Con- trol Division Manager
6	Alex Rutagengwa	Land Management Authority	Dir. Land Use Planning
7	Dr Charles Bucagu	RAB	Deputy Director of Research RAB
8	Jean Ntakirutimana	Caritas Rwanda	
9	Sonia Muhikaze Kanamu- gire	One Acre Fund	Government Relations Coordinator
10	Steven Bihinda	Mininfra	
11	Oreste Niyonsaba	Rwanda Energy Group	Manager for Social Energies

District	Sector	Cell	Site name	GPS point	Estimated area ha/km)	Type of intervention
			Kavunja watershed	X:495455		Agroforestry
		Jenda-Mbati-Mu-		Y:4764633	100	
		gina		X:495375	108	
				Y:4764477		
		Nitalia	>	X:497659	25	
	Mugina	Ντέκο	Rwani	Y:4769509	35	Attorestation
				X:494928		
		IJEQIVI	ITEGIN	Y:4767991	4	Attorestation
		NA	Rebero-Butera	4kms	•	
		iviugina	Kagarama-Kagasa	3kms		Afforestation (Roadsides)
		Nteko	Ramba-Kivumu-Gishari	15kms		
		Mukinga	Mbayaya X:491346 Y:476636 Y:476636	X:491346	100	Agroforestry
	Nyamiyaga			Y:4766364	100	
			Nyabubare	X:491493	68	Agroforestry
Kamonyi				Y:4766454		
				X:492165	4	Afforestation
			Мрауауат	Y:4766787		
			Mbayaya2 X:4916 Y:4767 Y:4767	X:491658	г	Afforestation
				Y:4767021	5	
		Iyamiyaga Bibungo	Bibungo X:4903 Y:4768	X:490326	4 Afforesta	
				Y:4768450		Afforestation
				X:490098	2	
			Karubanda	Y:4769286		Afforestation
				X:489926	2	A 55
		Ruy Kabashumba Mu	Ruyumba	Y:4770628	2	Afforestation
			Munini	X:488919	5 A	A 55
				Y:4771553		Attorestation
			Allente	X:488980	- 3	
		Nkoto	ΝΚΟΤΟ	Y:4772089		Attorestation

		Ngoma	Mataba	X:492821 Y:4771039	2	Afforestation
		Kidahuua	Kingha	X:490134	1	Afferentation
		Kidanwe	Kirene	Y:4772943	1	Anorestation
		Kigembe-Mukinga	Rugobagoba-Mukunguli	19kms		Afforactation (Readeridae)
		Kabashumba	Arikide-Rwabinahu	4kms		And estation (Roadsides)
	Ndora	Mukande	Kaduha	X:482859	200	Agroforestry
				Y:4713244		
		Gisagara	Nyabitare	X:479466	220	Agroforestry
				Y:4710557		
			Tamba	X:484480	200	Agroforestry
	Gishubi	Gabiro		Y:4712067		
				X:484527		
				Y:4712070		
	Musha	Kiimana	Mushaduka	X:481130	400	Simple Agroforestry
Gisagara	IVIUSIIA			Y:4720523		
	Gikonko	Gasagara	Karehe-Mugusa	X:480650	230	Agroforestry
				Y:4722926		
	Save	Shyanda	Ryakabuye	X:477513	200	Agroforestry
				Y:4721216		
	Mamba-Gishubi	Muyaga-Nyeranzi	Muyaga	X:489658	129	Afforestation
				Y:4719522		
				X:489752		
				Y:4719617		
				X:489621		
				Y:4719023		
Nyanza	Busoro	Masangano	Burakari watershed	X:485117	100	Agroforestry
				Y:4746460		
			Busenyi-Vunga		7.3 km	Afforestation(Roadsides)
			Busoro centre-Munyinya- Nyarubogo		11.7 km	Afforestation(Roadsides)
	Kibirizi	Rwotso	Agasasa watershed	X:482803 Y:4734450	96	Agroforestry

			Abakundakurima-Bahimba-Mu- hunde		5km	Afforestation(Roadsides)
	Kigoma	Gahombo	Muvuguto watershed		150	Agroforestry
		Mulinja	Muvuguto Watershed		150	Agroforestry
			Karama-Nyagacyamu		9	Afforestation(Roadsides)
			Budubi-Gashyushyu	X:485121		Afforestation(Roadsides)
				Y:4746364		
	Muyira	Nyamure	Nyarubogo watershed	X:480387 Y:4740579	210	Agroforestry
		Migina	Nyarubogo watershed		110	Agroforestry
		Nyamiyaga	Nyarubogo watershed	X:485402 Y:4740117	105	Agroforestry
		Gati	Nyarubogo watershed	X:480716 Y:4743227	120	Agroforestry
			Gisharara-Nyarubogo		8 km	Afforestation(Roadsides)
			Kayanza-Gahuru-Kabuye-Nzovi		9 km	Afforestation(Roadsides)
			Rugomero-Gihengeri		6 km	Afforestation (Roadsides)
	Ntyazo	Cyotamakara	Budubi watershed	X:480394 Y:4744130		Agroforestry
		Kagunga	Agasasa watershed (Karuyumbu)	X:480065 Y:4735019	110	Agroforestry
			Rwakamanya	X:484640 Y:4729088	8	Afforestation (woodlot)
			Rusasa		18	Afforestation (woodlot)
			Rwezamenyo	X:482352	8	Afforestation (woodlot)
				Y:4730573		
			Nyarubuye	X:484932	10	Afforestation (woodlot)
				Y:4731854		
			Mpande-Misasa-Nyarutovu		8 km	Afforesta-tion(Roadsides)
		Bugari	Ndago (A)	X:486323	15	Afforestation (woodlot)
				Y:4730573		
			Ndago (B)	X:486774	5	Afforestation (woodlot)
				Y:4731160		
			Nkomane	X:488740	8	Afforestation (woodlot)

				Y:4731525		
			Gasha	X:487360	5	Afforestation (woodlot)
				Y:4729931		
	Ndora	Mukande	Kaduha	X:482859	- 200	Agroforestry
				Y:4713244		
		Gisagara	Nyabitare	X:479466	- 220	Agroforestry
				Y:4710557		
	Gishubi	Gabiro	Tamba	X:484480	200	Agroforestry
Gisagara				Y:4712067		
				X:484527		
				Y:4712070		
	Musha	Kiimana	Mushaduka	X:481130	100	Simple Agroforestry
				Y:4720523	400	
	Gikonko	Gasagara	Karehe-Mugusa	X:480650	230	Agroforestry
				Y:4722926	230	
	Save	Shyanda	Ryakabuye	X:477513	200	Agroforestry
				Y:4721216	200	
	Mamba-Gishubi	Muyaga-Nyeranzi	Muyaga	X:489658		Afforestation
				Y:4719522		
				X:489752	120	
				Y:4719617	125	
				X:489621		
				Y:4719023		

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