



ADAPTATION FUND

## FULLY DEVELOPED PROPOSAL FOR SINGLE COUNTRY

### PART I: PROJECT/PROGRAMME INFORMATION

**Title of Project/Programme:** Enhancing adaptation through catchments restoration 6 sub-catchment of Mukungwa catchment in Rwanda

**Country:** Rwanda

**Thematic Focal Area:**

**Type of Implementing Entity:** National Implementing Entity

**Implementing Entity:** Ministry of Environment

**Executing Entities:** Rwanda Water Resources Board

**Amount of Financing Requested:** USD 10,000,000.

**Letter of Endorsement (LOE) signed:** Yes  No

*NOTE: The LOE should be signed by the Designated Authority (DA). The signatory DA must be on file with the Adaptation Fund. To find the DA currently on file check this page: <https://www.adaptation-fund.org/apply-funding/designated-authorities>*

**Stage of Submission:**

This proposal has been submitted before including at a different stage (concept, fully-developed proposal)

This is the first submission ever of the proposal at any stage

In case of a resubmission, please indicate the last submission date: Click or tap to enter a date.

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## Project/Programme Background and Context:

### National Context and Project Rationale

**With a population of 13.2 million and a land size of 26,338 km<sup>2</sup>, Rwanda has one of highest population densities in the world, at about 503 people/km<sup>2</sup>.** Despite land scarcity, rain-fed subsistence agriculture was only recently eclipsed by the services sector as the predominant sector of the economy, contributing about 23% of gross domestic product (GDP). GDP reached USD 1,004 per capita in 2022<sup>1</sup> – but certainly lower in the Volcanoes region and the adjacent Vunga corridor which has a large rural population. The average annual incomes for the districts that make up the region are – Burera (USD 362.8), Musanze (USD 500.4), Nyabihu (USD 320.7), Ngororero (USD 299.9) and Rubavu (USD 477.0).<sup>2</sup>

**Climate change in Rwanda is associated with flooding and landslides in the rugged and steep topography that covers the western two-thirds of the country whereas droughts affect the drier one third of the east.** It negatively affects water resources, agricultural production, biodiversity, human health, fish and forestry and other vulnerable ecosystems, with further impacts on the economy. The country temperate tropical highland climate (with two rainy seasons and two dry seasons) in the recent years is associated with flooding and landslides that result in loss of life, damage to property and infrastructure, livelihood assets, soil erosion and water pollution – see figure 1.

Figure 1: Floods and Landslides in Rwanda



Source: WMO & ResearchGate

### Key Issues, Challenges, and Trends

#### *Climate (current and future)*

**Climate change appears to be taking effect in Rwanda and is one of the defining challenges which will impact policy and strategy, increasing the need for sustainability and resilience.** Extreme floods and droughts are estimated to reduce the East African region's long-term growth by approximately 2.4% of GDP per annum (Global Water Partnership, 2016). The 2022 Rwanda Country Climate Development Report (CCDR) estimated that if these risks materialise, Rwanda's GDP levels can drop by between five and seven per cent below baseline in multiple years by

1 National Institute of Statistics of Rwanda, retrieved online at <https://www.statistics.gov.rw> on 9-7-2023.

2 National Institute of Statistics of Rwanda, LFS 2022

2050, with negative impact on private consumption, exports, and government revenues<sup>3</sup>.

**Potential impacts include increased temperature.** Rising temperatures may result in an increase in evaporation rates and harsher weather conditions. Water quantity will be affected as a result, as well as water quality due to higher temperatures, land use changes, impacts on rivers and lakes, changes to physio-chemical parameters, micro-pollutants and biological parameters. Rising temperatures result in environments conducive for malaria vectors to thrive, thereby implicating public health issues. An increase in the intensity of extreme events may result in the event of a combination, or all, of the following hazards:

- Increased intensity of rainfall
- Increased frequency of floods
- Prolonged droughts
- Increased frequency of droughts

**Climate change is also expected to bring about unpredictable weather patterns that will have significant impacts for Rwanda.** Given that most farmlands are rain-fed, inconsistent and uneven rainfall will make farming difficult. The unpredictability also makes long-term planning challenging and creates uncertainty in prioritisation of short-term adaptation strategies. Increased severity of droughts will increase the issue of water scarcity, food insecurity, and inflation. It will also lead to increased malnutrition and a likely increase in the number of children dropping out of school due to families migrating to better lands or needing more labour to maintain yield. (East African Community, 2011; Tramberend, et al., 2019). Although changing climate will affect all groups, the impacts on women and girls will be greater, as they are likely to spend more time collecting water from distant sources in periods of drought. They are also disproportionately affected by the risk to waterborne diseases during floods because of lack of access to safe water (UNESCO; UN-Water, 2020)

#### *Resource issues (variability, quality, protection)*

**Flooding events in Rwanda, which are often accompanied by landslides, occur regularly in the northern, southern, and western parts of the country because of heavy rainfall.** Floods not only are a dangerous hazard, but they also affect the water quality (Bizuhoraho, Icyimpaye, & Nadia, 2018). The deterioration in water quality also has grave economic impacts because it increases the cost of doing business, as many enterprises are forced to treat water before being able to use it in their industrial processes, and has an increased cost to municipalities and cities to treat water to drinking water standards (Rwanda Ministry of the Environment, 2018). The eastern parts of the country are more prone to droughts, which have adverse effects on the agriculture sector and increase the pressure on groundwater resources. Land management is critical to social and economic national development, but land degradation can erode that development and lead to poverty for those that are closely linked to natural resource use.

#### *Climate change risk and impacts in the Volcanoes Region and the adjacent Vunga corridor.*

**The projected climate change in the Volcanoes Region and the adjacent Vunga corridor, particularly the increase in precipitation, is expected to significantly increase the climate risk in the region.** The climate hazard will increase due to increased runoff from the volcanoes to the lower areas, increasing the risk of flooding and watershed degradation. The below sections elaborate on the increasing climate hazard and exposure, and implications for reducing the vulnerability to climate risks in the region, based on a detailed analysis of the region.

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<sup>3</sup> World Bank Group. 2022. Rwanda Country Climate and Development Report. CCDR Series;. © World Bank, Washington, DC.

**The mountainous northern and western districts of the country are particularly vulnerable to negative climate impacts.** During years of severe floods (for example, a 100-year flood), such extreme events are forecast to reduce GDP by an additional 4.4 percentage points below the baseline scenario during the flood year<sup>4</sup>. Devastating floods and landslides in these districts in May 2023 killed 135 people and destroyed nearly 6,000 homes, totaling over US\$450 million in damage<sup>5</sup>. Women are especially vulnerable to flood impacts due to household care burdens and mobility constraints. Rwanda anticipates increases in both intensity (between +3 to +17 percent) and frequency (between +9 to +60 percent) of rainfall by the end of the century.<sup>6</sup> Heavy precipitation events are expected to impact rivers and surface water runoff during the summer rainy seasons, increasing both the frequency and intensity of floods.<sup>7</sup> The impact of flooding on people is likely to worsen, as population growth and limited land push people to settle in flood-prone areas.

Figure 2: Sebeya River floods



Source: The New Times

**The Volcanoes Region and the adjacent Vunga corridor, located in the north-western of Rwanda, spans the districts of Burera, Nyabihu, Rubavu, Gakenke, Muhanga, Ngororero, Musanze and part of Rutsiro District, and is home to over 2.3 million people.** The communities that live in this region are highly vulnerable to the adverse effects of floods, landslides, and soil erosion, which are projected to exacerbate from increased rainfall due to climate change<sup>8</sup>. According to MINEMA records, between January 2013 to June 2023, Burera, Musanze, Muhanga, Nyabihu, Gakenke, Ngororero, Rutsiro and Rubavu districts experienced

<sup>4</sup> World bank group, (2022). Country Climate and Development Report - Rwanda

<sup>5</sup> Relief Web, 2023. Rwanda: Floods and Landslides

<sup>6</sup> World Bank Group. (2021). Climate Risk Profile - Rwanda. ([link](#))

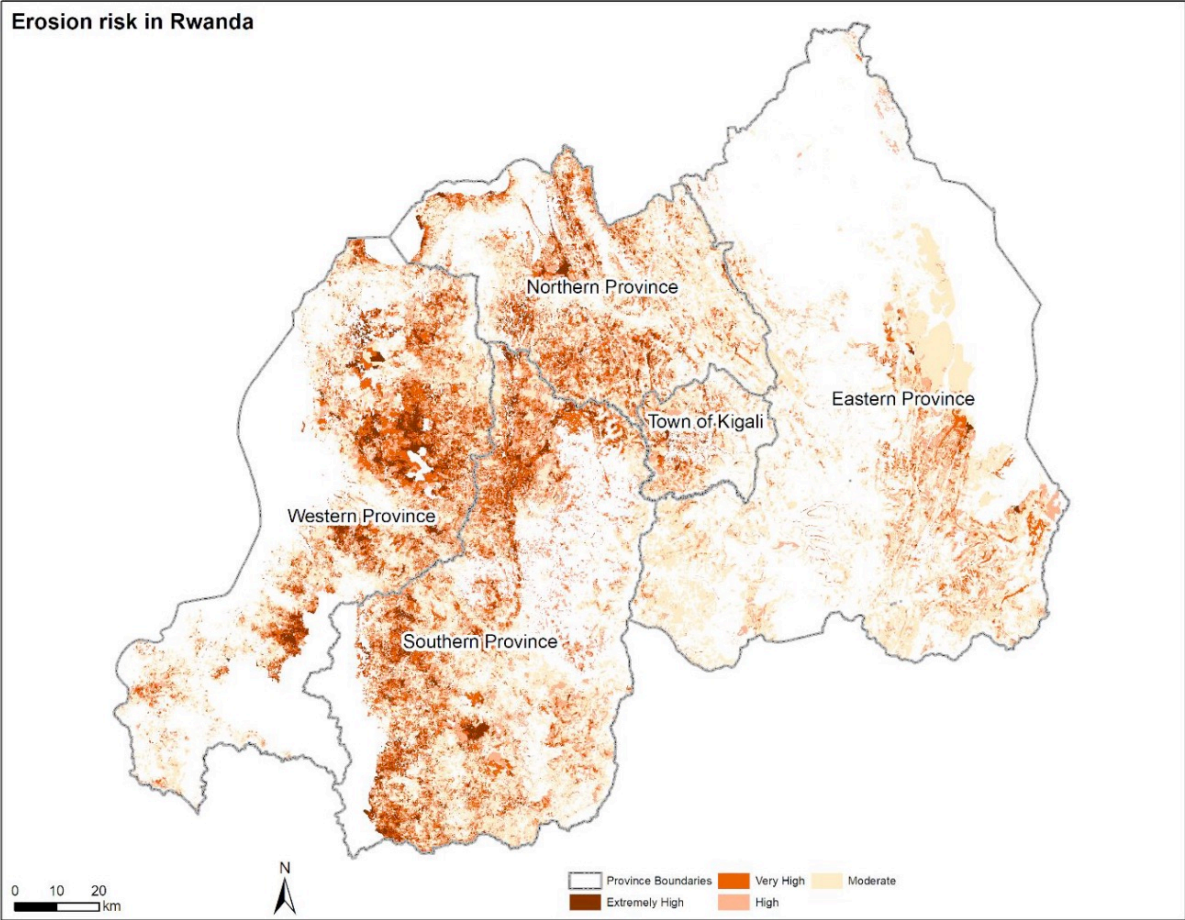
<sup>7</sup> World Bank Group. (2021). Climate Risk Profile - Rwanda. ([link](#))

<sup>8</sup> Republic of Rwanda. (2019). Detailed designs of flood control measures in the Volcano Region, Rwanda: Final report. ([link](#)). These numbers exclude the impacts from the recent floods and landslides disaster in May 2023.

severe climate related events including floods, landslides, hailstorms and rainstorms with 539 people killed, 316 seriously injured, 18,415 houses damaged, 7,740.57 Hectares of crops damaged, 1,995 livestock lost, and 345 road structures damaged. A recent flood risk assessment shows that the expected annual damage in the Volcanoes Region and Vunga corridor amounts to US\$10.1 million per year and may increase national food security risks.

**Soil erosion and flood risk are the most serious environmental problem in many catchment areas in Rwanda.** About 6 million tons of crops, valued at US\$76 million (RWF 76 billion), are lost each year due to erosion. To identify areas at risk of soil erosion and develop prevention measures, in July 2018, A national erosion risk map based on a spatial model developed by the Government was created in 2018. This risk map informs catchment planning to optimize land use and risk reduction measures.

Figure 3: Erosion Risk in Rwanda



Source: Rwanda Water Resources Board

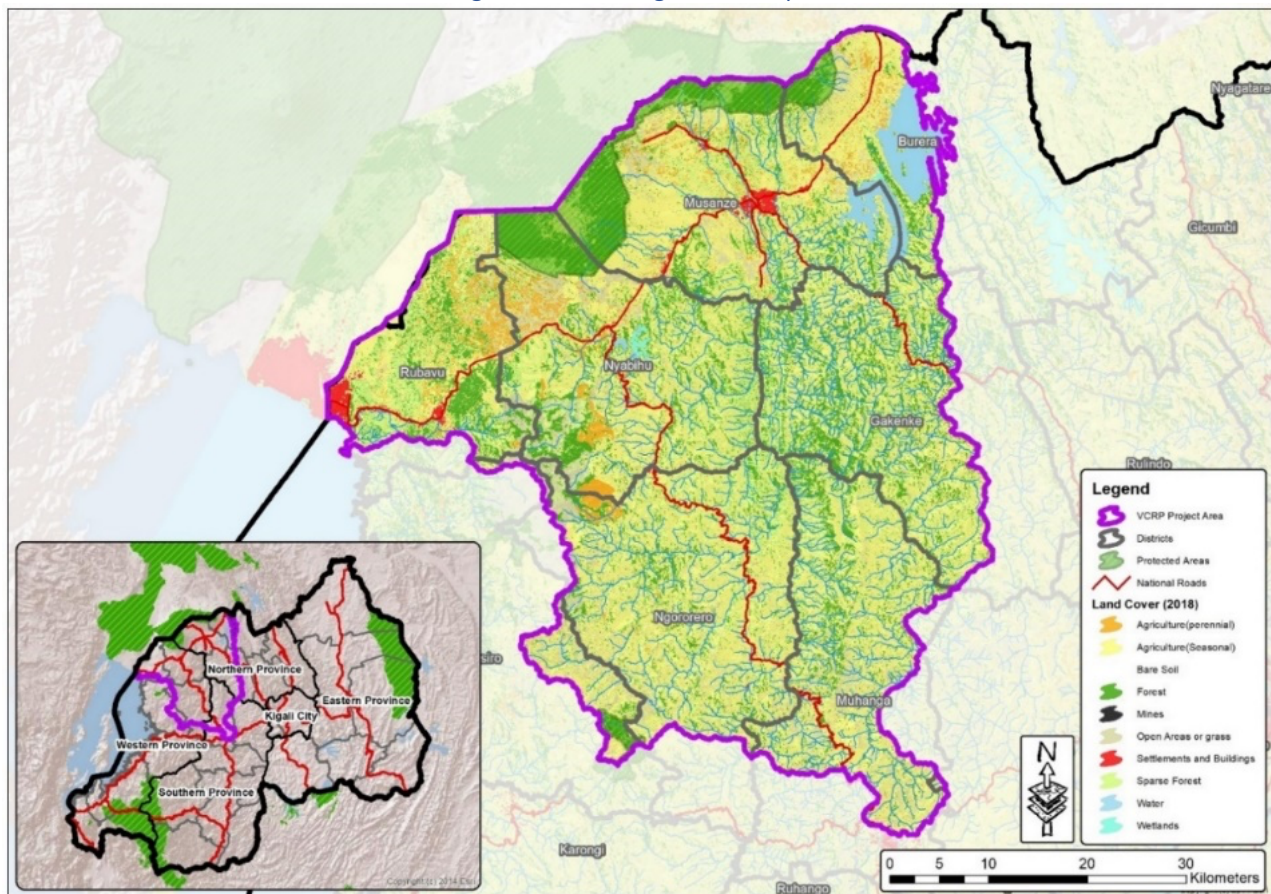
**Rwanda’s response to climate change**  
**Climate change is poised to impact all sectors of Rwanda’s economy, and to negate some of the country’s remarkable development gains unless the country builds resilience and**



**adaptivity to climate change**<sup>9</sup>. Climate impacts of significance for agriculture and food security are likely to be temperature increases and more frequent droughts, with the nature and timing of impacts varying across regions. Climate impacts may alter the extent of areas suitable for agriculture and the length of growing seasons, affecting crop yields as well as hunger and nutrition. In addition, climate change may alter the occurrence and distribution of pests that may harm or ruin crops and livestock.

**Recognizing the urgent need for adaptive interventions, the National Strategy for Transformation (NST1) has prioritized an integrated climate adaptation and economic transformation initiatives under the Volcanoes Community Resilience Project.** This multi-faceted project’s objective is to strengthen climate resilience, reduce the risks of flooding, and improve the management of natural resources and tourism assets in the Volcanoes Region of Rwanda. See the project map below.

Figure 4: VCRP Programme Map

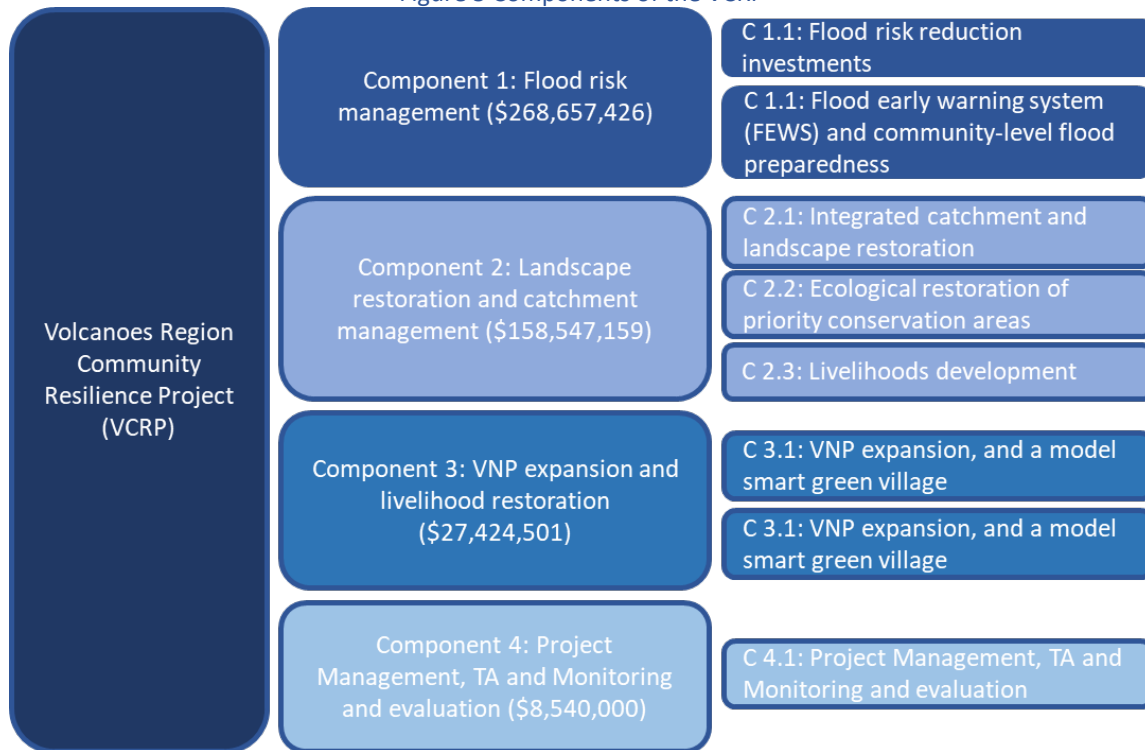


Source: VCRP Project Appraisal Document

The project contains four components, and its implementation has been estimated at USD 494 million. Figure 4 below shows the components and subcomponents of the project.

<sup>9</sup> As Rwanda moves up the development ladder, it needs an investment strategy that supports its economic growth and development aspirations – including those in Vision 2020, the Vision 2050 blueprint, and the National Strategy for Transformation (NST) while assuring the continuity and sustainability of such progress in the face of climate change.

Figure 5 Components of the VCRP



Source: Vanguard Economics 2024

The project will be implemented in 3 phases as highlighted in the following table with their respective size of investment. The project is expected to be funded through a variety of sources including the World Bank, the Climate Investment Fund (CIF), the Global Environment Facility (GEF), Green Climate Fund (GCF), Adaptation fund, and Nordic Development Fund (NDF)

Table 1: VCRP project budget

| Components   | Phase 1            | Phase 2            | Phase 3           | Total budget       |
|--|--------------------|--------------------|-------------------|--------------------|
| Component 1: <b>Flood risk management</b>                                | 117,948,924        | 86,584,638         | 64,123,864        | <b>268,657,426</b> |
| Component 2: <b>Landscape restoration and catchment management</b>       | 92,313,333         | 40,755,780         | 25,478,046        | <b>158,547,159</b> |
| Component 3: <b>VNP expansion and livelihood restoration</b>             | 27,424,501         | -                  | -                 | <b>27,424,501</b>  |
| Component 4: <b>Project Management, TA and Monitoring and evaluation</b> | 4,500,000          | 2,393,105          | 1,646,895         | <b>8,540,000</b>   |
| Operations   | 11,081,991         | 8,415,872          | 1,790,955         | <b>21,288,818</b>  |
| Contingency fees 2%  | 5,065,375          | 2,762,988          | 1,860,795         | <b>9,689,158</b>   |
| <b>Totals</b>  | <b>258,334,124</b> | <b>140,912,383</b> | <b>94,900,555</b> | <b>494,147,062</b> |

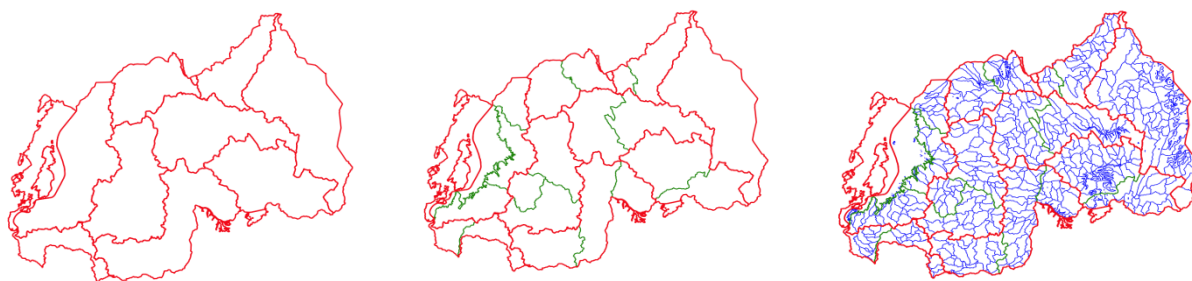
Source: VCRP documents

## Catchments in Rwanda

### Rwanda distinguishes four catchment levels in its National Water Resources Master Plan:

- **2 Basins:** The Congo River basin (Congo Basin) in the west, and the River Nile basin (Nile Basin) in the east are the largest spatial planning scales.
- **9 Level 1 Catchments:** the Kivu and Rusizi Level 1 catchments (feeding into the Congo Basin); seven other Level 1 catchments (feeding into the Nile Basin), namely: Mukungwa, Akanyaru, Upper Akagera, Lower Akagera, Muvumba, Upper Nyabarongo, Lower Nyabarongo catchments.
- **20 Level 2 Sub-catchments** are medium scale catchment boundary, roughly district size, in which, distinguished within these nine **Level 1** catchments, dozens of **Level 3**, and hundreds of **Level 4** micro-catchments.

Figure 6: Levels of hydrologic analysis for Rwanda, with Level 1 on the left, Level 2 in the middle and Level 3 on the right.



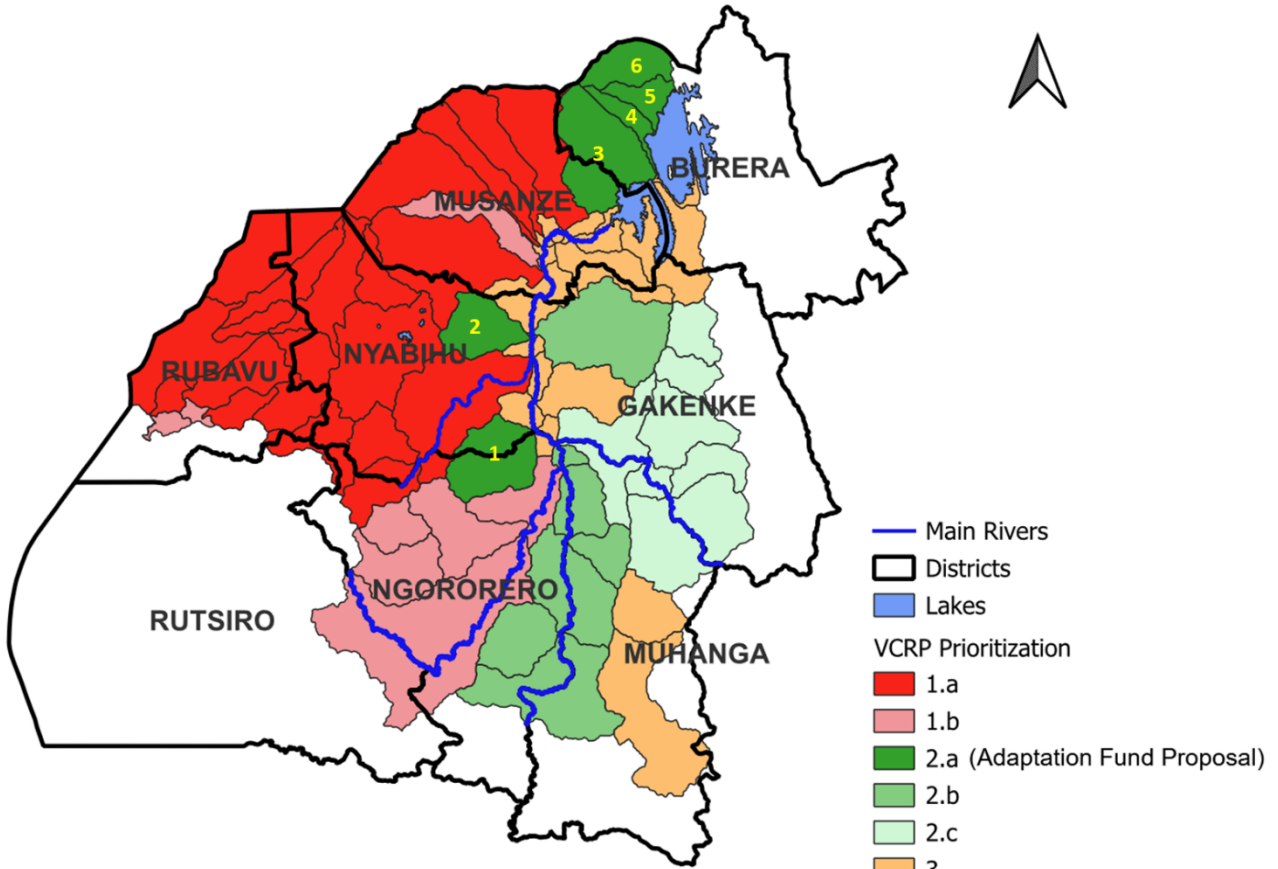
Source: VCRP Documents

The VCRP project area is subdivided in 66 level 3 catchments (over 311,000 ha) and catchment/landscape restoration activities are planned in all of them. To accelerate the implementation of the project, the 3 implementation phases were further subdivided into 5 investment phases (1a, 1b, 2a, 2b, and 3). Fund mobilization for the first phase of investment (1a) which will cover 21 of the 66 catchments is almost complete, and the VCRP has entered into effectiveness with the World Bank, the first funder of the project.

**This proposal to the Adaptation Fund seeks funding to support the catchment restoration activities for the second phase of the VCRP, specifically activities under investment phase 2a.** The investment need for catchment restoration activities in phase 2a (see map below) of the VCRP match the funding ceiling of the Adaptation fund (USD 10 million) and the timeline matches the implementation phase of the project. Phase 2a includes 6 level 3 catchments located in the level 1 catchment of Mukungwa and in the following specific districts referring to the figure 6:

- Rubagabaga catchment in the districts of Ngororero (labeled as 1)
- Nyamutera catchment in the district of Nyabihu (labeled as 2)
- Mwora catchment in the districts of Musanze and Burera (labeled as 3)
- Minoga catchment in the district of Burera (labeled as 4)
- Burera-Gisovu catchment in the district of Burera (labeled as 5)
- Kagere catchment in the district of Burera (labeled as 6)

Figure 7: Subbasements restoration phases



Source: VCRP Phasing

**This proposal has benefitted from recent extensive studies<sup>10</sup> - See table below.** The interventions of the project are based on climate change forecasts. It has also benefited from a detailed hydrological study of the region, socio-economic condition of the communities in the Mukungwa catchment as well as literature reviews.

Table 2: Studies that informed this proposal

| # | Studies   |
|---|---|
| 1 | Mukungwa Catchment Management Plan (2023-2030)  |
| 2 | Revision of Rwanda's Green Growth and Climate Resilience Strategy (2021) – Water Resources Concise Sector Working Paper   |
| 3 | VCRP – Project Appraisal Document   |
| 4 | VCRP - Environmental and Social Management Framework (ESMF) Report  |
| 5 | VCRP - Stakeholder Engagement Plan  |
| 6 | Building Climate Resilience by Implementing the Upper Nyabarongo Catchment Restoration Plan in the Mbirurume Sub-catchment of Rwanda – Environmental and Social Impact Assessment |
| 7 | Community Approach Guidelines<br>Part I: Guidelines for a Community Participatory Approach to Landscape Restoration and   |

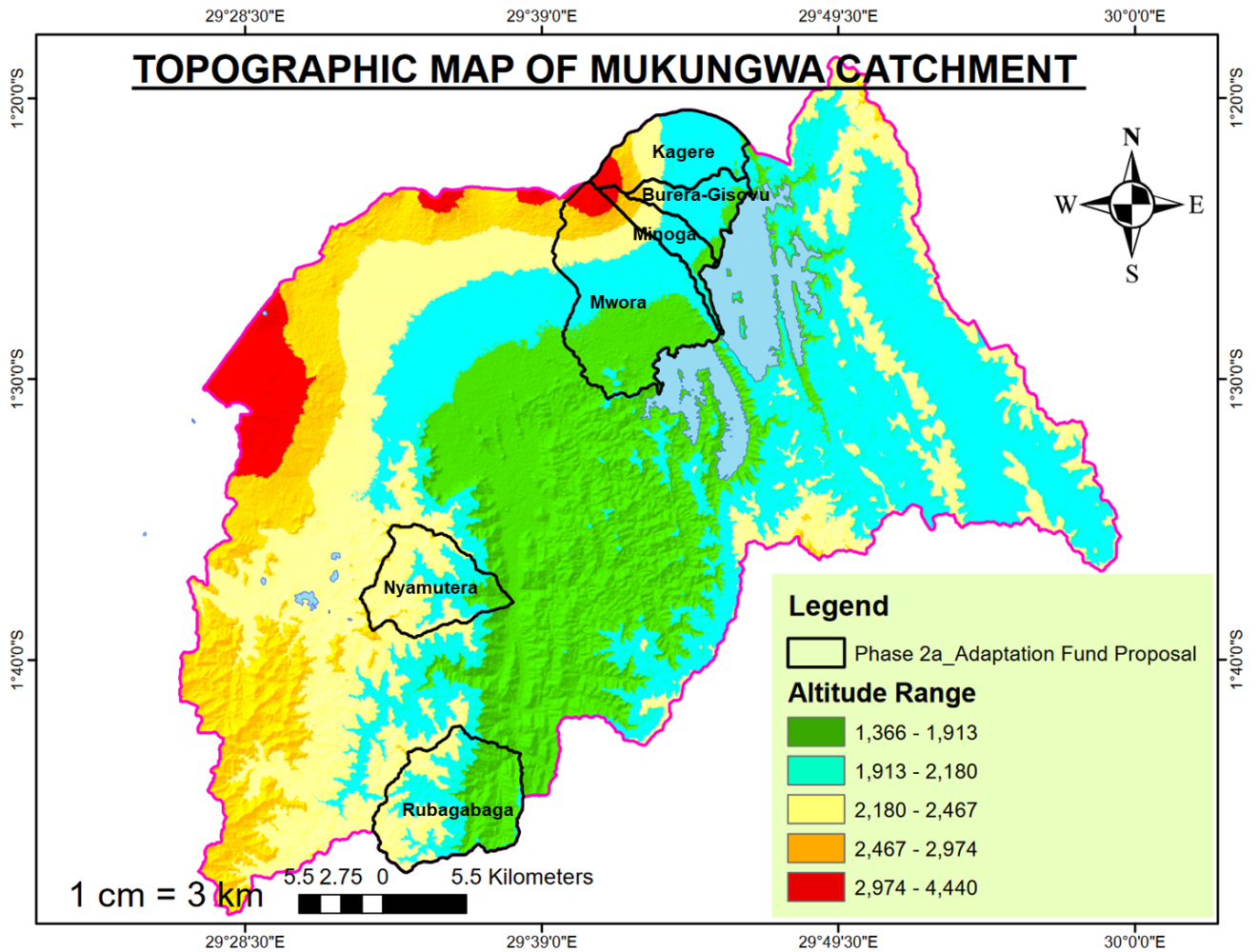
<sup>10</sup> in the region on geophysical and socio-economic conditions and trends, as well as from the availability of better quality and more detailed climate studies and climate change forecasts.

Source: Vanguard Economics 2024

Catchment and landscape restoration in Mukungwa catchment

**Mukungwa Catchment, spanning 1,830km<sup>2</sup> and home to over 1,250,000 people, exhibits diverse terrain and significant geological features.** According to the RWB database of 2018, which utilized data from Landsat-8 (30m resolution) and Sentinel-1 (20m resolution), the catchment's land use is predominantly agricultural land (44%) and forest cover (approximately 38%). A notable feature is the Rugezi marshland, covering 6400ha in the east, recognized as a protected area. Another key area is the Volcanoes National Park, encompassing 160 km<sup>2</sup> with its natural alpine forest, crucial for biodiversity and contributing to the national economy through tourism. The region's soils, mainly andosols in the North and Northeast and a variety of others in the South, central, and Eastern areas, have high infiltration rates, leading to a significant groundwater recharge of over 300 mm/year, about 25%. A large part of the catchment supports seasonal agricultural crop production, with approximately 72% of the population engaged in rain-fed subsistence agriculture.

Figure 8: Topographic map of Mukungwa catchment



Source: Mukungwa Catchment Management Plan 2023-2030

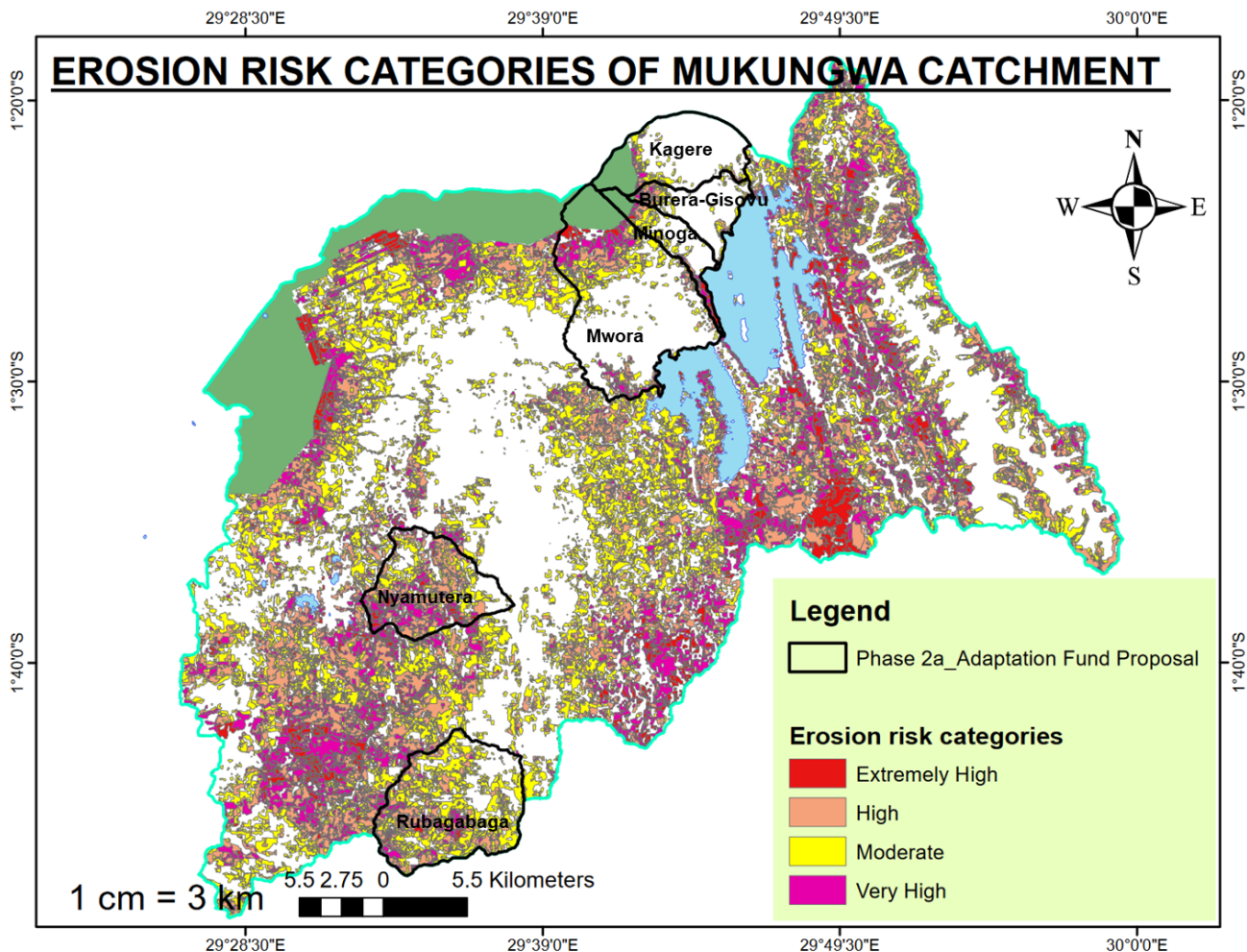
### **Climate related impacts**

**Due to the geophysical make-up of the catchment, with steep slopes and friable soils in combination with intense seasonal rainfall, land use in the region is inherently susceptible to environmental disasters.** The high population density and extreme poverty in the region imply that the land is intensively cultivated but without due regard for the geophysical risk of disasters, which are predominantly expressed through landslides and flooding. Geophysical disasters lead to economic losses at different levels: damage in infrastructure, crops and livestock; disruption of the economic system in communities where people were displaced; fiscal transfer to disaster response and crowding out of other functions as manpower is concentrated on disaster response rather than productive activities following a disaster.

### **Soil erosion**

**Soil erosion is the most serious problem in reference to sustainable management of land and water resources.** The main factors affecting sediment yield include land use and vegetation cover, topography, soil and climate. In order to describe the areas with high soil erosion risks and to develop adequate erosion prevention measures for Rwanda, the national erosion risk map was generated in July 2018 based on the methodology “Catchment Restoration Opportunity Mapping (CROM)”, which is a spatial model developed by ESRI Rwanda in coordination with and the Ministry of Environment through Rwanda Water Resources Board (RWB) and the IWRM Program (Water for Growth Rwanda-W4GR). The CROM model identified six erosion risk classes including (1) No risk, (2) Low risk, (3) Moderate risk, (4) High risk, (5) Very high risk, and (6) Extremely high-risk zones of erosion.

Figure 9: Erosion Risk Map for Mukungwa catchment



Source: Mukungwa Catchment Management Plan 2023-2030

### Livelihood impacts

The catchment is characterized by high population density and a relatively higher dependency on rain fed subsistence agriculture. The sector is heavily impacted by climate related disasters that are frequent in the catchment especially floodings that swipes away crops and soil erosion that significantly reduced the land productivity. The ultimate impact of these events is that the population remains trapped in a multidimensional poverty cycle. For example, Nyamutera catchment fall in Nyabihu district which has been assessed to have 46.8%<sup>11</sup> poverty level. Rubagabaga catchment fall in Ngororero district which has 47.7%<sup>12</sup> poverty level. Kagere, Burera-Gisovu, Minoga, and part of Mwora catchmets fall in Burera district which has 49.8% poverty level<sup>13</sup>.

<sup>11</sup> Rwanda Population and Housing Census 2022

<sup>12</sup> ibid

<sup>13</sup> ibid

## Project/Programme Objectives:

The overall objective of this project is to enhance climate adaptation resilience in the Mukungwa catchment, and specifically in 6 sub-catchments of Rubagabaga, Nyamutera, Mwora, Minoga, Burera-Gisovu, and Kagere. This will be done by implementing landscape restoration measures to reduce water runoff, soil erosion, and rehabilitate degraded areas and hence increase soil productivity. One of the major challenges identified in the catchment is soil erosion, which significantly impacts ecosystem service supply, land productivity and water resources (quality and quantity, and timing). The foundation of sustained ecosystem service supply is catchments that are in good health. The objective targets to improve the status of the catchment through targeted landscape restoration initiatives. For prioritized sub catchments, this objective aims to implement actions that include:

1. Rehabilitation of degraded areas through terracing, afforestation, reforestation, agroforestry, and hedgerows practices.
2. Gully rehabilitation.
3. Landscape restoration supporting measures.
4. Community capacity building
5. Monitoring, Evaluation, and Learning

## Project/Programme Components and Financing:

Table 3: Project components and financing

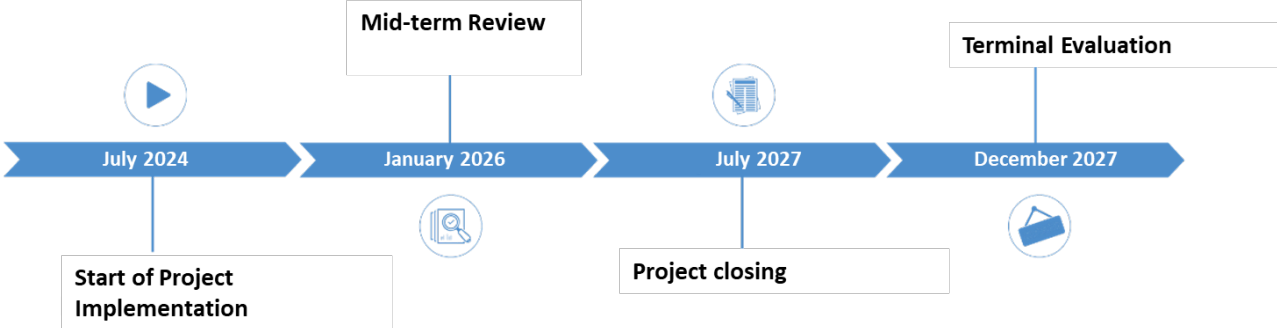
| Project/Programme Components   | Expected Concrete Outputs             | Expected Outcomes              | Amount (US\$)                  |         |
|--|---------------------------------------|--------------------------------|--------------------------------|---------|
| 1. Rehabilitation of degraded areas  | Hectares terraced.                    | 1. Climate resilient watershed | 5,626,190                      |         |
|  | Hectares afforested                   |                                | 110,147                        |         |
|  | Hectares reforested                   | 2. Improved water security     | 110,322                        |         |
|  | Hectares of land under agroforestry   |                                | 3. Resilience to climate risks | 87,888  |
|  | Kilometers of hedgerows planted       |                                |                                | 247,683 |
| 2. Gully rehabilitation  | Kilometers of gullies rehabilitated   |                                | 441,610                        |         |
| 3. Landscape restoration supporting measures   | Water harvesting structures installed |                                | 850,200                        |         |
|  | Cows distributed to households        |                                | 910,000                        |         |
| 4. Community capacity building   | Capacity building events              |                                | 150,000                        |         |
| 5. MEL   | Recommendations implemented           |                                | 1,465,960                      |         |
| 6. Project/Programme Execution cost  |                                       |                                | 850,000                        |         |
| 7. Total Project/Programme Cost  |                                       |                                | 9,234,040                      |         |
| 8. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable) |                                       |                                | 615,960                        |         |
| <b>Amount of Financing Requested</b>   |                                       |                                | <b>10,000,000</b>              |         |

Source: Vanguard Economics 2024 & Rwanda Water Resources Board



# Projected Calendar:

Table 4:Project Calendar



Source: Rwanda Water Resources Board

## PART II: PROJECT/PROGRAMME JUSTIFICATION

### A. Project Components

#### **Sustainable Land Management and Catchment Restoration measures**

Subcomponent 2.1 will support **Sustainable Land Management (SLM)** and catchment restoration interventions. The focus will be on enhancing terraces, restoring gullies, promoting agroforestry, and undertaking afforestation efforts. These interventions will have a positive impact on approximately 71,000 of residents of 6 sub-catchments who adopt SLM and climate change adaptation practices.

Interventions are selected using **Catchment Restoration Opportunity Mapping Decision Support System (CROM-DSS)**, a tool that is widely applied by the RWB. The selected interventions are afforestation, reforestation, agroforestry, bench terrace, contour bank terrace, riverside protection (plantation), hedgerows, water harvesting. Interventions are recommended to address the existing land degradation and the associated problems and sometimes they are combined, and, in some cases, they are recommended for certain areas. The recommended interventions are proven technologies in Rwanda and elsewhere in Africa such as Ethiopia and Kenya. The most recommended intervention is terracing followed by hedgerows and water harvesting structures. The catchment management measures will also integrate climate-smart interventions whenever feasible for maximum impact. Additionally, beneficiaries will be supported to adopt appropriate agronomic practices and cropping systems through climate smart agriculture to enhance the adaptive capacity of the communities.

It is estimated that full treatment of the 66 Level-3 priority catchments will result in:

- over 4 million tons of topsoil per year will be conserved.
- Additionally, different land uses such as agricultural fields, road networks, rivers, lakes, dams, and wetlands located downstream will be protected from the sediment loads.
- The impact of soil erosion on crop production will be minimized. Adoption of sustainable land management practices such as contour bank terraces and strengthening the bunds with various multipurpose plants will retain surface water and protect the agricultural land from splash and accelerated erosion. Conservative estimates show that the impact of catchment restoration in the priority 1 areas will help in protecting from loss approximately 900,000 tons of crops per year.
- Soil erosion causes soil fertility depletion, which is the primary cause of low agricultural productivity in Rwanda. The practices also augment soil fertility and improve agriculture productivity.

Table 5: Project components and their contribution to climate resilience

| Adaptation activity   | Contribution to climate resilience  |
|---|---|
| <b>Component 1: Rehabilitation of degraded areas</b>  |   |
| <p><b>Terracing</b> – The 6 proposed sub-catchments are subject to severe soil erosion challenges brought on by erosion-prone landforms -See figure 7 -Topography - and long-term human activities that alter the physical landscape, cause substantial soil erosion, and adversely affect surface waters. The project will implement terracing on 6,400 ha in the 6 sub-catchments.</p>  | <p>This activity will contribute to the community’s resilience in terms of soil erosion control by reducing the speed and flow of water downhill, and also retain the topsoil and nutrients needed for the growth of crops thereby minimizing soil erosion. This is crucial for maintaining soil fertility and agricultural productivity, which are vital in a region where more than 70% of the population relies on agriculture.), effective water management, more productive farming.</p> <p>Effective water management and productive farming are vital for food security in the region, especially as climate change impacts poses risks to agricultural yields. The process of building and maintaining terraces will also involve community efforts, which will strengthen local knowledge and practices around sustainable land use and climate adaptation strategies.</p>   |
| <p><b>Afforestation and reforestation</b> – The National Forest Policy recognizes the crucial role forests play for the livelihood of Rwandese people and governs a process of restoring degraded landscapes and protecting natural forests. In 2019, Rwanda reached its goal of increasing forest cover to 30%<sup>14</sup> of total land area one year ahead of plan despite continuing population and land pressures. It is now aiming to fulfil its Bonn Challenge commitment of bringing 2 million ha under restoration by 2030.</p> | <p>Rwanda benefits from afforestation both social-economically – food security, medicine, construction materials, recreational services, etc- and environmentally by increasing climate resilience. By law, slopes over 60% need to be forested against erosion and landslides<sup>15</sup>.</p> <p>In the Mukungwa catchment where the topography is challenging, afforestation is seen as a reliable solution to inherent watershed degradation related to climate related events. In the selected catchments for this proposal, 284 hectares of afforestation and reforestation are planned.</p> <p>The rest of the land, which is predominantly used for agriculture, will harness the agroforestry system. This activity will contribute to the community’s resilience in terms of carbon sequestration, water cycle regulation, microclimate regulation, climate resilient livelihoods, flood control, and enhancing agricultural resilience.</p> |
| <p><b>Agroforestry</b> – Same as forestry, agroforestry is also a major component of the catchment rehabilitation plans in Rwanda to restore and protect the natural infrastructure.</p>  | <p>Agroforestry supports the livelihoods of farmers through the provision of additional biological products such as fruit, as well as services - supporting (soil fertility and moisture), regulating microclimate and water and air quality. Agroforestry contributes to healthy catchments and healthy people.</p>  |

<sup>14</sup> <https://www.newtimes.co.rw/article/170943/News/rwanda-reaches-30-forest-cover-target>

<sup>15</sup> Rwanda Water Portal

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|  | <p>Agroforestry in combination with terraces is necessary to reduce erosion and increase infiltration. This intervention will also significantly increase the community's resilience in terms of reduced dependence on external inputs, resilience to extreme weather events as well as supporting pollinators and natural predators of crop pests. Additional benefits of agro-forestry includes food security, can be used as fodder for livestock, can be used as support for climbing beans etc.</p>  |
| <p><b>Hedgerows</b> - Planting hedgerows will play a significant role in combating soil erosion. Their roots help to bind the soil together, reducing its susceptibility to erosion. They also slow down water runoff as well as acting as barriers that capture soil particles and prevent them from being washed or blown away, thereby reducing the loss of topsoil. This mechanism works particularly on steep slopes which fit well the topology of the 6 sub-catchments.</p>   | <p>Same as agroforestry's contribution to climate resilience, hedgerows will also contribute to carbon sequestration, biodiversity enhancement, and most importantly, soil conservation.</p>  |
| <p><b>Component 2: Gully rehabilitation</b></p>  |   |
| <p><b>Gully Rehabilitation</b> – Given the steep topography, the geology, and the rainfall intensity in the project area, gullies are easily formed. Gullies decrease the stability of hillsides and increase the soil erosion rate. Gullies can be rehabilitated before they become larger, longer, and deeper by implementing measures such as bamboo plantation along gullies, building check dams to decrease water flows/erosion rate, and adding gabion walls where needed.</p>  | <p>This intervention will result in soil retention, hillside stabilization, better water quality downstream, and resilience to rainfall extremes.</p> <p>Controlling gully erosion (in gully erosion, the running water creates deep channels known as gullies) has higher energy since gullies are a great contributor to flash flood and other water related disasters - dense gully network facilitate the occurrence of extremely destructive floods. Unless steps are taken to stabilize the disturbance, gullies will continue to move by headward erosion or by slumping of the side walls. It is far easier and more economical to do repair work in the early stages of newly formed gullies; and reducing the associated sediment losses.</p> |
| <p><b>Component 3: Landscape restoration supporting measures</b></p>   |   |
| <p><b>Water harvesting</b> – The 2022 State of soil erosion Control in Rwanda report by IUCN states that built-up area, although relatively small (in rural areas which is the case in the two selected catchments), accelerates water velocity, runoff, and flow accumulation which creates severe gullies downstream. In such areas, storm-water management facilities, as well as the rainwater harvesting infrastructure, should be established to collect storm water from houses. The project will provide rainwater harvesting systems to the 1,300 households in the proposed intervention catchments.</p> | <p>The objective of improving livelihoods and increase resilience to heavy rains through provision of supporting measures is to ensure the sustainability of the proposed catchment restoration activities which are reinforced by more rational use of natural resources (e.g. rainwater). Additionally, animal husbandry, preferably through cows should also play a greater role in maintaining soil fertility necessary for more intensive agriculture.</p>   |

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| <p><b>Cows distribution</b> - The promotion of livestock development through animal distribution by programmes such as Girinka was identified as one of the solutions to contribute to improve soil fertility necessary for more productive agriculture. The project will provide cows to 1,300 households in the proposed intervention catchments.</p>   |  |
| <p><b>Component 4: Community capacity building</b></p>  |  |
| <p><b>Training Workshops and Educational Programs</b> - The capacity building and implementation of the catchment restoration activities through community approach is based on Village Land Use Plans.</p> <p>Village Land Use Action Planning combines planning, implementation, and learning (based on monitoring) to improve future planning and implementation. Community members go through cycles of planning-implementation-monitoring-observation-learning-planning. A group of people with a shared concern (e.g. soil erosion, soil fertility, livelihoods), plan, implement and learn from their actions. VLUAP is an overall approach, uses various methods and tools, e.g. mapping, GIS, stakeholder analysis, and is suitable when:</p> <ul style="list-style-type: none"> <li>- A problem is complex (e.g. integrated landscape challenges);</li> <li>- People (e.g. farmers) are not sure where to start (e.g. soil erosion and terracing);</li> <li>- Action involves people with differing perspectives (e.g. men and women); and</li> <li>- The situation may change (e.g. reducing fertility, increasing floods).</li> </ul> <p>Based on the VLUAPs capacity building of project beneficiaries may be required (e.g. agroforestry, organic farming, terrace layout, grass strips, etc.). Training will be provided by the appointed Service Providers in collaboration with RWB, the Districts (Hub and DPCC) and/or other IAs and programs.</p> | <p>Education is an essential factor in the ever more urgent fight against climate change in Rwanda. As part of the first phase of investment of the VCRP, a service provider will be hired to conduct community mobilization and capacity building of the community linked to climate change adaptation. This capacity building will help communities understand and tackle the consequences of climate change while encouraging them to change their behaviour and help them to adapt in order to build resilience to climate shocks.</p> |
| <p><b>Development of Educational Materials -</b></p>  |  |
| <p><b>Component 5: Monitoring, Evaluation, and Learning</b></p>   |  |
| <p><b>Mid-term project evaluation</b>– will focus on the process of</p>   |  |

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| <p>programme implementation. The evaluation will use data and information from the program's monitoring system to (a) assess progress in implementation; (b) assess progress towards achievement of objectives or yearly benchmarks; (c) assess if interventions are sufficient to reach desired outcomes, (d) identify barriers to achievement of objectives, and (e) to provide recommended actions to guide the remaining duration of the implementation timeframe</p> | <p>Data, insights, findings and lessons from the programme evaluations will help inform future catchment restoration interventions. Evidence generated and then shared with other communities, countries and regions will help shape and improve the design of catchment restoration and rehabilitation programmes. Doing so will strengthen resilience for all.</p> |
| <p><b>End-term project evaluation</b> – will focus on (a) assessing if the programme met the stated goals and objectives; (b) the effectiveness of the technical approach; (c) development of the overarching lessons learned from the project, and (d) a strategy for use or communication of these lessons both within the organization and to partners.</p>  |  |
| <p><b>Learning and knowledge sharing strategy</b> – Will be developed to ensure that throughout the implementation of interventions, lessons will be learned and shared at household level, community level, and national level in order to inform both policy and practice in the most effective and efficient approach to catchment restoration interventions</p>   | <p>Data analysis and lessons learnt from the implementation of this programme will be used to inform other watershed restoration project in Rwanda and the region</p>  |

Source: Vanguard Economics 2024

## B. Economic, Social and Environmental Benefits.

Implementation of the above discussed sustainable environmental practices will not only benefit the environment but also significantly improve the livelihoods of the most vulnerable communities in the two catchments. In the table below, we will discuss the economic, social and environmental benefits of the project to the community with a particular focus on vulnerable groups, including gender considerations.

Table 6: Economic, Social, and Environmental Benefits

| Type of benefit                | The benefit with Reference to vulnerable groups   | Mitigation and Compliance with ESP   | Mitigation and Compliance with GP   |
|--------------------------------|---|--|---|
| <p><b>Economic benefit</b></p> | <p><b>Job Creation</b> - The project will generate employment in the sustainable land management practices including forestry management, tree planting, and terracing. These activities will employ local community and prioritize hiring from local vulnerable groups, including women,</p> | <p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>The project will focus on job creation opportunities in sectors that do not further degrade the environment.</li> </ul> | <p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>The project will provide equal employment opportunities to all.</li> <li>Working sites will also cater for special needs for women.</li> </ul> |

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|  | <p>youth, and marginalized communities. Special training programs will be conducted to equip them with the necessary skills, ensuring these opportunities are accessible to all, regardless of their educational or professional background.</p>   | <ul style="list-style-type: none"> <li>Project implementation will ensure that it does not exacerbate existing social inequalities.</li> </ul> <p><b>Compliance:</b></p> <ul style="list-style-type: none"> <li>The project planning complies with the fund's risk principles like 1) Marginalized &amp; vulnerable groups, 2) Core labour rights, and 3) Protection of natural habitats</li> </ul>  | <p><b>Compliance:</b></p> <ul style="list-style-type: none"> <li>The project planning complies with the fund's principles like 1) Access &amp; equity, 2) Marginalized &amp; vulnerable groups, and 3) Human rights</li> </ul>   |
|  | <p><b>Diversification of Income</b> – By forestation and agroforestry, the project will introduce income avenues through non-timber forest products such as fruits, nuts, fodder, and medicinal plants. This initiative is especially beneficial to marginalized groups that often find it challenging to engage in mainstream economic activities.</p>  | <p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>The project will ensure equitable access to project resources for all community members including marginalized groups.</li> </ul> <p><b>Compliance:</b></p> <ul style="list-style-type: none"> <li>The project planning complies with the fund's principles like 1) Access &amp; equity and 2) Marginalized &amp; vulnerable groups.</li> </ul>   | <p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>The project will give particular attention to empowering women.</li> </ul> <p><b>Compliance:</b></p> <ul style="list-style-type: none"> <li>The project planning complies with the fund's principles like 1) Access &amp; equity and 2) Marginalized &amp; vulnerable groups.</li> </ul>  |
|  | <p><b>Increased Agricultural Productivity</b> - By introducing agroforestry and progressive terracing, the project aims to increase crop yields, thus enhancing food security and household income. This approach is particularly advantageous for smallholder farmers, who are often vulnerable to economic and environmental challenges. The project will provide these farmers with the tools and knowledge to improve their land's productivity sustainably.</p> | <p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>The project will use sustainable farming practices to avoid land degradation and biodiversity loss and provide training to avoid overuse of natural resources.</li> </ul> <p><b>Compliance:</b></p> <ul style="list-style-type: none"> <li>The project planning complies with the fund's principles like 1) Pollution Prevention &amp; Resource Efficiency and 2) Lands and Soil Conservation.</li> </ul> | <p><b>Mitigation</b></p> <ul style="list-style-type: none"> <li>Project will actively seek to empower women and girls in order for them to participate and benefit from project interventions</li> </ul> <p><b>Compliance:</b></p> <ul style="list-style-type: none"> <li>The project planning complies with the fund's principles like 1) Access &amp; equity and 2) Marginalized &amp; vulnerable groups.</li> </ul> |
|  | <p><b>Soil Fertility Improvement</b> - Enhancing soil fertility through agroforestry will reduce dependence on chemical fertilizers, which are often unaffordable for small-scale farmers. This aspect of the project is crucial for ensuring that these farmers, including a significant number of women,</p>   | <p><b>Mitigation</b></p> <ul style="list-style-type: none"> <li>The project will comply with Rwanda's standards on the use of chemical fertilizers and herbicides.</li> <li>The project will ensure that communities are educated about producing improved organic manure as well as the importance</li> </ul>   | <p><b>No risk identified</b></p>   |

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|  | <p>can maintain fertile and productive land without incurring high costs.</p>  | <p>of protective equipment when using chemicals and fertilizers.</p> <p><b>Compliance</b></p> <ul style="list-style-type: none"> <li>The project planning complies with the fund's principles of Lands and Soil Conservation.</li> </ul>   |   |
|  | <p><b>Reduced Erosion and Land Degradation Costs</b> - Terracing will play a vital role in reducing soil erosion, which is particularly significant for communities residing in marginal and susceptible areas. This initiative will lessen the long-term costs associated with land rehabilitation and maintenance.</p>   | <p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>The project will be careful in planning of terracing to avoid disrupting natural water flow or harming local ecosystems.</li> </ul> <p><b>Compliance:</b></p> <ul style="list-style-type: none"> <li>The project planning complies with the fund's principles like 1) Pollution Prevention &amp; Resource Efficiency and 2) Lands and Soil Conservation.</li> </ul> | <p><b>Mitigation</b></p> <ul style="list-style-type: none"> <li>By mitigating land degradation, the project also aims to alleviate the burden on women and children, who frequently bear the responsibility of traveling longer distances for resources like water and firewood due to environmental degradation.</li> </ul> <p><b>Compliance:</b></p> <ul style="list-style-type: none"> <li>The project planning complies with the fund's principles of Marginalized &amp; vulnerable groups..</li> </ul> |
|  | <p><b>Reduction in Labor and Maintenance Costs</b> - The establishment of terraces, once completed, requires minimal maintenance, which is particularly beneficial for elderly and physically less able community members. This aspect ensures that farming remains a viable and less labor-intensive occupation for these groups, fostering inclusivity and sustainability in agricultural practices.</p> | <p><b>- No risk identified</b></p>   | <p><b>- No risk identified</b></p>  |



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|                              | <p><b>Enhanced Land Value</b> - Well-maintained terraces will increase the value of agricultural land.</p>   | <p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>The project will ensure that the increase in land value benefits the entire community, especially marginalized groups.</li> </ul> <p><b>Compliance:</b></p> <ul style="list-style-type: none"> <li>The project planning complies with the fund's principles like 1) Access &amp; equity and 2) Marginalized &amp; vulnerable groups,</li> </ul>  | <p><b>Mitigation</b></p> <ul style="list-style-type: none"> <li>Project will ensure Rwandan women benefit from the improved value of their land in accordance to land rights in Rwanda.</li> </ul> <p><b>Compliance:</b></p> <p>The project planning complies with the fund's principles like 1) Access &amp; equity and 2) Marginalized &amp; vulnerable groups, and 3) Human Rights.</p>               |
| <p><b>Social benefit</b></p> | <p><b>Improved Health</b> - The planting of trees will significantly improve air quality, reducing respiratory health issues commonly faced by communities. Additionally, the diverse range of crops and fruits from agroforestry will contribute to better nutrition, thus improving overall health, particularly important for children and the elderly.</p> | <p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>In forestry and agroforestry, the project will select tree species that do not exacerbate allergies or other health issues with a focus on indigenous species.</li> <li>On work sites, the project will ensure a safe environment and provide workers with PPEs.</li> </ul> <p><b>Compliance:</b></p> <ul style="list-style-type: none"> <li>The project planning complies with the fund's principle of Public Health</li> </ul> | <p><b>Mitigation</b></p> <ul style="list-style-type: none"> <li>Project will ensure that women actively participate in agro forestry interventions to ensure they can improve their incomes and access nutritious diets.</li> </ul> <p><b>Compliance:</b></p> <ul style="list-style-type: none"> <li>The project planning complies with the fund's principle of Public Health</li> </ul>                 |
|                              | <p><b>Food Security</b> - Enhanced yields from agroforestry and terraces secure food sources for low-income families and marginalized communities, ensuring consistent access to food, a critical aspect for women who are primary caregivers.</p>   | <p><b>Mitigation</b></p> <ul style="list-style-type: none"> <li>Ensure that crops grown on the terraced land have a viable market both within the community and externally.</li> </ul>  | <p><b>Mitigation</b></p> <ul style="list-style-type: none"> <li>Priority to access terraced land for production should be given to women together with education to ensure they can maximize their yields</li> </ul>   |
|                              | <p><b>Community Engagement and empowerment</b> - The project's implementation involves community participation, particularly empowering women and marginalized groups, fostering unity, cooperation, and a sense of collective responsibility and ownership.</p>   | <p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>The project will create inclusive decision-making processes that give voice to all community members.</li> </ul> <p><b>Compliance:</b></p> <ul style="list-style-type: none"> <li>The project planning complies with the fund's principles like 1) Access &amp; equity and 2) Marginalized &amp;</li> </ul>  | <p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>The project will ensure that women, youth, and marginalized groups have equal opportunities to participate in and lead project activities, fostering empowerment and ownership.</li> </ul> <p><b>Compliance:</b></p> <ul style="list-style-type: none"> <li>The project planning complies with the fund's principles like 1)</li> </ul> |

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|                              |  | vulnerable groups, and 4) Core Labour Rights  | Access & equity and 2) Marginalized & vulnerable groups, 3) Gender Equality and Women's Empowerment   |
|                              | <b>Educational Opportunities</b> - Training in agroforestry and terracing techniques will offer skill development for underprivileged community members, with a focus on including women and youth, thereby increasing their employment opportunities and economic independence. | <b>No risk identified</b>   | <b>Mitigation:</b> <ul style="list-style-type: none"> <li>The project will focus on equitable education and skill development opportunities, especially for women and youth, to enhance their economic independence.</li> </ul> <b>Compliance:</b> <ul style="list-style-type: none"> <li>The project planning complies with the fund's principles like 1) Access &amp; equity and 2) Marginalized &amp; vulnerable groups, and 3) Gender Equality and Women's Empowerment</li> </ul> |
|                              | <b>Cultural Preservation</b> - Afforestation will help preserve indigenous plant species, which may have cultural significance in the region.  | <b>Mitigation:</b> <ul style="list-style-type: none"> <li>The project will work closely with local cultural leaders to ensure that afforestation efforts do not disrupt cultural heritage sites or practices.</li> <li>It will integrate traditional knowledge into conservation practices.</li> </ul> <b>Compliance:</b> <ul style="list-style-type: none"> <li>The project planning complies with the fund's principle of Physical and Cultural Heritage</li> </ul> | <b>No specific risk from a gender perspective</b>   |
| <b>Environmental benefit</b> | <b>Biodiversity Conservation</b> - New forests provide habitats for wildlife, aiding in biodiversity conservation. Agroforestry also supports a variety of plant and animal species, enhancing local biodiversity.   | <b>Mitigation:</b> <ul style="list-style-type: none"> <li>The project will be executed by environmental experts working closely with local community and leveraging local knowledge to prevent unintended harm to local ecosystems due to new species introduction.</li> </ul> <b>Compliance:</b> <ul style="list-style-type: none"> <li>The project planning complies with the fund's principle of</li> </ul>  | <b>Mitigation</b> <ul style="list-style-type: none"> <li>The project will ensure that women are not left out of conservation, education, employment opportunities.</li> </ul> <b>Compliance:</b> <ul style="list-style-type: none"> <li>The project planning complies with the fund's principles like 1) Access &amp; equity and 2) Marginalized &amp; vulnerable</li> </ul>  |

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|  |   | Conservation of Biological Diversity  | groups, and 3) Gender Equality and Women's Empowerment  |
|  | <b>Soil Erosion Control</b> - Trees help stabilize soil and reduce erosion, which is particularly important in the region's hilly terrain.  | <b>Mitigation</b> <ul style="list-style-type: none"> <li>Project will ensure the community is educated on the cost and measures to address the soil erosion challenge.</li> </ul>   | <b>No specific gender issue</b>   |
|  | <b>Improved water conservation</b> - Through afforestation and terracing benefit small-scale farmers, particularly women who often manage household water resources.  | <b>Mitigation</b> <ul style="list-style-type: none"> <li>Community to be educated about water conservation and use practices that maximize their agriculture production and improve their access to water on the household.</li> </ul> <b>Compliance:</b> <ul style="list-style-type: none"> <li>The project planning complies with the fund's principles of Pollution Prevention &amp; Resource Efficiency</li> </ul>                        | <b>Mitigation</b> <ul style="list-style-type: none"> <li>The project will ensure that women are actively participate in education campaigns and are facilitated to access water resources.</li> </ul> <b>Compliance:</b> <ul style="list-style-type: none"> <li>The project planning complies with the fund's principles like 1) Access &amp; equity and 2) Marginalized &amp; vulnerable groups, and 3) Gender Equality and Women's Empowerment</li> </ul>                                   |
|  | <b>Landscape Restoration</b> - In areas affected by degradation like the Mukungwa catchment, afforestation, agroforestry system and terraces will help in restoring the natural landscape.  | <b>Mitigation:</b> <ul style="list-style-type: none"> <li>The project will balance restoration efforts with existing land uses to avoid displacing local activities, especially those critical for livelihoods.</li> </ul> <b>Compliance:</b> <ul style="list-style-type: none"> <li>The project planning complies with the fund's principles like 1) Compliance with the Law and 2) Human Rights, and 3) Involuntary Resettlement</li> </ul> | <b>Mitigation</b> <ul style="list-style-type: none"> <li>The project will access potential impacts on women as a result of landscape restoration in order to ensure their active participation in opportunities that emerge.</li> </ul> <b>Compliance:</b> <ul style="list-style-type: none"> <li>The project planning complies with the fund's principles like 1) Access &amp; equity and 2) Marginalized &amp; vulnerable groups, and 3) Gender Equality and Women's Empowerment</li> </ul> |
|  | <b>Climate Mitigation</b> - Carbon sequestration by trees in agroforestry systems offers long-term environmental benefits, with special attention to ensuring that these efforts support livelihoods in vulnerable communities, including women's groups. | <b>Mitigation:</b> <ul style="list-style-type: none"> <li>The project will ensure that carbon capture efforts do not monopolize land needed for community activities, especially agriculture.</li> </ul>  | <b>Mitigation</b> <ul style="list-style-type: none"> <li>Project will access how women are affected by climate and mitigate the negative impact.</li> </ul>   |

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|  |  | <b>Compliance:</b> <ul style="list-style-type: none"> <li>The project planning complies with the fund's principles like 1) Compliance with the Law and 2) Human Rights, and 3) Involuntary Resettlement</li> </ul> |                           |
|  | <b>Microclimate Stabilization</b> - The creation of a stable microclimate through forest and agroforest systems supports agricultural resilience, crucial for small-scale farmers and particularly beneficial for women, who are often disproportionately affected by climate-related agricultural challenges. | <b>No risk identified</b>  | <b>No risk identified</b> |

Source: Vanguard Economics 2024

## C. Cost-effectiveness of the proposed project

**Cost effectiveness is a description of alternative options to the proposed measures.** It compares proposed actions to other possible interventions that could have taken place to help adapt and build resilience in the same sector, geographic region, and/or community<sup>16</sup>.

**This project's cost effectiveness can only be analysed through the lens of the VCRP larger programme.** The programme's interventions, under its flood risk management and landscape restoration and catchment management components, leveraged CROM-DSS technology that links science with participatory processes. The tool did not only help to identify priority sites for soil erosion and landslide mitigation but also guided the decision on how to efficiently respond to the situation. There is a high level of certainty that the combination of all programme's interventions will to a healthy and climate resilient ecosystem in the region. Table 7 compares the proposed intervention in this specific project with other possible interventions which in many cases are proposed in other components of the larger VCRP programme.

Table 7: Cost effectiveness analysis

| Proposed action                       | Cost      | Other possible options   |
|---------------------------------------|-----------|--|
| Terracing                             | 5,626,910 | Studies have shown that with the current vegetation cover using perennial crops, grasses, annual crops or afforestation, the loss of soil in the Upper Nyabarongo catchment decreases from 437 tons/ha/yr to 36 tons/ha/yr. Literature such as Rutebuka et al. (2021) reported that with the planned terracing, the soil loss will be less than 5 tons/ha/yr and the reduction of erosion (bringing the national average to less than 11 tons/ha/yr) and the full implementation of soil erosion control with bench terraces is expected to make soil erosion very negligible. |
| Reforestation                         | 110,322   | No alternative option given the legal framework. By law, slopes over 60% need to be forested against erosion and landslides <sup>17</sup> .  |
| Afforestation                         | 110,147   | Under Bonn Challenge <sup>18</sup> , Rwanda has committed to several landscape restoration projects, whose objective is to restore 2 million hectares of forests.  |
| Agroforestry practices                | 87,888    | The other option is current agriculture practices that would continue to be at risk from climate change impact like soil erosion and flooding.   |
| Planting hedgerows                    | 247,683   | N/A  |
| Gullies protection and rehabilitation | 441,610   | No alternatives interventions that address gully erosion. Unless steps are taken to stabilise the disturbance, gullies will continue to move by headward erosion or by slumping of the side walls.   |
| Rainwater harvesting systems          | 850,200   | N/A  |
| Awareness creation                    | 30,000    | N/A  |
| Skills development                    | 90,000    | N/A  |
| Knowledge sharing                     | 30,000    | N/A  |
| Monitoring and learning               | 1,465,960 | N/A  |

<sup>16</sup> AdF's Instructions for preparing a request for project or programme funding from the adaptation fund - Annex 5 to OPG Amended in October 2017

<sup>17</sup> Rwanda Water Portal

<sup>18</sup> Bonn Challenge Commitment - Rwanda was the first African country to pledge to the Bonn Challenge in 2011, aiming to restore two million hectares of deforested and degraded land by 2020. This pledge is part of a global effort to restore 150 million hectares by 2020 and 350 million hectares by 2030.

**The project activities are designed to obtain optimum results that will benefit direct and indirect beneficiaries in tangible ways.**

- **Focus on Climate Resilience:** The project aims to address climate change impacts, such as floods, landslides, and soil erosion, which pose significant risks to the communities in the two proposed catchments. By implementing enhancing adaptive capacity, the project seeks to reduce vulnerability and enhance resilience. Investing in climate resilience measures can be cost-effective in the long run as it mitigates potential damages and losses caused by climate-related events, reducing the need for costly post-disaster response and recovery efforts.
- **Synergistic Approach:** The project adopts a multi-component approach that integrates various activities, afforestation and reforestation, terracing, agro-forestry, planting of hedgerows, gully rehabilitation, and rainwater harvesting. This holistic approach allows for synergies and interlinkages between different components, maximizing the impact and cost-effectiveness of the interventions.
- **Income Generation and Economic Resilience:** The project emphasizes promotion of sustainable livelihoods by supporting the most practiced livelihood in the two catchments – agriculture. With more climate resilient agriculture and enhanced productivity as a result of mitigated soil erosion, there is an improved income for the vulnerable communities. Economic resilience will contribute to poverty reduction, decrease dependency on external assistance, and generate positive economic spillover effects within the communities.
- **Long-term Environmental Benefits:** The project's focus on sustainable land and water management practices, by regenerative landscapes, offers long-term environmental benefits. These measures contribute to the preservation of natural resources, reduction of environmental degradation, and promotion of ecological sustainability. While the immediate costs of implementing these measures may be incurred, the long-term benefits, such as reduced ecosystem restoration costs and improved environmental quality, can outweigh the initial investments.

## D. Consistency with national or sub-national sustainable development strategies

The project is aligned with several national strategies that foster climate resilience and sustainable development. Table 8 below provides a summary of the alignment of the project to various government policies.

Table 8: Consistency with national development strategies

| Policy / Strategy                                  | Alignment and relevance   |
|--|---|
| <b>National level</b>                              |   |
| <b>Rwanda Vision 2050</b>                          | <p>Rwanda’s Vision 2050 recognises the role of the environment as a key pillar on which the country can transform to the quality of life for Rwandans. The blueprint outlines key areas related to water resources through which the development targets can be met as follows:</p> <ul style="list-style-type: none"> <li>• Rwanda Vision 2050 aims to achieve 100% access to water by 2024. The project's commitment to reducing water runoff and protecting riverbank areas directly contributes to sustainable water management, aligning with the vision's goal of establishing a modern, safe, and reliable water supply network.</li> <li>• The project's objective of enhancing climate adaptation resilience and sustainable management of the Mukungwa catchment aligns with Vision 2050's commitment to sustainable environmental management.</li> <li>• The focus on rehabilitating degraded areas through terracing, afforestation, and reforestation directly contributes to the vision's goal of restoring and maintaining healthy ecosystems.</li> <li>• The project's efforts to reduce soil erosion and enhance landscape restoration contribute to Vision 2050's target of increasing renewable water resource availability per capita to 1000 m<sup>3</sup> per annum. By improving soil productivity and preserving water resources.</li> </ul> <p>Achieving these objectives requires strategic planning of management and use of land and water resources including water resources management, land and soil conservation, waste disposal, reducing and elimination water pollution. The strategic planning needs to have intentional consideration of future scenarios – development and climate change.</p> |
| <b>National strategy for Transformation (NST1)</b> | <p>The National Strategy for Transformation (NST-1)/Seven Years Government Program (2017-2024) outlines priorities for a green economy. The Economic Transformation pillar of NST-1 prioritizes “<i>Sustainable Management of Natural Resources and Environment to Transition Rwanda towards a Green Economy</i>” as key to a green economy. The strategy say that this will be achieved through the following efforts that are strongly aligned with this project:</p> <ul style="list-style-type: none"> <li>• Continue to strengthen forest management and ensure their sustainable exploitation working with the private sector.</li> <li>• The area covered by forest will be increased and sustained at 30% by 2024 through forest landscape restoration.</li> <li>• Develop a project to manage water flows from the volcano region and other rivers to mitigate related disasters and improve water resource management. To further improve integrated water resource management, water catchment areas will be effectively managed and protected to mitigate disasters in partnership with communities.</li> <li>• Strengthen land administration and management to ensure optimal allocation and use of land.</li> <li>• Scaling up of marshland and small-scale technologies for irrigation and promotion of new models of irrigation scheme management, including the development and strengthening of farmers’ and water users’ associations. Increases the land</li> </ul>  |

|  |  |
|--|--|
|  | <p>area covered by terraces and ensure their optimal use, land covered by radical terraces will increase to 142,500 ha by 2024. Similarly, land covered by progressive terraces will increase to 1,008,000 ha by 2024.</p> <p>Under priority area 7, providing for “development of a project to manage water flows from the volcano region and other rivers to mitigate related disasters and improve water resource management” was envisaged as one of the national priorities.</p>  |
| <b>Rwanda Green Growth and Climate Resilient Strategy (GGCRS 2021)</b> | Rwanda’s Green Growth and Climate Resilience Strategy (GGCRS) outlines the country’s actions and priorities on climate change relating to both mitigation and adaptation. One of the three strategic objectives of the GGCRS is to achieve sustainable land use and water resource management that results in Food Security, appropriate Urban Development and preservation of Biodiversity and Ecosystem Services. Sustainable Land use and Natural Resource Management, entails integrated water resource management, building climate resilient water infrastructure for storage, supply, efficiency; developing catchment restoration and soil erosion control strategies; and strengthening disaster management and response.   |
| <b>Rwanda National Environment and Climate Change Policy (2019)</b>    | Recognizes deforestation as one of the key environmental and climate change issues in Rwanda. It emphasizes the need to restore ecosystems and enhance their ecological functioning, including forests. This is to be achieved by regularly conducting an inventory of degraded ecosystems and preparing restoration development plans.  |
| <b>Nationally Determined Contribution (2020)</b>                       | Focusing on climate change, the NDC for Rwanda outlines the country’s to contribute to global efforts to curb global temperature rise below 2°C by 2100. Among others, key adaptation interventions proposed under NDCs include expanding irrigation and improving water management using IWRM framework; developing a National Water Security through water conservation practices, wetlands restoration, water storage and efficient water use; (vii) developing water resource models, water quality testing, and improved hydro-related information systems; and developing and implementing a catchment management plan for all Level 1 catchments.   |
| <b>Sector level</b>  |  |
| <b>The Environment and Natural Resources Sector Strategic Plan</b>     | Aims to strengthen governance structures for IWRM at catchment, national and trans-boundary levels, ensure equitable, efficient & productive water allocation and establish national standards for ambient water quality. This strategic plan recognizes deforestation as a prominent environmental and climate change issue in Rwanda and emphasizes the urgent need to restore ecosystems, with a specific focus on forests. The project’s commitment to enhancing climate adaptation resilience in the Mukungwa catchment is in direct harmony with the strategic plan’s overarching goals. Moreover, the project’s landscape restoration initiatives align with the strategic plan’s emphasis on conducting regular inventories of degraded ecosystems and developing comprehensive restoration plans. |
| <b>Forestry Policy</b>   | Acknowledges the importance of managing forest resources to support the country’s sustainable, low-carbon, and climate-resilient development goals, with the aim of improving the livelihoods of present and future generations.   |
| <b>The Strategic Plan for Agricultural Transformation (PSTA-4)</b>     | outlines priority investments in agriculture and estimates required resources for the agriculture sector for the period 2018-2024. Given that Rwanda currently relies to a greater extent on rain fed agriculture PSTA-4 promotes developing soil and water conservation as part of integrated watershed management programmes, considering that the most successful approaches are those involving local communities, especially in reconciling the use of crop, livestock, and trees.  |
| <b>Water and Sanitation</b>  | Aims to increase the proportion of the population/households accessing improved source of water to 100% and the proportion with improved sanitation services/ facilities to 100% as well.  |



|   |   |
|---|---|
| <b>Sector Strategic Plan (2018-2024)</b>      |   |
| <b>Land Policy</b>                            | Emphasizes the inclusion of agroforestry in the hillside agricultural landscape due to its contribution to soil protection.   |
| <b>District level</b>                         |   |
| <b>District development strategies (DDSs)</b> | Are development blueprints at the district level that drive the district' s contribution towards national goals. Environmental conservation programs are critical components including measures to control soil conservation, wetlands and riverbanks protection, among others. |

## E. Compliance with National standards

Landscape restoration standards in Rwanda are part of a comprehensive approach to address environmental degradation and promote sustainable land use. The table 9 below provides some key aspects of these standards and initiatives. These standards and initiatives highlight Rwanda's comprehensive and community-focused approach to landscape restoration, aiming not only to restore ecological functionality but also to enhance human well-being and economic development.

Table 9: National Standards

| Category             | Standard   | Relevance to this project   | Alignment with ESP of the AdF  |
|----------------------|--|---|--|
| <b>Environmental</b> | <b>Bonn Challenge Commitment</b> - Rwanda was the first African country to pledge to the Bonn Challenge in 2011, aiming to restore two million hectares of deforested and degraded land by 2020. This pledge is part of a global effort to restore 150 million hectares by 2020 and 350 million hectares by 2030. The Bonn Challenge and the African Forest Landscape Restoration Initiative (AFR100) have been crucial in guiding Rwanda's restoration efforts. | Following the footprint of the Bonn Challenge, the project design focuses on landscape restoration, enhancing ecosystem services, community involvement, agroforestry, and land use practices, leveraging global synergy, as well as policy support and funding opportunities | Strongly aligned with principles of 1) Climate Change, 2) Pollution Prevention & Resource Efficiency, 3) Lands and Soil Conservation |
|                      | <b>Nationwide landscape restoration</b> - Since 2011, Rwanda has implemented 80 restoration projects across the country. Over this period, Rwanda quadrupled domestic investment in landscape restoration. As of 2018, a combined domestic and international investment of US\$ 6.7 million made nearly 35% of the country's two-million-hectare restoration ambition a reality <sup>19</sup> .  | The project design is built on shared best practices and lessons learned from other restoration projects.   | Strongly aligned with principles of 1) Climate Change, 2) Pollution Prevention & Resource Efficiency, 3) Lands and Soil Conservation |
|                      | <b>Technical Packages and Analysis</b> - Detailed cost-benefit analysis and spatial analysis have been conducted to evaluate the financial effectiveness and potential impact on erosion control of various restoration measures. These analyses help guide and enhance restoration strategies across Rwanda.  | Rwanda has well-developed policies and tools for land and water management – such as the CROM decision support system that has underpinned the proposed interventions in this project.  | Strongly aligned with principles of 1) Climate Change, 2) Pollution Prevention & Resource Efficiency, 3) Lands and Soil Conservation |
|                      | <b>Forest Landscape Restoration (FLR) Strategies</b> - The FLR approach in Rwanda includes transforming traditional agriculture to agroforestry systems,   | Forest landscape restoration in Rwanda is supported by strong policy frameworks and institutional   | Strongly aligned with principles of 1) Climate Change, 2) Compliance with the Law, 3)  |

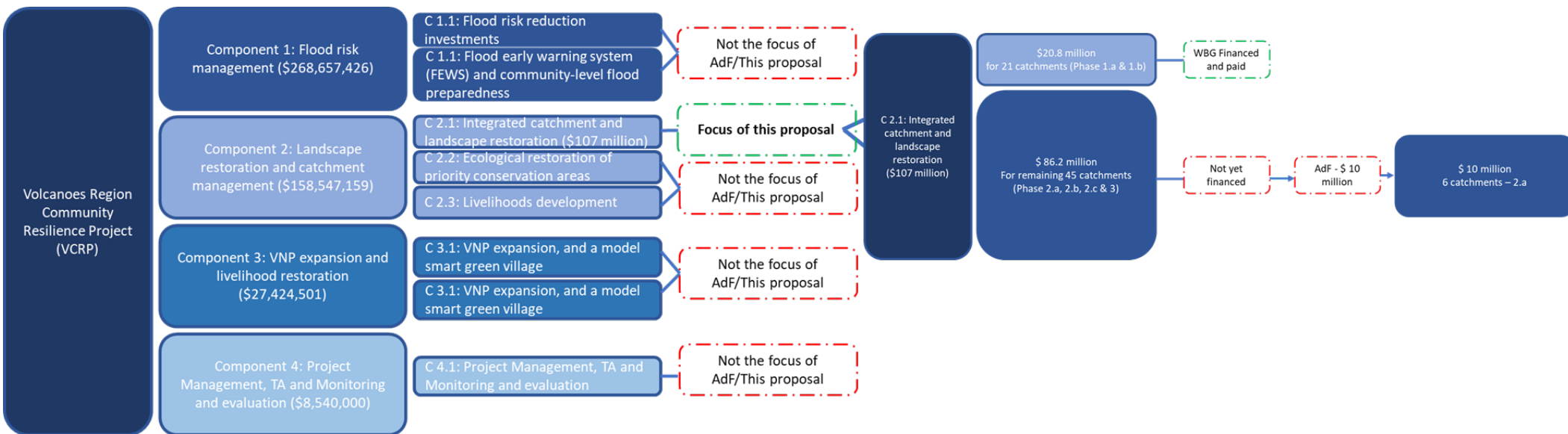
<sup>19</sup><https://www.iucn.org/news/forests/202003/how-rwanda-became-a-restoration-leader#:~:text=From%20the%20eastern%20semi%2Ddry,domestic%20investment%20in%20landscape%20restoration.>

|               |  |  |   |
|---------------|--|--|---|
|               | rehabilitating poorly managed eucalyptus woodlots and plantations, restoring deforested protected land with native species, and improving tree diversity in protected forests and sensitive sites like water catchments.   | support  | Lands and Soil Conservation   |
| <b>Social</b> | <b>Community Involvement and Economic Impact -</b> Restoration projects involve local communities and have a significant economic impact. The focus is also on building resilience against climate change impacts and ensuring sustainable use of natural resources. | The project will also ensure active and meaningful involvement of local communities in all stages of the project—from planning to implementation and monitoring. | Strongly aligned with principles of 1) Access & Equity, 2) Marginalized & Vulnerable Groups, 3) Human Rights                            |
|               | <b>Equity and Inclusion –</b> In Rwanda, ensuring that the benefits of the project are shared equitably among all members of the community, including marginalized and vulnerable groups such as women, youth, and the economically disadvantaged is crucial.        | This project has also considered equity and inclusion standards in its design and will remain the practice throughout its implementation.                        | Strongly aligned with principles of 1) Gender Equality and Women's Empowerment, 2) Access & Equity, 3) Marginalized & Vulnerable Groups |

## F. Duplication of project with other funding sources

In the larger VCRP programme, the focus of this project is only component 2.1 – See figure 11. WBG has funded \$ 20 million out of \$ 107 million in this sub-component and the GoR is working on raising more funds to cover the whole cost of landscape restoration. The Adaptation Fund is requested to fund \$ 10 million to cover 2 sub-catchments as the figure below shows.

Figure 10: VCRP component and their funding



Source: Vanguard Economics 2024 – VCRP project documents

## G. Learning and Knowledge Management

The learning and knowledge management component of the project will be captured and disseminated through the following channels:

- **Community engagement platforms** – At the larger project (VCRP) level, the project design has considered community engagement a priority in project design and implementation. Community approach guidelines were developed where the primary objective is to consult landowners in different catchments at the Village level to jointly plan and agree on proposed solutions as well as the implementation of work plans. This establishes a platform where the project continually collects the community's insights and disseminates knowledge through capacity building.
- **Project implementation (annual reviews and progress reports)** –the project will collect case studies under each component to drill down into specific innovations and practices that arise due to project interventions. A lesson learning exercise will also be included annual reviews of project implementation. During this process significant new understandings will be catalogued and used to build the knowledge base of best practices as well as document where project implementation has resulted in unexpected impacts or investigate approaches that have not worked and why. Lessons learned will include detailed, specific information about behaviors, attitudes, approaches, that will inform project implementation and other interventions.
- **Periodic monitoring and evaluation** - Lessons will also be captured through the Monitoring and Evaluation system which will provide regular monitoring of project indicators, as well as progress against the key milestones. The project will promote Participatory Monitoring and Evaluation System so that, as much as possible, the results of climate adaptation approaches will be measured, processed and evaluated by the communities involved. As well as enabling project participants to use the information to modify approaches as they go, this approach will also build the capacity of local communities to adapt to future climate trends and shocks.

## H. Consultative process

**Continued stakeholder and beneficiary engagement during the implementation of proposed activities will be important.** The project has facilitated stakeholders' engagement in the design and will continue to facilitate the same during the implementation of proposed activities. This has been done through regular consultations and mobilization sessions for the beneficiaries in each targeted catchment. Engagements has helped to mitigate as much as possible any negative impacts related to the works and thus ensuring the beneficiaries' buy-in and ownership.

Community engagement methods and mechanisms included:

- Early identification and representation of key stakeholders.
- Early engagement of communities in the project/process not only be engaged once key project-related decisions have already been made.
- Clear setting out of, and agreeing to/of objectives at the beginning of the project/process.
- Continuous conversations between all stakeholders throughout the project.
- Acknowledging and using local knowledge.
- The selected methods of engagements must be relevant to the context within which the project is implemented, and the stakeholders.
- The community engagement process must create opportunities for accountability.
- Create community ownership.
- Incorporate the capacity building of the community to ensure that they can participate in the process (and project!) in a meaningful manner.
- The decision-making process must be structured, open and inclusive of key stakeholders representing the community, ideally without political or self-bias.

Throughout project implementation, the implementation team will continue to carry out regular consultation and mobilization sessions for the beneficiaries in each targeted watershed to mitigate as much as possible any negative impacts related to the works and ensure buy-in and ownership by beneficiaries.

### Project stakeholders

Table 10:classification of the project stakeholders

| Type of stakeholder   | Stakeholder  | Responsibilities  | Power to influence the project delivery |
|-----------------------|--|---|---|
| Government ministries | Ministry of Environment                                | Implementing Entity and chair of steering committee               | High                                    |
|                       | Ministry of Finance and Economic Planning (MINECOFIN), | Fund disbursement and Part of steering committee                  | High                                    |
|                       | Ministry of Local Government (MINALOC),                | Part of steering committee  | Medium                                  |
|                       | Ministry of Emergency Management (MINEMA),             | Support on disaster areas and data and Part of steering committee | Low                                     |
| Local government      | Vice mayor - Nyabihu District                          | Local governance coordination                                     | High                                    |
|                       | Vice mayor - Ngororero District                        |   | High                                    |
|                       | Sector offices   |   | High                                    |
|                       | Cell executive secretaries                             |   | High                                    |

|                                  |   |                            |        |
|----------------------------------|---|----------------------------|--------|
|                                  | Village leaders                                 | Community coordination     | High   |
| Government agencies              | Rwanda Water Resources Board (RWB)              | Executing entity           | High   |
|                                  | Rwanda Environment Management Authority (REMA), | Part of steering committee | High   |
|                                  | Rwanda Green Fund FONERWA                       |                            | High   |
|                                  | Rwanda Agriculture Board (RAB),                 |                            | Medium |
|                                  | Rwanda Forest Authority (RFA)                   |                            | Medium |
| Donors and Multilateral agencies | World Bank                                      | Funding partner            | High   |
|                                  | Adaptation Fund                                 | Funding partner            | High   |
|                                  | Green Climate Fund                              | Funding partner            | High   |

Source: VCRP Documents

**Local community**

During the design of the project, on 4<sup>th</sup> May 2023, a community of farmers in the Ngororero district, Matyazo sector, near Rubagabaga river (Hence falls in Rubagabaga catchment) was consulted as representative of other communities. 63 community members attended the consultation where 45 are male and 18 are female. The table below summarize key discussion areas:

Table 11: Local community consultation

| Benefits and Issue recorded   | Stakeholders that responded                              | Suggested mitigation measures by stakeholders  |
|---|--|--|
| Mitigation of floods that have been affecting communities in the volcanoes region and vunga corridor, directly responsible for the loss of houses, land, crops and human lives due to the downstream flow of water from upstream in the volcanic region   | RWB  | Suggested mitigation measures towards flood risk reduction comprise; detention ponds upstream of the main gullies, stabilisation of gulley embankments, rehabilitation of culverts, bridges, construction of check dams, dykes.  |
| Sediment deposit management in the main rivers (Giciye, Rubagabaga, Satinsyi rivers) draining into the vunga corridor, to avoid flood risks and destruction of homes, plantations, infrastructure such as roads, bridges, hydropower plants.  | RWB  | Suggested mitigation measures towards flood risk reduction comprise; river dredging, catchment restoration and landscape management.   |
| Minimizing landslide and erosion risks along the Vunga corridor hillsides   | RWB/ REMA  | Landscape restoration through the use of a tool known as CROM-DSS and the utilization of best practices to effectively mitigate the effects of erosion and reclaim land affected by erosion through activities such as radical terraces, rainwater harvesting, afforestation, reforestation, improved agricultural practices, suited crops to grow.  |
| <p>As a result of high sediment load on Rubagabaga river, areas along its banks and bridge are flooded, resulting in the following impact.</p> <ul style="list-style-type: none"> <li>• Rubagabaga river has a high sediment deposition which blocks the flow of river water under the Rubagabaga bridge, raises the river water level and causes flooding of the surrounding areas.</li> <li>• Potential of complete clogging of the Rubagabaga bridge in the very near future.</li> <li>• This has led to flooding and destruction of houses of 8 houses the previous day to the time of the stakeholder consultation.</li> <li>• Destruction of plantations leading to loss of crops and therefore food and income for households in their communities. As informed by participants, about 25ha of rice below Rubagabaga had been covered by sediments from Rubagabaga river floods the previous day.</li> <li>• Loss of land owned by locals, inundated by floods.</li> </ul> | Local community from Matyazo sector, Ngororero district. | <p>Suggested mitigation measures are:</p> <ul style="list-style-type: none"> <li>• Dredging the Rubagabaga river at its bridge as a short-term quick mitigation measure to avoid its complete clogging by sediment deposits and eventually making it impassable during rainy seasons or getting damaged.</li> <li>• To establish flood risk detention systems upstream of the main source of the flooding, which will reduce the volume of rainfall run-off reaching the village.</li> <li>• To support households in the river catchment with rainwater harvesting (such as water tanks) to collect rainwater off their house roofs which could minimise on contribution to run-off that causes landslides and ends up in the river causing flooding.</li> <li>• To support in channelling excess rainwater run-off from their settlements into pipes or other suitable drains directed to natural gullies that drain directly into the rivers hence minimising soil erosion and</li> </ul> |



|   |  |   |
|---|--|---|
| <ul style="list-style-type: none"> <li>• Damage of infrastructure such as; Rubagabaga hydro power plant had been severely damaged by the floods the previous day, the mostly used access road from Shyira sector in Nyabihu district to Matyazo sector in Ngororero district had been blocked by landslides making it impossible for the field visit team to reach Satinsyi river proposed for river dredging.</li> </ul> |  | <p>landslides that are part of the sources of sediment deposition in the rivers.</p> <ul style="list-style-type: none"> <li>• As part of catchment restoration, support the community in tree planting but with special attention to community participation and ownership of these trees. An example was given that the project should directly supply and employ the local community in planting and caretaking of the trees that way ensuring sustainability of the trees to grow rather than hire private companies that only plant trees and leave with no intention of following them up.</li> <li>• They offered to support soil erosion and flood risk prevention initiatives by offering community participatory labour as part of the monthly national voluntary community clean-up “locally called Umuganda”.</li> </ul> |
|---|--|---|

## I. Justification for funding requested.

Although this project is a component of the wider VCRP programme, it is important to note that the requested funds are sufficient to implement all adaptation measures presented in the proposal for the six sub-catchments identified, and that the implementation does not depend on the progress of activities or fund raising in other components of the wider VCRP programme. This flexibility of financing and implementation is part of the VCRP programme's funding strategy. Funding of this project is also justified based on the following:

- **Addressing Multi-faceted Challenges:** The project tackles multi-faceted challenges related to climate change adaptation, including reducing likelihood of climate hazards, enhancing community resilience, and sustainable livelihoods. These challenges require a holistic and integrated approach, involving various interventions such as introduction of nature-based solutions, infrastructure development, and capacity building. The funding requested covers nature-based solutions and capacity building activities as complementary components to the larger VCRP project that will also ensure the infrastructure development in its component 1. Funding these activities will ensure a comprehensive response to the complex climate change impacts faced by the vulnerable communities in the 6 sub-catchments.
- **Long-term Cost Savings:** Investing in climate change adaptation measures upfront will result in significant long-term cost savings. By implementing interventions that reduce and retain run-off such as afforestation, hedgerows planting, etc, the project aims to adapt to the current climate related potential hazards as well as mitigate potential damages and losses caused by future climate-related events. This proactive approach reduces the need for costly post-disaster response and recovery efforts, ultimately saving resources in the long run.
- **Enhancing Sustainable Development:** The requested funding supports sustainable development in the target region. By promoting terracing, afforestation and reforestation, agroforestry as well as rainwater harvesting systems, the project fosters long-term resilience and reduces floodings and soil erosion. This contributes to the economic (significantly contributes to agricultural activities that are the main source of income in the region), social, and environmental well-being of the communities, fostering their self-sufficiency and reducing vulnerabilities to future climate impacts.
- **Leveraging Co-benefits:** The proposed project not only addresses climate change adaptation but also generates co-benefits across various sectors. For instance, terracing, afforestation and reforestation and agro-forestry practices contribute not only to environmental conservation and biodiversity preservation, but also to agricultural productivity and which is vital in the region. The forest and trees also diversify income sources by selling sustainably harvested logs and payment for the sequestered carbon, promoting economic growth and poverty reduction. These co-benefits amplify the overall impact of the project and justify the funding requested by extending the reach of adaptation efforts beyond climate resilience alone.
- **Ensuring Long-term Resilience:** The full cost of adaptation reasoning takes into account the long-term resilience of the communities. By implementing a comprehensive set of interventions, including capacity building, knowledge management, and monitoring systems, the project ensures the sustainability of the adaptation measures beyond the project's lifespan. This long-term perspective strengthens the case for the requested funding as it

emphasizes the importance of investing in comprehensive and lasting solutions to climate change impacts.

## **J. Project Sustainability**

The project sustainability is based on involving the communities in the implementation of the project and building their capacity throughout the process as well as incentivizing their landscape restoration efforts.

- **Incentivize catchment protection efforts** - The project will support the design of a framework for PES scheme to support the sustainability of the outcomes as well as other mechanisms through which communities can receive incentives for their restoration efforts.
- **Participatory Approach** - Smaller activities situated closer to the communities will employ a participatory and consultative approach providing job opportunities and creating a sense of ownership of the programme.
- **Capacity Building** - Capacity building activities are integrated into the project to enhance the skills and knowledge of the community members. By providing training on climate-smart agriculture, sustainable land management, sustainable livelihoods, and other relevant topics, the project equips the communities with the necessary tools to continue implementing and maintaining the project outcomes independently.
- **Institutional Strengthening** - The project recognizes the importance of institutional strengthening to support the sustainability of the outcomes. Collaboration with local authorities, government agencies, and relevant institutions is prioritized to ensure the integration of project activities into existing policies, plans, and programs. This promotes institutional ownership and the incorporation of project outcomes into long-term development strategies.

## J. Environmental and Social Impacts and Risks

Table 12 compiles potential risks that the project has identified based on the nature of the proposed interventions and their relevancy to the 15 risk principles of Adaptation Fund.

Table 12: Identified potential risks

| AF ESP  | Identified potential risk   |
|---|---|
| <i>Compliance with the Law</i>                      | During terracing activities, there is high risk of land conflict related to boundaries. It is difficult to keep boundaries during terracing.  |
|   | <b>Carbon market monopoly</b> – With the emerging carbon market, the project might overlook other existing activities like agriculture.   |
| <i>Access and Equity</i>                            | During the implementation of various project activities, especially the radical terraces and afforestation, there is a risk of gender and vulnerability disparities in labour allocation during implementation of the sub-catchment restoration plan. |
| <i>Marginalized and Vulnerable Groups</i>           | <b>Gender-based violence</b> – At work sites with many workers, there is a risk of GBV.   |
|   | <b>Child abuse and exploitation</b> – Project implementation activities risk exploiting children through child labor and School dropout.  |
| <i>Human Rights</i>                                 | <b>Community rejection and discontent</b> – Restoration projects may result in community discontent especially when the concerned community were not consulted, or their voice were not considered.   |
|   | During implementation, existing crops may be destroyed due to the movement of workers.  |
| <i>Gender Equality and Women’s Empowerment</i>      | <b>Social inequalities</b> – Landscape restoration projects might exacerbate the existing social inequalities in terms of access to available opportunities and benefits.   |
| <i>Core Labour Rights</i>                           | <b>Injuries / accidents</b> – Terracing activities might risk several accidents.  |
| <i>Indigenous Peoples</i>                           | No identified risk  |
| <i>Involuntary Resettlement</i>                     | No identified risk  |
| <i>Protection of Natural Habitats</i>               | No identified risk  |
| <i>Conservation of Biological Diversity</i>         | <b>Biodiversity loss</b> – Earth moving activities like terracing might result in biodiversity loss especially amphibians and reptile’s species.  |
|   | <b>Non-Native Species Introduction</b> – Forestation activities might include exotic trees that are not friendly to the local ecosystem.  |
|   | <b>Root competition between trees and crops</b> which will negatively affect the growth of trees and crops.   |
| <i>Climate Change</i>                               | No identified risk  |
| <i>Pollution Prevention and Resource Efficiency</i> | <b>Soil structure disturbance and water bodies pollution.</b>   |
| <i>Public Health</i>                                | <b>HIV/STD transmission and prostitution among workers and residents.</b>   |
|   | <b>Spread of water borne diseases, poor hygiene and sanitation related diseases.</b>  |
| <i>Physical and Cultural Heritage</i>               | <b>Disruption of cultural heritage sites or practices.</b>  |
| <i>Lands and Soil Conservation</i>                  | <b>Soil Disturbance and Compaction</b> – Terracing might lead to soil disturbance and compaction, affecting soil health and productivity.   |
|   | <b>Soil erosion due to heavy rains especially during terracing.</b>   |

Source: Vanguard Economics 2024

As it will be highlighted later in table 15, under environmental and social risk management section, all these potential risks are thought of in the project design and key mitigation measures have been put in place to ensure that all possible risks mentioned above are addressed. The project will not have any significant adverse environmental or social negative impacts. Based on this assessment, the project is categorized as category C. Table 13 below shows whether or not the

project requires further environmental and social assessment.

Table 13: Checklist of environmental and social principles

| <b>Checklist of environmental and social principles</b> | <b>No further assessment required for compliance</b> | <b>Potential impacts and risks – further assessment and management required for compliance</b> |
|---|--|--|
| <i>Compliance with the Law</i>                          | X  |  |
| <i>Access and Equity</i>                                | X  |  |
| <i>Marginalized and Vulnerable Groups</i>               | X  |  |
| <i>Human Rights</i>                                     | X  |  |
| <i>Gender Equality and Women's Empowerment</i>          | X  |  |
| <i>Core Labour Rights</i>                               | X  |  |
| <i>Indigenous Peoples</i>                               | X  |  |
| <i>Involuntary Resettlement</i>                         | X  |  |
| <i>Protection of Natural Habitats</i>                   | X  |  |
| <i>Conservation of Biological Diversity</i>             | X  |  |
| <i>Climate Change</i>                                   | X  |  |
| <i>Pollution Prevention and Resource Efficiency</i>     | X  |  |
| <i>Public Health</i>                                    | X  |  |
| <i>Physical and Cultural Heritage</i>                   | X  |  |
| <i>Lands and Soil Conservation</i>                      | X  |  |

## PART III: IMPLEMENTATION ARRANGEMENTS

### A. Project Implementation Arrangements

**National Implementing Entity:** The Ministry of Environment (MoE) is the National Implementing Entity that will endorse the proposed Adaptation Fund Project. MoE is the Ministry responsible for ensuring sustainable development of the environment and management and rational use of natural resources. It is responsible for the development of policies, strategies, and programmes as well as the formulation of regulations and mobilizing resources for the development of the sector. The Ministry is also responsible for the monitoring and evaluation of the implementation of environment, climate change and natural resources management at the national level. MoE will be responsible for the overall management of the Project and financial, monitoring the achievement of the project outcomes/outputs, and reporting and supervision of the project with AF.

**Executing Entity:** The Rwanda Water Resources Board (RWB) will be the executing entity. It will be mandated to develop and implement flood mitigation and catchment rehabilitation measures. It will also work with institutions concerned with a specific aspect of the wider project, such as the Rwanda Environmental Management Authority (REMA) and the Rwanda Forest Authority (RFA) for reforestation and restoration.

#### **Procurement of Goods, Works and Services**

**All procurement of goods works and services will be undertaken in accordance with National Implementing Entity's Rules of Procedure for the Procurement of Goods and Works** as stipulated in the Law No 031/2022 of 21/11/2022 and Ministerial Order No 001/23/10/TC of 10/10/2023 establishing regulations governing public procurement. MoE will submit to the secretariat, on an annual basis, a procurement audit report issued by the Auditor General's Office, or an independent auditor, on the Adaptation Fund project/s under implementation in relation to the effectiveness of its procurement systems and practice, as well as continuous availability of qualified resources in project cycle management. The report will correlate recommendations identified by the internal auditor of MoE and any relevant review by the Ministry of Economy and Finance (MINECOFIN), taking also into account any issues raised by stakeholders.

#### **Financial Management and Auditing Arrangements**

**A Financial Management (FM) assessment was carried out for the project in accordance with the World Bank Policy and Directives on Investment Project Financing (IPF).** The assessment was carried out on the MoE and the RWB during project preparation to determine whether the implementing entities have acceptable FM arrangements, which will ensure that (a) funds are used for the intended purposes in an effective, efficient, and economical way; (b) financial reports will be prepared in a reliable, accurate, and timely manner; and (c) project assets will be appropriately safeguarded.

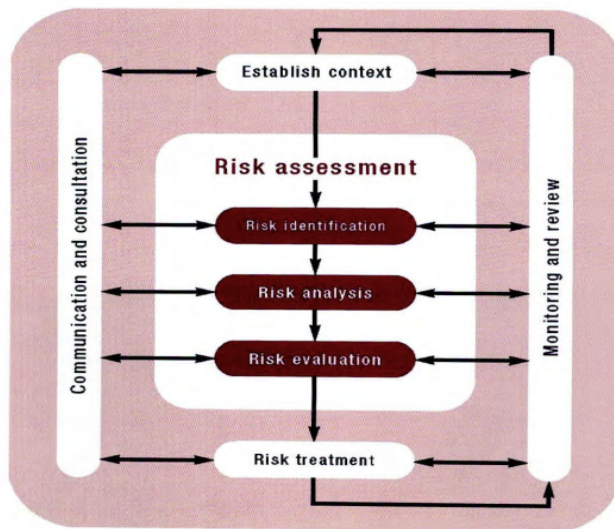
The project benefits from the public financial management (PFM) reforms that the country has undergone and the project's oversight and accountability arrangements. The PFM system is anchored in solid legal frameworks and PFM strategies. Progress has been made in budget planning, expenditure efficiency, enhancement of the internal audit function, external audit coverage, and financial reporting. The Public Expenditure and Financial Accountability (PEFA) 2022 confirmed these strengths. The project has acceptable project oversight and accountability structure which involves a National Steering Committee, management oversight (that is, the MoE, REMA, and the RWB), internal oversight bodies (internal audit and audit committee), external oversight bodies (Office of the Auditor General), and Parliament that approves the government's budget.

**Measures for financial and project/programme risk management.**

*GoR approach to risk management*

The project will be implemented by the Government of Rwanda through several its Ministries and agencies. Rwanda has a robust financial and project risk management framework that governs the activities of all government institutions. The Ministry of Finance and Economic Planning has published a set of Risk Management Guidelines to be followed by all government institutions and agencies. GoR recognizes that management of risk, is an important strategy for the achievement of NST 1, the Organic Law No. 12/2013/OL of 12/09/2013 on State Finances and Property requires every public institution to put in place risk management mechanisms to manage uncertainties that could impede achievement of institution's objectives. Figure 1 below provides visualization of the GoR risk management process that is applied to all projects under its implementation. For this project, the following risk matrix has been drawn up to based on an identification of the risk and how the risks will be managed and or mitigated- Table 14.

Figure 11: GoR risk management process



Source: Ministry of Finance and Economic Planning - Risk Management Guidelines, 2019

Table 14: Identified project risks and mitigation strategy

| Type of risk  | Description   | Approach to mitigation   |
|---------------|---|--|
| Strategic     | GoRs ministries, agencies, and other stakeholders may not demonstrate the level of commitment needed to ensure the success of the project | Continuous communication and visibility, advocacy, and engagement with key stakeholders during the implementation of the project to secure and maintain political buy in.  |
|               |   | Consulting fully with the stakeholders so that the project remains relevant to their needs.  |
|               |   | Networking and establishing meaningful partnerships in support of delivery of the project  |
| Financial     | GoR implementing agencies lack the capacity to manage and track the project funds.  | GoR through MINECOFIN has a system of annual assessments that ensure that projects are on track and that funds are spent on activities that had been agreed upon. An assessment of fund utilization will be done both annually and in the project evaluations. |
|               |   | GoR internal audit function led by the Auditor general will ensure that all financial controls are in place and are being followed.  |
| Economic      | Some households and communities may benefit more than others from the implementation of the project                                       | Implementation of each intervention should include an inclusion assessment that guides the targeting of beneficiaries. Data should be collected on who in the targeted beneficiaries has or has not benefited from the project as designed.                    |
|               |   | Continuous M&E of the project will help guide the implementation process and ensure that it is equitable.  |
| Developmental | Some segments of the targeted population are left out of the beneficiation of the project – youth, women, and PWDs.                       | Implementation of the plan should mainstream youth, gender and PWDs across all interventions.  |
|               | The project fails to deliver on its climate, environment, and conservation objectives   | Each intervention should include an audit on the how climate, environment, and conservation objectives will be impacted, or negative effects will be mitigated and or eliminated.  |
| Operational   | GoR is unable to raise enough funding to implement the project  | GoR needs to draw up a funding strategy that will help raise financial support and commitment to support implementation at both the local and national government levels.  |
|               | Poor visibility of the impacts and benefits of the project  | Proactive, timely and planned communication and visibility actions throughout the duration of the project  |
| Technical     | Delayed progress in the implementation of the project that could impact on its usefulness to the affected communities.                    | Effective coordination at all levels – community, local and national government and with implementing partners (NGOs or private sector) to ensure the agreed interventions are delivered in a timely manner  |

Source: Vanguard Economics 2024



## B. Environmental and Social Risk Management

Table 15: Environmental and Social Risk Management

| Type of risk                    | Description   | Alignment with AdF  | Measure to manage risk   |
|---------------------------------|---|---|--|
| <b>Environmental<br/>Social</b> | <b>Soil Disturbance and Compaction</b> – Terracing might lead to soil disturbance and compaction, affecting soil health and productivity.       | This risk is reflected in the fund’s principle of Lands and Soil Conservation.  | The project will use sustainable practices like avoidance of heavy machinery to minimize the disturbance and avoid soil compaction   |
|                                 | Soil erosion due to heavy rains especially during terracing.  | This risk is reflected in the fund’s principle of Lands and Soil Conservation   | Soil erosion related risks will be addressed through re-vegetation of exposed areas around the site should be carried out rapidly in order to mitigate erosion of soil through surface water runoff and wind erosion. In addition, restoration interventions especially terraces shall be carried out during dry seasons.  |
|                                 | <b>Biodiversity loss</b> – Earth moving activities like terracing might result in biodiversity loss especially amphibians and reptile’s species | This risk is reflected in the fund’s principle of Conservation of Biological Diversity  | <ul style="list-style-type: none"> <li>The project will be executed by environmental experts working closely with local community and leveraging local knowledge to prevent unintended harm to local ecosystems.</li> <li>The related risk will be mitigated/addressed through ensuring the vegetation clearance only remains within the project footprint; Avoid unnecessary destruction of the surrounding vegetation, and ensure reforestation of cleared or degraded sites by agroforestry trees; Preserve (or stockpile) excavated topsoil for future site restoration procedures and finally planting trees on exposed slopes</li> </ul> |
|                                 | <b>Soil structure disturbance and water bodies pollution.</b>   | This risk is reflected in the fund’s principle of 1) Pollution Prevention & Resource Efficiency and 2) Lands and Soil Conservation. | These risks will be addressed/mitigated through application of organic fertilizer, planting of soil stabilization trees ensuring an appropriate lime application to avoid water body pollution and avoid soil deposit in river.  |
|                                 | <b>Non-Native Species Introduction</b> – Forestation  | This risk is reflected in the fund’s principle  | <ul style="list-style-type: none"> <li>In forestry and agroforestry, the project will only encourage indigenous tree species.</li> </ul>   |

|  |  |   |  |
|--|--|---|--|
|  | activities might include exotic trees that are not friendly to the local ecosystem   | of Conservation of Biological Diversity   | <ul style="list-style-type: none"> <li>This will be addressed through community mobilization and local authorities consultation to ensure that farmers' preference is taken into account during selection of species to be planted in the project site.</li> </ul>   |
|  | <b>Root competition between trees and crops</b> which will negatively affect the growth of trees and crops.  | This risk is reflected in the fund's principle of Conservation of Biological Diversity  | Root competition shall be avoided by regularly pruning of the roots of big trees to avoid/ reduce competition. In addition, respecting recommended techniques for agroforestry trees plantation and maintenance.   |
|  | <b>Social inequalities</b> – Landscape restoration projects might exacerbate the existing social inequalities in terms of access to available opportunities and benefits | This risk is reflected in the fund's principle of Conservation of 1) Access & equity and 2) Marginalized & vulnerable groups, 3) Gender Equality and Women's Empowerment, and 4) Core Labour Rights | This risks will be addressed through providing equal chances to all categories of people in benefiting from the project by establishing workers' grievance redress committees (WGRCs), and community grievance committees (CGRCs) to handle all grievances that may arise. In addition, Gender Action Plan will be developed to ensure that both women and girls benefit and participate in the project. Gender related targets will be set and tracked throughout the project implementation. |
|  | During terracing activities, there is high risk of land conflict related to boundaries. It is difficult to keep boundaries during terracing.                             | This risk is reflected in the fund's principle of Compliance with the Law   | To address this issue wooden poles/pegs shall be used to clearly demarcate the boundaries of plots of the people who will give away their land for radical terraces construction   |
|  | <b>Gender-based violence</b> – At work sites with many workers, there is a risk of GBV.  | This risk is reflected in the fund's principle of Marginalized and Vulnerable Groups  | GBV related risks will be mitigated or addressed through Sensitization (regular training and meeting on anti-Gender Based Violence). Immediate contact of service providers (Isange OSC, RIB) shall be performed in occurrence of a GBV case.  |
|  | <b>Child abuse and exploitation</b> – Project implementation activities risk exploiting children.  | This risk is reflected in the fund's principle of Marginalized and Vulnerable Groups  | This risk will be mitigated by ensuring the recruitment of workers is in line with Rwanda labor law, identity cards shall be used to check their age as well as conducting regular training and meetings preventing the use of students in project activities are regularly provided to contractors, workers, and local community. In holidays, students can be employed following the Rwanda labor low.   |

|  |  |   |   |
|--|--|---|---|
|  | <b>Disruption of cultural heritage sites or practices</b>  | This risk is reflected in the fund's principle of Physical and Cultural Heritage  | The project implementation will avoid destruction of areas of historic interest (Cemeteries, Genocide memorials and recreational areas)   |
|  | <b>Community rejection and discontent</b> – Restoration project may result in community discontent especially when the concerned community were not consulted, or their voice were not considered. | This risk is reflected in the fund's principle of 1) Compliance with the Law and 2) Human Rights, and 3) Involuntary Resettlement | This will be addressed through regular consultation with the community on each activity to be conducted and providing project-affected parties with accessible and inclusive means to raise issues and grievances and allow the project team to respond to and manage those grievances.                                   |
|  | <b>Carbon market monopoly</b> – With the emerging carbon market, project might overlook other existing activities like agriculture   | This risk is reflected in the fund's principle of 1) Compliance with the Law and 2) Human Rights                                  | The project will ensure that carbon capture efforts do not monopolize land needed for community activities, especially agriculture.   |
|  | HIV/STD transmission and prostitution among workers and residents  | This risk is reflected in the fund's principle of Public Health   | These risks will be mitigated or addressed through awareness campaign on prevention of STDs, use of condoms, voluntary testing to determine HIV/AIDs & other STDs status and counseling at existing medical facilities.   |
|  | <b>Spread of water borne diseases, poor hygiene and sanitation related diseases.</b>   | This risk is reflected in the fund's principle of Public Health   | These risks will be mitigated or addressed through ensuring availability of appropriate and sufficient mobile toilets on site (separated for men and women); availing appropriate and sufficient hand washing facilities on site and finally provision of regular awareness campaign among workers and community members. |
|  | <b>Injuries / accidents</b> – Terracing activities might risk several accidents  | This risk is reflected in the fund's principle of Core Labour Rights  | These risks will be addressed through sensitization (regular training and meeting on accidents and incidents prevention, use of appropriate PPEs, availing First aid kits at the project sites and ensuring that the contractor have site insurance.  |
|  | During implementation, existing crops may be destroyed due to movement of workers.   | This risk is reflected in the fund's principle of Human Rights  | This will be addressed through conducting sensitization and awareness programme to call people and workers not to destroy existing crops and only existing pathways shall be recommended to be used.  |

|  |   |   |  |
|--|---|---|--|
|  | Gender and vulnerability disparities in labour allocation during implementation of the sub-catchment restoration plan | This risk is reflected in the fund's principle of Access and Equity | To address this, the project will ensure the prioritization of local people during workers recruitment by women and other vulnerable people in the project area. |
|--|---|---|--|

Source: Vanguard Economics 2024

## C. Monitoring and Evaluation Arrangements

Measuring the performance of this project is critical to helping assess its impact on (1) the community that lives in the catchments, (2) watershed health, (3) GoR policy on degraded landscape restoration as an adaptation measure. Measuring the progress and learning will also help in identifying and addressing all environmental and social risks identified during project design and implementation. The table below shows the M&E arrangement and their budget.

Table 16: M&E Arrangements

| M&E arrangement                               | Description  | M&E Budget  |
|---|--|-------------|
| <b>Monitoring the implementation progress</b> | The IE - MoE- will monitor the project implementation on an annual basis using the results framework. For effective results, a baseline study will be required before implementation of the project commences.   | USD 70,000  |
| <b>Evaluation of the project -</b>            | The project will be evaluated on an annual basis using the MoE annual project reporting framework. Additionally, a mid-term and terminal evaluation of the project are planned. The mid-term evaluation will be done two years into the project and will be commissioned by the project steering committee. Both mid-term and terminal evaluation will use the OECD DAC evaluation criteria. Lessons and impact stories will be captured and shared with relevant stakeholders following the completion of each evaluation cycle – Annual, mid-term, and terminal. | USD 100,000 |

Source: Vanguard Economics 2024

## D. Results Framework

### Theory of Change - Integrated catchment and landscape restoration

Table 17: The project Theory of Change

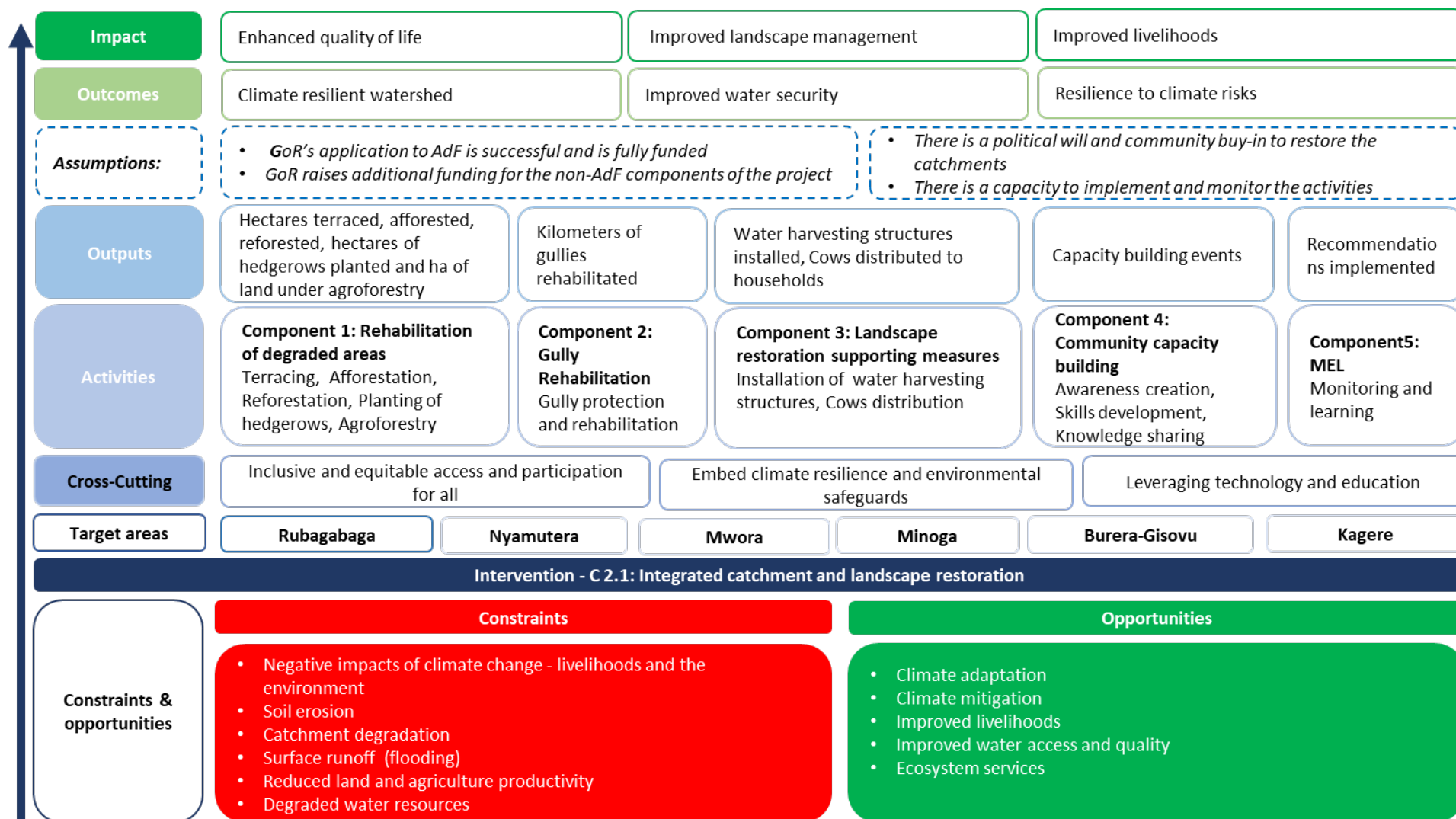


Table 18: Impacts, Outcomes and how they will be measured.

| <b>Impact level</b>           | <b>How it will be measured</b>   | <b>Data sources</b>                   |
|-------------------------------|--|---------------------------------------|
| Enhanced quality of life      | % of beneficiaries accessing quality drinking water, improved sanitation, and secured housing. | NISR – Multidimensional Poverty Index |
| Improved Landscape management | Area of improved landscape management  | RWB Documents                         |
| Improved livelihoods          | Increased household income (Annually)  | Survey                                |
|                               | Number/value of household assets acquired  | NISR Household survey                 |
| <b>Outcome level</b>          | <b>How it will be measured</b>   | <b>Data sources</b>                   |
| Climate resilient watershed   | % of watershed area with proper landscape management   | Survey - RWB                          |
| Improved water security       | Number of households with water harvesting infrastructures                                     | Distribution list - RWB               |
| Resilience to climate risks   | Reduced number of disasters  | MINEMA                                |

Source: Vanguard Economics 2024

## 1. The Theory of Change (ToC)

The dynamics of implementing this project requires an understanding of the challenges and opportunities that currently communities in the 6 proposed sub-catchments face due to climate change impacts. As indicated previously, these challenges and opportunities have been identified through the collection and analysis of primary and secondary data, especially in-depth consultations with stakeholders at the local, regional, and national levels. The ToC presented in figure above attempts to explain how these challenges can be addressed and opportunities exploited to deliver the type of impact that was envisioned under this project /programme.

## 2. Project components

Based on the extensive consultations with stakeholders on the constraints and opportunities related to the catchment restoration, the following areas of intervention have been proposed in this action plan.

- **Rehabilitation of degraded areas** through terracing, afforestation, reforestation, agro-forestry, and hedgerows practices.
- **Gully rehabilitation.**
- **Reduction of water runoff**
- **Community capacity building**
- **Levels of intervention**

## 3. Cross cutting themes

In implementing the project, it's imperative that several cross-cutting issues are embedded and or considered in the design of the interventions. These include the following

- **Inclusive and equitable access and participation for all** – An inclusion lens needs to be applied to ensure equitable access and participation by all. This means a careful understanding of the factors that may exclude the participation of some sections of society and how these would be addressed. Additionally, the M&E data collected on the impact of the project should be disaggregated to understand how different groups have benefited or been affected by the implementation of the plan.
- **Embed climate resilience and environmental safeguards** – Imperative that all interventions are assessed on how they adapt to existing climate related impacts as well as reduce and mitigate climate and environmental impacts.
- **Leveraging technology & education** – Where relevant digital solutions should be explored to simply process and to aid data collection and analysis and communication. In doing so, it will be important for these solutions to be tailored to be inclusive so as not to exclude vulnerable groups that may not be digitally literate or have the infrastructure and tools to participate on these platforms.

## 4. Assumptions underlying the ToC

There are several assumptions underlying the ToC. The assumptions are the conditions that need to be in place for this project to deliver on the outputs, outcomes and impacts outlined in the ToC. The assumptions explain the logic behind the project and the causal links attributed to



the climate, conservation, economic and social impacts that the plan is expected to deliver to the targeted communities. The following assumptions are proposed.

- GoR’s application to AdF is successful and is fully funded.
- GoR raises additional funding for the non-AdF components of the project.
- There is political will and community buy-in to restore the catchments.
- There is a capacity to implement and monitor the activities.

#### A. Outputs and indicators

Table 19 presents the output indicators and how they will be measured. The outputs and indicators outlined are not conclusive and can be further refined at the start and during the implementation of the project.

Table 19: Output indicators and their measurement

| Output  | Output Indicator  | Target | How it will be measured                    | Source of data |
|---|---|--------|--|----------------|
| Hectares terraced, afforested, and reforested                   | Number of ha terraced, afforested, and reforested                   | 6,700  | Field measurements using GPS and GIS tools | RWB SPIU       |
| Kilometers of gullies rehabilitated                             | Number of km of gullies rehabilitated                               | 110    | Field measurements using GPS and GIS tools | RWB SPIU       |
| Hectares of hedgerows planted and ha of land under agroforestry | Number of ha of hedgerows planted and ha of land under agroforestry | 2,200  | Field measurements using GPS and GIS tools | RWB SPIU       |
| Water harvesting structures installed                           | Number of water harvesting structures installed                     | 1,300  | Signed distribution forms                  | RWB SPIU       |
| Hectares of planted bamboos                                     | Number of ha of planted bamboos                                     | 360    | Field measurements using GPS and GIS tools | RWB SPIU       |
| Cows distributed to households                                  | Number of cows distributed to households                            | 1,300  | Signed distribution forms                  | RWB SPIU       |
| Capacity building events  | Number of capacity building events                                  | 100    | Event minutes and attendance form          | RWB SPIU       |
| Recommendations implemented                                     | Number of recommendations implemented                               | All    | Terminal evaluation report                 | RWB SPIU       |

Source: Vanguard Economics 2024 & Rwanda Water Resources Board

## E. Alignment with the Results Framework of the Adaptation Fund

Table 20: Alignment of result frameworks

| Project Objective(s) <sup>20</sup> | Project Objective Indicator(s)  | Fund Outcome  | Fund Outcome Indicator   | Grant Amount (USD) | Area in the budget     |
|------------------------------------|---|---|--|--------------------|------------------------|
| Climate resilient watershed        | % of beneficiaries accessing quality drinking water, improved sanitation, and secured housing.                    | Outcome 5: Increased ecosystem resilience in response to climate change and variability induced stress                    | 5. Ecosystem services and natural resource assets maintained or improved under climate change and variability-induced stress | 8,384,040          | Component 1,2,3, and 4 |
| Improved water security            | Number of beneficiaries with water harvesting structures  |   |  |                    |                        |
| Resilience to climate risks        | 1. Increased household income (Annually)<br>2. Number/value of household assets acquired                          | Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas         | 6.1 Percentage of households and communities having more secure access to livelihood assets                                  | 150,000            | Component 5            |
|                                    |   | Outcome 4: Increased adaptive capacity within relevant development sector services and infrastructure assets              | 4.1. Responsiveness of development sector services to evolving needs from changing and variable climate                      |                    |                        |
|                                    | Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level | 3.1. Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses |  |                    |                        |
|                                    |   | 3.2. Percentage of targeted population applying appropriate adaptation responses  |  |                    |                        |

<sup>20</sup> The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply

## **A. Detailed Budget**

The overall requested funding is US\$ 10,000 over 3 years.

**Component 1- Rehabilitation of degraded areas** - will cost US\$ 6,182,229 for the activities under this component.

**Component 2- Gully Rehabilitation** – will cost US\$ 441,612 for the activities under this component.

**Component 3 – Landscape restoration supporting measures-** will cost US\$ 1,760,200 for the activities under this component.

**Component 4 – Community capacity building** - will cost US\$ 150,000 for the activities under this component.

**Component 5 – Monitoring, Evaluation and Learning** - will cost US\$ 1,465,960.

- Project execution cost- will be US\$ 850,000. Its breakdown is in table 21
- Implementation Entity fee – will be US\$ 615,960.

Table 21: Detailed Budget

| Budget  |   |        |        |       |                   |                  |                  |                  |
|---|---|--------|--------|-------|-------------------|------------------|------------------|------------------|
| Components  | Activity                                    | Unit   | Qty    | Rate  | Cost              | Year 1           | Year 2           | Year 3           |
| <b>Total Budget</b>   |   |        |        |       | <b>10,000,000</b> | <b>3,073,979</b> | <b>3,889,543</b> | <b>3,036,479</b> |
| <b>Component 1 - Rehabilitation of degraded areas</b>         |   |        |        |       | <b>6,182,229</b>  | <b>1,854,669</b> | <b>2,472,891</b> | <b>1,854,669</b> |
|   |   |        |        |       | 6,182,229         | 1,854,669        | 2,472,891        | 1,854,669        |
|   | Hectares of bench terraces                  | Ha     | 908    | 2,941 | 2,669,448         | 800,835          | 1,067,779        | 800,835          |
|   | Hectares of contour bank terraces           | Ha     | 5,512  | 536   | 2,956,742         | 887,023          | 1,182,697        | 887,023          |
|   | Hectares of afforestation                   | Ha     | 142    | 775   | 110,147           | 33,044           | 44,059           | 33,044           |
|   | Hectares of reforestation                   | Ha     | 142    | 775   | 110,322           | 33,097           | 44,129           | 33,097           |
|   | Hectares of hedgerows                       | Ha     | 1,546  | 160   | 247,683           | 74,305           | 99,073           | 74,305           |
|   | Hectares of agroforestry                    | Ha     | 691    | 127   | 87,888            | 26,366           | 35,155           | 26,366           |
| <b>Component 2: Gully Rehabilitation</b>                      |   |        |        |       | <b>441,612</b>    | <b>132,484</b>   | <b>176,645</b>   | <b>132,484</b>   |
|   |   |        |        |       | 441,612           | 132,484          | 176,645          | 132,484          |
|   | Kilometers of gullies rehabilitated         | Km     | 111    | 3,239 | 360,722           | 108,217          | 144,289          | 108,217          |
|   | Hectares of bamboo planted close to gullies | Ha     | 367    | 220   | 80,890            | 24,267           | 32,356           | 24,267           |
| <b>Component 4: Landscape restoration supporting measures</b> |   |        |        |       | <b>1,760,200</b>  | <b>528,060</b>   | <b>704,080</b>   | <b>528,060</b>   |
|   |   |        |        |       | 850,200           | 255,060          | 340,080          | 255,060          |
|   | Number of structures installed              | number | 1,300  | 654   | 850,200           | 255,060          | 340,080          | 255,060          |
|   |   |        |        |       | 910,000           | 273,000          | 364,000          | 273,000          |
|   | Number of cows distributed                  | number | 1,300  | 700   | 910,000           | 273,000          | 364,000          | 273,000          |
| <b>Component 5: Community capacity building</b>               |   |        |        |       | <b>150,000</b>    | <b>75,000</b>    | <b>37,500</b>    | <b>37,500</b>    |
|   |   |        |        |       | 30,000            | 15,000           | 7,500            | 7,500            |
|   | Awareness campaigns                         | number | 5      | 6,000 | 30,000            | 15,000           | 7,500            | 7,500            |
|   |   |        |        |       | 90,000            | 52,500           | 22,500           | 15,000           |
|   | Skills development events                   | number | 20,000 | 5     | 90,000            | 52,500           | 22,500           | 15,000           |
|   |   |        |        |       | 30,000            | 7,500            | 7,500            | 15,000           |
|   | Knowledge sharing tools                     | number | 10     | 3,000 | 30,000            | 7,500            | 7,500            | 15,000           |
| <b>Component6: MEL</b>  |   |        |        |       | <b>1,465,960</b>  | <b>483,767</b>   | <b>498,426</b>   | <b>483,767</b>   |

|                                      |  |  |  |         |         |         |         |
|--------------------------------------|--|--|--|---------|---------|---------|---------|
| Project Execution Cost (9.2%) - RWB  |  |  |  | 850,000 | 280,500 | 289,000 | 280,500 |
| Implementing entity fee (6.6%) - MoE |  |  |  | 615,960 | 203,267 | 209,426 | 203,267 |

A breakdown of the project execution costs is shown in Table 21. The costs comprise 19 staff within the project implementation unit. These costs amount to USD 2,536,139. USD 850,000 of the financing will come from the AF and the rest from GoR co-finance option.

Table 22: Project execution cost

| Project output/activity   | Year 1           | Year 2         | Year 3         | Total, USD       | AdF            |
|---|------------------|----------------|----------------|------------------|----------------|
| <i>Project execution costs (&lt; 9.5% of the total budget requested, before the implementing entity fees)</i> |                  |                |                |                  |                |
| Project coordinator gross salary  | 52,961           | 52,961         | 52,961         | 158,882          | 1              |
| Financial management specialist salary  | 26,551           | 26,551         | 26,551         | 79,652           | 2              |
| Monitoring and evaluation specialist gross salary   | 26,551           | 26,551         | 26,551         | 79,652           | 3              |
| Soil and water conservation specialist gross salary (2)   | 57,708           | 57,708         | 57,708         | 173,123          | 4              |
| Soil and water conservation officer gross salary (4)  | 63,228           | 63,228         | 63,228         | 189,684          | 5              |
| Accountant gross salary (2)   | 31,614           | 31,614         | 31,614         | 94,842           | 6              |
| Procurement Specialist gross salary   | 26,551           | 26,551         | 26,551         | 79,652           | 7              |
| Legal (contract management) Specialist gross salary   | 26,551           | 26,551         | 26,551         | 79,652           | 8              |
| Environmental Safeguard Specialist gross salary   | 26,551           | 26,551         | 26,551         | 79,652           | 9              |
| Social Safeguard Specialist gross salary  | 26,551           | 26,551         | 26,551         | 79,652           | 10             |
| Logistics officer gross salary  | 14,362           | 14,362         | 14,362         | 43,087           | 11             |
| Drivers (3) gross salary  | 4,537            | 4,537          | 4,537          | 13,610           | 12             |
| Purchase of Vehicles (3)  | 315,000          |                |                | 315,000          | 13             |
| Purchase of Motorcycles (4)   | 20,000           |                |                | 20,000           | 14             |
| Contribution to VCRP program operations at RWB  | 350,000          | 350,000        | 350,000        | 1,050,000        | 15             |
| <b>Subtotal</b>   | <b>1,068,713</b> | <b>733,713</b> | <b>733,713</b> | <b>2,536,139</b> | <b>850,000</b> |
| <i>Percent expenditure per year</i>   | <i>42%</i>       | <i>29%</i>     | <i>29%</i>     |                  |                |

## Budget Notes

| No. | Budget Notes   |
|-----|--|
| 1   | Hired at project inception   |
| 2   | Hired at project inception   |
| 3   | Hired 1 month after project inception to enable PM to participate in recruitment |
| 4   | Hired 1 month after project inception to enable PM to participate in recruitment |
| 5   | Hired 1 month after project inception to enable PM to participate in recruitment |
| 6   | Hired 1 month after project inception to enable PM to participate in recruitment |
| 7   | Hired 1 month after project inception to enable PM to participate in recruitment |
| 8   | Hired 1 month after project inception to enable PM to participate in recruitment |
| 9   | Hired 1 month after project inception to enable PM to participate in recruitment |
| 10  | Hired 1 month after project inception to enable PM to participate in recruitment |
| 11  | Hired 1 month after project inception to enable PM to participate in recruitment |
| 12  | Hired at project inception   |
| 13  | Toyota brand vehicle with up to 8 seats for mobility                             |
| 14  | To ensure mobility to the fields by staff  |
| 15  |  |

## B. Disbursement Schedule

### Disbursement arrangements:

**Adaptation Fund resources will be disbursed in accordance with National Implementing Entity's Rules of Procedure and Operational Procedures.** The following two disbursement methods will be used: (i) the direct payment method for works, goods and services contracts; (ii) the special account or revolving fund (RF) method for goods and services contracts and for operating costs, project staff allowances and sundry management costs.

**Adaptation Fund resources will be deposited into the special account opened by the project Executing Entity (RWB) in a local bank deemed acceptable to the Adaptation Fund.** The provisions set forth in the Adaptation Fund's Disbursement Manual will apply. Disbursements from the special account will be made as an advance, based on an annual work programme and budget approved. Every request for an advance will be submitted to the NIE for approval and will cover a maximum period of six months of operations. The special account will be replenished based on requests by RWB, backed by supporting documents for the use of at least 100% of the advance previously received.

**MoE will also provide effective co-ordination with other climate change projects in Rwanda creating linkages where necessary.** MoE will appoint a Programme Officer in Kigali to ensure the efficient disbursement and use of donor funds and timely delivery of project inputs and outputs. S(he) will also coordinate all other responsible parties for the purposes of forming the Steering Committee and Technical Advisory Group as well as support project implementation by assisting in recruiting and contracting of project personnel and consultant services, sub-contracting and procuring equipment in accordance with Government guidance and procedures (see above). Table 22 provides the proposed disbursement schedule of the AdF fund.

Table 23: Disbursement schedule

|                               | On signing agreement | Year 1    | Year 2    | Year 3  | Total      |
|-------------------------------|----------------------|-----------|-----------|---------|------------|
| Date                          | 2024                 | 25-Jan    | 26-Jan    | 27-Jan  |            |
| Project Funds from AdF in USD | 3,000,000            | 5,000,000 | 1,500,000 | 500,000 | 10,000,000 |

## PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

### Record of endorsement on behalf of the government <sup>21</sup>



<sup>21</sup> Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.



**Implementing Entity certification**

*Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address*

|   |
|---|
| <p>I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans (Enhanced NDC, ENR SSP, Green Growth &amp; Climate Resilience Strategy, Vision 2050...) and subject to the approval by the Adaptation Fund Board, <u>commit to implementing the project/programme in compliance with the Environmental and Social Policy and the Gender Policy of the Adaptation Fund</u> and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.</p> |
|   |
|   |

Patrick KARERA  
Permanent secretary  
Implementing Entity Coordinator



Date: March, 7<sup>th</sup> 2024

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