

Funding Proposal

FP167: Transforming Eastern Province through Adaptation

Rwanda | International Union for Conservation of Nature (IUCN) | Decision B.29/02

1 July 2021



**GREEN
CLIMATE
FUND**

A. PROJECT/PROGRAMME SUMMARY			
A.1. Project or programme	Project	A.2. Public or private sector	Public
A.3. Request for Proposals (RFP)	<p>If the funding proposal is being submitted in response to a specific GCF Request for Proposals, indicate which RFP it is targeted for. Please note that there is a separate template for the Simplified Approval Process and REDD+.</p> <p>Not applicable</p>		
A.4. Result area(s)	<p>Check the applicable GCF result area(s) that the <u>overall</u> proposed project/programme targets. For each checked result area(s), indicate the estimated percentage of <u>GCF budget</u> devoted to it. The total of the percentages when summed should be 100%.</p> <p>Mitigation: Reduced emissions from:</p> <p><input type="checkbox"/> Energy access and power generation:</p> <p><input type="checkbox"/> Low-emission transport:</p> <p><input type="checkbox"/> Buildings, cities, industries and appliances:</p> <p><input checked="" type="checkbox"/> Forestry and land use:</p> <p>Adaptation: Increased resilience of:</p> <p><input checked="" type="checkbox"/> Most vulnerable people, communities and regions:</p> <p><input checked="" type="checkbox"/> Health and well-being, and food and water security:</p> <p><input type="checkbox"/> Infrastructure and built environment:</p> <p><input checked="" type="checkbox"/> Ecosystem and ecosystem services:</p>		<p>GCF contribution:</p> <p><u>Enter number</u>%</p> <p><u>Enter number</u>%</p> <p><u>Enter number</u>%</p> <p>19%</p> <p>21%</p> <p>30%</p> <p><u>Enter number</u>%</p> <p>30%</p>
	A.5. Expected mitigation impact	<p>Indicate t CO₂eq over lifespan</p> <p>9,662,441</p>	A.6. Expected adaptation impact
A.7. Total financing (GCF + co-finance)	49,622,797 USD	A.9. Project size	Small (Upto USD 50 million)
A.8. Total GCF funding requested	33,783,755 USD <i>For multi-country proposals, please fill out annex 17.</i>		
A.10. Financial instrument(s) requested for the GCF funding	<p>Mark all that apply and provide total amounts. The sum of all total amounts should be consistent with A.8.</p> <p><input checked="" type="checkbox"/> Grant <u>33,783,755 USD</u> <input type="checkbox"/> Equity <u>Enter number</u></p> <p><input type="checkbox"/> Loan <u>Enter number</u> <input type="checkbox"/> Results-based payment <u>Enter number</u></p> <p><input type="checkbox"/> Guarantee <u>Enter number</u></p>		
A.11. Implementation period	6 years	A.12. Total lifespan	20 years, effective lifetime of investment
A.13. Expected date of AE internal approval	<p>This is the date that the Accredited Entity obtained/will obtain its own approval to implement the project/programme, if available.</p> <p>4/15/2021</p>	A.14. ESS category	<p>Refer to the AE's safeguard policy and GCF ESS Standards to assess your FP category.</p> <p>B</p>

A.15. Has this FP been submitted as a CN before?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	A.16. Has Readiness or PPF support been used to prepare this FP?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
A.17. Is this FP included in the entity work programme?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	A.18. Is this FP included in the country programme?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
A.19. Complementarity and coherence	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
A.20. Executing Entity information	The project will be implemented through three Executing Entities (Rwanda Forestry Authority, ENABEL and IUCN through its Rwanda country office). In the EE role the IUCN Rwanda country office functions as an in-country entity based on its host country agreement on project management, member and advisory services.		
A.21. Executive summary (max. 750 words, approximately 1.5 pages)			
<p>Rwanda is ranked the first of all African countries in terms of natural resource dependency and is also highly vulnerable to projected climate change impacts on natural resource dependant sectors.¹ The agriculture sector accounted for more than 30% of GDP for 2014² and 80% of the population is engaged in the sector. About 50.6% of Rwanda's land area is agricultural and 98% of it is rain-fed. The Eastern Province has the most agricultural land (439,000 ha) in Rwanda.³ Agriculture is predominantly practiced by smallholder farmers⁴ (84% of all farmers) with agricultural production depending almost exclusively on the amount of rainfall during the rainy seasons (mid-September – December and mid-January – mid-May).</p> <p>In the past two decades, climate change has increased the frequency and intensity of droughts, floods and landslides affecting two million Rwandans.⁵ A combination of climate impacts, high levels of poverty and dependence on undiversified and subsistence agriculture contributes to Eastern Province status as the region with the highest vulnerability, most exposure to droughts and most severe potential reductions in crop production yields in Rwanda.^{6,7} Droughts are one of the major hazards severely affecting smallholder farmers as they depend on rain-fed agriculture and lack irrigation systems. From one severe drought in the period 1981 – 1993, the number increased to six major agricultural droughts in the period 1993 – 2017 leading to crop failure, food shortage and famine.^{8 & 9} More intensive rains during the rainy season increases the risk of soil erosion and degradation, which increases the impact of drought in dry season. In Eastern Province the flood risk is limited to areas bordering the Akagera river.</p> <p>Climate projections show that climate change will have an increasingly serious effect on the Eastern Province in Rwanda, largely as a result of rising temperatures and changing patterns of precipitation. The mean rainfall is predicted to increase by between 0.1 and 1.24 mm per year, except during the short rainy season (Mid-September -Mid-December), showing a marked decline of between 0.412 and 1.65 mm per year. Temperatures in the Province have already increased 2.6 °C over 1961-2016¹⁰ and are projected to increase a further 2.5 °C by 2050¹¹, up from the 1970 average. Temperature rise will increase evapotranspiration, resulting in increased crop water requirements and reduced soil moisture capacity. A study from ICRAF using the CGIAR CSI model for projection of the Soil Moisture Index estimated decrease in evaporation and increase in evapotranspiration by 2050 which will begin crossing critical thresholds in crop tolerance.¹²</p> <p>The combination of increased temperatures for longer periods and decreased rainfall especially in the short rainy season, makes the Eastern Province highly exposed to more dry spells with up to 7 days by 2050. ^{13,14} There will be</p>			

¹ Nabalamba, A., Mubila, M., Alexander, P. Climate Change, Gender and Development in Africa. African Development Bank, 2011.

² World Bank, 2019. Rwanda Systematic Country Diagnostic.

³ NISR, The Fifth Integrated Household Living Conditions Survey (EICV5)

⁴ Smallholder farmers in Rwanda have a mean land size of up to 1 ha.

⁵ USAID, 2018. Lake Victoria Basin Climate Change Adaptation Strategy and Action Plan.

⁶ Austin KG, Beach RH, Lapidus D, Salem ME, Taylor NJ, Knudsen M, Ujeneza N. Impacts of Climate Change on the Potential Productivity of Eleven Staple Crops in Rwanda. Sustainability. 2020; 12(10):4116.

⁷ MIDIMAR, 2015. The National Risk Atlas of Rwanda

⁸ Definition from National Risk Atlas of Rwanda: Agricultural drought focuses on differences between actual and potential evapotranspiration and soil- water deficits.

⁹ USAID, 2018. Lake Victoria Basin Climate Change Adaptation Strategy and Action Plan.

¹⁰ Idem.

¹¹ Idem.

¹² See Section 3.2 of the Feasibility Analysis for more information on the Soil Moisture Index.

¹³ USAID, 2019. Climate change risk profile Rwanda. URL: https://www.climatelinks.org/sites/default/files/asset/document/2019_USAID-ATLAS-Rwanda-Climate-Risk-Profile.pdf

¹⁴ Netherlands Commission for Environmental Assessment, 2015. Climate Change Profile: Rwanda

even greater unevenness in rainfall distribution, and more extremes in rainfall volumes and water deficit prolonged agricultural droughts during the dry season is projected.^{15,16}

Climate change, particularly dry spells and rainfall erosivity will exacerbate many of the ongoing land degradation processes in the Eastern Province leading to increased soil erosion (80% caused by rainfall) and further degradation.¹⁷ The Restoration Opportunities Assessment Methodology (ROAM) analysis in 2015 estimated approximately 37% (374,130 ha) of the territory of the Eastern Province is degraded and alone is responsible for approximately 21% of the soil erosion in the country.¹⁸ Since much of the Province is located on slopes (up to 55% inclination) it is estimated that climate change will introduce new degradation pathways through soil loss.¹⁹

The impacts of climate change on agriculture and surrounding ecosystems is projected to result in serious socio-economic implications for the 3 million people living in the Eastern Province. Economic models suggest that Rwanda could lose over 1% of its GDP each year due to climate change related losses by 2030, and an even greater proportion thereafter.²⁰ Drought scenarios show estimated total monetary losses for the Eastern Province from crop loss and damage to be in the range of USD 2 million and USD 7.5 million (RWF 1.9 billion and 6.9 billion) respectively per year.²¹ Smallholders will be the most affected group due to their lack of assets to buffer shocks and limited access to the information, new technologies, finance and government services needed to undertake adaptive actions.

In response to these climate change threats, integrated adaptation measures are needed to enhance the resilience of the landscape in the Eastern Province, which will sustain the agricultural production and enable sustainable growth of the region in a manner that reduces poverty, increases resilience and achieves food security.

The project's objective is: **to achieve a paradigm shift in land management practices in Rwanda's Eastern Province from landscapes that are degraded, fragile and unable to sustain livelihoods in the face of climate change to restored ecosystems and landscapes through building community resilience to enhance livelihoods, food and water security of the most vulnerable rural population.** The project components and outcomes that will result in the achievement of this objective are:

Outcome 1: A shift to farming practices that build resilience against climate threats and risks.

Outcome 2: Strengthened adaptive capacity and reduced exposure to climate risks

Outcome 3: Strengthened institutional and regulatory systems for climate-responsive planning and development

In order to achieve the three outcomes, the project will pursue an integrated resilience approach²² that is adaptive and able to support transformation and innovative processes. The project's Theory of Change (ToC) (figure 3) shows how degraded and climate sensitive landscapes will be transformed by adaptive land management practices and technologies to build resilience of agro-ecological systems and livelihoods. Below the component structure and climate impacts/benefits are outlined:

Component 1: Restored landscapes that support climate resilient agro-ecological systems and livelihoods in Eastern Province, will scale-up tested and diversified landscape restoration and resilient agricultural practices such as agroforestry and silvopastoralism practices and deliver as deliver restoration of degraded woodlots, tree plantations and ecologically critical buffer zones. Measures will restore ecosystem services and build resilience in drought-prone, degraded landscapes and thus achieve food security and reduce vulnerability of smallholder farmers

¹⁵ Republic of Rwanda, 2018. Third National Communication: Report to the United Nations Framework Convention on Climate Change. Republic of Rwanda, Kigali

¹⁶ Republic of Rwanda, 2018. Third National Communication: Report to the United Nations Framework Convention on Climate Change. Republic of Rwanda, Kigali

¹⁷ Karamage et al. 2016. Extend of cropland and related soil erosion risk in Rwanda. *Sustainability* **2016**, *8*, 609

¹⁸ Karamage, et. al. 2016. Extent of Cropland and Related Soil Erosion Risk in Rwanda. *Sustainability* **2016**, *8*, 609; doi:10.3390/su8070609

¹⁹ IPCC, 2019. Special Report on Climate Change and Land

²⁰ Rwanda Environment Management Authority and SEI, Economics of Climate Change in Rwanda (2009). http://www.rema.gov.rw/~remagov/fileadmin/templates/Documents/rema_doc/CC%20depart/Economics%20of%20CC%20in%20Rwanda.pdf

²¹ MIDIMAR, 2015. The National Risk Atlas of Rwanda

²² In the TREPA Project, the "integrated resilience approach" refers to the set of complimentary and mutually reinforcing technical assistance packages and direct investments made by the project across a) a range of land management and restoration practices and activities to restore landscapes and ecosystem services, combined with b) targeted technical assistance to farmers and farmer groups to improve the performance of sustainable businesses and land management practices, support to climate resilient livelihoods and value chains and improved access to affordable finance to scale up the project interventions across entire landscapes and value chains c) support to strengthen the enabling environment through enhancement of land management planning at the district level (which can be scaled up to the national level).

to climate change impacts and in particular soil erosion (during more intensive rainy seasons) and prolonged droughts. Restoration of degraded lands will increase overall productivity and reduce climate risks by improving the overall supply of crops, fodder and water. The outcomes will include increased food and water security under a climate change scenario and greater income security to ensure sustainability. These outcomes contribute together to overall drought resilience of smallholder farmers.

Component 2: Market and value chain development for climate resilient agricultural and tree products linked to financial products and services for sustainable management of agro-ecological systems, ensures the economic and financial sustainability and the incentive for scaling up of the implemented practices for climate resilience and reinforces interventions under Component 1. Component 2 ensures that farmers and Farmer Forester Producer Organisations (FFPOs) can both diversify livelihoods through gender inclusive agricultural value chains and have the financial resources required to add value to the agricultural and tree products derived from landscape restoration activities as a means to improve adaptive capacity to climate shocks and loss of income induced by impacts such as prolonged drought and floods. The project supports local financial institutions to diversify agricultural lending products to include short-term and long-term lending modalities combined with refined terms and conditions suited to the needs of farmers. Project activities will overcome constraints hindering investment in climate resilient technologies, practices and value chains. This support will stimulate climate resilient investment (e.g., in forest landscape restoration), capacitate financial service providers to measure climate resilient risk management in their monitoring systems and eventually link digitization to agri-lending tools. This will bring a paradigm shift in lending practices for agriculture and rural value chains which are currently of a very uniform and short-term nature. Please refer to the FS for more background on the financial sector and annex 4 of feasibility study for more detail

Component 3: Strengthened enabling environment to effectively plan, manage and monitor climate adaptation outcomes from improved land use at national and decentralized levels ensures an enabling environment through developing systems, information and capacity for the effective planning, implementation, monitoring and upscaling of the restoration model throughout Rwanda and further afield. Stronger institutions under component 3 will enable both better decision-making and better implementation as a result of stronger participation and accountability.

B. PROJECT/PROGRAMME INFORMATION

B.1. Climate context (max. 1000 words, approximately 2 pages)

Baseline scenario

Social, economic and ecosystems context

Rwanda is a relatively small (26,338 km²), hilly and landlocked country in East Africa and is characterised by mountains in the west and savanna in the east, with numerous lakes and a temperate tropical highland climate. Rwanda's estimated population is about 12,636,116 in 2020 with annual growth rate of 2.6% per year.^{23,24} The country has the highest population density (470 people per km²) in Africa.²⁵ More than 38% of Rwandans live below the poverty line with 16% living in extreme poverty.²⁶ Female-headed households are more affected by poverty accounting for 47% of total population.²⁷ Household food insecurity and undernutrition²⁸ remain a challenge in the country. As many as 473,847 households (20% of total population) were considered food insecure in 2015.²⁹

In Rwanda, the agriculture sector accounted for more than 30% of GDP for 2014³⁰ and 80% of the population is engaged in the sector. While agriculture created less than 15% of new jobs in 2001 and 2011, its share increased to 50% between 2011 and 2017 and to 60% between 2017 and 2019. About 50.6% of Rwanda's land area is agricultural and 98% of it is rain-fed. The Eastern Province has the most agricultural land (439,000 ha) in Rwanda.³¹ Agriculture is predominantly practiced by smallholder farmers³² (84% of all farmers) with agricultural production depending almost exclusively on the amount of rainfall during the rainy seasons (mid-September – December and mid-January – mid-May). Major crops include beans, cassava, maize and banana, fruits and vegetables. About 68% of all households in Rwanda have livestock, most commonly: goats, cattle, and chicken. The dissemination of agroforestry practices is still very limited (2-4 %) and the average tree density in the crop / agroforestry lands (54 % of total land area) is only around 21 trees per ha (NFI, 2015).

Livestock is currently the fastest growing sub-sector of the economy with an average growth of 8.3% per annum between 2010 and 2016.³³ Although cattle farming is widely spread across the country, the highest concentrations of cattle are in the Eastern Province accounting for about 31% of the total cattle population in 2015.³⁴ Considering the increasing demand of milk with a limited land dedicated for grazing, the traditional free open grazing with local Ankole cows (1.4/ha) over the carrying capacity suffers from over-grazing, and is/has to be progressively replaced by fenced ranches with dairy cross breed animals (0.5/ha), providing higher return while decreasing seriously pressure on pasture. This transition to cross-breed dairy cow system is supported by RAB, but this system is still missing or weak in well-established silvopastoral plan integrating access to water, grazing rotation and forage trees components.

The forest cover in Eastern Province is dominated by the protected areas (Akagera National Park and smaller protected natural forests, 9.4%) and by un-protected degraded shrub-lands and wooded savannah (13.7%) progressively converted into ranches. State and District owned tree plantation are respectively covering only 1.7% and 0.1%, while small-holder scattered woodlot represent 5 %. Small older tree plantations are far below the optimal productivity (around 3-4 instead of 9-11 m³/ha/year) and stocking (around 10-30 instead of 60-80 m³/ha) due to poor management and over-exploitation.

Agricultural Land in the Eastern Province is mainly located on slopes (up to 55% inclination), which are highly prone to soil erosion due to a fragile soil and a high average rainfall amount of 1156 mm that concentrates in the wet season.³⁵ Increased droughts and dry spells have generated dryer soils, which combined with the projected rainfall intensity more concentrated during short period of the year, is favourable for increase soil erosion. The rainfall erosivity has a high impact on soil erosion and contributes to about 80% of soil loss. Variability of rainfall occurrence and intensity will considerably increase soil erosion.³⁶ Soil loss for Rwanda is

²³ Estimate based on projection based on National Institute of Statistics for Rwanda, 2014 medium projection estimates of a total population in 2020 of 12,663,116 (representing a 20.42% increase). Calculation also includes a rough estimate of urbanisation of 2.86%

²⁴ National Institute of Statistics of Rwanda, 2018. The Fifth Integrated Household Living Conditions Survey (EICV5).

²⁵ World Bank, 2019. Rwanda Systematic Country Diagnostic.

²⁶ National Institute of Statistics of Rwanda, 2018. The Fifth Integrated Household Living Conditions Survey (EICV5)

²⁷ Republic of Rwanda, 2013. Second Economic Development and Poverty Reduction Strategy (EDPRS II) for 2013-2018

²⁸ UNICEF defines undernutrition "as the outcome of insufficient food intake and repeated infectious diseases. It includes being underweight for one's age, too short for one's age (stunted), dangerously thin for one's height (wasted) and deficient in vitamins and minerals (micronutrient malnutrition)". See: <https://www.unicef.org/progressforchildren/2006n4/undernutritiondefinition.html>

²⁹ WFP, 2015. ComprehensiveFoodSecurityAnalysis2015

³⁰ World Bank, 2019. Rwanda Systematic Country Diagnostic.

³¹ NISR, 2018. The Fifth Integrated Household Living Conditions Survey (EICV5)

³² Smallholder farmers in Rwanda have a mean land size of up to 1 ha.

³³ National Institute of Statistics of Rwanda (NISR), Ministry of Finance and Economic Planning (MINECOFIN), 2014. *2012 Fourth Rwanda Population and Housing Census. Final Results: Main indicators report.*

³⁴ IFAD, 2016. Rwanda Dairy Development Project: Detailed design report. Republic of Rwanda. Report No: 4167-RW.

³⁵ Karamage et al. 2016. Extend of cropland and related soil erosion risk in Rwanda. Sustainability 2016, 8, 609

³⁶ Ibid

estimated at 15 million metric tons per year, which is equivalent to losing the capacity of the land to feed 40,000 people annually.³⁷ According to the IUCN Restoration Opportunities Assessment Methodology (ROAM) analysis in 2015, approximately 37% (374,130 ha) of the territory of the Eastern Province is degraded (Table 1).³⁸ The Eastern Province alone is responsible for approximately 21% of the soil erosion in the country.³⁹ Land degradation is a result of a complex chain of direct and indirect drivers including: high population density and growth rate, combined with scarcity of land for food production and supply of wood energy for cooking (high pressure due to wood supply demand imbalance: demand of 1.65 M m³/year vs sustainable supply capacity of 0.55 M m³/year) leading to over-exploitation and degradation of trees/shrub resources (both in forest and crop/agroforestry lands) with consecutive exposure of soils to erosion⁴⁰; drought exposing friable soil to land degradation, especially on sloppy areas; low organic carbon content as results of deforestation and drought which reduces below ground micro and macro-organisms and weakens capacity to hold moisture and soil nutrients; over-exploitation of crop residues for energy or animal feed, without ensuring required return of biomass to soil for fertility; and, reduced soil water retention capacity with negative impact on ground water level and the soil microclimate. These drivers lead to loss of soil productivity (both for food and wood), loss of profitability and business opportunities, degradation of socio-economic conditions, an increase of food insecurity and lack of access to wood for cooking, especially for the most vulnerable population. Observed climate change not only exacerbates many of the ongoing land degradation processes of managed ecosystems (such as croplands and pastures) but will become dominant pressure that introduces new degradation pathways in natural and seminatural ecosystems. Variation of the timing of rainfall events are estimated to have significant impacts on processes of soil erosion, while soil moisture content is affected by changes in evapotranspiration and evaporation which may influence the creating of surface runoff.

Overall, the agricultural sector is under significant pressure because of the growing scarcity of land, increased land degradation and climate risks. The sector is highly exposed to climate change shocks such as droughts, which result in considerable decline of productivity causing large losses affecting the government's growth objectives.^{41&42} Total production losses over a period of 18 years (1995 to 2012) are estimated at US\$1.16 billion.⁴³

The project will be implemented in the Eastern Province, which was prioritized based on biophysical and social factors, which underpin the high climate vulnerability of Rwanda's economy, the ecosystems and people in the area. The criteria included: (1) contribution of the region to agricultural production and food security in the country; (2) high social and ecological vulnerability to climate change⁴⁴; (3) very high exposure to climate risks such as droughts⁴⁵; (4) high poverty and malnutrition levels; and (5) high levels of land degradation (See section 6 in Feasibility Study).

The Eastern Province covers an area of 9,813 km² (20% of country's territory) and includes seven districts: Bugesera, Ngoma, Kirehe, Rwamagana, Kayanza, Gatsibo and Nyagatare (see Annex 16). The province is characterized by diverse ecosystems including savannah, swamps and montane, moreover the Akagera National Park is located there. The Province is the most populated in Rwanda with an estimated 3,051,454 people (24% of total population est. 12,663,116) in 2020.⁴⁶ One third of this population lives in poverty (37%) and 15% live in extreme poverty.⁴⁷

Table 1 – Description of the Eastern Province in Rwanda by population, density, with description of ecosystems, degree of land degradation and exposure to climate hazards.

Population ⁴⁸	Ecosystems	Land degradation ⁴⁹
Ngoma Population: 396,086 people	Eastern Plateau (1200-1500m of altitude) largely comprises ecosystems where natural vegetation is rare and was gradually replaced by human activities. They include farmlands, some wetlands with a limited number of marshlands used for agriculture and few gallery forests (in Kirehe	24% (20,976 ha)
Gatsibo Population: 509,049 people		32% (50,218ha)

³⁷ MINAGRI, 2009

³⁸ IUCN, 2015. Restoration Opportunities Assessment Methodology.

³⁹ Karamage, et. al. 2016. Extent of Cropland and Related Soil Erosion Risk in Rwanda. *Sustainability* **2016**, 8, 609; doi:10.3390/su8070609

⁴⁰ One of the main drivers of land degradation in the Eastern Province is extremely high pressure on wood resources for cooking estimated at 1.65 mil m³ per year while supply is only 0.55 mil. m³. If the gap remains so high, the pressure on resources will be a major constraint for private forest growers to respect management plan prescriptions and avoid over exploitation of degradation of restored forests

⁴¹ Idem.

⁴² World Bank, 2015. Rwanda Agriculture Risk Assessment

⁴³ Idem.

⁴⁴ REMA, 2015. Baseline Climate Change Vulnerability Index for Rwanda. Rwanda Environment Management Authority, Kigali, 2015

⁴⁵ Idem

⁴⁶ Estimate based on projection based on National Institute of Statistics for Rwanda, 2014 medium projection estimates of a total population in 2020 of 12,663,116 (representing a 20.42% increase). Calculation also includes a rough estimate of urbanisation of 2.86%

⁴⁷ National Institute of Statistics of Rwanda, 2018. p. 24

⁴⁸ Estimate based on projection based on National Institute of Statistics for Rwanda, 2014 medium projection estimates of a total population in 2020 of 12,663,116 (representing a 20.42% increase). Calculation also includes a rough estimate of urbanisation of 2.86%.

⁴⁹ MNR et al, 2015. Forest Landscape Restoration Opportunity Assessment in Rwanda.

Rwamagana <i>Population: 368,498 people</i>	District) and forest plantations. It rains between 950-1050mm/year. (<i>Parts of Kayonza and Kihere</i>)	22% (14,968 ha)
Nyagatare <i>Population: 547,649 people</i>	Eastern Savannah (below 900m of altitude) are comprised of farmlands, pasturelands, numerous wetlands and semi-arid ecosystems, where the prevalent natural plant species are thorny shrubs and trees, especially <i>Acacia</i> spp and herbaceous characteristic of dry lands. (<i>Parts of Kayonza and Kihere</i>)	54% (103,850 ha)
ayonza <i>Population: 404,584 people</i>		39% (75,477 ha)
Kirehe <i>Population: 400,130 people</i>		40% (47,324 ha)
Bugesera <i>Population: 425,459 people</i>	Bugesera (900-1200m of latitude) is an area whose colonization by humans is relatively recent and was largely covered by natural forests. It is characterized with arid and semi-arid areas, numerous lakes and swamps that cover an estimated 10,635 ha. It rains about 810mm/year with poorly distributed rains.	48% (61,317 ha)

Historical climate trends in the Eastern Province

The climate in Rwanda varies significantly across the country and between seasons. According to Rwanda's Third National Communication on Climate Change, the following climate trends were observed for the period 1961-2016 in the Eastern Province:⁵⁰

- **Mean annual temperature** has increased with up to 2.6°C .
- **Mean annual rainfall** has decreased by 250 mm per year. The region experienced serious rainfall deficits over several years during previous decades which has alternated with rainfall excesses in other years.⁵¹
- **Change in seasonality:** Rainy seasons have become shorter and more intense, leading to a reduction in agricultural production and events such as droughts in dry areas and floods in areas experiencing heavy rains.

In recent years, higher temperatures, prolonged drought periods, and elevated rates of evapotranspiration have resulted in disturbances in the hydrologic cycle and altered river flows.⁵² In particular, increased temperatures resulted in a high decline of De Martonne aridity index⁵³ of between 0.12 and 0.36 per year over the south-eastern lowlands of Rwanda, making the Eastern Province be bound to experience more droughts, leading to reduced water and consequent decline in agricultural production.⁵⁴

In the past two decades, 2 million Rwandans have been affected by climate-induced hazards, such as floods, droughts, and strong storms.⁵⁵ Droughts are one of the major hazards severely affecting Rwandan farmers as they depend on rain-fed agriculture and lack irrigation systems. The most exposed districts to rainfall deficit in Rwanda are Bugesera, Nyagatare, Gatsibo, Kayonza, Ngoma and Kirehe in the Eastern Province. The frequency of drought occurrence and severity has considerably increased in the last two decades with numerous severe droughts with Standardized Precipitation Index (SPI > -1.5). From one severe drought in the period 1981 – 1993 they became more frequent reaching. Six major agricultural droughts in the period 1993 – 2017 leading to crop failure, food shortage and famine.^{56 & 57} The 2006 drought affected over 1 million people in Rwanda.⁵⁸ In 2016, drought affected Rwanda's Eastern Province, especially Kayonza, Kirehe, and Nyagatare districts, leaving 225,000 people food insecure.⁵⁹ The drought of 2017 has decreased the milk production in the Eastern Province by 50% due to shortage of water and forage.⁶⁰ For more information see Section 3.1.2 from the Feasibility Study.

The target sites of the project experience the dual problems of rainfall erosivity and drier soils due to agricultural droughts. The increased frequency of drought in the province reduces the amount of recovery time between dry periods or sometimes comes back-to-back with extreme flooding, such as the 2006, 2009, and 2015 El Niño events. The country is highly susceptible to landslide and 42% of the country's area is classified with moderate to very high susceptibility.⁶¹, though this is concentrated in Western, Northern and Southern provinces, not in Eastern Province The degraded vegetation cover due to deforestation and climate impacts combined with recent trends in increased rainfall intensity are the major factors for the high susceptibility to soil erosion in the

⁵⁰ MIDIMAR, 2015. The National Risk Atlas of Rwanda.

⁵¹ Republic of Rwanda (2018). Third National Communication: Report to the United Nations Framework Convention on Climate Change. Republic of Rwanda, Kigali

⁵² USAID, 2012. Climate Change Adaptation in Rwanda.

⁵³ Definition of De Martonne aridity index: aridity is defined as the ratio of precipitation to mean temperature. Can be used to classify the climates of various regions, because the ratio of precipitation to temperature provides a method for determining an area's climate regime. Monthly calculation of AI can be used to determine the onset of drought, as the index takes into account temperature impacts as well as precipitation.

⁵⁴ Muhire and Ahmad, 2015. Spatiotemporal trends in mean temperatures and aridity index over Rwanda. Theoretical and applied climatology, 123 (1)

⁵⁵ UNDP, 2015

⁵⁶ Definition from National Risk Atlas of Rwanda: Agricultural drought focuses on differences between actual and potential evapotranspiration and soil- water deficits.

⁵⁷ USAID, 2018. Lake Victoria Basin Climate Change Adaptation Strategy and Action Plan.

⁵⁸ MIDIMAR, 2015. The National Risk Atlas of Rwanda.

⁵⁹ USAID, 2019. Risk Atlas: Country Profile Rwanda.

⁶⁰ The World Bank, Rwanda Agriculture Risk Assessment

⁶¹ MIDIMAR, 2015. The National Risk Atlas of Rwanda.

country, particularly the Eastern Province. For instance, according to a study by ICRAF using the Landscape Degradation Surveillance Framework, average soil erosion prevalence in Nyagatare stood at 30% while in Kayonza it was more than 40%. Due to limited land availability in Rwanda, agriculture and infrastructure are often established at slopes increasing soil erosion impact.⁶² Over the past 20 years, both floods and rainfall deficits or droughts have been fairly frequent but are often incurred locally or regionally and therefore there are little documented data on the impacts.⁶³ The climate driven dual problems of rainfall erosivity and drier soils due to agricultural have severe consequences for all agricultural activities, especially on poorer households. The pressure of a growing population also has a negative effect on land availability. As a result, land holdings are becoming more and more fragmented and more people adopt unsustainable survival strategies and practices such as overharvesting trees for charcoal and change in grazing areas leading to intensive grazing practices that reduce the soil fertility of pastures. These practices decrease the absorption capacity of climate impacts of both landscapes that people depend upon and the capacity of the most vulnerable populations to respond to increased severity and frequency of rainfall erosivity and drier soils over time. Farmers expanding their agricultural lands into more fragile environments such as steeper hill slopes and wetlands thus becoming more exposed to climate risks. **Observed climate change not only exacerbates many of the ongoing land degradation processes of managed ecosystems (such as croplands and pastures) but will become the dominant pressure that introduces new degradation pathways in natural and seminatural ecosystems.**⁶⁴ **Variation of the timing of rainfall events may have significant impacts on processes of soil erosion, while soil moisture content is affected by changes in evapotranspiration and evaporation which influence the surface runoff.**⁶⁵

Future climate projections

Climate change is increasing the frequency and severity of drought events in Rwanda's Eastern Province while contributing to degrading the natural resources on which local population depend for adaptation. Projected impacts will further compound the already-fragile situation in these areas unless major adaptation actions are integrated in the way landscapes are managed and governed.

The Third National Communication on Climate Change used the new version of the stochastic weather generator-LARS-WG incorporating predictions from 15 GCMs used in the IPCC AR4 and was used to project precipitation and temperature data for 2050 (with baseline 1961-1990). Climate projections for the Eastern Province show:

- Mean annual temperature is likely to increase by up to 2.5°C by 2050, up from the 1970 average. In addition, increases in average maximum and minimum monthly temperatures ranging from 1.5-2.7°C and 1.7-2.8°C, respectively, are expected.⁶⁶
- Mean annual rainfall will likely increase between the range of 0.1 and 1.24 mm, however during the short rainy season (Mid-September -Mid-December) there will be a decline in rainfall of between 0.412 and 1.65 mm per year.
- **Heat waves and duration of dry spells will increase.** Projections show likely increase in the duration of heat waves by 7–22 days more than current duration and dry spells with up to 7 days by 2050.⁶⁷ Climate projections show⁶⁸ that the number of hot days and hot nights will likely increase with 17 - 31% (hot days) and 47-64% (hot nights), while dry spells in the rainy season will likely increase in length with 3-78% by 2065.⁶⁹

The Eastern Province already receives a low amount of rainfall and such changes in rainfall and temperature alongside increased dry spells will cause potential **water deficit** in the province in the coming years. The increased occurrence of **prolonged droughts during the drought season** will inevitably lead to food shortages. In 2016, a major agricultural drought affected Rwanda's Eastern Province, especially Kayonza, Kirehe, and Nyagatare districts, leaving 44,000 households (some 225,000 people) food insecure.⁷⁰

While there is an expected decrease in rainfall during the short rainy season, **rainfall will be unevenly distributed.** Projections show **an increase in heavy rainfall event frequency** (7–40 percent) **and intensity** (2–11 percent) by 2050.⁷¹ After prolonged dry season, events of extreme rainfall will likely lead to more **floods (on flood plains bordering main rivers) and landslides (in**

⁶² Idem.

⁶³ Giertz, et al. 2015. Rwanda Agricultural Sector Risk Assessment. The World Bank Group.

⁶⁴ IPCC, 2019. Special Report on Climate Change and Land

⁶⁵ Idem.

⁶⁶ Republic of Rwanda, 2015. Intended Nationally Determined Contribution (INDC) for the Republic of Rwanda.

⁶⁷ USAID, 2019. Risk Atlas: Country Profile Rwanda.

⁶⁸ For each scenario projections from the CMIP3 dataset (basis of the 4th IPCC assessment report - IPCC-AR4), projections from the CMIP5 dataset (basis of the 5th IPCC report), bias-corrected projections of global models and finally projections of regional models have been analyzed together. These results are estimated on the basis of a high emission scenario (SRES A2 (IPCC-AR4) and RCP8.5 (IPCC-AR5)). The baseline is 1961-1990.

⁶⁹ Climate Service Centre, 2016. Factsheet Climate Rwanda.

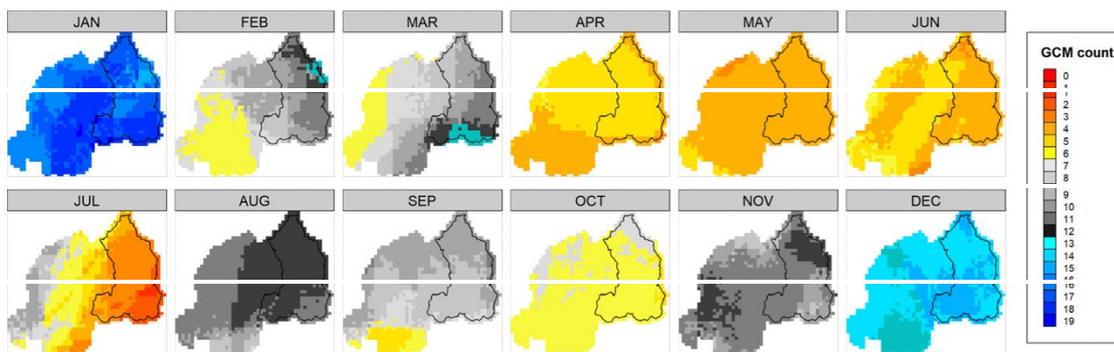
⁷⁰ USAID, 2019. Ibid.

⁷¹ Idem.

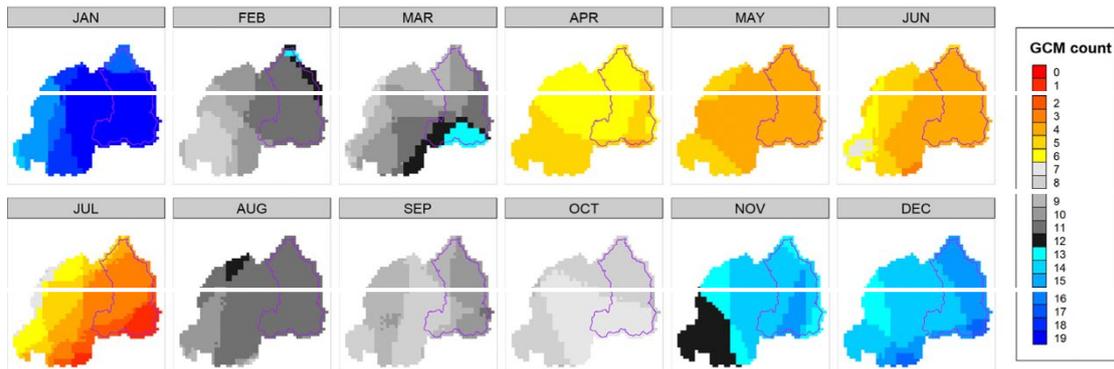
Western, Northern and Southern provinces).⁷² Major flood events have doubled in the last two decades, from 13 flood events in the period 1980 – 2000 to 30 flood events in the period 2000 – 2020.⁷³

Such cumulative effects of projected climate change are assessed through the downscaled analysis of the Soil Moisture Index in the Eastern Province. Input data layers of minimum, maximum and mean monthly temperatures for the analysis of the moisture index were obtained from WorldClim 1.4, whereas monthly extra-terrestrial solar radiation was obtained from the CGIAR CSI. The moisture index shows how droughts affect agricultural and forest productivity. In the baseline (1975), the total Precipitation (P) and Potential Evapotranspiration (PET) for the Eastern Province were 42,772 mm and 56,367 mm respectively, with moisture index of 0.7588. In the future climate scenario (RCP 4.5), total P decreases to 32,753 mm and the PET increases 59,852 mm by 2050, resulting in decrease in the moisture index of 0.5472, especially in the months of April to May, which are important months for crop sowing. This will have immediate impacts on the agricultural systems and crop production. Figure 2 presents the monthly increases of Rwanda moisture index, P and PET for 2050s (For details on the moisture index model see section 3.2 of the Feasibility Analysis – Annex 2).

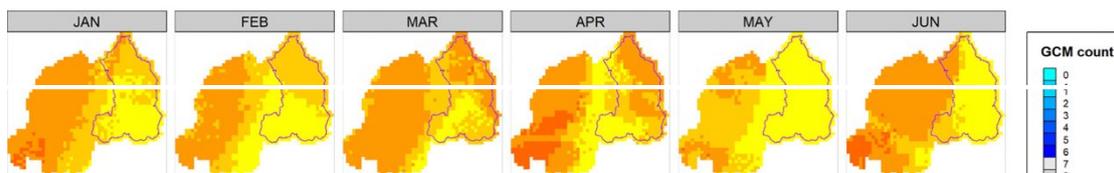
(a) Moisture Index



(b) Precipitation



(c) Potential evapotranspiration



⁷² Republic of Rwanda, 2018. Third National Communication: Report to the United Nations Framework Convention on Climate Change. Republic of Rwanda, Kigali

⁷³ CRED/EM-DAT, n.d. emdat.be. [Online] Available at: http://www.emdat.be/disaster_list/index.html [Accessed April 2020].

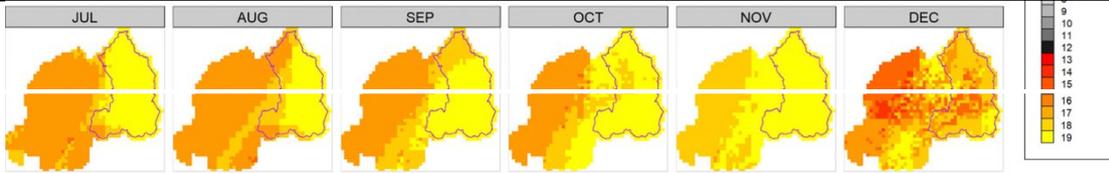


Figure 1. Counts of General Circulation Models that project monthly increases for Rwanda and the Eastern Province in particular, in moisture index for RCP4.5 by 2050 compared to the baseline centred on 1975. The major changes in the colour schemes correspond to the likelihood scale recommended for the IPCC AR5.

Climate risks, vulnerability and impacts

Rwanda is ranked the first among all African countries in terms of natural resource dependency and thus highly vulnerable to climate change for 2011.⁷⁴ The National Climate Change Vulnerability Index defines the Eastern Province with the highest levels of vulnerability in the country due to the high sensitivity and low adaptive capacity of the population to address climate change (Figure 3).⁷⁵ Existing gender imbalances between men and women such as higher poverty of women-led households and farms, limited access to economic assets and land ownership, weakens women’s adaptive capacity and makes them more vulnerable to shocks and stresses linked to climate change. Women are primarily responsible for households’ water availability and food security which suggests that their burdens will increase disproportionately due to climate change.⁷⁶

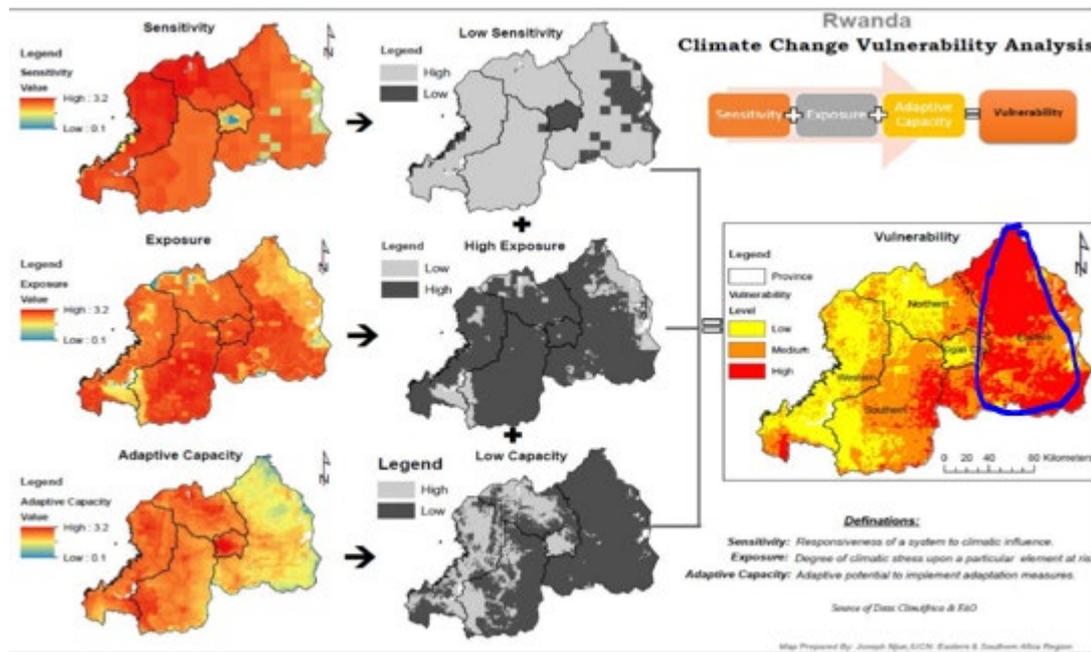


Figure 3 - Climate change vulnerability analysis.⁷⁷ The circle shows the Eastern Province where the project will be implemented

The following graph shows changes in moisture index for the moisture index for best ranking model according to the GCMeval tool.

⁷⁴ Nabalamba, A., Mubila, M., Alexander, P. Climate Change, Gender and Development in Africa. African Development Bank, 2011.

⁷⁵ REMA, 2015. Baseline Climate Change Vulnerability Index for Rwanda. Rwanda Environment Management Authority, Kigali, 2015

⁷⁶ NEPAD (2012): African Gender, Climate Change and Agriculture Support Program (GCCASP) – Rwanda.

⁷⁷ REMA, 2015. Baseline Climate Change Vulnerability Index for Rwanda. Rwanda Environment Management Authority, Kigali, 2015

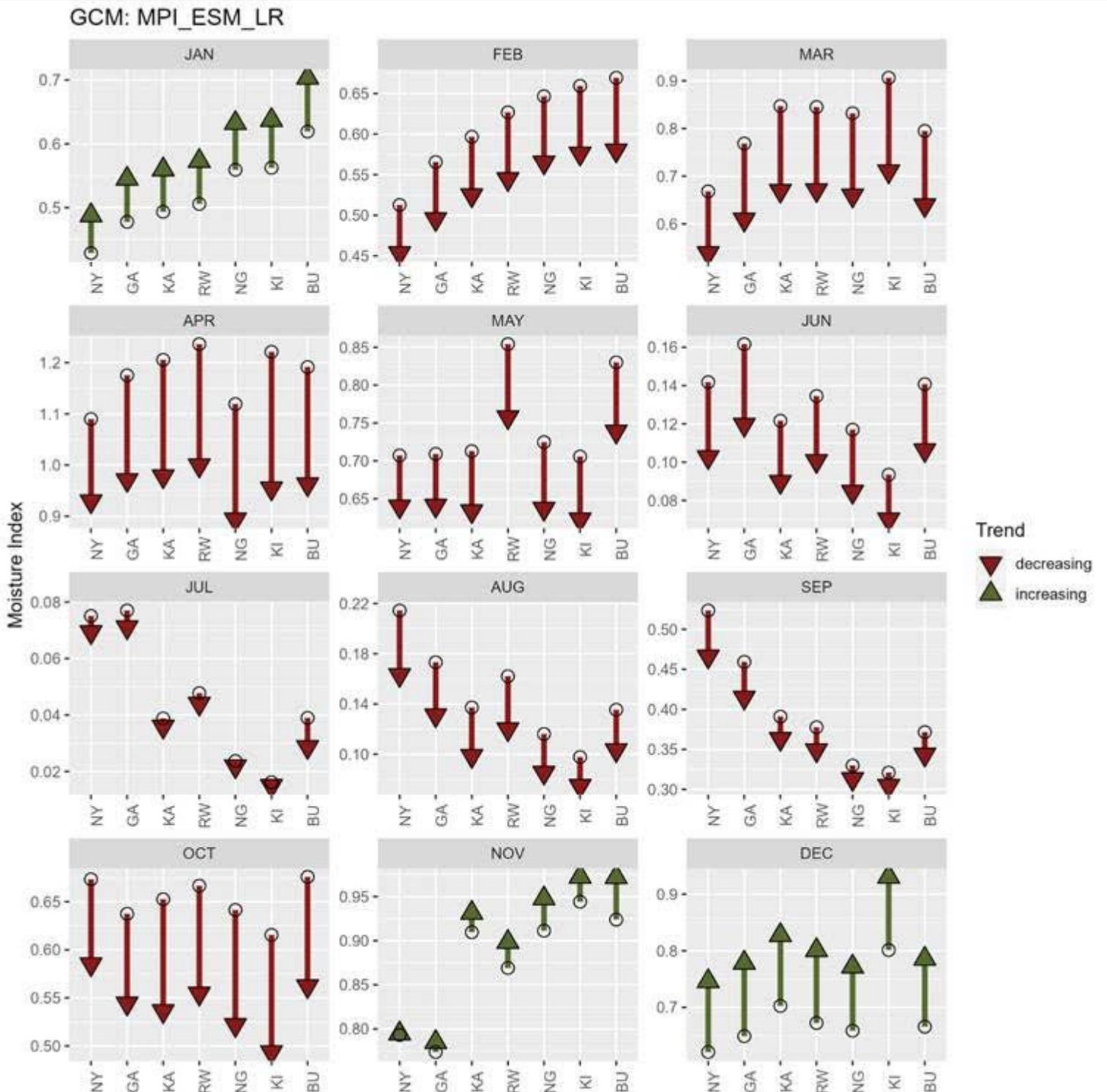


Figure 4 Changes in moisture index from baseline climate to future climates for the GCM that ranked first by the GCMeval (MPI_ESM_LR) for CMIP5:RCP4.5 for the historical climate of East Africa. Districts are sorted from north to south. NY = Nyagatare ; GA = Gats

Rwandan agriculture is predominantly rain-fed and therefore highly sensitive to variations in climate conditions and exposed to weather-related risks such as severe, frequent, and prolonged dry spells occurring during the cropping seasons.⁷⁸ Season A usually runs from September through to January, while season B lasts from February to June. The projected decline in the moisture index during the growing season will have impacts on the agricultural sector.

Drought scenarios i.e. Season A and Season B, show estimated total monetary losses for the Eastern Province from crop loss and damage (cereals, bananas, beans and cassava) at USD 2 million and USD 7.5 million (RWF 1.9 billion and 6.9 billion) respectively

⁷⁸ Republic of Rwanda, 2015. Intended Nationally Determined Contribution (INDC) for the Republic of Rwanda.

per year.⁷⁹ Economic models⁸⁰ suggest that Rwanda could lose over 1% of its GDP each year due to climate change related losses by 2030, and an even greater proportion thereafter.⁸¹

Table 2 shows the projected changes in precipitation, evapotranspiration, moisture index and water balance across Growing Season A and B. While in season A, crops (maize, sorghum, & beans) can benefit from increased precipitations and Moisture Index (MI) in the growing season of Dec-Jan, they would have suffered from poor emergence and establishment rates due to the increased evapotranspiration and decreased MI in the uncertain sowing widow of Sept-Oct. Season B could be worse due to the increased evapotranspiration in the sowing window, followed by consecutive decrease in precipitation & MI in the growing and harvesting period of Apr-Jul which will have negative effects on crop productivity.

Table 2: Projected changes for the middle of the 21st century for Eastern Province. Trends follow the likelihood scale recommended by the IPCC. Water balance is in million l, estimated to maintain baseline moisture indices.

Month	Maize	Sorghum	Beans	PREC	EVAP	MI	Water balance	Median	Max.
SEP	S (A)	S (A)	S (A)		↑				
OCT	S (A)	S (A)	S (A)		↑	↓	↓ (13 GCMs)	-111,691	-203,173
NOV	G (A)	G (A)	G (A)	↑	↑				
DEC	G (A)	G (A)	H (A)	↑	↑	↑	↑ (13 GCMs)	133,042	296,739
JAN	H (A)	H (A)	H (A)	↑	↑	↑	↑ (15 GCMs)	75,542	377,479
FEB	H (A) + S (B)	H (A) + S (B)	S (B)		↑				
MAR	S (B)	S (B)	S (B)		↑				
APR	G (B)	G (B)	G (B)	↓	↑	↓	↓ (14 GCMs)	-234,939	-390,986
MAY	G (B)	G (B)	H (B)	↓	↑	↓	↓ (15 GCMs)	-224,358	-330,802
JUN	H (B)	H (B)	H (B)	↓	↑	↓	↓ (15 GCMs)	-36,747	-94,740
JUL	H (B)	H (B)		↓	↑	↓	↓ (16 GCMs)	-6,957	-21,663
AUG					↑				

S = Sowing G = Growing H = Harvesting

A study on impacts of climate change on the potential productivity of eleven staple crops in Rwanda has estimated that climate change under both RCP4.5 and CP8.5 will have, on average, a negative impact on 11 staple crops, with the exception of three banana varieties.⁸² The future climate will have the largest impacts on Bush bean, Irish potato, and maize yields. All three crops are likely to experience a reduction in yields of at least 10% under ICP 4.5 and at least 15% under RCP 8.5. In addition, it is expected that climate change will exacerbate the effect of pests and diseases, which will further reduce crop yields. The impacts of future climate change vary over space, with the most severe reductions in potential crop yields in the Eastern province. Notably, these are widely cultivated crops nationally and are crops targeted by Rwanda's Crop Intensification Program, which aims to boost productivity via improved inputs and extension services. Thus, this program may face additional challenges to achieving target yields posed by future climate. The study concludes the Eastern Province is thus a subnational hotspot of concern informing where diversification of livelihoods and adaptation investments may need to be prioritized to support food security and climate resilience in Rwanda's agricultural sector.⁸³

The analysis from the National Risk Atlas (2015) shows that the number of people vulnerable to severe drought are 28,582 and 157,786 for the Agricultural seasons A and B respectively for the seven districts of the Eastern Province. Nevertheless, since the productivity loss due to climate change will mostly hit the Eastern Province, which is a critical food basket of the country, the effect is likely to dramatize the overall food security of the country.

The increase of total rainfall but also the intensity of precipitation during the rainy season are exposing lands on sloppy areas not covered by vegetation to higher soil erosion and degradation, lowering the water retention capacity in upstream catchment areas (decreasing their resilience to drought in dry season), and increasing the water and sediment runoff to the downstream

⁷⁹ MIDIMAR, 2015. The National Risk Atlas of Rwanda

⁸⁰ Framework for Uncertainty, Negotiation and Distribution (FUND) Model. URL: <http://www.fund-model.org>

⁸¹ Rwanda Environment Management Authority and SEI, Economics of Climate Change in Rwanda (2009).

⁸² Austin KG, Beach RH, Lapidus D, Salem ME, Taylor NJ, Knudsen M, Ujenezu N. Impacts of Climate Change on the Potential Productivity of Eleven Staple Crops in Rwanda. Sustainability. 2020; 12(10):4116.

⁸³ IBID

areas, exacerbating the risk of flooding on plains already subject to overflow from Nyabarongo-Akagera main rivers, and causing damage to crops established on these fertile soils, and potentially disturbing irrigation systems. However, the slope and rain intensity are not sufficiently high to generate a risk of landslide in the Eastern Province (these risks are observed mainly in Northern / Western/Southern provinces of Rwanda, cfr “Landslide Susceptibility Assessment Using” by Jean Baptiste Nsengiyumva and all, 2017).

Considering the topography and their limited size, the areas potentially impacted by floods in sub-catchments of the EP are very limited: the flood risk concerns mainly plains areas which are subject to overflowing from major rivers Nyabarongo-Akagera - these represent around 1% of the overall EP areas (National Risk Atlas of Rwanda, 2015).

Thus the areas and population affected by flooding are much more limited than the those affected by the impact of drought; the latter can affect the majority of the rural population dependent on rain-fed crop production. This is why the TREPA project is focusing first on the drought impact, for which drivers and solutions can be addressed locally (soil water retention capacity, vegetation/tree cover, land management practices, etc) at sub-catchment level.

However, while addressing the main drought issues, the TREPA project activities are at the same time increasing the soil protection and water retention capacity in the targeted upstream water catchment of the EP, contributing partly to the reduction of flooding risks. As these floods are driven in large part by the flows coming from Western/Northern/Southern provinces (outside of the TREPA project scope), it has to be acknowledged that other governmental programs (landscape restoration in Western/Southern province, water control infrastructures, etc) are being implemented progressively to better regulate and use these water resources.

Existing climate change adaptation interventions

The project is built upon lessons learned from existing IUCN, ENABEL, GCF and Government of Rwanda led projects and will align with and compliment other ongoing climate change adaptation projects in Rwanda. Key projects and how the projects will/seek to align are outlined below (for full list please refer to Section 5 in Annex 2).

Support Program to the Forestry Sector in Rwanda (PAREF) and Forest Management and Biomass Energy project (FMBE): TREPA builds on the experience, lessons learned and processes developed under this 3-phase project (PAREF.be 1/PAREF.be2 from 2008 to 2016 and FMBE from 2017 to 2020) conducted by ENABEL in collaboration with RFA. The project focuses on restoration and concession to private sector of public forests, on management of private woodlots under consolidated Forest Management Units lead by cooperatives of landowners, output 1.4 of TREPA specifically applies lesson learned from successful approaches developed by the PAREF and FMBE project on the establishment of Community Vigilance Committee in support of planting and sustainable management of protective road/river side tree plantation.

Sustainable forestry, agroforestry and biomass energy management for climate resilience in Gatsibo District and the “Border to border forest landscape restoration” project: These 2 projects funded by FONERWA and conducted by IUCN/RFA (2016-2018) focused on landscape restoration in Gicumbi and Gatsibo District, especially through agroforestry promotion, restoration of public and private forests. The TREPA project took lessons from these projects, particularly on knowledge of local context and technical issues regarding adapted species adopted by farmers.

Landscape Restoration and Integrated Water Resources Management in Sebeya and other Catchments: The project is implemented by Rwanda Forestry Authority (RFA) in collaboration with the International Union of Conservation of nature (IUCN). The project aims to restore degraded lands in Sebeya and other catchments through agroforestry interventions and early lessons will inform the TREPA interventions.

Strengthening climate resilience of rural communities in Northern Rwanda (FP073) – FONERWA: This recently approved FONERWA GCF funded project is similar in its design to the TREPA GCF Project and will seek coordination, synergy and to integrate lessons learned. Many of the project’s interventions target those who farm marginal land and are highly vulnerable to landslides, flooding and droughts. The TREPA project will integrate early lessons from complimentary activities aligned to the projects four components including objectives around adopting climate resilient practices, sustainable forest management, adoption of fuel-efficient cooking methods. TREPA output 1.5 will specifically take advantage of lessons learned of different ICS support initiatives, such as the testing in Rwamagana of different model of ICS in rural households (under aforementioned FMBE) and the dissemination of ICS in Gicumbi by the GCF FP073.

Land Husbandry, Water harvesting and Hillside irrigation Project – World Bank and MINAGRI:

The project aimed to increase the productivity and commercialization of hillside agriculture in target areas including Eastern Province. The TREPA project builds on these interventions and will continue to climate proof hillside irrigation systems by contributing to soil stability, nutrient retention and reduced runoff.

The Rural Sector Support program (RSSP) – World Bank and MINAGRI: The TREPA project will build on approaches and lessons learned through the implementation of the 3-phased RSSP which ran 2001 to 2018, focusing on marshlands rice production in Eastern Province (RSSP1), accelerating intensification and commercialization of priority crops on the hillsides surrounding marshland rice (RSSP2) and the diversification of economic activities to increase and stabilize rural incomes. TREPA’s component

2 related to markets and value chains will be aligned and complement those established by RSSP in Eastern Province, supporting investments in climate resilience to strengthen the impacts of this project.

The Sustainable Agricultural Intensification and Food Security Project (SAIP) – World Bank and MINAGRI:

The currently ongoing SAIP (2018 -2023) is intended to strengthen and sustain the cooperatives and crop value chains established by the previous World Bank funded projects (LWH and RSSP). TREPA will therefore complement SAIP and will be informed by this parallel co-financing. Particularly, TREPA will focus on climate-proofing these crop value chains supported by SAIP in eastern Province and supporting scaling up of activities through the financial products developed by the support of TREPA component 2.

Rwanda Dairy Development Project: Effective from Feb 2016, now at Mid-term. The project focuses on strengthening Dairy Value chains in Nyagatare, Gatsibo, Kayonza and Rwamagana Districts of Eastern Province. The TREPA project will complement these ongoing activities by providing critical silvopastoral adaptation measures under component 1. Furthermore, value chain resilience will be supported through the financial products developed by the support of TREPA component 2.

Anchor Farm Project: Rwanda – Clinton Development Initiative – the project covers the Eastern Province – in the Rwamagan, Nyagatare, Kirehe, Gatsibo, and Kayonza districts – where they have an established network of agriculture and enterprise development officers, government agricultural workers, and have trained more than 33,000 farmers. The project predominantly focuses on soy-maize rotation; access to quality and reliable seeds, inputs and input finance; climate resilience and erosion control; seed multiplication; production of quality commodities; and working directly with large buyers to secure the best price. The TREPA project may work with some of the same farmers on agroforestry and silvopastoral activities and will benefit from linkages to the private sector activities these farmers are engaged in through the CDI project and will link farmers with the CDI established network of agriculture and enterprise development officers to leverage training opportunities and reduce the need for training some farmers under TREPA, particularly under component 2.

Forest Landscape Restoration in the Mayaga Region – UNDP and REMA

The project, approved by the GEF in 2019 aims to develop forest restoration plans (for 263,270 ha) with institutional and legislative frameworks guiding a forestation natural resource management and agriculture within the region alongside development of institutional capacity through enhanced planning and implementing gender sensitive forest landscape restoration strategies on approximately 2000ha of forest. The intervention includes participatory forest management and private sector concessions for restoration of forest. While in the Southern Province, the TREPA project will work alongside UNDP and REMA to integrate early lessons learned from the forest landscape restoration plans as well as any institutional capacity for planning and implementing forest landscape restoration strategies.

Transboundary Agro-ecosystem Management Programme for the Kagera River Basin – FAO and MINAGRI

Effective 2009-2014, the project undertook various Sustainable Land Management (SLM) interventions that aimed maintaining and enhancing agricultural productivity; minimising risks to agricultural, livestock and forestry production systems; protection of natural resources and prevention of environmental degradation; and improving livelihoods through increased income generating opportunities. The intervention included activities by farmer groups in adopting Agroforestry systems; trials in Soil fertility improvement; construction and maintenance of Terraces; and practicing appropriate agronomic techniques. The FAO project pioneered some of the measures proposed by TREPA in the EP. While the FAO project interventions were on a significantly smaller scale to those proposed by the TREPA project, TREPA aims to scale up and replicate the successes of the FAO project. TREPA project design has taken a number of lessons learned from the pilot plot interventions and SLM practices.

Nationally funded Irrigation and selected crops value chains projects starting and in pipeline, specifically for Eastern Province. (For for a detailed list of projects please refer to Section 5, Annex 2.): The Rwandan Government with the support of international donors are expanding irrigation in Eastern Province. The TREPA project will leverage on existing MINAGRI investment in irrigation infrastructure to strengthen landscape restoration upstream and community engagement in sustainable management of productive landscapes.

MINAGRI irrigation Programme development: The Government of Rwanda has embarked on a substantive irrigation programme development in the Eastern Province with about 500 million USD invested in currently ongoing irrigation projects and those in pipeline in Eastern province. This programme consists in supporting several water management and water supply schemes such as the Muvumba Multi-Purpose Dam (USD 173,555,021), the Warufu Irrigation Project (USD 73,365,832), the Gatare-Mugesera Irrigation Project (USD 9,044,320), the Rukumberi project (USD 9,000,000), the Rweru Irrigation scheme in Bugesera District (USD 23,355,000), the export targeted modern irrigation project (USD 120,500,000), the Gabiro Irrigation Scheme development project (USD 93,700,000),

Regular Programmes and earmarked funds for agricultural development Eastern Province by MINAGRI and MoE: A number of other regular programmes under earmarked transfers from MINAGRI and MoE service the districts in Eastern Province include: soil conservation and land husbandry, small-scale irrigation technology, lime and compost, small stock management, genetic improvement, vaccination and veterinary delivery service, Twigire Muhinzi, Seeds and fertilizers post harvest infrastructures and farmer training. More specifically, output 1.1 of TREPA project builds on the existing Twigire Muhinzi Farmer Field School system and related lessons learned through different project such as FMBE, PAREF and IUCN Gatsibo (see annex 2), where the approach has been customized (improvement of the organization of farmers groups, awareness and establishment of MoU, preliminary baseline assessment and regular monitoring, etc.) for effective and prompt dissemination of agroforestry knowledge and best agroforestry tree planting practices.

Rwanda Dairy Development Project (RDDP): Financed by IFAD (USD 65.3 Million) started in mid-2016 with the aim to strengthen the dairy value chains in 12 districts , including 4 districts of Eastern Province (Nyagatare, Gatsibo, Kayonza and Rwamagana) where there is the highest cattle population share in the country. The project seeks to (1) sustainably intensify dairy production and productivity by at least 80% among the smallholder farmers. This is to be achieved through promotion of improved the promotion of access to quality dairy inputs, extension services, appropriate green technologies and business and financial services following a hub model approach. (2) Increase incomes by at least 80% among the participating smallholder farmers from dairy farming, through a combined effect of the increased milk production and improved market access, by strengthening dairy farmers organizations; facilitating linkages to markets and dairy value chain actors. The TREPA project builds on the experience of the IFAD RDDP project and will replicate the successful paddocking technics applied in Nyagatare under output 1.3 through applying drought adapted grasses and tree species, while using dairy cross-breeds cows that cope better on degraded pastures while also increasing farmer incomes.

The GCF funded TREPA project will be complementary to a number of development activities that are planned and taking place in the Eastern Province and the Agriculture Sector in general. While these existing projects and initiatives are critical for irrigation and water supply development ensuring the sustainability of agriculture development and food security in Rwanda and in the Eastern Province in particular, they are related to large scale agriculture development schemes. These schemes are selective on some value chains and climate exposed monocultural staple crops which in the face of projected climate change rely heavily on functional pastoral, forest landscapes and buffer zones and the ecosystem services such as food and water, regulation of floods, soil erosion that they provide. However, these investments will be at risk as they do not appropriately consider landscape and ecosystem functions in the face of increased climate impacts such as soil erosion and reduced moisture content characteristic of the Eastern Province.

Adaptation scenario proposed by this project

Rwanda's land use planning and management does not sufficiently factor for climate change impacts at the landscape and ecosystem level in the Eastern Province, thus it leads to increased vulnerability of farmers to drought (high risk for all farmers dependent of rain fed cropping) and to flooding (lower risk limited only to flood plains overflowed by the Akagera river), . The TREPA project will be complementary and deepens the benefits of existing projects and programs as it will ensure:

- Smallholders livelihoods are resilient and more adaptive to climate change, in particular in the context of increased droughts,
- Making all value chains in the area more climate resilient, especially those not well addressed by existing activities
- Ensuring finance is available to support the development of climate resilience across value chains
- Supporting business design to fact in climate variability and also specifically supporting diversification of revenue streams for small farmers faced with vulnerable livelihood activities

The project will transform this tendency in the Eastern Province by incentivizing more sustainable and climate resilient practices on arable lands, while restoring and protecting more fragile lands and addressing the dual climate induced problems of rainfall erosivity and drier soils compounded through landscape degradation through poor management practices. The project approach is centred on landscape-scale restoration of degraded lands informed by improved climate risk assessment, management and finance. The landscape restoration approach adopted by the project will identify (in close collaboration with farmers and local authorities), for each targeted piece of land, the best restoration option according to its location and roles / potential impact in the water catchment. Local landscape restoration to adapt to climate change will address at the same time issues raised by a longer drought period (first priority) and stronger rains during the rainy season. The agroforestry and forestry activities will target degraded lands on sloped areas which tend to be located on the upstream area of the water catchment: the increased tree density, the anti-erosive ditches and the better coverage of soil by good forestry agroforestry practices will reduce significantly the risk of soil erosion during intensive rains and will increase the water retention in upstream level, increasing adaptation to drought while reducing the risk of flooding in downstream fertile plains. Silvopastoral activities will target also up-stream degraded shrubland on sloped areas with the same expected impact on drought adaptation and reduction of flooding risks. However, some of the silvopastoral ranches are located on grazing areas of the downstream plains, naturally already exposed to some flooding in intensive raining seasons. For these plain, tree and forage species adapted to short flooding will be selected, and the silvopastoral plan will include grazing rotation with areas located upstream (grazing in upstream areas in rainy season, in downstream in dry season). The traditional free open grazing of local Ankole cows contributes to overgrazing due to stocking densities (1.4 head/ha) that exceeds carrying capacity. Open grazing will be replaced by fenced ranches with an increased proportion of cross-breed dairy cows, with a stocking density of 0.5 head/ha. This will provide a higher return to farmers due to increased milk production while avoid overgrazing and reducing methane (CH₄) emissions.

On public lands under special protection status (road/river side, Akagera buffer zone), participatory approaches engaging neighbouring local communities will be employed to restore the most degraded lands. The targeted degraded buffer zone is mainly located on upstream slope areas, where forest coverage restoration with drought adapted species will contribute both to drought resilience and reduced run-off. During the establishment of local landscape restoration plans, the tree planting areas will be selected

on sloppy degraded lands to increase water retention and limit run-off and soil erosion, while the river shore areas targeted for tree planting will be selected based on their exposure to water-run-off and flooding, to support the fixing of river banks.

TREPA aims to scale up landscape and ecosystem restoration efforts that have already started in the country but may have had limited climate adaptation and mitigation impact due to insufficient scale, inappropriate design or selection of interventions, lack of funding and the absence of coordinated and science informed approaches across entire landscapes and ecosystems. As such, GCF support through the TREPA project is necessary to support science informed approaches and finance that aims to both fund adaptation and mitigation investments and empower farmers, local and national institutions to strengthen implementation and governance of forest and pasture resources at all levels. In the alternative scenario delivered through the project, climate resilient practices for landscape management and planning (Table 3) combined with stronger institutions will enable local communities to adapt more effectively to climate change. They will allow both better decision-making and better implementation of decisions as a result of stronger participation and accountability.

Table 1 - Key climate hazards for the Eastern Province, projected impacts, landscape restoration interventions and adaptation results.

Climate change projections and impacts for the Eastern Province	Projected impacts on agriculture, forestry and livestock that would occur in the baseline scenario ⁸⁴	Project adaptation interventions
Increasing trend in mean temperatures	<ul style="list-style-type: none"> Leads to increasing significant reduction of crop yields Increasing heat stress affects physiological processes health and mortality of livestock Increasing disease pressure on livestock, through change of the thermal optimum for pathogens, hosts, vectors and epidemiology, together with a number of indirect effects 	<p>Promotion of agroforestry practices: contribute to the conservation of soil moisture and its recharge through the infiltration of rainfall and runoff water, the creation of sheltered microclimatic conditions, and the inclusion into the soil of organic matter that contributes to moisture retention.</p> <p>Promotion of silvopastoral practices: Improve soil properties due to greater uptake of nutrients from deeper soil layers, enhanced availability of nutrients from leaf-litter and increased nitrogen input by N₂-fixing trees.⁸⁵ Moreover, silvopastoral systems enhance the resilience of the soil to degradation, nutrient loss, and climate change, while enhancing water holding and infiltration capacity of the soil which contributes to the regulation of the hydrological cycle by reducing runoff intensity.^{86, 87} Overall, these results improve the animal welfare.⁸⁸</p>
Decreasing trend in mean rainfall and number of rainy days coupled with more days with extreme rainfall intensities	<ul style="list-style-type: none"> Late harvests, delay of sowing in the next season, seasonal crop failures and low yield Limited grazing and feed resources during long dry spells significantly reduce milk productivity and thus affect food security of cattle farmers Increase soil loss and nutrient leaching from soil, thus challenging agricultural productivity growth. Increased runoff during heavy storms destroy existing soil conservation facilities, increase sedimentation of lakes and ponds thus altering fish habitats. As rainfall variability is related to overall impacts on hydrological flow, water storage and availability, climate-related impacts on water resources lead to more floods and dry spells, while groundwater recharge diminishes. 	<p>Restoration and sustainable management of degraded forests (including Akagera buffer zone): by restoring and maintaining tree coverage (with drought adapted species) and by establishing anti-erosive ditches on slope areas, the soil is protected against erosion; meanwhile organic matter, the moisture, the water penetration and retention is increased, limiting flood risk</p>

⁸⁴ MIDIMAR, 2015. The National Risk Atlas of Rwanda.

⁸⁵ Nair VD, Haile SG, Michel GA, Nair R, 2007. Environmental quality improvement of agricultural lands through silvopasture in southeastern United States. *Scientia Agricola* 64:513–519.

⁸⁶ Ibrahim M, Guerra L, Casasola F, Neely N, 2010. Importance of silvopastoral systems for mitigation of climate change and harnessing of environmental benefits. In: Abberton M, Conant R, Batello C (Eds) *Grassland carbon sequestration: management, policy and economics*. Proceedings of the workshop on the role of grassland carbon sequestration in the mitigation of climate change. Integrated Crop Management, Vol. 11. FAO, Rome, Italy. <http://www.fao.org/docrep/013/i1880e/i1880e09.pdf>

⁸⁷ Jose S., 2009. Agroforestry for ecosystem services and environmental benefits: an overview. *Agroforest Syst* 76 (1):1–10.

⁸⁸ Broom DM, FM Galindo, Murgueitio E., 2013. Sustainable, efficient livestock production with high biodiversity and good welfare for animals. *Proceedings of the Royal Society Biological Sciences* 280:2013–2025

	<ul style="list-style-type: none"> • More extreme climatic events, such as prolonged drought, raises concerns for water access, even in areas known to be water secure. 	<p>during rainy season and improving adaptation of impacted water catchments to drought during dry season</p> <p>Seed banks: Promote climatically adapted seed varieties to reduce crop failure in the event of rainfall failure during critical growth periods and reduce harvest failure in the event of excessive rainfall during harvest</p>
<p>More frequent violent storms with torrential rains</p>	<ul style="list-style-type: none"> • Crop damage or total crop destruction and thus yield reduction; • Increased flooding destroying crops cultivated on vulnerable/fragile areas such as valleys and steep slopes. 	<p>Protective restoration measures at erosion-prone areas: Reduce exposure to soil erosion and floods of communities and their assets living in road and river side.. The restoration measures will act as natural levees and reduce shoreline erosion, improve water quality, and improve aquatic ecosystems by protecting and restoring rivers banks, lakes and marshland shorelines and roadside areas.⁸⁹</p>
<p>Pressure on forest resources and woody biomass leading to GHG increased emissions</p>	<ul style="list-style-type: none"> • land degradation driven by extremely high pressure on wood resources for cooking estimated at 1.65 mil m³ per year while supply is only 0.55 mil. m³. • pressure on resources will be a major constraint for private forest growers to respect management plan prescriptions and avoid over exploitation of degradation of restored forests. 	<p>The project will support adaptation and reduced GHG emissions through: (1) decrease of demand and (2) increase of wood supply capacity. Dissemination of Improved Cook Stoves (ICS) via Output 1.5 will reduce pressure on forest resources, reducing degradation and allowing restoration of degraded forest (mainly Outputs 1.2 and 1.4). Together, the project activities will help correct the supply-demand imbalance facing forests in Rwanda's Eastern Province, and alongside the project's other measures, allow for the establishment of sustainable forest management. Over the 6-year implementation period these measures will save, respectively 1,207,000 tCO_{2e} (cookstoves) and 100,000 tCO_{2e} (forestry and silvopastoral measures). Over the 20-year year period from the start of the project, the direct impact will reach 9,660,000 tCO_{2e}.</p>

Maladaptation:

While the project adaptation interventions outlined are specifically designed to adapt to projected climate change impacts, there is, however, the possibility that adaptation actions do positively increase the vulnerability of other groups and sectors in the future, often referred to as 'maladaptation' risks. These risks are described under section G1 and F, with adequate risk mitigation measures.

Several measures and frameworks are in place to prevent maladaptation: 1) analysis, selection and design of appropriate adaptation measures as outlined in the feasibility study (see: annex 2). 2) limit the possible risks posed by the project interventions and identification of appropriate mitigation measures (see section F: 'risk assessment and management') and ensure a framework for sufficient environmental and social safeguards (see annex 6). 3) established frameworks for monitoring and reporting (see annex 11).

There are five possible categories of maladaptation⁹⁰ that may inadvertently result from project interventions that must be considered, these include: 1) Increasing emissions of greenhouse gases (e.g. energy-intensive adaptation actions) 2) disproportionately burdening the most vulnerable (increased cost of agricultural inputs or indebtedness through investment in

⁸⁹ Zuazo, VH, Pleguezuelo CR, 2008. Soil-erosion and runoff prevention by plant covers. A review. Agronomy for Sustainable Development, Springer Verlag/EDP Sciences/INRA, 2008, 28 (1), pp.65-86. hal-00886458

⁹⁰ Barnett, J. and S. O'Neill, 2010: Maladaptation. Global Environmental Change, 20(2), 211-213

adaptation measures) 3) high opportunity costs (e.g. measures with high economic, social, or environmental costs relative to alternatives) 4) reduced incentive to adapt (e.g. encouraging unnecessary dependence on others, stimulating rent-seeking behavior, or penalizing early actors), and 4) path dependency (committing capital and institutions to trajectories that are hard to sustain or difficult to change in the future). During project implementation, consideration of these five pathways to maladaptation will offer a basis by which adaptation decisions can be screened, evaluated and monitored for their possible adverse effects. Each implies a question and a line of investigation that IUCN, partners and the GoR will pursue through the projects risk management framework considering both the short-term and long-term perspective of proposed measures before committing resources to adaptation decisions during implementation.

Adaptive management:

While these measures are specifically designed to adapt to projected climate change impacts, there is an element of future climate impacts within and beyond the GCF project lifetime that may require the adjustment of interventions as well as updating or modifying practices that aim to restore degraded lands. In addition, the project may create positive replication effects for other players intervening in the Eastern Province, which may contribute to an indirect increase in project size and scale. As such, alongside climate change adaptation measures, adaptive project management (AM) will be applied as a rigorous approach to long-term implementing, monitoring, and evaluating actions will increase the ability of decision-makers to form timely responses to new information throughout implementation and beyond GCF financial exit⁹¹ In the context of climate change, documentation and monitoring all outcomes under component 3 will advance the scientific understanding of adaptation interventions and climate change and inform adjustments in policy or operations of the TREPA project.⁹²

B.2. Theory of change (max. 1000 words, approximately 2 pages plus diagram)

Barrier analysis: Rwanda has advanced in many aspects of mainstreaming and implementing climate resilient initiatives, however there are several technical, information, financial and institutional barriers that can result in less efficient or less effective adaptation, missed opportunities and/or higher costs for future adaptation strategies (table 3). These barriers include:

Knowledge barriers

(1) Limited or no baseline data on state and vulnerability of ecosystems and vulnerability of human livelihoods due to climate risks– Knowledge barriers refer to the awareness and understanding by farmers, value chain actors and others of how climate change impacts the agriculture sector, both in terms of general trends and at the farm level, and also how to formulate an appropriate response. The rural population is largely unaware of the risks that climate change poses to their livelihoods, such as the exacerbation of droughts and soil erosion as there is limited or no baseline data on state and vulnerability of ecosystems and vulnerability of human livelihoods or data to calculate and track information for making evidence-based investment decisions and solutions. The traditional knowledge on which communities depended for agricultural planning and water management is fast becoming insufficient in the context of climate change. Farmers have limited awareness of climate resilient production methods as well as understanding of financial products such as savings and credit. Additionally, extension officers have inadequate capacity to guide decision-making processes based on climate forecasts. Such information is usually available from the Rwanda Meteorology Agency and disseminated through several channels, but it is not always easily accessible and is rarely used in decision making. Practical guidance on how to adopt alternative and innovative practices to adapt livelihood, agriculture and land management practices based on climate forecasts is not available. Without access to up to date information including climate projections and impact pathway analysis (e.g. impacts to agricultural production caused by changes in seasonality and evapotranspiration), and the ability to process such information, government and communities will not have the necessary understanding to develop and implement adaptive measures that restore fragile environmental resources and climate proof future land management initiatives.

Technical / capacity barriers

(2) Local population and extension services have limited technical skills, information, knowledge to design and implement adaptation solutions related to landscape restoration & soil and water management in the face of climate change - Technical capacity barriers refer to the skills, resources and delivery infrastructure required to obtain appropriate inputs and implement more resilient practices. People living in Eastern Province lack the skills to implement agroforestry, silvopastoral and forest/ecosystem restoration activities that would enhance their capacity to mitigate the impacts from climate induced droughts, soil erosion and flood. The technical staff and communities in the Eastern Province of Rwanda have limited technical capacity and skills to employ short-term and long-term climate adaptive solutions to land management practices and technologies. While some landscape and ecosystem restoration efforts have already started in the country, they have had limited climate adaptation and mitigation impact due to insufficient capacity to implement these schemes at scale, inappropriate design or selection of interventions, lack of funding and the absence of coordinated and science informed approaches across entire landscapes and ecosystems.

⁹¹ Douglas, A. 2012. International Upper Great Lakes Study: Adaptive Management.

⁹² Panel on Adaptive Management for Resource Stewardship. 2004. Adaptive Management for Water Resource Project planning. National Research Council. Accessed from <http://www.nap.edu/catalog/10972.html>

(3) Farmer organizations are weak and have insufficient capacities to design integrated climate resilient solutions to enhance livelihoods and access markets and value chains that would diversify livelihoods and protect against climate shocks

- Smallholder farmers, especially women and youth, are unorganised and often underrepresented in the market and do not elicit benefits to support healthy livelihoods. The lack of farmers associations and groups impedes their participation in equitable markets and receiving fair prices. Where such organisations exist in the Eastern Province, they often lack organisational capacity, entrepreneurship development skills, access to finance services (e.g. loans, grants), access to equitable markets and engagement with the private sector. In a bid to finance economically feasible projects for farmers, financial service providers **with limited knowledge on climate impacts, vulnerabilities and adaptive capacity enhancement through climate resilient agricultural production and diversification methods** unintentionally stimulate vulnerable (often monocultural) production methods that can compound the effects of climate change and exacerbate environmental degradation such as soil instability and nutrient loss

Social, cultural and gender barriers

(4) Traditional cultural views and dependence on monocultural and subsistence agriculture in EP slow the rate of adoption of diversified agricultural systems as adaptation options. Dependence primarily on seasonal crops, such as maize, sorghum, beans and tubers, and hand tillage yearly exposes the soil to erosion and rapid decomposition of organic matter which is exacerbated by climate impacts on soil. Governmental and NGO efforts to introduce agroforestry and other forms of biological erosion control have not been widely adopted, partly because of the perception that they occupy much space on the fields and compete with crops for nutrients.

Traditional gender roles and patriarchal attitudes towards women in rural Rwanda mean that women have limited control over assets and decision making at the household, community and FFPO level. This weakens their adaptive capacity and makes them more vulnerable to shocks and stresses linked to climate change. Women's involvement in certain livelihoods is also limited by gender relations which limits the ability of women to take up certain off-farm livelihoods.

Financial barriers

(5) Financial service providers have limited knowledge on climate change and experience financing resilient agricultural production methods and risks for investors to support climate resilient technologies and practices are still too high due to climate change variation and limited potential for adaptation

- Traditionally, small holder farmers have managed their assets, building on local knowledge and generally using their own resources to operate and manage water supply and invest in agricultural inputs and tools. However, the cumulative deterioration resulting from increasing climate-related shocks has reduced productivity and impoverished smallholder farmers. Community organisations and in particular farmers' organisations no longer have the capacity to invest adequately in innovative climate resilient land and soil management technologies. Where government investments are leveraged, the investment is not sustained due to lack of financial capacity to bear the incremental costs of addressing the severity of climate shocks on small-scale infrastructure. The upfront capital costs of these investments are outside the financial capability of farmer households or communities and, addition, communities lack the ability to effectively mobilise financing for land restoration and adopting climate resilient technologies. The Government of Rwanda (GoR) recognizes the role played by the financial sector in facilitating economic growth through enhanced access to financial services, Access to finance for investment and resilience for farmers While the recent surveys show a gradual growth in financial inclusion since 2016 despite Covid 19 (reference to FS annex 4) the use of formal financial service particularly lending in agriculture still remains low. financial service providers need support to adapt financial services to the needs of farmers and FFPOs, including support to diversified loan packages, climate sensitive risk monitoring systems and linking lending to digital payment and information services. The Rwanda sector shows a fast outreach through informal systems, mobile banking, and SACCO, however the bulk of agri-credit is still provided by microfinance banks and microfinance institutions, since these organization have a stronger finance rural base and deploy already digitized system (foodnote such as the selected partners in this proposal).

While Rwanda has a very progressive financial inclusion strategy and one of the highest financial inclusion figures in Africa, the formal lending in agriculture still remains behind. The latest finscope study shows that the current institutions consist of 416 Sacco Umurenge, 23 Non Umurenge Sacco and 19 Limited microfinance institutions. The Umurenge Saccos are very local based and have a strong focus on savings, with limitations in lending capacities, especially for longer term lending to SMEs. Consolidation of these Saccos is currently ongoing and includes establishment of 30 district-level Saccos which will have a much greater lending capacity and can speed up digitalization within the Sacco's. The evaluation of the KFW Microfinance Challenge concluded that microfinance institutions still need support in capacity building and attracting capital.

Institutional barriers

(6) The institutional capacity and coordination to implement climate-risk informed landscape management strategies is weak – The sectoral nature of land use planning is complicated by a myriad of actors at local, provincial and national levels making it increasingly challenging for institutions to coordinate and work together. There are weaknesses and overlaps in the role of

government institutions and this is evident in the lack of local land-use planning and harmonisation of activities at landscape scale. The absence of a coordinating mechanism constrains the operation and management of the cascade and its water resource as a planning unit.

Lack of linkages between farmers and other actors in selected value chains production of products based on climate-resilient land use - Poor capacity to engage in climate-resilient and energy-efficient production in value chains of agricultural and tree crops which would support strengthened adaptive capacity in the face of climate shocks such as drought or provide buffers against increased flooding and soil instability.

Weak national framework for facilitating the creation and sharing of climate knowledge - Besides limited infrastructure and knowledge to develop and disseminate climate-sensitive technologies and information, there is a weak framework at national level for facilitating the creation and sharing of knowledge about what works and what does not work related to climate related land and water management. There is no local or provincial knowledge management mechanism that extracts lessons learned from recent interventions to integrate into a complete package of technologies for the restoration, improvement, modernization, operation and maintenance of farms, forests and landscapes.

(7) Risk: Limited engagement with public, private and CSO sectors for the design and innovation of solutions, planning and implementation of interventions can lead to lack of trust between actors and limit incentives to protect and conserve ecosystem goods and services

Table 4 - – Linkage of TREPA project interventions address barriers

Category	Adaptation barrier	How the project will overcome this barrier
Knowledge	(1) EP population and extension services have limited or no baseline data on state and vulnerability of ecosystems and vulnerability of human livelihoods. Furthermore, they have limited technical skills, information, knowledge to design and implement adaptation solutions related to landscape restoration & soil and water management in the face of climate change	The project will strengthen the generation of and access to tailored information on the state of landscapes and climate information as well as improve the capacities of farmers and extension workers to use the information for decision making. In order to address the lack of baseline data on the state and vulnerability of ecosystems and livelihoods, potential intervention sites/plots will be selected through existing thematic maps and then prioritized based on community participatory mapping, plot characterization (e.g. slope %) and farmer needs based on identified and characterized vulnerability. This information will ensure packages are suited to site-specific context and that simplified management plans can be developed for each targeted restoration site.
	(3) (social and cultural barrier linked to technical and capacity barriers) Traditional cultural views on agricultural practices, gender & monocultural agriculture slow adoption of diversified, climate & gender sensitive agricultural adaptation options	The project will provide tailored technical support and capacity building to help farmers and extension services identify and implement locally appropriate and gender sensitive climate resilient restoration activities. Complementing the mapping exercise, additional awareness and sensitisation training on selection of appropriate adaptation measures will take place through outputs 1.1 – 1.5. Furthermore, output 3.2 will focus on the development of information systems that will enable communities to implement climate change risk informed adaptive solutions (enhanced knowledge and information system). Output 3.4 will generate new information on technical packages for climate resilient interventions adapted to Eastern Province. Training, tools and investments will be made in climate resilient land management and restoration (diversified agroforestry and silvopastoral packages, woodlot and tree plantation rehabilitation, protection of erosion prone buffer zones and clean and efficient cooking technologies) through outputs 1.1-1.5. Farmers will especially be trained through FFS and the Twigire Muhinzi, system to understand agroforestry and silvopastoral cropping techniques and to understand the exposure to climate hazards that subsistence and monocultural agricultural systems pose in the face of climate impacts. Output 3.3 will provide climate resilient species seed and seedling supply to support output 1.1-1.4. Highly productive and climate resilient farmlands and ecosystems will: 1. enhance climate resiliency of beneficiary farming communities and FFPO, 2. Increase climate-resiliency of the farmlands to climate impacts through agroforestry techniques (Wise and Cacho 2002), 3. Climate resilient ecosystems built including forests will reduce topsoil erosion, improve water quality; protect source water; and ensure uninterrupted water supply for household needs, drinking and irrigation (Wilson and Lovell, 2016. Garrity et al., 2010), 4. Reduced stormwater runoff resulting in flood risk mitigation (e.g. Matthews et al. 2004; Ranieri et al. 2004). Output 3.4 will ensure that evidence from best practices is implemented in climate resilient management practices for land restoration. Measures will be implemented in a gender sensitive manner to ensure gender barriers are addressed in sectoral and community restoration planning. Particular consideration will be given to incentives for participation of men and women and marginalised groups. Through activities under component 1 and value chains under output 2.2, and prioritizing agroforestry-based landscape restoration
Technical/Capacity And Social/cultural		

	<p>(2) Farmer organisations are weak and have insufficient capacities to adopt climate resilient land use practices and develop climate resilience across value chains to improve livelihoods and have better access markets</p>	<p>options and landscape based restoration businesses are specifically proposed that women, marginalised and young people can benefit from.</p> <p>The project will strengthen the capacity of farmer organisations that will help farmers overcome financial constraints, support more inclusive value chains and improve market access. Capacity of FFPOs and other groups will be assessed and strengthened through output 2.1. Output 2.1 will also support organisations through establishment of resilient market infrastructure and market linkages to improve market access. Output 2.2 will support the strengthening, value addition and diversification of targeted value chains for climate resilient agricultural and tree products to protect the most vulnerable population to climate shocks. Enhancing adaptive capacity of local communities to sustainably operate nature-based enterprises will also enhance livelihoods of the most vulnerable people through employment creation and boosting income of local communities especially targeting women and youth. Output 2.3 will improve access to finance for investment in resilience measures.</p>
<p>Financial</p>	<p>(4) Financial service providers have limited knowledge on climate change and experience financing resilient agricultural production methods</p> <p>Risks for investors to support climate resilient technologies and practices is still too high due to climate change variation and limited potential for adaptation</p>	<p>The project will help increase knowledge of financial service provider to monitor climate risks thereby reduce financial risk, increase financial returns and improve access to savings and credit for farmers engaged in diversified/climate resilient livelihood activities. There are limited financial products to stimulate climate resilient production in landscapes and selected value chains, lack of access to finance for rural population especially women and youth, and limited financial participation in climate resilient production methods in respective value chains. The project will diversify financial products including mixing short- and long-term loans and specific lending products for SMEs developed under 2.2. (Kindly see FS figure 15 - an infographic describing linkages to agricultural value chains).</p> <p>Also, financial products will link to GCF funded activities under Output 1.1-1.5, helping to cover the incremental costs to overcome the financial hurdle rate and technical barriers of investing in climate resilient landscape management and restoration to address vulnerabilities of other modes of production through investments in agroforestry, silvopastoral, forestry activities. While for some landscape restoration activities financial barriers to investment initially require 100% concessionality through grant funding provided by the project, others will be partially funded from private and public resources.</p> <p>Bringing in the private sector to invest in the local development there are better prospects for financial risk sharing and for a gradual shift away from 100% granting Through the development of tailored financial products and services, output 2.3 will improve access to finance for replication of investment in resilience measures. Under output 2.1 and 2.2, development of the targeted value chains will increase income generation among local farmers and farmer organizations. Business plans will be developed for realizing value adding opportunities in the targeted value chains, building on improved public and private services, such as electricity and water supply, ICT solutions, and GPS equipment, where possible. This will allow to match supply of such services by public and private providers with the demand among farmers and farmer organizations. Increased income from value chain development will increase the capacity and willingness to pay for such services among the latter, and the business plans will make the case for associated public and private investments.</p> <p>Under output 2.3, financial service providers (FSPs) will be equipped with tools that measure, climate risks and impact as well as long-term sustainability of food security through land restoration measures. FSPs will also be educated including the promotion of land restoration practices and creating incentives through favourable lending conditions for farmers that employ landscape and sustainable climate resilient practices, The support will build on already existing gender strategies of participating FSP's and tune financial products and financial education to climate resilient investments.</p>

Institutional	<p>(5) Weak national framework for facilitating the creation and sharing of climate knowledge. The institutional capacity and coordination to implement climate-risk informed landscape management strategies is weak</p> <p>(6) (Risk): Limited engagement with public, private and CSO sectors for the design and innovation of solutions, planning and implementation of interventions can lead to lack of trust between actors and limit incentives to protect and conserve ecosystem goods and services</p>	<p>The project will empower local and national institutions to effectively implement climate adaptation across value chains, land planning and management. Output 2.1 and 2.2 focuses on institutional organisation and value chain capacities and associated infrastructure that directly reduce impacts of climate shock through increased diversification of livelihoods and will reduce poverty through generation of employment and income across a portfolio of value chains. Value chain resilience supports activities under component 1 by reducing pressure on the forest and other wooded ecosystem (less deforestation and forest degradation) through improved production modes and value adding in terms of their contribution to climate-resilient production (water, soil and shade management, carbon sequestration, and other ecosystem services) and improved rural livelihoods, value adding and better market linkages (higher and diversified income generation, and secured income for subsistence needs in the face of increasing drought of impacts on staple crops) and, thus, provide monetary incentives for further engagement in land restoration. Such engagement will further be stimulated through enhanced access to financial institutions, innovative financial products and services geared toward improved land restoration under output 2.3. Financial incentives will also be provided in terms of concessional credit conditions for farmers engaged in specific climate resilient activities supported by the project. In order to scale up the local interventions from the eastern province to the national scale a number of capacity and institutional barriers must be addressed at the national level. Output 3.1 will achieve implementation of systems for increasing resilience through integrating climate resilience metrics into district development strategies and performance contracts, training landscape restoration planners and managers, developing restoration plans and developing cross sectoral monitoring and evaluation of resilience measures. Output 3.2 will enhance and coordinate knowledge and information systems. Output 3.3 will develop climate informed maps and information portal for habitat suitability for resilient species.</p>
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Theory of change: In order to address the identified barriers to adaptation, the project is based on a robust Theory of Change (ToC) (see Figure 3), which will lead to a paradigm shift from degraded and vulnerable land in the Eastern Province unable to sustain livelihoods to a climate resilient landscape providing development opportunities for smallholder farmers. The ToC shows how degraded and climate sensitive land will be transformed by adaptive land use management practices and technologies to build resilience in the landscape to sustain agro-ecological systems and livelihoods. Investment opportunities coupled with improved land use planning and management will set the scene for transforming the landscape. The project is designed to achieve three outcomes, which are jointly reinforcing (See Section B.3) to deliver a paradigm shift through cross-cutting outputs that bring adaptation results with mitigation co-benefits. The expected outcomes are:

- Outcome 1: A shift to farming practices that build resilience against climate threats and risks;
- Outcome 2: Strengthened adaptive capacity and reduced exposure to climate risks;
- Outcome 3: Strengthened institutional and regulatory systems for climate-responsive planning and development.

In Rwanda's Eastern Province, to achieve outcome 1, **if** transformative and adaptive agroforestry and silvopastoral packages are scaled up, and woodlots, tree plantations and buffer zones are rehabilitated, **then** the restoration of drought-dominant and heavily degraded lands combined with the protection of fragile zones will increase overall landscape resilience and resilience of the most vulnerable people, ecosystems and ecosystem services to climate shocks. These measures will ensure food and water security through resilient and improved production under climate change scenarios. **Because** these measures will restore ecosystem services in drought and erosion-degraded landscapes and farmers will have an improved awareness of climate threats and risk-reduction processes and be equipped with the tools and knowledge to adapt to predicted climate change.

To achieve outcome 2, **if** the project (i) develops and strengthens farmer cooperatives and producer groups and establishes stronger linkages to markets for agricultural products, (ii) promotes and reinforces climate resilience in key agricultural and tree crop value chains and associated infrastructure, (iii) enhances access to finance for improved financial inclusion supporting the establishment and management of climate-resilient agro-ecological systems through the development of farmer savings and credit groups as well as savings, loans and insurance product development through financial service providers, **then** farmers will have strengthened adaptive capacity, diversified livelihoods and increased financial capacity to invest in measures that reduce exposure to climate risks. These measures will ensure long-term sustainable access to finance to empower communities in the Eastern Province to transform their current agricultural practices. Landscape restoration activities of component 1 will be supported and scaled with MFI debt financing products developed under Output 2.3. will leverage over USD 1.5m a year in private sector investments in climate-resilient agroforestry, silvopastoral, forestry and value chain activities. **Because** access to affordable finance

for investments would have increased alongside the attractiveness of adaptation investments in landscape restoration and climate-resilient value chains.

To achieve outcome 3, **if** the project strengthens the ability of local institutions to support farmers and the private sector, and thus contribute both to Components 1 and 2 and institutional capacity for climate adaptation in land planning and management is strengthened and if mainstreaming of the landscape restoration approach developed at the Eastern Province level into various sectoral and cross-sectoral strategies and plans at the national level **then** the knowledge generated and disseminated by the project will provide an enhanced evidence base in the Eastern Province to support further promotion and investment in interventions to build resilience in the landscapes as part of Rwanda's response to climate change and the Eastern Province will have strengthened institutional and regulatory systems and enhanced capacity to deliver low emissions and climate resilience planning **because** local institutional capacity for climate adaptation in land planning will be in place and plans implemented at the regional scale and the upscaling of the project results at the national level will be achieved through mainstreaming Eastern Province approach at the national level.

Taken together, these three Outcomes contribute to the project-level impact of restored degraded landscapes in Eastern Province of Rwanda and enhanced climate resilience of ecosystems and communities capacity to adapt to climate change and also to the GCF Fund-level impacts (A1.0) Increased resilience and enhanced livelihoods of the most vulnerable people, communities, and regions; (A2.0) Increased resilience of health and well-being, and food and water security and (A4.0) Improved resilience of ecosystems and ecosystem services. The project achieves its paradigm shift objective through transforming land management practices and enhancing climate resilient ecosystems and community capacity to adapt to climate change.

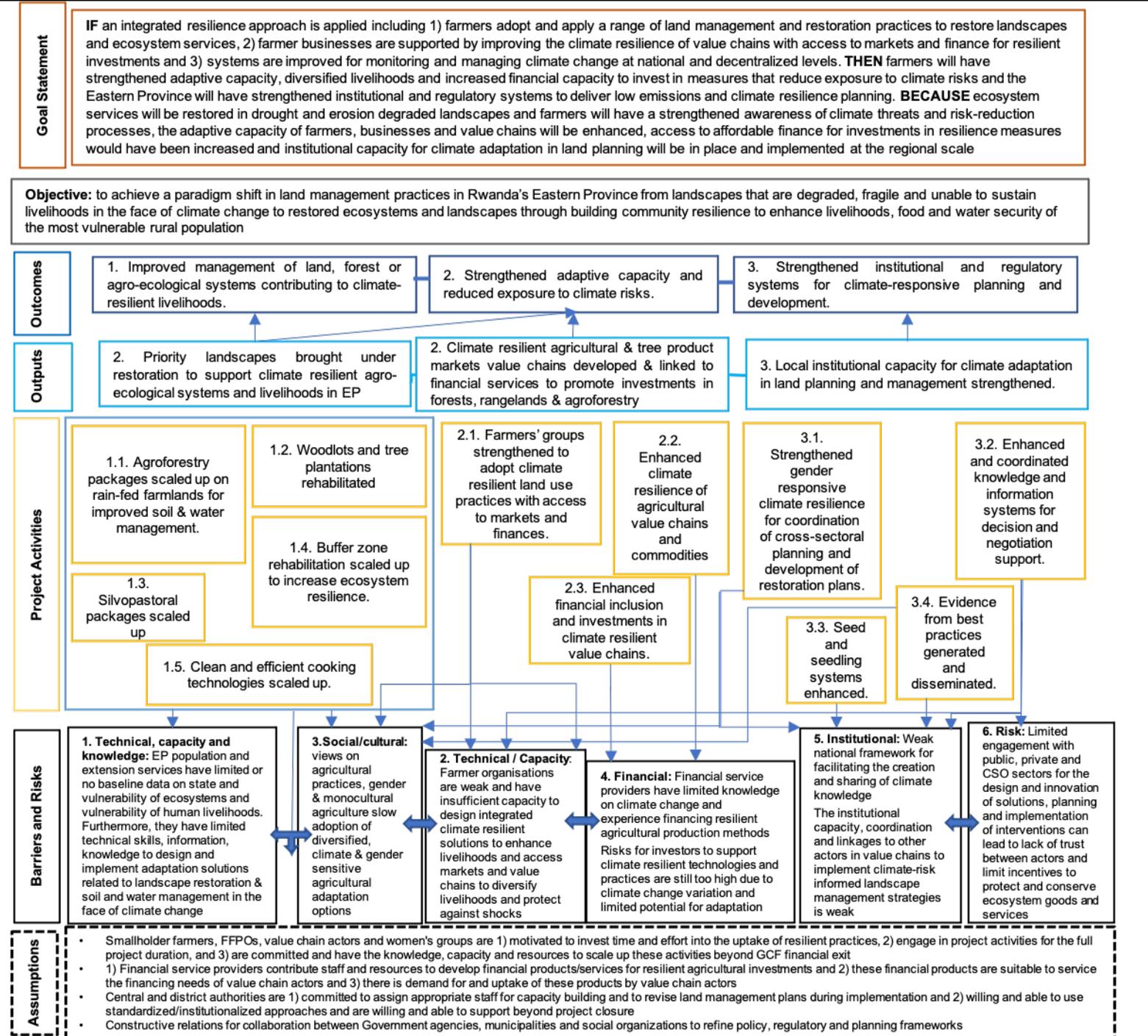


Figure 3 - Diagram of Theory of Change for TREPA project in Rwanda.

The intervention logic of this project is articulated around the needs of the Eastern Province to cope with climate variability and in particular, climate hazards of extreme weather events including intensified drought and flooding. The Feasibility Study showed that the general lack of technical and business skills, proper infrastructure, finance, and information remains among the principal challenges for improving climate resilience of agricultural and tree crop production and agribusinesses along the nodes of the associated value chains. If not addressed properly, these limitations will undermine the restoration outcomes and adaptation benefits in the project area, including the realization of economic benefits for Eastern Province and Rwanda as a whole. Since these events will impact negatively the agriculture sector in the Eastern Province, which is critical to support the livelihoods of the project beneficiaries and for the Rwandan economy, the project will have a three-fold approach. First, component 1 focuses on restoration, through forest and land management focusing on silvopastoral and agroforestry activities. The project design recognises the critical role landscape management plays in regulating water in the eastern province so activities and investments in the agriculture and

the water management and supply sector are made more resilient through TREPA's landscape restoration activities. The project provides an essential role in ensuring that water catchments effectiveness is maintained in the long run so the agriculture sector, highly dependent on water supply, is preserved from climate variability and related meteorological events. Second, the projects will focus on value chains including their financing mechanisms that support investments in order to ensure these are made more resilient. Resilient and adaptive value chains are critical to ensure smallholders, as their main suppliers, can have their livelihoods sustained and maintained, despite climate variability. The project activities under component 2 address major gaps in access to finance for climate resilient value chains supported by existing projects in the Eastern Province. Furthermore, component 3 supports the development of adaptation strategies and institutional capacity at both the Eastern Province and national scale. Interventions at national scale will support the scaling up of local interventions in the EP to other areas of Rwanda. Particularly where such interventions require national level capacity development or changes in landscape management approaches in order to address national level institutional technical and policy barriers. The local and national institutional framework that is being established by this project coupled with work on value chains and financing mechanisms will ensure interventions are scaled up and maintained following the project closure. Combined, these activities are complimentary to the overall resilience of the agricultural activities and improved landscape management for climate resilience in the Eastern Province.

B.3. Project/programme description (max. 2000 words, approximately 4 pages)

Project objective

to achieve a paradigm shift in land management practices in Rwanda's Eastern Province from landscapes that are degraded, fragile and unable to sustain livelihoods in the face of climate change to restored ecosystems and landscapes through building community resilience to enhance livelihoods, food and water security of the most vulnerable rural population

The project will focus on the Eastern Province, which is most vulnerable and drought exposed region of Rwanda.

Project Components

The components of the project are as follows (Figure 4):

Component 1: Restored landscapes that support climate resilient agro-ecological systems and livelihoods in Eastern Province

Component 2: Market and value chain development for climate resilient agricultural and tree products linked to financial products and services for sustainable management of agro-ecological systems

Component 3: Strengthened enabling environment to effectively plan, manage and monitor climate adaptation outcomes from improved land use at national and decentralized levels.

The project will pursue an integrated resilience approach that is adaptive and able to support transformation and innovative processes. Component 1 will scale-up tested restoration practices to build resilience in drought-prone, degraded landscapes and thus achieve food security and reduce vulnerability of smallholder farmers to climate change and prolonged droughts in particular. Component 2 ensures the economic and financial sustainability of the implemented practices for climate resilience and reinforces interventions under Component 1 by ensuring that farmers and FFPOs have the financial resources required to add value to the agricultural and tree products derived from landscape restoration. Activities will allow beneficiaries to scale up climate resilient activities and strengthen livelihoods through better access to markets, inclusive value chains and responsible finance, along with the organisational capacity to overcome constraints hindering investment in climate resilient technologies and practices and value chains that build on these. Component 3 ensures an enabling environment through developing systems, information and capacity for the effective planning, implementation, monitoring and upscaling of the restoration model.

A gender transformative approach has been mainstreamed across the project design. The project design is guided by the Gender Assessment and Action Plan (Annex 8). It identifies actions and procedures across all three components aimed at mainstreaming gender and ensuring that the project provides women and men with an equal opportunity to build resilience, address their differentiated vulnerabilities and increase their capability to adapt to climate change impacts.

The three project components are described below (for detailed activity level breakdown please refer to E.6). The Feasibility Study (Annex 2) and other annexes provide additional detail and elaboration for the activities and sub-activities that are presented in summary form in the below description of the project components.

Objective: to achieve a paradigm shift in land management practices in Rwanda's Eastern Province from landscapes that are degraded, fragile and unable to sustain livelihoods in the face of climate change to restored ecosystems and landscapes through building community resilience to enhance livelihoods, food and water security of the most vulnerable rural population

Component 1. Restored landscapes that support climate resilient agro-ecological systems and livelihoods in Eastern Province

Outcome 1. Strengthened awareness of climate threats and risk-reduction processes

Output 1.1 Diversified agroforestry packages scaled-up

Output 1.2 Woodlots & tree plantations rehabilitated and sustainably managed for productive and ecological services

Output 1.3 Scale-up climate resilient silvopastoral packages to restore degraded rangelands

Output 1.4 Protective restoration measures scaled up to climate-proof fragile, ecologically sensitive & erosion prone lands

Output 1.5 Clean and efficient cooking energy technologies promoted through support to private sector and communities to transition/reduce biomass fuel consumption

Component 2. Market and value chain development for climate resilient agricultural and tree products linked to financial products and services for sustainable management of agro-ecological systems

Outcome 2. Strengthened adaptive capacity and reduced exposure to climate risks

Output 2.1 Farmers' groups strengthened to adopt climate resilient land use practices with access to market and finances

Output 2.2: Enhanced financial inclusion and investments in climate resilient value chains

Output 2.3 Strengthened enabling environment to effectively plan, manage and monitor climate adaptation outcomes from improved land use at national and decentralized levels

Component 3. Strengthening of enabling environment to effectively plan, manage and monitor climate adaptation from improved land use at national and decentralized levels

Outcome 3. Outcome 3: Strengthened institutional and regulatory systems for climate-responsive planning and development

Output 3.1 Strengthened gender-responsive climate resilience for coordinated cross-sectoral planning & community landscape restoration plans developed

Output 3.2 Enhanced and coordinated knowledge and information systems for decision and negotiation support

Output 3.3 Seed and seedling supply systems are enhanced to provide diverse climate adapted species and varieties

Output 3.4 Evidence from best practices generated and disseminated

Figure 4. Design of TREPA project.

Component 1: Restored landscapes that support climate resilient agro-ecological systems and livelihoods in Eastern Province.

GCF: USD 21,298,852

Co-Financing: USD 8,386,599

Component 1 is designed to begin landscape transformation by introducing climate resilient restoration and management practices, giving priority to the most degraded areas and in collaboration with farmer groups – which are organised and strengthened in Component 2. The main activities are related various agro-ecological land use interventions including agroforestry, silvopastoral systems, protective restoration and woodlot management, and linked to more efficient cooking fuels and technology and land-use planning under component 3. The activities compliment other landscape dependent projects like irrigation through restoring critical ecosystem function such as soil stability and water runoff regulation. Monitoring, control and evaluation of supported restoration areas will identify financial and farmer/FFPO market, financial and organisational capacity constraints to be targeted by the market and financial enhancement activities under Component 2. Data on successful interventions under Component 1 will be systematically collected and synthesized through mechanisms established under Component 3, which will be maintained after project closure to ensure replication of activities in the Eastern province and throughout Rwanda. Section 7 of the Feasibility Study (Annex 2) outlines the indicative selection criteria for targeted sites and beneficiaries of interventions under outputs 1.1-1.5. Stakeholder participatory mapping and in-depth consultations during the first year of the project will define the final selection criteria. While adaptive management allows adjustment of both the size and scale of interventions as well as updating or modifying practices that aim to restore degraded lands during implementation. Stakeholder and gender-specific preferences for each of the selected species has been assessed and incorporated into the project design. Additional gender aspects have been considered throughout the activities and will be implemented in accordance with the Gender Action Plan to ensure the adoption gender sensitive approach (Annex 8).

Overall, component 1 creates the interlinkages between investments, knowledge and experience developed during the implementation of the various restorative land use interventions and improved land use planning delivered under output 3.1. For instance, participative local landscape restoration plans (developed under output 3.1) will be elaborated, and informed by, local authorities and actors during the implementation of component 1 activities. Under output 3.2, the project will consolidate existing database (Land Use, Forest Plan, etc.) while informing landscape restoration plans and climate information systems. Output 1.2, District Forest Management Plans and dependent Simplified Forest Management Plans and output 1.3, detailed Silvopastoral Plans, will be developed/updated, in line with District landscape restoration opportunities assessments and local Forest Landscape restoration plans (Output 3.1). These linkages create an enabling environment for improved land use planning and investments in the Eastern Province.

The District land use plans, the district development plans, and national land-use plans will serve as a key reference during implementation for developing the forest restoration and silvopastoral plans. The process will be two-fold. First, in consultation with district authorities, recommended interventions will be mapped and optimized using a GIS-based multi-criteria evaluation method where the proposed land uses - in the existing plans- will be part of layers/criteria. Second, the resulting maps will be validated through a stakeholder process before they are used to generate restoration plans which must include detailed on-ground activities. Section E.6 provides detail about the activities listed below, as well as the associated sub-activities and deliverables. Further elaboration can be found in Annex 2 feasibility study.

Output 1.1 Agroforestry packages are scaled-up on rain-fed farmlands for improved soil and water management (*EE: RFA, IUCN*) This intervention will address the lack of knowledge and capacities to implement climate resilient agroforestry landscape restoration practices and targets 100 sub areas (40,0000 ha) where soil erosion is prevalent. During project inception, potential intervention sites/plots will be selected through existing thematic maps and then prioritised based on community participatory mapping, plot characterisation (e.g. slope %) and farmer needs to ensure agroforestry packages are suited to specific context. Each sub area will have their own tree nursery and demonstration plot (1-2 ha each). 160 farmer groups will agree to sustain agroforestry systems (through an MOU with local authorities) and be trained on agroforestry techniques, enhanced management skills, markets linkages, and access to innovative financial services continued/scaled resilience investments and under Component 2. Government staff, national and international agroforestry and landscape restoration experts will provide technical assistance in planting and management of resilient varieties. Support will promote practices that reduce farmers' vulnerability to crop losses caused by short-term and long-term climate change conditions, by promoting agroforestry practices that enhance soil moisture retention and help in adoption of more diversified, climate resilient livelihood options. Promoting agroforestry practices such as biomass incorporation and cover crops have been proven to enhance soil moisture retention through increasing soil organic carbon content in the soil. Practices include drought-resistant species that can grow to maturity with less water use, while supporting soil nitrate fixation and increased tree litter incorporation into soil to build on soil organic matter content. Rainfall erosivity constraints in the area will be addressed through the selected tree species, planting methods and anti-erosive ditches selected specifically to encourage soil and slope stability (see Annex 2). To support supply of quality seed and germplasm, farmer cooperatives, some with existing nurseries, will be supported to diversify nursery stock and some to establish demonstration plots through technical backstopping, involving use of quality germplasm, nursery best practice and seedlings marketing by RFA and ICRAF. Knowledge dissemination and management, data collection and documenting lessons learnt will be integrated into activities under component 3. Particularly, activities will inform landscape restoration plans (3.1) and the prioritization of tree species exhibiting climate resilience characteristics (3.3). Furthermore, the project will temper fertilizer application practices with use of organic options (compost) to help build soil organic matter as a measure for more sustainable soil fertility management. In order to address cultural and social barriers to adopt and scale up investment in agroforestry packages, the project builds on the existing Twigire Muhinzi system⁹³ for effective and prompt dissemination of agroforestry knowledge and best practices on plant species. Plots will be registered in RFA DFMP database. Regular monitoring, control, evaluation and knowledge sharing on most effective resilience benefits will be performed. A list with suitable and resilient agroforestry species is compiled and included in Annex 1 in the Feasibility Study (Annex 2). Experts are procured by the EE listed in Table 5 and involved local specialist officers (from RAB). TA and officer mission costs are covered by GCF grant funding, while the salary of the local officer specialists are covered by co-finance of their respective institution (RAB, RAF, District governments, etc.).

Specific activities under this Output include the following:

- 1.1.1: Identify 100 sub-areas of intervention (400 ha each) for agroforestry dissemination over *Eastern Province*
- 1.1.2: Train 160 farmers groups on agroforestry techniques and establish 160 MoUs with local authorities
- 1.1.3: Establish and sustain one agroforestry/fruit trees nursery in each of the 100 sub-areas of intervention
- 1.1.4: Provide technical assistance to farmers in planting agroforestry/fruit trees and in implementation of agroforestry technologies in their owned parcels
- 1.1.5: Establish and sustain 1 demonstration plot of 1-2 ha in each of the 100 sub-areas
- 1.1.6: Monitoring, control and evaluation of supported agroforestry areas

⁹³ *Twigire muhinzi consist of extension system established and supported by the Rwanda Agricultural Board (RAB) across the country, where champion farmer promoters (1 per village) are trained and supported to (1) implement innovative good agriculture practices in its parcels serving as demonstration plots and to (2) train/advise/guide neighboring farmers in implementation of these goods practices.*

Output 1.2. Woodlots and tree plantations are rehabilitated and sustainably managed for productive and ecological services (EE: Enabel)

This intervention will result in highly productive, climate-resilient woodlots and forestland with fully restored ecosystem services and significantly increased long-term carbon sequestration. Recognizing that forest degradation contributes to erosion, increases evapotranspiration (with related water regulation impact) and decreased soil productivity, the objective of the proposed intervention is to protect local populations from livelihood loss from reduced productive capacity of woodlots and impacts of follow-on ecological service losses. Increased resilience will be achieved through a) rehabilitating the degraded smallholder woodlots within district / state owned forests which are degraded by both soil erosivity and drought while shifting from bad forest management practices to efficient, integrated and sustainable management systems and b) enhancing markets linkages for wood products, and access to innovative financial services continued/scaled resilience investments and under Component 2. Restoration involves promotion of practices to reduce problems of land degradation from soil erosion and reduced moisture content and fire through tree and vegetation cover based interventions, anti-erosive ditches and fire breaks for the benefits of people living and farming in the restored landscapes. The increased woodlot productivity will support narrowing the supply and demand gap in wood biomass in the Eastern Province.

The proposed intervention aims to restore 1,400 ha of very degraded district/state forests, to improve sustainable management of approximately 10,000 ha (50% of the Eastern Province total) of State forest through long-term concessions to private investors according to simplified management plans, and to identify (through community participatory mapping) and restore 6,545 ha (14.5% of EP total) of private smallholder woodlots to be managed (under MOU agreement with RFA) by cooperatives of land owners who will be supported in becoming organized into FFPOs, with enhanced management skills, markets linkages, and access to innovative financial services under Component 2. For the case of State Forest, a concession agreement will be signed between the private forest company and MoE, but the TA will have only a support role in the design of the management plan and of other contracting document. Grant investments will be made available for FFPOs to manage more costly restoration actions (including anti-erosive ditches) in order to make their forest land management financially sustainable in the medium and long-term. Forestry experts will also support i) district governments of Kayonza and Nyagatare and private owners to develop Simplified Forestry Management Plans (SFMP), ii) provide RFA and Districts guidance on processes for long-term concession of 10,000 ha state owned forest, iii) ownership/demarcation conflict cases solving and management plan updating.

The existing very degraded State tree plantation to be restored are essentially constituted by exotic species (Eucalyptus and Pinus), but the restoration will be done with more diversified high value timber species (including natives) adapted to drought and avoiding species that could impact negatively the water balance by over-use of water resources. The existing very degraded small holder woodlot are essentially constituted by Eucalyptus, which is the preferred species of farmers due its coppicing capacity. The use of Eucalyptus species will be restricted only to restore existing very degraded Eucalyptus plantation (1.2.3), without extension of their current area. To mitigate any minor risk on water use, the project will ensure the selection of species/origin which are adapted to drought condition and are using less water, while applying silviculture techniques (longer coppice period, avoid removal of leaves and small branches to secure the increase of soil organic matter, avoid big clear cutting during dry season, etc)

A particular attention will be given for the proper involvement of women and men in these forest restoration and management activities through and gender sensitive approach, as described in the annexed Gender Action Plan (see gender action under output 1.2)

Experts are TA (international and national) procured by the EE and the local specialist officers (from RFA and District). Under output 1.2, the TA will be dedicated principally to the support of the private forest management unit (PFMU), based on MoU that will be signed between the concerned groups of small holder forest owners and District authorities. For the case of State Forest, a concession agreement will be signed between the private forest company and MoE, but the TA will have only a support role in the design of the management plan and of other contracting document. ENABEL will work based on an MOU that will be signed between FFPOs and District Authorities. The design and preparation of the MoU will be supported by ENABEL with the facilitation of RFA officers in charge. Note that Enabel (as EE) will not enter transfer any money to the FFPOs or District Authorities under the MOUs to be entered among them.

Specific activities under this Output include the following:

- **1.2.1:** Restore 700 ha of degraded District owned tree plantations and provide technical assistance for their sustainable management
- **1.2.2** Restore, in collaboration with RFA and Districts, an area of 700 ha of very degraded State-owned tree plantations and in long-term concession of 10,000 ha of State FMUs to private investors
- **1.2.3** Restoration, in collaboration with smallholders, the area of 6,545 ha of very degraded private tree plantations and their sustainable management under private FMUs according to approved SFMPs

Output 1.3 Scale-up climate resilient silvopastoral packages to restore degraded rangelands (EE: RFA, IUCN)

The objective of this intervention is to enhance the climate resilience of Eastern Province's most drought-prone and degraded pastures and protect climate vulnerable pastoralist livelihoods. The current cattle stock levels in Eastern province are very high,

leading to overgrazing and rangeland degradation. This work complements government strategy on shifting from high density (1.5 head/ha) involving Ankole cattle to low density (0.5 head/ha) with dairy cross breed cows adapted to the capacity of the land. This will increase incomes per hectare due to the high milk productivity of these cross-bred cows, while avoiding overgrazing. Introduction and use of climate smart tree and forage species for silvopasture will contribute to reduced gas emissions through carbon sequestration, reduction of methane from enteric fermentation. Use of trees and improved grasses such as *Brachiaria spp* will improve microclimate through shade and litterfall that increase soil organic carbon, soil microorganism activities, helping reduce evapotranspiration in the pastures and heat stress for cattle by providing shading.

Food security and adoption of diversified, climate resilient livelihoods will be achieved through a) identification of climate related vulnerabilities and detailed characterisation of rangelands in three semi-arid districts of Nyagatare, Gatsibo and Kayonza to support 4400 dairy farmers, to develop relevant pasture resources use strategy involving planting diverse indigenous and exotic forage species to help in soil erosion control identification of climate related vulnerabilities and detailed characterisation of rangelands in three semi-arid districts of Nyagatare, Gatsibo and Kayonza to support 4400 dairy farmers, to develop relevant pasture resources use strategy involving planting diverse indigenous and exotic forage species to help in soil erosion control; designing silvo-pastoral plans integrated with the District Land Use Plan (under component 3) and up-scaling silvopastoral systems and adopting sustainable pasture management through supporting 25 district extension agents to establish, manage and mainstream tree-based climate smart forage technologies and facilitating community seeding of palatable indigenous species mostly of grass, shrubs and trees to help restore 10,000 ha of degraded pastoral rangelands and b) enhancing market linkages and access to innovative financial services for continued/scaled resilience investments under Component 2. Synergies between cattle and trees mean that a combined system can produce more income than either system on its own. Silvopastoral systems will be designed to fit existing baseline activities and individual farmers' needs by focusing more on forestry growth at some sites or sustainable cattle productivity in others. In particular, the project will increase the productivity of drought-prone pastures through the introduction of fodder trees, shrubs, grasses, and herbaceous legumes with high drought resilience potential to increase the climate adaptive capacity of the pasture lands and by promoting and training on resilient grazing management practices. Experts will support identification of knowledge gaps in management of rangelands for government extension service and farmer leaders. Experts will deliver awareness creation, promotion, training and technical assistance for species selection and acquisition, nurseries set up, management, planting and enterprise development. Experts are procured by the EE listed in Table 5 and involved local specialist officers (from RAB). Training of trainers will also be provided on management of grazing lands for climate resilient pasture productivity. To increase water security, the project will map and assess water availability and rainwater potential harvesting in 60 pastures and purchase 60 water tanks of 5000 m³ and construct 60 water troughs to reduce drought stress for the pastoralist communities. Specific activities under this Output include the following:

- 1.3.1 Characterize the climate resilience features of the existing pasture lands
- 1.3.2 Select fodder trees, shrubs, grasses, and herbaceous legumes with high drought resilience potential to increase the climate adaptive capacity of the pasture lands
- 1.3.3 Purchase and disseminate agroforestry fodder trees, improved grasses and herbaceous legumes to improve grazing land and build resilience of degraded lands
- 1.3.4 Organize two Training of Trainers (ToT) sessions per year for 30 lead farmers on management grazing lands for climate resilient pasture productivity
- 1.3.5 Assess water availability and rainwater potential harvesting in 60 pastures and purchase 60 water tanks of 5000 m³ and construction of 60 water trough to reduce drought stress for the livestock
- 1.3.6 Conduct twice per year capacity building workshops for 30 leaders farmers, 7 government extension staff, 7 church leaders and 7 local authorities in charge of development in 7 districts
- 1.3.7. Monitoring and evaluation of silvopastoral activities

Output 1.4 Protective restoration measures are scaled up to climate-proof fragile, ecologically sensitive and erosion prone lands (EE: RFA)

The objective of this proposed intervention is to climate-proof fragile, ecologically sensitive ecosystems and erosion prone areas (not covered by outputs 1.1-1.3) which are under different special protective measures (road side planation, river side plantation, buffer zone of Akagera) and which are owned by State and upon which measures under 1.1-1.3 and populations are dependent for ecosystem services, and increasing water demand from large scale irrigation projects. Climate proofing will be achieved through scaling up protective restoration measures and addressing a lack of investment funds and access to climate resilient technologies. The aim is to protect or restore approximately 700 hectares of riverbanks, lakes or marshland shorelines, approximately 700 kilometres of roadside areas through activities such as tree planting and approximately 400 hectares of Akagera National Park buffer zone through natural regeneration and planting native species. Restoration activities will be coupled with community management approaches such as the establishment and support of Community Vigilance Committees (CVC), a participatory silvopastoral plan and community nurseries to ensure long-term sustainability of interventions. The CVCs and cooperatives running the community nurseries will receive from the EE support of assets and some operational costs in form of consultancy. The final silvopastoral plans to be funded by GCF will be validated by RFA (the EE for Output 1.3 and 1.4) in consultations with ICRAF and IUCN. National and international experts in protective restoration will be procured by the EE (RFA) and will provide technical

assistance to RFA to design required regulation for management and integrating climate resilience into the specific protected areas by the project as well as integrate new M&E in the DFMP database. Women's roles and involvement in the local CVC and nurseries will be strengthened through sensitisation of groups leaders and integration of gender sensitive internal rules and actions (see Gender Action Plan, output 1.4)

Specific activities supported under this activity include the following:

- **1.4.1** Restore 700 ha of lake/river shorelines and 700 km of roadside through tree/shrub planting and participatory management
- **1.4.2** Restore and protect 400 ha of Akagera Buffer zone through tree/shrub planting and implementation of participatory silvopastoral plan
- **1.4.3** Provide technical support to 3 local nurseries in production of selected climate resilient multipurpose trees/shrub seedlings
- **1.4.4** Provide technical assistance to the seven Districts to perform monitoring and evaluation of restored areas under protection integrating climate resilience

Output 1.5 Clean and efficient cooking energy technologies promoted through support to private sector and communities to transition/reduce biomass fuel consumption (EE: Enabel)

One of the main drivers of land degradation in the Eastern Province is extremely high pressure on wood resources for cooking estimated at 1.65 mil m³ per year while supply is only 0.55 mil. m³. If the gap remains so high, the pressure on resources will be a major constraint for private forest growers to respect management plan prescriptions and avoid over exploitation of degradation of restored forests. Adaptation requires: (1) decrease of demand and (2) increase of wood supply capacity. To succeed, the decrease should be quick, which can be possible only through ICS dissemination as recommended by the Rwandan Biomass Energy Strategy (BEST). This intervention will reduce pressure from biomass cooking fuel demand, on tree resources in forest and farmland by raising household awareness of the differences between high and low efficiency stoves and by addressing the limited availability of high-efficiency stoves in rural markets (linked to access to attractive financial products and services to enhance affordability). This output will deliver a large-scale awareness campaign across the Eastern Province on selected improved cook stove (ICS) and cooking fuel solutions and opportunities. The output will also facilitate the access to ICSs for over 100,000 rural households, develop and establish subsidy/microcredit scheme and rules with local finance institutions and other economic actors and establish "cooking fuel and technology" hubs in 14 main local markets of TREPA intervention areas. Different types of ICS will be promoted through local hubs distributed in rural areas (with sensitization/training/ face to face guidance) to better adapt ICS choice to the specific need and context of households (HHs), depending of the accessibility to firewood, pellet and/or crop residue in their area, and of the level of income which allow to afford different level of clean fuel and technologies. Through output 3.4, specific applied research will be implemented (see co-financing from DESIRA-EU) in order to support local ICS producers to improve prototypes and adapt them to the HH needs. Depending on HH income level, the ICS will be freely provided, partly subsidized or not subsidized, with possibility to access to micro-credit (specific product to be covered by output 2.3). The proposed stove technologies (described in detail in Annex 9 of the FS) may include but are not limited to:

- Woody pellet gasifier stove (such as MINIMOTO model)
- Wood gasifier stove (such as the "TLUD Karundura" model):
- Woody & multi-biomass improved metallic full consumption stove (such as "Songa", "Rahisi" or "Ruhaka" models)
- Improved fixed mud stove:

Output 1.5 complements the supply side interventions of Outputs 1.1 – 1.4 by reducing the supply-demand gap facing Eastern Province forests. By reducing wood demand, the ICS interventions will reduce the pressure on wood resources (forest and agroforestry trees). This will allow woodlot owners to respect the harvesting rotation period established by sustainable forest management plans and avoid the early harvesting and over-exploitation, degradation and loss of production of forest resources supported by the interventions in Outputs 1.1 – 1.4.

Supporting private sector in biomass fuel / ICS business development and promoting the adoption of improved biomass cookstoves for rural farmers in the projects areas of intervention will contribute to sustainable biomass resource use and prevent overexploitation of forest resources thereby ensure the success of the forest landscape restoration activities described in Outputs 1.1 to 1.4 above.

Specific activities under this Output include the following:

- **1.5.1** Conduct a large scale and intensive awareness campaign across the Eastern Province on ICS and cooking fuel solutions and opportunities
- **1.5.2** Support access to ICSs for over 100.000 rural Households of EP
- **1.5.3** Establish "Cooking fuel and technology" hubs in 14 main local markets of TREPA intervention areas
- **1.5.4** Provide feedback into enabling environment activities supporting the shift from traditional cooking to clean ICS and fuels

Component 2. Market and value chain development for climate resilient agricultural and tree products linked to financial products and services for sustainable management of agro-ecological systems.

GCF: USD 6,476,786

Co-Financing: USD 3,041,323 confirmed⁹⁴

The tasks of climate change adaptation and mitigation from land use activities mainly depends on farmers and local communities organisational and management capacities, access to information as well as access to markets and finance and critically, appropriate economic and behavioural change incentives. Evidence in EP shows that behavioural responses to hazards heavily rely on limited access to climate information to properly plan and mitigate climate risks, as well as resources and capacities locally available to respond. If farmers do not perceive climate change as a threat or they are not convinced of economic incentives, they will not likely undertake adaptive or mitigative actions, nor will they do so if they lack resources and skills for effective engagement in adaptation and mitigation measures.

The success of the project and the adaptation efforts in Rwanda will largely depend on behaviour of communities, FFPOs and individual farmers based on their perception of climate risk, paired with adaptive community organization, capacity building, and access to finance and other resources to incentivise land use transition. Therefore, Component 2 focuses on the improvement of access to climate information, management of climate and other risks, and the enabling conditions in and around targeted agricultural and tree crop value chains, including access to finance. Component 2 also facilitates the sustainability of the restoration actions, while using knowledge, information management and scaling of best practices developed by other project activities. Farmers that engage in land restoration will enhance their long-term food security and diversify income and production and be incentivised through economic benefits through engagement in production of timber, fodder and honey for example.

Sustainability of the project interventions, particularly of the restoration outcomes (Component 1), will be achieved by strengthening FFPOs to act collectively and to benefit economically from both diversified production systems and enhanced ecosystem functionality. FFPOs will also serve as key communication outlets to disseminate climate and market information among both their members and independent farmers, based on promoted ICT services promoted and information systems strengthened nationally in Component 3. Value chains targeted under the TREPA project are selected to avoid overlap and complement existing value chain activities in the Eastern Province, while financial mechanisms and support services will service all agricultural value chains also targeted in the project baseline.

Specifically, Component 2 will:

- i) enhance organizational and management capacities of FFPOs (Output 2.1);
- ii) develop inclusive value chains of climate resilient agricultural and tree products (Output 2.2); and
- iii) improve access to financial services in the province and nationally that take into account climate resilience and overall sustainability of restored landscapes (Output 2.3).

Section E.6 provides detail about the activities listed below, as well as the associated sub-activities and deliverables. Further elaboration can be found in Annex 2 feasibility study.

Output 2.1 Farmers' groups strengthened to adopt climate resilient land use practices with access to market and finances (EE: IUCN)

The project will strengthen existing or support the establishment of new FFPOs (district-level cooperatives, farmers associations, forest user groups, producer organizations, farmer field school groups, savings groups, and other smallholder organizations) to address the capacity and awareness gaps. The output will assess capacity of FFPOs and develop and deliver a capacity enhancement programme for resilient livelihoods and environment benefits. FFPOs will be strengthened to actively represent member interests, to pool farmer resources when adopting sustainable land use management practices, to jointly utilize data on climate risks with the aim to protect and improve their outputs in the long-term. Through financial literacy and management training, FFPOs are supported to become 'investment ready' and supported to work with financial service providers who will offer tailored financial products (Output 2.3). Additionally, the FFPOs will allow better servicing of their members and independent farmers through production, marketing and financial services provided in-house or through external providers. Strengthened FFPOs will reduce the farmers' reliance on government and donor support and facilitate access to national climate data platforms and restoration incentives. Furthermore, the project will build capacity to sustainably operate nature-based enterprises. The financial service providers participating in the program already have financial inclusion strategies for women, and these will be integrated into the project activities (see the Gender Action Plan for more detail).

Insufficient access to credit by most FFPOs warrants policy action. The project will employ the Citizen Voice and Action (CVA) - a proven methodology to strengthen farmers capacity to conduct advocacy and improve social accountability by transforming dialogue between communities, government and private service providers. The CVA has been successfully utilized to influence policy standards, spur climate change related policy reform, regularise prices and subsidies, monitor, and improve service delivery.

Overall, Output 2.1 will enhance the ability of FFPOs to benefit from other project interventions and will largely serve as an enabler for smooth and effective implementation of project activities at the level of organized farmers. Specific activities under this Output include the following:

- **2.1.1.** Integrate targeted farmers into existing FFPOs or where appropriate form new ones

⁹⁴ Activities in component 2 are expected to mobilize approx. USD 10M of lending by local financial intermediaries. This leveraged co-finance is subject to review of individual loans to value chain participants, and cannot be confirmed prior to project implementation. It therefore has not been presented in the budget totals.

- 2.1.2. Conduct capacity assessment on organizational and financial management of existing FFPOs and develop a comprehensive strengthening plan
- 2.1.3 Capacity enhancement programme for farmer groups and cooperatives (FFPOs)
- 2.1.4. Support FFPOs to conduct advocacy around climate change related policies and market reforms to regularize prices and subsidies

Output 2.2 Enhanced climate resilience of agricultural value chains and commodities (EE: IUCN)

The portfolio of value chains benefiting from increased productivity through enhanced ecosystem functionality obtained by the project in Component 1, ranges from value chains of staple crops (maize, rice, sorghum) already targeted and supported in the baseline projects to those of tree crops linked to restoration outcomes (seedling/nursery production, fruits, wood fuel, timber, and fodder). The Feasibility Study showed that the general lack of technical and business skills, proper infrastructure, finance, and information remains among the principal challenges for improving climate resilience of agricultural and tree crop production and agribusinesses along the nodes of the associated value chains. If not addressed properly, these limitations will undermine the restoration outcomes and adaptation benefits in the project area, including the realization of economic benefits for Eastern Province and Rwanda as a whole. Output 2.2 will support the strengthening, value addition and diversification of targeted value chains for climate resilient agricultural and tree products and support nature based tree product and forage enterprises. Diversification and value addition is considered an effective adaptation strategy to protect the most vulnerable population to climate shocks in the EP on staple crops. This will also support the restoration targets through lasting economic incentives in the targeted value chains. By supporting the development of diversified markets for tree crops, bee products and fodder also enhance nutrition/health, food and water security. Enhancing adaptive capacity of local communities to sustainably operate nature-based enterprises will also enhance livelihoods of the most vulnerable people through employment creation and boosting income of local communities especially targeting women and youth. Activities in this subcomponent will enhance capacities for better access to markets and value chain development through access to information, advisory services, private sector enterprise establishment and networking among diverse groups of value chain actors and stakeholders building on existing local knowledge and stakeholder networks. Activities will also draw on the private sector to drive investments in enhanced infrastructure (processing facilities, machinery and equipment) and services (technical, business and financial).

In order to support market access and value chain development, output 2.2 will establish or rehabilitate seven Rural Resource Centres (RRCs)⁹⁵ which will service a range of training and nature based or restorative enterprise establishment needs in the region. Key to sustainable supply of planting materials is functioning small and medium enterprises and sustainable business models. Community-managed seed and nursery enterprises will be established with collective (FFPOs) or single proprietorship to ensure market-driven sustainable supply of quality, climate-resilient seeds and seedlings (building on capacity and activities developed under outputs 1.1-1.4). Business plan development for seed/nursery and other tree-based enterprises aims at achieving financial sustainability over the project period. Project funding will only be used as start-up capital for initial activities. For the business case of nurseries, the project will: 1) support champion nurseries (i.e. already viable nurseries) in diversification, quality production, and business plan development, and 2) where no nursery exists, select farmers with entrepreneurial spirit (from FFPOs established under 1.1-1.4), train them as champions in nursery management, and support business plan development. When business plans are mature and financial sustainability of seed/nursery enterprises is ensured, they will be linked with financial service providers. In the case of contractual wood farming enterprises, the financial analysis shows a model for long-term concessions in State forests to be established under output 1.4 and granted to private operators. Another model is given for the PFMU cooperatives and farmers (for more details, see FS). Business plan development under 2.2 will account for context-specific business strategies and models. Similarly, livestock feed and fodder landscape restoration enterprises (with an emphasis on involving youth and women) will be established and trained and supported to develop and maintain proper management of livestock value chains. The feasibility study also found that pollinators are essential for food security, supporting the proposed resilient varieties as well as a providing a key alternative livelihood source for farmers. As such, bee keeping cooperatives will also be supported to improve tree-based bee forage, to improve honey production techniques and value-adding through wax-based products. Output 2.2 will also build local capacity for installing renewable energy facilities to power post-harvest handling and processing by the strengthened enterprises in the targeted value chains.

Trade fairs and business roundtables will bring together farmers, FFPOs, processors and traders for negotiation and the creation of more equitable business relationships in terms of sharing information, benefits and risks. While sourcing from the intervened areas in Eastern Province will be prioritized, the project will adopt a broader view on national markets to ensure transformational change beyond the project boundaries. Scalability to other regions in Rwanda will be ensured through relationships with entrepreneurs and financial service providers through these and other forums, as well as engagement with national and local governments. Output 2.2 will also establish ICT supported services on climate risk, market information and knowledge products for climate resilience and low-emissions decision making. Services will support farmers and FFPOs to understand diverse climate factors and adapt production systems to projected climate trends and shocks. Such information will be made accessible through mobile phone and internet applications as well as the RRCs. Overall, output 2.2 will build on the expansion of climate resilient agroforestry practices (1.1) and link with the comprehensive system for managing knowledge and information that will operate

⁹⁵ ICRAF has successfully been pioneering the design and proliferation of rural resource centres (RRCs) as a model of supporting rural communities to gain access to the knowledge needed for expanding sustainable land management and improving livelihoods through tree-based systems (agroforestry, silvopastoral systems, and other forms of restoration).

across scales (3.2). Value chain development in 2.2 will also be done in tandem with activities on tailoring financial products to value chains for climate resilient agricultural and tree products in 2.3. Specific activities under this Output include the following:

- **2.2.1:** Tree crop value chain development
- **2.2.2:** Bee product value chain development
- **2.2.3:** Fodder value chain development
- **2.2.4** Building local capacity and knowledge for climate resilience in value chains
- **2.2.5.** Establish/rehabilitate seven Rural Resource centers and market infrastructures for value chains for climate resilient agricultural and tree products
- **2.2.6.** Trade fairs and business roundtables connecting farmers with other value chains actors for marketing products based on climate-resilient land use
- **2.2.7** ICT supported climate risk, market information and knowledge products for climate resilience in value chains

Output 2.3 Enhanced financial inclusion and investments in climate resilient value chains (EE: IUCN)

The output addresses barriers such as limited financial products to stimulate climate resilient production in agriculture for FLR, and for the selected value chains, lack of access to finance for the rural population - especially women and youth - and overcomes limited financial participation in climate resilient production methods in respective value chains of the private sector. Interventions will enhance the long-term sustainability and economic viability of the project by 1) improving farmer' and FFPOs' capital base through savings stimulation 2) developing financial products and improving access to loans for progressive farmers including women, from financial service providers (FSP) 3) stimulating private sector service investments for climate resilient goods and services and linking private sector service providers with farmers and FFPOs and downstream value chain actors engaged in climate resilient and low emissions processing and trading. Bringing in the private sector investments in local development improves the prospects for a gradual shift away from grant finance to private operators. Private sector and financial sector leverage offer stronger scaling potential and potential for diversifying the local community's economy.

Unique to private sector stimulation, the Interchurch Organisation for Development Cooperation (ICCO)⁹⁶ will collaborate with financial service providers to develop savings, credit, and other financial services that will adequately take into account reduced climate risks from landscape interventions and other improvements in managing climate risks and incentivizing farmers and communities to take up climate interventions. To achieve this, output 2.3 will deliver technical assistance to microfinance staff, help to develop new financial products, develop indicators in credit assessment, establish monitoring systems and test and evaluate financial products.⁹⁷ With provided support and capacity building, the financial service providers will be enabled to:

- Develop financial products, including savings, tailored to the needs of groups involved in targeted climate resilient activities (described in 1.5),
- Develop financial products for FFPOs, farmers and other actors in value chains for agricultural and tree products (e.g., seedling/nursery production, fruits, wood fuel, timber, and fodder, honey),
- Assess investment opportunities while incorporating analysis of climate resilient methods of agricultural production for mainstream/staple crops, and
- Adapt products for mainstreaming and replicating products at branch and national level. Through this last intervention the wider finance sector in Rwanda will be reached, including the SACCO's and lessons will be shared sector wide to stimulate a paradigm shift towards climate resilient finance.

Furthermore, Output 2.3 will facilitate international impact investors to engage in investment for SMEs in the relevant value chains and connect to insurance companies. The design and development of financial products will be based on clear understanding of the demand for such financial products and services, detailed screening, and adaptation of internal procedures of financial institutions, and pilot testing and evaluation of financial products for the targeted value chains. This will build on and enhance previous and ongoing work by donors such as USAID Rwanda to attract private investments and strengthen agricultural value chains. The financial products will be consistent with climate resilience capacity building for value chain actors under Outputs 2.1 and 2.2. Techniques will be developed to analyse and score climate resilient agricultural production modes for mainstream/staple crops.

The project will support financial providers to utilize the proof of concept from Eastern Province and gather lessons learnt in order to upscale developed financial products to the national level.

Specific activities under this Output include the following:

- **2.3.1:** Financial education and savings mobilization for groups involved in restoration activities and linked with MFIs
- **2.3.2:** Promote and upscale agri-finance products of MFIs (maize, beans and rice) including water collection, planting of trees, soil erosion mitigation
- **2.3.3** Detailed and comprehensive scoping of financial service potential in the respective value chain for detailed product design and development
- **2.3.4:** Supporting MFI to design and pilot test financial products for the selected value chains
- **2.3.5:** Evaluate the financial products

⁹⁶ ICCO specialises in food and nutrition security, economic empowerment, and resilient and disaster-prepared communities. In particular, ICCO support the economic empowerment of smallholder farmers and small and medium enterprises (SME) to seize economic opportunities to improve and sustain farmers' livelihoods.

ICCO also work with financial service providers to develop capacity and enhance access to finance for smallholder farmers and SMEs.

⁹⁷ The service provider ICCO will procure resources relevant to the delivery of TA. There will be no transfer of funds from EE to downstream parties.

- 2.3.6: Implement the roll out and upscaling plan of financial products developed
- 2.3.7: Facilitate impact investors to engage in investment for SMEs in the relevant value chains and connect to insurance companies
- 2.3.8: Facilitate learning and sharing for replication in the financial sector

Component 3. Strengthened enabling environment to effectively plan, manage and monitor climate adaptation outcomes from improved land use at national and decentralized levels.

GCF: USD 4,399,946

Co-Financing: USD 3,538,421

This component aims to effectively mainstream climate adaptation in national and sectoral strategies and to create an enabling environment for long-term and sustainable adaptation project results. The project adopts a strategy for mainstreaming based on using a climate lens to screen current policies and strategies and integrate climate resilience metrics for improved monitoring and reporting. These measures will further provide the opportunity to build-in appropriate climate proofing measures and include projects and activities that will reduce climate vulnerability. This will lead to a systematic consideration of climate change risks and adaptation in policy planning that will be sustained beyond the project duration. Section E.6 provides detail about the activities listed below, as well as the associated sub-activities and deliverables. Further elaboration can be found in Annex 2 feasibility study.

Output 3.1 Strengthened gender-responsive climate resilience for coordinated cross-sectoral planning & community landscape restoration plans developed (EE: IUCN)

This output will build the enabling environment necessary to design and implement climate risk-informed landscape (supporting Component 1) and livelihoods (supporting Component 2) restoration plans in all seven districts in the Eastern Province. Technical assistance will be provided to lead participatory approaches coupled with geo-spatial analysis landscape planning tools such as Restoration Opportunity Assessment Methodology (ROAM), which will ensure a robust process and inform restoration planning. IUCN will support collaboration between government and communities to define final criteria and select primary target intervention areas to restore ecological functionality under outputs 1.1-1.4.⁹⁸ The final criteria will also be used to select future areas of landscape restoration targeted as outlined by landscape restoration plans developed under output 3.1. In order to create the enabling environment necessary for landscape restoration plans, the output will strengthen the capacity of institutions at national, provincial and district levels and enable them to effectively implement climate adaptation in land planning and management to ensure climate resilient landscape governance. Activities will involve annual planning, evaluation and integrating of climate resilience metrics into district development strategies and performance contracts and harmonizing cross-sectoral monitoring and reporting mechanisms. Technical assistance will be provided to develop curricula and training materials on climate risks for the sectors agriculture and forestry and adaptation solutions and then enhance capacities of technical staff that are tasked specifically in developing District landscape restoration opportunities assessments and cross-sectoral teams of technicians to become landscape restoration planners and managers for fund mobilization, planning, and delivery of climate adaptation actions. The trained technical staff will deliver awareness raising (presentations and workshops) on landscape restoration and adaptation to other relevant staff of district authorities. Technical support will also be provided for the design and implementation of a cross-sectoral monitoring and reporting mechanism. In this way, the project will establish an enabling environment and proper incentives and monitoring for actors at local, district and provincial levels to integrate adaptation considerations within their activities and contribute to coherent reporting at all governance levels. TREPA will ensure community mobilization through existing local channels such as village council meetings, Umuganda events (community works, monthly organized at local level and well attended by all active residents in the village, cell and sectors). This will enable participation of men and women since access to information will be equal and both will be given opportunities to participate in the project.

Specific project activities under this Output include the following:

- **3.1.1** Organize and facilitate 10 multi-stakeholder workshops to identify and integrate climate resilience metrics into 35 (7 district*5years) annual district development strategies and performance contracts
- **3.1.2** Hold monthly round tables to facilitate the collaboration for adaptation actions between institutions in charge of agriculture and agroforestry
- **3.1.3** Deliver 5 training sessions at central and district level, to enhance capacities for funding mobilization, planning, and delivery of climate adaptation actions
- **3.1.4** Provide technical assistance for the design and implementation of a cross-sectoral monitoring and reporting mechanism for climate resilient actions
- **3.1.5** Identify and train cross-sectoral teams of technicians to become landscape restoration planners and managers in collaboration with communities
- **3.1.6** Collaborate with communities to define priority criteria and select primary target intervention areas to restore ecological functionality
- **3.1.7** Train 28 staff in the district authorities and provide technical assistance for the preparation of 7 landscape restoration plans with climate resilience protocols / technical packages at the district level

Output 3.2 Enhanced and coordinated knowledge and information systems for decision and negotiation support (EE: IUCN)

This intervention will address the need for a comprehensive system for sharing climate knowledge at the national level, sub-national (focused on Eastern Province and District administration) level and community level to ensure effective integration of climate risk

⁹⁸ . While government actors and communities may participate in the definition of the criteria to select the interventions that will be implemented, such criteria must be subject to the final approval by the Executing Entity/ies for the relevant Outputs.

related data to support climate informed decision making. Therefore, the intervention aims to firstly appraise knowledge and information systems the needs based on findings of the feasibility study and initial activities under output 3.1 and then develop new and update and improve existing knowledge and information systems at the national and provincial level. Output 3.2 includes a project tracking database system that will track the MRV for activities under Outputs 1.1 to 1.5 and other outputs, as specified in Annex 11.

The proposed measures will ensure the integration of climate-related data to contribute to climate-informed decision-making, monitoring and reporting for different sectors and at all levels. Training will be provided to staff from districts agencies, RAB, RFA, RLMUA and Meteo-Rwanda, on managing information systems and integrating climate-related aspects. Activities will facilitate the sustainability and scale-up of project results and will enhance monitoring of climate information and relevant climate-related indicators at landscape level. The project will organize training of trainers' sessions for technical staff responsible for the information systems. By establishing such user-friendly climate information systems for the Eastern Province such as Forest Landscape Restoration (FLR) monitoring systems, climate knowledge and information exchange systems (including farmer to farmer), the project will improve the monitoring of relevant climate-related indicators at landscape level (*Output 3.1*). This will guide decision-making-processes and scaling-up initiatives within the Eastern Province and the rest of Rwanda. Specific activities under this Output include the following:

- **3.2.1** Improve existing knowledge and information systems to ensure effective integration of climate risk related data to support climate informed decision making
- **3.2.2** Organize 4 trainings for 18 staff (14 from districts, 1 from RAB, 1 from RFA, 1 from RLMUA and 1 from Meteo-Rwanda) on managing information systems and integrating climate-related aspects

Output 3.3 Seed and seedling supply systems are enhanced to provide diverse climate adapted species and varieties (EE: RFA), ICRAF

This intervention will address the limited knowledge and access of climate-resilient planting materials adapted to future climate scenarios used in agroforestry, forestry and horticulture. It will further focus on improving the currently inadequate consideration of farmers' knowledge of local tree diversity in planning and decision making for tree planting. Additionally, the interventions will improve the limited institutional knowledge and capacity for management of climate resilient planting material. The intervention aims to design and establish a national-level program for up to 25 climate resilient priority species of fruit, food, fodder and timber species to improve the seed and seedling supply system and promote climate adaptation through access to high quality and climate resilient planting material. To enable this, output 3.3 will also i) strengthen climate change aspects in sector-specific policies and legal frameworks ii) generate climate informed maps and an information portal⁹⁹ for habitat suitability for up to 100 climate resilient tree and crop species, and iii) enhance capacities of multi-agency working groups on seed-seedlings and climate adaptation through workshops and training. This intervention will also improve the capacity of local entities to supply germplasm for native and resilient wood tree species from local sources. Additionally, it will increase the diversity of fruit germplasm (e.g. avocado, mango, tree tomato, macadamia, pawpaw, guava) suited to the agroecological zones in the Eastern Province. In parallel, the project will encourage the private sector through the creation of collaboration platforms for state and non-state actors such as the District NGO coordination board and Joint Sector Working Groups. The project will develop incentives and develop business models for local fruit nursery accreditation systems to produce the 'right materials for the right place' and avoid pest and disease problems due to prolonged drought periods. Specific activities under this Output include the following:

- **3.3.1** Integrate climate change aspects in policies and strategies for the seed sector and develop business models to promote climate resilient varieties
- **3.3.2** Prepare climate informed maps and information portal for habitat suitability for up to 100 climate resilient tree and crop species in Rwanda
- **3.3.3** Design and establish a national-level breeding programme for up to 25 climate resilient priority species of fruit, food, fodder and timber species
- **3.3.4** Conduct 12 trainings for six multi-agency working groups on seed-seedlings and climate adaptation

Output 3.4 Evidence from best practices generated and disseminated (EE: RFA, IUCN, ENABEL)

This intervention seeks to address the insufficient links and collaboration between research agencies with agricultural extension services to generate knowledge relevant to addressing specific farmer needs to adapt to climate change. The intervention will promote good practices and scaling up of climate-resilient strategies that will be built on robust evidence regarding their effectiveness to address climate risks. The intervention aims to improve inter-agency knowledge about the role of agroforestry systems and practices to contribute to the restoration of degraded agricultural land and build climate resilience. The activities under this subcomponent will address knowledge gaps on agroforestry systems (e.g. ecological and socio-economic perspective, value chain development, sustainable use of biomass energy) via applied research and evidence generation to inform good practices for climate resilience in the country including: (i) 2 publications on the role of agroforestry systems for food security and building socio-economic resilience of local communities (ii) test user-friendly improved cooking stoves (ICS) and produce 4 knowledge materials to train 6 local producers, (iii) 4 knowledge and research materials on the socio-economic barriers to adoption of climate resilient practices for land restoration, (iv) conduct capacity building sessions for 8 and develop 8 knowledge sharing tools. The results from the applied research will guide both public and private development partners to disseminate appropriate agroforestry-based

⁹⁹ Where end users are unable to access the portal via smartphone, the project will identify and deploy appropriate SMS alternatives.

restoration options, inclusive and competitive value chains, improved cookstoves (ICS) to enhance the resilience of social and ecological systems. Research will be supported by the European Commission led platform called DeSIRA (Development Smart Innovation through Research in Agriculture) to enhance farmers' access to innovation through better integration of agricultural research. . This applied research output will be supported (fully co-financed) by the led platform called DeSIRA (Development Smart Innovation through Research in Agriculture) funded by EU, for which both Enabel and IUCN have been contracted for its implementation in Rwanda, including dissemination of generated knowledge.

Specific activities under this Output include the following:

- **3.4.1** Produce 6 research publications on the role of agroforestry systems for building climate resilience in semi-arid landscapes
- **3.4.2** Produce 2 publications on the role of agroforestry systems for food security and building socio-economic resilience of local communities
- **3.4.3** Locally test user-friendly improved cooking stoves (ICS) and produce 4 knowledge materials to train 6 local producers and 12 national/district staff and inform best practices
- **3.4.4** Produce 4 knowledge and research materials on the socio-economic barriers to adoption of climate resilient practices for land restoration and identified opportunities for economic incentives
- **3.4.5** Conduct 8 capacity building sessions and develop 8 knowledge sharing tools to foster scaling-up of agroforestry systems for climate resilient landscapes and promote sustainable use of biomass energy

B.4. Implementation arrangements (max. 1500 words, approximately 3 pages plus diagrams)

The focal Ministry for the project will be the Ministry of Environment (MoE) through Rwanda Forestry Authority (RFA). Previously the Rwanda Water and Forestry Authority, has now been split into the RFA and Rwanda Water Resources Board (RWB). The RFA is mandated to implement policy and strategy in relation to forestry. IUCN is the Accredited Entity (AE) of the project. The AE functions and its related activities will be undertaken jointly by programmes hosted at Headquarters (GEF & GCF Coordination Unit, Global Finance Unit, Global Forest Programme) and the Regional Office for Eastern and Southern Africa (ESARO). The project will be implemented through three Executing Entities (EE), namely RFA, ENABEL and IUCN-Rwanda office. In the EE role IUCN Rwanda functions as an in-country entity based on its host country agreement on project management, member and advisory services. In the AE role IUCN will provide oversight to the project consisting of a) entering into contractual agreements with the EEs; b) managing and disbursing GCF funds to EEs, after providing no objection to work plans and budgets; c) reviewing financial expenditures and progress reports; d) overseeing Project implementation in accordance with the Project document and Annual Work Plans and Budgets, agreements with co-financiers and each executing agency rules and procedures; e) providing technical guidance to ensure that the appropriate technical quality is applied to all Project activities; f) providing financial reports to the GCF for Project funds received; g) ensuring that the project complies with the terms agreed in the project's respective FAA as well as the AMA signed between IUCN and the GCF; and h) undertaking regular annual supervision missions according to the IUCN's guidelines, at least one before the mid-term National Steering Committee (NSC) meeting and one prior to the end of the year NSC aimed to review yearly progress and approve the next year AWP.

IUCN HQ & ESARO (AE) will contract the EEs (RFA, Enabel, & IUCN-Rwanda). A project Executing Entity receives project specific GCF funding from and under the supervision of the IUCN as the GCF AE. Service providers (ICRAF, WV, and ICCO) also contracted by IUCN HQ & ESARO based on terms of references elaborated by EE leading the components. The service providers receive funds from HQ & ESARO upon successful delivery and acceptance by the EE leading the respective components (see Table 5). Both EEs and Service providers will issue contracts with TA and other beneficiaries and shall pay for the services based on successful delivery. In case of co-finance from EE and Service providers, they will report on activities co-financed with distinction of what was funded by GCF. Co-financiers who are not directly part of the EEs or Service providers will choose to either sign an implementing agreement with the EEs or Service providers or sign a Memorandum of Understanding to render directly the service on behalf of the EE or Service provider as a co-finance.

As IUCN Rwanda will have a role in the project execution, a firewall will be established to ensure responsibilities are segregated so IUCN plays the oversight role dedicated to AE efficiently. Within IUCN, the execution function will remain within IUCN Rwanda, out of its office based in Kigali only, when IUCN has to take on execution responsibilities. These include the responsibilities related to EEs as described above. For such activities, IUCN Rwanda will be reporting to the project steering committee. The AE, which will oversee the project execution function including decisions made by the steering committee, will be performed by the IUCN regional office for Eastern and Southern Africa based in Nairobi, Kenya and global programmes in Headquarters. The IUCN regional office for Eastern and Southern Africa will be in charge of coordinating the oversight function, including conducting supervision missions for this project. The oversight will be performed by a team composed of various expertise including finance, M&E, environmental and social safeguards based in the regional office for Eastern and Southern Africa and Headquarters. The technical part of the oversight function will lay under the responsibility of the global ecosystem's management programmes, based in Headquarters, but with staff outposted in the IUCN regional office for Eastern and Southern Africa. All staff related to performing oversight will have no reporting line with the staff in charge of the execution function based on the Rwanda Office, which will ensure full independence in the performance of their duties under this project.

EEs will be in charge of the actual delivery of the project under the guidance of the AE and steering committee. more specifically, EEs will be in charge of oversee the tasks within the overall project management structure consisting a) Implementing day-to-day activities as per the project work plan and budget, including the Environment and Social management Plan; b) Undertaking procurement activities directly or through the Programme Management Unit (PMU); c) Managing contracts of suppliers and services providers; d) Hiring and managing project staff relevant to the EE managed project areas; e) Implementing activities as per the project work plan; and f) Carrying out financial and technical monitoring of activities, including the achievement of the outputs and outcomes EE is in charge of.

EEs will work with service providers at the activity level. Service providers will be either identified during the appraisal process of the project or selected through a procurement process. When identified during the appraisal process, the service providers will have to go through the steps related to an exception for competition as per the IUCN guidelines for procurement of goods and services.

The Secretary, MoE will chair the National Steering Committee (NSC), which will provide implementation guidance and support as well as financial and procedural oversight. IUCN will enact financial contracts and transfers with the actors executing the project (namely the three EEs with the support of the three service providers ICCO, WV and ICRAF), with consolidated financial and technical reporting through the Project Management Unit that will be established under RFA. IUCN will carry out financial transfers in accordance with requests from the PMU, governed by the GCF procedural requirements. All funds' disbursements will be requested by the PMU based on a yearly work plan approved by the Steering Committee and IUCN as the project AE. The PMU will submit its disbursement requests to IUCN task manager based in the IUCN Eastern and Southern Africa Regional Office. The disbursement request will be accompanied by a budget and work plan and will only be accepted if the previous instalment technical and financial reporting has been accepted by the team in charge of oversight. The project task manager will coordinate feedbacks and inputs from the project oversight team from the regional office and headquarters. Once there is a consensus on the previous instalment financial and technical reporting, and on the budget and work plan for the forthcoming disbursement request, the latter will be accepted, through official communication from the task manager to the PMU.

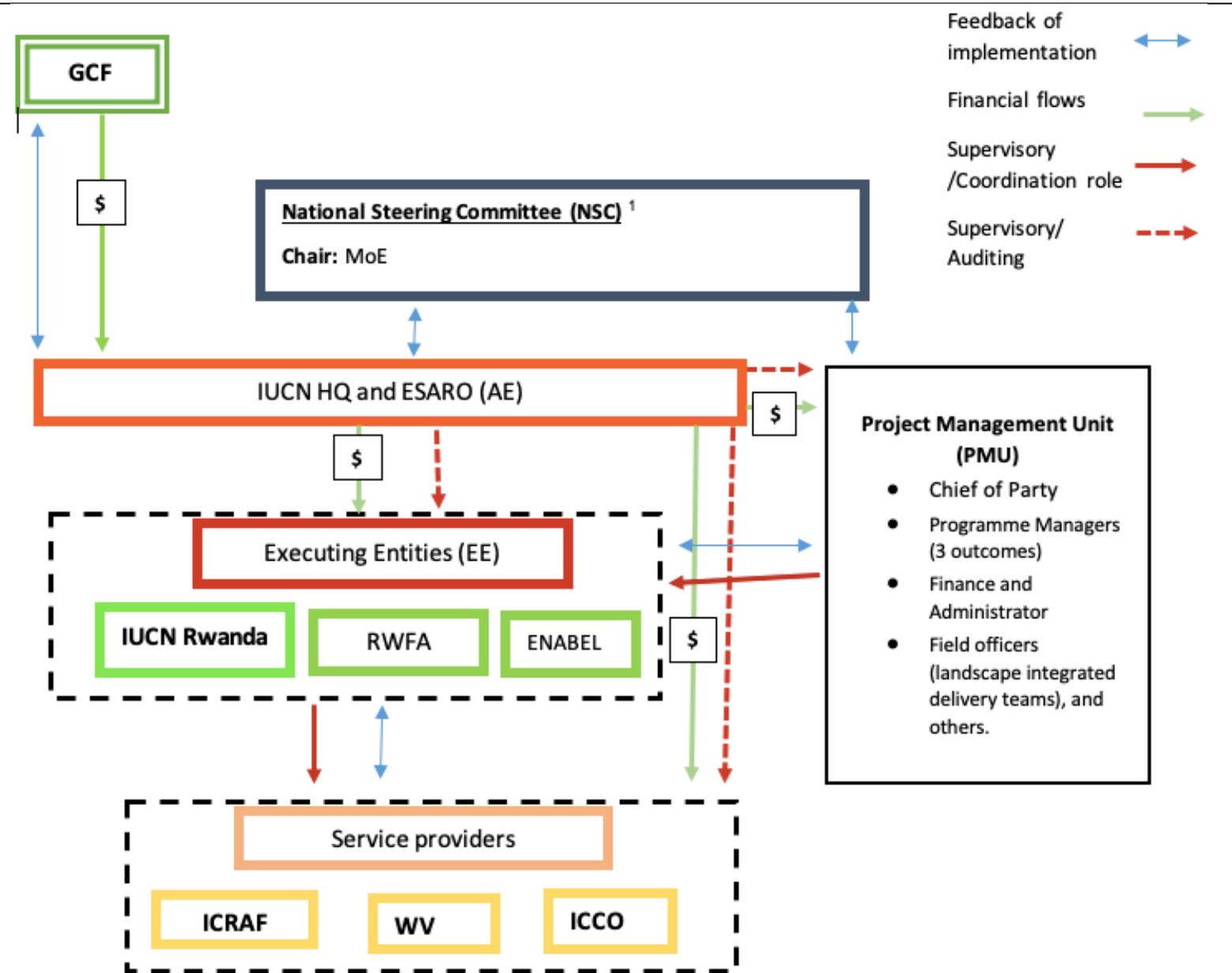


Figure 5 demonstrates the institutional arrangements of the TREPA project including National Steering Committee¹⁰⁰ and Project Management Unit executive functions.

National Steering Committee: The strategic guidance and financial reviews and recommendations for the project implementation will be provided by the NSC comprised of key entities appointed by the Director General, RFA. The NSC is responsible for the governance of the project and oversight of the PMU. NSC will act in accordance with best practices and standards for governing bodies and ensure that the project management delivers expected results with best value for money, fairness, integrity, transparency and effective competition.

¹⁰⁰ NDA-REMA, IUCN, ENABEL, Ministry of Finance and Economic Planning, and selected representatives from among: the Ministry of Agriculture (MINAGRI), National Agricultural Export Development Board (NAEB), Ministry of Infrastructure - Energy department, and Rwanda Cooperative Agency (RCA), Rwanda Development Board (Akagera national park), academia-UR, community representatives (a man and a woman) from Eastern Province, and other relevant institutions and agencies including private sector.

Any recommendation or action taken by the NSC in respect of the project shall be subject to final approval by the EE in charge of the output or activity. The National Steering Committee will meet twice a year.

Along with the three EEs (RFA, ENABEL and IUCN), the NSC will include the SPIU (Single Project Implementation Unit) to the Ministry of Environment, Rwanda Environment Management Authority (REMA), Ministry of Finance and Economic Planning, and selected representatives from among: the Ministry of Agriculture (MINAGRI), National Agricultural Export Development Board (NAEB), Ministry of Infrastructure – Energy department, and Rwanda Cooperative Agency (RCA), Rwanda Development Board (Akagera national park), representative of CSOs¹⁰¹ and relevant private sector organizations. In addition, any other relevant institutes and agencies co-opted as and when necessary.

Project Management Unit: The Project Management Unit (PMU), established under the RFA will perform according to the policy guidance from the National Steering Committee (NSC) of which IUCN will also be a key member. PMU is headed by the Programme Director selected through an open competitive process by a panel appointed by the NSC on a Terms of Reference approved by NSC along with other PMU staff. The selection and recruitment of all PMU staff will be done following IUCN recruitment practices and proposed to Ministry of Environment for non-objection.

The PMU may include experts from local and international agencies identified based on project needs with the concurrence of the NSC to provide adaptive programme management support. Agencies specialized in agroforestry such as ICRAF, and other specialized entities will be linked to PMU through this modality.

The Programme Director is responsible for the day-to-day operations of the PMU within the guidelines laid down by the NSC including the tasks of managing and monitoring the project risks initially identified and submit new risks to the NSC for consideration and decision-making on possible actions if required and update the status of these risks by maintaining the project risk log.

The project will use IUCN fund management modalities¹⁰² based on an annual work plan developed by the PMU and subsequently approved by the NSC. The AWP indicates which activities should be funded by the RFA applying the Government procedures and other activities to be funded through other Executing Entities (ENABEL and IUCN) as per their internal procedures.

The PMU will be established in Kigali city at RFA/ MoE with the management arrangements outlined in the chart above. The PMU will provide the NSC with quarterly progress reports and close its operations when the final project terminal evaluation report and other documentation required by the GCF and IUCN has been completed and submitted to the NSC and IUCN.

The PMU will further include the leads for three Project Components. In addition, the PMU will be staffed with required professional and technically qualified personnel selected and recruited following IUCN procedures and presented to the Ministry for non-objection. In all, the PMU will strive to maintain a lean management structure.

For ground level delivery, under the PMU, the executing entities together with support from their service providers will establish integrated landscape delivery teams (ILDTS) specific to the districts of intervention in the Eastern Province of Rwanda. These teams will work closely with the Joint Action Development Forums (DJAF) based in each district.

The PMU will develop the contracts, guidelines and technical documentation to engage and support the ILDT, and Implementing Partners. PMU will ensure extensive coordination and experience sharing among Project Components, ILDTs, Implementing Partners and members of local communities. NSC will provide policy direction and guidance to improve the coherence and efficiency of this innovative approach to be developed as an up-scalable model.

Each ILDT will be managed by an Area Manager reporting to the PMU *via* the three outcome leads, who convene appropriate implementing partners for the work in the area, as directed and supported by the relevant PMU component teams. The ILDTs will have different composition according to the nature of options being implemented in each area.

Coordination: The project, at the local level will coordinate closely with district and divisional coordinating committees to ensure smooth local level coordination in project implementation, provide ownership and ensure sustainability. The District executive directors (DEDs) are expected to play an active role in project implementation, facilitation and monitoring which is generally an assigned function of the office and play a key role in the grievance redress mechanisms, as described in the Environmental and Social Management Plan of the project.

¹⁰¹ Civil Society Organizations including Youth climate change alliance representatives

¹⁰² The three modalities by which IUCN may disburse funds include: (1) if IUCN is acting as the EE, transfer funds to service providers that it has directly procured, (2) transfer funds to the respective EEs under the relevant subsidiary agreements, or (3) transfer funds to third parties (i.e., service providers or goods suppliers) that have been procured by the relevant EEs, following the written request from the relevant EE and fulfilment of any applicable conditions under the subsidiary agreements.

Local stakeholders and community members have a key role and are expected to extend support in the implementation—through Community groups at landscape level and will be involved in monitoring of the project. During the inception phase of the project, the principal Executing Entity (RFA) working together with the other two Executing Entities (ENABEL and IUCN), will consult with all stakeholders, including vulnerable community members, FFPOs, CBOs, private sector players etc. and facilitate an understanding of the roles, functions, and responsibilities within the Project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The stakeholders will be engaged at all levels of the project management process and will assess the progress of the project and enable adaptive project management in response to the needs and priorities of the communities

Execution: Table 5 shows activities and institutions which will execute them under supervision of the executing entities.

Table 5. Summary of project activities and institutions which will execute them.

Output	Activity	Lead Executing Entity per output	Executing entity/ Service providers
1.1. Agroforestry packages are scaled-up on rain-fed farmlands for improved soil and water management	1.1.1: Identify 100 sub-areas of intervention (400 ha each) for agroforestry dissemination over <i>Eastern Province</i> .	RFA	RFA
	1.1.2: Train 160 farmers groups on agroforestry techniques and establish 160 MoUs with local authorities		ICRAF
	1.1.3: Establish and sustain one agroforestry/fruit trees nursery in each of the 100 sub-areas of intervention		RFA
	1.1.4: Provide technical assistance to farmers in planting agroforestry/fruit trees and in implementation of agroforestry technologies in their owned parcels		RFA
	1.1.5: Establish and sustain 1 demonstration plot of 1-2 ha in each of the 100 sub-areas		ICRAF
	1.1.6: Monitoring, control and evaluation of supported agroforestry areas		IUCN
1.2. Woodlots and tree plantations are rehabilitated and sustainably managed for productive and ecological services	1.2.1: Restore 700 ha of degraded District owned tree plantations and provide technical assistance for their sustainable management	Enabel	ENABEL
	1.2.2: Restore, in collaboration with RFA and Districts, an area of 700 ha of very degraded State-owned tree plantations and in long-term concession of 10,000 ha of State FMUs to private investors		ENABEL
	1.2.3: Restoration, in collaboration with smallholders, the area of 6,545 ha of very degraded private tree plantations and their sustainable management under private FMUs according to approved SFMPs		ENABEL
1.3. Scale-up climate resilient silvopastoral packages to	1.3.1: Characterize the climate resilience features of the existing pasture lands	RFA	ICRAF
	1.3.2: Select fodder trees, shrubs, grasses, and herbaceous legumes with high drought resilience		ICRAF

restore degraded rangelands	potential to increase the climate adaptive capacity of the pasture lands			
	1.3.3: Purchase and disseminate agroforestry fodder trees, improved grasses and herbaceous legumes to improve grazing land and build resilience of degraded lands		ICRAF	
	1.3.4: Organize two Training of Trainers (ToT) sessions per year for 30 lead farmers on management grazing lands for climate resilient pasture productivity		ICRAF	
	1.3.5: Assess water availability and rainwater potential harvesting in 60 pastures and purchase 60 water tanks of 5000 m ³ and construction of 60 water trough to reduce drought stress for the livestock		ICRAF	
	1.3.6: Conduct twice per year capacity building workshops for 30 leaders farmers, 7 government extension staff, 7 church leaders and 7 local authorities in charge of development in 7 districts		ICRAF	
	1.3.7: Monitoring and evaluation of silvopastoral activities		IUCN	
1.4. Protective restoration measures are scaled up to climate-proof fragile, ecologically sensitive and erosion prone lands	1.4.1: Restore 700 ha of lake/river shorelines and 700 km of roadside through tree/shrub planting and participatory management	RFA	RFA	
	1.4.2: Restore and protect 400 ha of Akagera Buffer zone through tree/shrub planting and implementation of participatory silvopastoral plan		RFA	
	1.4.3: Provide technical support to 3 local nurseries in production of selected climate resilient multipurpose trees/shrub seedlings		RFA	
	1.4.4: Provide technical assistance to the seven Districts to perform monitoring and evaluation of restored areas under protection integrating climate resilience		RFA	
1.5. Clean and efficient cooking energy technologies promoted through support to private sector and communities to transition/reduce Biomass fuel consumption	1.5.1: Conduct a large scale and intensive awareness campaign across the Eastern Province on ICS and cooking fuel solutions and opportunities.	Enabel	ENABEL	
	1.5.2: Support access to ICSs for over 100,000 rural Households of EP.		ENABEL	
	1.5.3 Establish "Cooking fuel and technology" hubs in 14 main local markets of TREPA intervention areas.		ENABEL	
	1.5.4: Provide feedback into enabling environment activities supporting the shift from traditional cooking to clean ICS and fuels.		ENABEL	
2.1. Farmers' groups	2.1.1. Integrate targeted famers into existing FFPOs or where appropriate form new ones	IUCN	WV	

strengthened to adopt climate resilient land use practices with access to market and finances	2.1.2. Conduct capacity assessment on organizational and financial management of existing FFPOs and develop a comprehensive strengthening plan			
	2.1.3. Capacity enhancement programme for farmer groups and cooperatives (FFPOs)			
	2.1.4. Support smallholder farmers' organizations (Cooperative and Producer Groups) to conduct advocacy around climate change related policies and market reforms to regularize prices and subsidies			
2.2 Markets and value chains for climate resilient agricultural and tree products are inclusive and incentivize sustainably the establishment and management of agro-ecological systems and associated public and private investments	2.2.1. Tree crop value chain development	IUCN	ICRAF	
	2.2.2. Bee product value chain development			
	2.2.3 Fodder value chain development			
	2.2.4 Building local capacity and knowledge for climate resilience in value chains			
	2.2.5. Establish/rehabilitate seven Rural Resource centers and market infrastructures for value chains for climate resilient agricultural and tree products			
	2.2.6. Trade fairs and business roundtables connecting farmers with other value chains actors for marketing products based on climate-resilient land use			
	2.2.7. ICT supported climate risk, market information and knowledge products for value chains			
2.3 Enhanced financial inclusion and investments in climate resilient value chains for climate resilient agricultural and tree products	2.3.1: Financial education and savings mobilization for groups involved in restoration activities and linking with MFIs	IUCN	ICCO	
	2.3.2: Promote and upscale agri-finance products of MFIs (maize, beans and rice) including water collection, planting of trees, soil erosion mitigation			
	2.3.3 Detailed and comprehensive scoping of financial service potential in the respective value chain for detailed product design and development			
	2.3.4: Supporting MFI to design and pilot test financial products for the selected value chains			
	2.3.5: Evaluate the financial products			
	2.3.6: Implement the roll out and upscaling plan of financial products developed			
	2.3.7: Facilitate impact investors to engage in investment for SMEs in the relevant value chains and connect to insurance companies			

	2.3.8: Facilitate learning and sharing for replication in the financial sector		ICCO	
3.1. Strengthened gender-responsive climate resilience for coordination cross-sectoral planning & community landscape restoration plans developed	3.1.1: Organize and facilitate 10 multi-stakeholder workshops to identify and integrate climate resilience metrics into 35 annual district development strategies and performance contracts.	IUCN	IUCN	
	3.1.2: Hold monthly round tables to facilitate the collaboration for adaptation actions between institutions in charge of agriculture and agroforestry		IUCN	
	3.1.3: Deliver 5 training sessions at central and district level, to enhance capacities for funding mobilization, planning, and delivery of climate adaptation actions		IUCN	
	3.1.4: Provide technical assistance for the design and implementation of a cross-sectoral monitoring and reporting mechanism for climate resilient actions		IUCN	
	3.1.5: Identify and train cross-sectoral teams of technicians to become landscape restoration planners and managers in collaboration with communities		IUCN	
	3.1.6: Collaborate with communities to define priority criteria and select primary target intervention areas to restore ecological functionality		IUCN	
	3.1.7: Train 28 staff in the district authorities and provide technical assistance for the preparation of 7 landscape restoration plans with climate resilience protocols / technical packages at the district level.		IUCN	
3.2. Enhanced and coordinated knowledge and information systems for decision support	3.2.1: Improve existing knowledge and information systems to ensure effective integration of climate risk related data to support climate informed decision making.	IUCN	IUCN	
	3.2.2: Organize 4 trainings for 18 staff (14 from districts, 1 from RAB, 1 from RFA, 1 from RLMUA and 1 from Meteo-Rwanda) on managing information systems and integrating climate-related aspects.		IUCN	
3.3. Seed and seedling supply systems enhanced to provide diverse climate adapted	3.3.1: Integrate climate change aspects in policies and strategies for the seed sector and develop business models to promote climate resilient varieties	RFA	ICRAF	
	3.3.2: Prepare climate informed maps and information portal for habitat suitability for up to		ICRAF	

species and varieties.	100 climate resilient tree and crop species in Rwanda		
	3.3.3: Design and establish a national-level breeding programme for up to 25 climate resilient priority species of fruit, food, fodder and timber species		ICRAF
	3.3.4: Conduct 12 trainings for six multi-agency working groups on seed-seedlings and climate adaptation		ICRAF
3.4. Evidence from best practices generated and disseminated	3.4.1: Produce research publications on the role of agroforestry systems for building climate resilience in semi-arid landscapes	IUCN	IUCN
	3.4.2: Produce 2 publications on the role of agroforestry systems for food security and building socio-economic resilience of local communities.		IUCN
	3.4.3: Locally test user-friendly improved cooking stoves (ICS) and produce 4 knowledge materials to train 6 local producers and 12 national/district staff and inform best practices		ENABEL
	3.4.4: Produce 4 knowledge and research materials on the socio-economic barriers to adoption of climate resilient practices for land restoration and identified opportunities for economic incentives.		ENABEL
	3.4.5: Conduct capacity building sessions for 8 and develop 8 knowledge sharing tools to foster scaling-up of agroforestry systems for climate resilient landscapes and promote sustainable use of biomass energy.		ENABEL

GCF proceeds will go to IUCN as the Accredited Entity for transferring to the Executing Entities, namely IUCN Rwanda, Rwanda Water Forest Authority (RFA) and ENABEL. Although ICRAF, ICCO and WorldVision will be service providers, those entities will receive the funding based on work plans from IUCN as the Accredited Entity. Executing Entities will be responsible for managing workplans implementation and results for service providers, though funds will be transferred from the AE: This will contribute to significantly reduce transaction costs and manage risks.

B.5. Justification for GCF funding request (max. 1000 words, approximately 2 pages)

Why the Project/ Programme requires GCF funding

The government of Rwanda is aware of the risks of climate change as exemplified by Rwanda's national environment and climate change policy of 2019. The Government of Rwanda already has policies, strategies and plans in place to mitigate and adapt to climate change. However, climate impacts are reducing the financial capacity of Rwanda to respond to its vulnerabilities; climate change is already reducing GDP by 1-2% each year¹⁰³. For example, the country has invested in heavy irrigation schemes in marshlands of the Eastern Province for paddy rice to alleviate the prevailing food insecurity. However, these schemes are threatened by erosion from surrounding hillsides due to increasing extreme rain events.

The Rwandan Government does not have the financial means to implement all activities identified to improve climate resilience and requires additional technical support. The project cannot be accomplished without GCF support. Funds from GCF for TREPA

¹⁰³ SEI, Economics of Climate Change in Rwanda (2009), Kigali. Rwanda.

would increase resilience of smallholders by diversifying their livelihoods and would climate proof the country's investments in existing climate resilience measures employed, such as the irrigation schemes in Warufu, Rukumberi, and Rweru marshlands.

While project partners are contributing co-finance for the implementation of the project, this represents only a fraction of the resources required for implementation. The GCF funding will unlock additional private sector capital, it will allow the government to implement adaptation capacity building training and practices to ensure that landscapes that support climate resilient agro-ecological systems and livelihoods in Eastern Province can be restored, and that under Component 2 farmers and communities have resources and capacity to restore, benefit from, and maintain climate resilient landscapes.

Rationale and level of concessionality

The market in Rwanda shows rapidly rising prices and demand for commodities (section B1.4). The vast majority of land is privately owned and densely populated. Limited community institutions, poor market structure and poor infrastructure translate into poor cooperation across districts, watersheds, and their underdeveloped markets. This inadequate, nascent market development is the root cause of the request for grants, not loans—since little surplus products are produced and traded on cross-district or export markets, and thus it is inadequate to secure or service any loans. In this regard, prevailing market conditions necessitate GCF grant finance, rather than loans, to be injected to raise the capacity and bridge the financial and technical gaps until the production/restoration models are brought to financial viability to be maintained by private sector. For another important output, it can be shown that the direct returns on investment in landscape restoration activities are too low to make them financially attractive or feasible for farmers, even if they had access to credit. GCF grant resources are therefore required to support restoration to help build capital (such as forest) which can be used sustainably in a profitable way in the future. The rationale for the level of concessionality for all grant supported measures is demonstrated in the economic returns from forestry and landscape restoration activities provided in Annex 3.

Economic analysis

The Economic and Financial Analysis spreadsheet - Annex 3 – shows the conclusions of the economic analysis, together with related assumptions and information. Best practices in appraisal for public sector projects have been followed.

The net present value (NPV) of the project-level investment is calculated using a discount rate of 12.1%. This figure represents the Rwanda Central Bank interest rate for a 10-year Treasury bill, as of September 2020¹⁰⁴. The use of the Government bond rate is justified as this is the rate at which the Government would have to borrow to fund equivalent investments in the absence of grant financing. The sensitivity analysis is performed using alternative discount rates of 8% and 20% (the latter being higher than the average commercial borrowing rate).

Project costs include GCF investment and co-finance from partners and Government during the project period as presented in Annex 4 (Detailed Budget Description). It also includes continued Government financial support for the remainder of the 20-year investment lifetime.

Project benefits include the cumulative net financial benefits for participating farmers compared to business-as-usual, as well as financial benefits for improved cook stove manufacturers / retailers, and non-marketable benefits like the value of time savings and environmental protection.

The project return varies depending on the period of analysis. The figures below present the NPV and Economic Internal Rate of Return (EIRR) for the 6-year implementation period, and for an estimated 20-year investment lifetime. Given the project's focus on long-term agroforestry, landscape restoration and silvopastoralism activities, the 20-year investment lifetime is considered most appropriate for this analysis.

Net present value and economic internal rate of return are presented below:

Table 2 - NPV and EIRR summary

Economic returns		
Direct, marketable benefits only	6 Years	20 Years
ENPV	35,435,968	6,575,924
EIRR	N/A	10.1%

¹⁰⁴ Source : <https://www.bnr.rw/browse-in/financial-market/money-market-interest-rates/monthly-interest-rates/>

When only marketable benefits are considered, project ENPV is negative over the 6-year and 20-year timeframes. As noted in the financial analysis discussion, the agroforestry, silvopastoralism and forest management outputs require up-front investments that take between 10 and 30 years to mature fully. These future benefits are depressed by the use of a discount rate. In addition, the direct marketable benefits are presented in comparison to baseline financial flows that result from severe overexploitation of forest resources.

Key non-market benefits from the project include the following:

1. Reduced topsoil erosion¹⁰⁵;
2. Improved water quality;
3. More reliable water supply for household needs, drinking and irrigation (Wilson and Lovell, 2016. Garrity *et al.*, 2010);
4. Reduced stormwater runoff resulting in flood risk mitigation (e.g. Matthews *et al.* 2004; Ranieri *et al.* 2004);
5. Time savings, especially for women and girls who traditionally collect fuelwood;
6. Increased carbon sequestration in soils and trees;
7. Reduced GHG emissions from the use of non-renewable biomass as a cooking fuel.

Non-market benefits are valued using shadow prices that attempt to reflect the amount that people would have to pay to obtain an equivalent benefit via the market. The main non-marketable benefits quantified in this analysis are the GHG benefits from carbon sequestration and GHG emission reduction activities, and the time savings from adoption and use of more efficient biomass cook stoves. The analysis values GHG emission reductions using a shadow price of USD 40, which is the lowest in a range of values recommended in the World Bank's 2017 analysis of shadow carbon prices¹⁰⁶.

Table 3 - Value of ecosystem benefits from project activities

	6 year total	20 year total
Direct carbon sequestration / emission avoidance, tCO ₂ e	1,307,819	9,662,441
Value at USD 40/tCO ₂ e	52,312,744	386,538,582

Time savings from reduced fuelwood collection are valued using a shadow price of USD 2.25 per day, or USD 0.28 per hour, which is equivalent to Rwanda's 2019 per capita annual income in current USD¹⁰⁷.

Table 4 - Non-marketable benefits - time savings

Other non-marketable benefits	6 year total	20 year total
Time savings - fuelwood collection, USD	43,332,201	163,847,414

Combining the non-market benefits from ecosystem services dramatically changes the cost-benefit ratio for the project. Project NPV shifts from negative when only marketable benefits are considered, and become strongly positive for the 6- and 20-year periods of analysis.

Table 5 - Economic returns including marketable and non-marketable benefits

Direct, incl marketable benefits	6 Years	20 Years
ENPV	20,504,468	160,764,861

¹⁰⁵ Karamage, et. al. 2016. Extent of Cropland and Related Soil Erosion Risk in Rwanda. *Sustainability* **2016**, 8, 609; doi:10.3390/su8070609

¹⁰⁶ *Guidance note on shadow price of carbon in economic analysis (English)*. Washington, D.C. : World Bank Group.

<http://documents.worldbank.org/curated/en/621721519940107694/Guidance-note-on-shadow-price-of-carbon-in-economic-analysis>

¹⁰⁷ World Bank country profiles <https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=RW>

EIRR	41%	62.07%
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The following sensitivity analysis shows how different carbon price assumptions affect the project’s economic attractiveness. Over the 6-year implementation period, the project requires a carbon price just over USD 12.63 to reach a positive NPV. Over the longer 20-year time period the project time savings from reduced fuelwood collection are sufficient to generate positive NPV, even if the carbon price were set to zero.

Table 6 Sensitivity analysis - shadow carbon price vs NPV

	Social Carbon Price, USD	Project 6-Yr NPV	Project 20-Yr NPV
	Base case - \$40	20,504,468	160,764,861
REDD+ market price	5.00	5,719,492	64,404,855
	7.50	3,846,352	71,287,713
	10.00	1,973,212	78,170,570
	20.00	5,519,348	105,702,001
	30.00	13,011,908	133,233,431
	40.00	20,504,468	160,764,861
WB low value			
WB high value	75.00	46,728,428	257,124,867

The results of the economic analysis show that the project does not generate sufficient financial returns to be undertaken without GCF funding. At the same time, the project generates robust economic benefits from a societal perspective, contributes to the long-term sustainability of productive landscapes in Rwanda, and supports the GCF’s goal of low-carbon and climate resilient development.

[Limits of] Alternative funding options

While this project supports Rwanda’s ambitious Green Growth plan, that plan overstretches government coffers and is inadequately funded.¹⁰⁸ Likewise, the private sector ambition in Rwanda to invest in climate resilient agriculture outweighs its financial and technical capacity to do so. Despite the strong economic benefits of this project, **Rwanda’s fiscal gap prevents addressing financing needs.** Rwanda, as a least developed country has a per capita GDP of less than USD 700. It had a severe balance of payments deficit on its current account of over USD 2 billion in 2018 with net borrowing at over USD 1 billion. Imports amount to almost three times the level of exports, and tax revenues are low, leaving Rwanda’s fiscal capacity weak. The country is heavily dependent on international donors to finance its annual budget. As noted in Section D.5 below, the spending needs as a result of the Government response to the COVID-19 pandemic coupled with revenue underperformance due to the crisis have led to an expected fiscal deficit of 8.5 percent of GDP in FY2020/21, with public debt projected at 67 percent of GDP at end-2020.¹⁰⁹

The government of Rwanda provides an annual budget to the different districts countrywide, depending on their District landscape restoration opportunities assessments and local performance contracts or “imihigo”. The environment and natural resources

¹⁰⁸ Domestic revenues do not sufficiently support the national budget making it difficult for Rwanda to make sufficient investment in the implementation of the Green Growth Strategy due to multiple competing priorities. For example, the 2019/20 budget is FRW2,876.9 bn whereas the domestic revenue (including domestic financing) is assumed to only contribute 68% of the budget see: <https://www.pwc.com/rw/en/pdf/rwanda-budget-analysis-2019-20.pdf>

¹⁰⁹ IMF Country Report No. 21/1, Rwanda: Third review under the policy coordination instrument (2021), Washington D.C.

sector at district level is the least prioritized due to competing needs for education, health, social protection among others. As a result current investment is insufficient to address the issues of climate change - changing precipitation regimes, and rising CO₂ emissions from household cooking with inefficient biofuels in Eastern Province. For example, it is difficult for community members to access the tree seedlings required to restore their small farms, and subsidies are required to provide such important inputs for afforestation activities, GCF funding will not crowd out private financing. On the contrary, funded activities target a vulnerable target population that has limited resources and will be unable to initiate these reforestation activities without grants. The promotion of financial instruments is a long-term effort to ensure sustainability of the interventions. The design and prototype testing of financial services as part of the project, coupled with financial education activities, will stimulate access to financial services, including savings and loans, by the targeted population. Once financial services are shown to be successful, financial institutions will gradually take ownership. Similarly, financial education activities will be handed over to actors such as farmer organizations and financial institutions. Alongside this, private companies and investors that are willing to operate in the area and provide services and equipment will be stimulated and connected to financial service providers that will eventually be able to provide relevant finance.

Small local capital market: Rwanda's capital market is relatively weak, with low levels of direct investment and overall negative net investment on the capital accounts. Attracting investment to the country and building up capital is a priority. The beneficiaries of GCF concessionality in this regard are farmers and households, private enterprises, government agencies and staff. As described in Component 2, GCF grant financing will help to crowd-in increased private capital.

Need for strengthening implementation capacity: The financial and human capacity to implement the initiatives planned is lacking and needs urgent strengthening. District Forest Management Plans are gradually emerging but have no funding, and there is a generally low level of skills and knowledge regarding environmental management and economics.

Taking these points into account the concessionality that the GCF provides is justified.

The detailed economic analysis and assumptions are presented in Annex 3.

B.6. Exit strategy and sustainability (max. 500 words, approximately 1 page)

How the project/programme sustainability will be ensured in the long run

The project's exit and sustainability strategy are formulated on the integration of the landscape restoration and management approaches into existing government plans and structures as well as within SMEs, agribusinesses and value chains for climate resilient agricultural and tree products. The project establishes the enabling conditions necessary for long-term reduction in climate and non-climate related stressors to livelihoods and food security and reduces risks for investment in land restoration, forestry and agro-forestry. Empowering national and local stakeholders and institutions to maintain these measures beyond the conclusion of the project is also an essential element to the project exit strategy. Empowerment is achieved technically and financially by generating access to markets and finances, enhancing financial inclusion and access to responsible finance and private investments and enhancing climate resilience in value chains for agricultural and tree products. Thus, the project sets the basis for climate resilient and adaptive economic development in the Eastern Province, which will in turn further enhance revenue generation and attract investments beyond the scope of the project. For full details of the projects exit strategy refer to section 8, Annex 3.

The project ensures that the sustainability of the interventions is feasible beyond the GCF resources through the following transformative actions:

Environmental sustainability

The basis for sustainable livelihood and food security outcomes rests upon the project's overall transformation of the biophysical conditions of the drought-degraded Eastern Province into climate-resilient ecosystems and communities through a shift towards best forestry, silvopastoral and agroforestry practices. In the long-term, the project's interventions will contribute to the resilience of ecosystems to climate change by supporting water and soil protection while contributing to plant and soil carbon sequestration, soil nutrient retention, provision of essential resources such as livestock fodder, fruits, and fuel wood for sustainable cooking energy and construction materials (through Outputs 1.1-1.5). Establishing long-term legal structures and capacity (under component 3) to maintain biophysical sustainability over time will ensure adaptation measures are sustained by each involved party (farmers, local authorities, sector extensionists and researchers) under Component 1 (see section 6 and 8 of the Feasibility Study). This GCF funded project will be critical for ensuring the sustainability of all investments in the Eastern Province as it will restore forests and land ecosystems that are critical for water supply and agriculture development. Through its component 1 and the restoration activities supported by the GCF, this project will make all projects related to agriculture development and/or water management and supply such as the ones funded by the World Bank Global Food Security Programme and the MINAGRI irrigation

development project resilient to climate change. Without this project, these initiatives will still be facing a substantial risk related to climate change and variability, translated into limited capacity to cope with projected increased droughts in particular.

Policy, regulatory and institutional capacity

The key to maintaining and scaling up the transformative change established by project is the development of the institutional capacity of stakeholders and institutions, particularly RFA as a lead executing entity to implement the green growth strategy and ensure country ownership. Transformational change is maintained by addressing weak institutional capacity and coordination to develop and implement climate risk-informed landscape management strategies. Increased knowledge on biophysically sustainable practices developed under Component 1 and 3 mean stakeholders can maintain protection of land and resources and support climate adaptation in land planning and management. The project achieves this through 1) supporting a gender-responsive climate resilience for coordinated cross-sectoral planning and community landscape restoration plans under Output 3.1, and 2) facilitating and encouraging networking under Component 2. A focus on knowledge management through demonstrations, monitoring, and evaluation across the project activities informs the implementation of current and future adaptation efforts. The project integrates climate resilience metrics into district development strategies and annual performance contracts and harmonize cross-sectoral monitoring and reporting mechanisms. These activities are instrumental to ensure that lessons learned, and best practices are shared in a manner that will inform and foster the scaling up of best practice of landscape restoration activities of component 1. Overall, these activities will lead to a systematic consideration of climate change risks and adaptation in policy planning that will be sustained beyond the project duration through increased capacity of stakeholders.

In particular, the project's Forest Landscape Restoration monitoring system is aligned with and will build on two existing monitoring systems: the District Forest monitoring information system (DFMIS) which has already been developed and now operational, and the National Forest Monitoring information System which is connected with the District one. Both IUCN and ENABEL have supported building the two system, including defining indicators that are in line with LDN targets and will coordinate with other international commitments as well including NDCs forest and agroforestry related targets. The Restoration Barometer will help combine the biophysical data collected under DFMIS and NFMIS, add the finance and socio economic indicators to provide a robust monitoring which will also enable strengthening both district and national forest monitoring systems. Integrating this capability into existing Government systems will contribute to the long-term sustainability of project outcomes and national scaling.

Financial sustainability

Strengthening responsible investments in value chains for climate resilient agricultural and tree products and associated enterprises is critical for incentivizing the establishment and management of agro-ecological systems and their continued management. Access to innovative finance products specifically designed for rainfed, agroforestry and silvopastoral systems is crucial, as it is for climate resilient practices in mainstream agricultural production. The project supports financial sustainability through three pillars, with value chain actors such as farmers, FFPOs and small- and medium-scale processors benefiting from: (i) building capacities for business administration, development of business/investment cases and their implementation (Output 2.2); (ii) training and support for developing basic financial and accounting literacy for financially viable FFPOs and MSMEs (Output 2.3); and (iii) facilitation of linkages with public and private providers of financial services and impact investors for implementing viable business/investment cases (interface between Outputs 2.2 and 2.3). Investment in restoration efforts through grant mechanisms provides for seed capital in the critical start-up phase, so farmers and FFPOs are incentivized to engage in climate resilient agroforestry/forestry activities which have higher profitability compared to BAU over the medium and long-term (see comparative financial feasibility of sub-activities in 1.1 to 1.5). Grant-based investments in the establishment of agro-ecological systems and critical infrastructure for FFPOs and other SMEs in the initial project phase will be succeeded by leveraging responsible investments through innovative financial products developed with financial service providers and investors under Output 2.3. This will ensure financial sustainability and support access to finance needed for restoration activities initiated under Output 1.1-1.4 and dissemination of ICS under Output 1.5.

It is important to note that the project does not directly support cookstove manufacturers under Output 1.5. The ICS sector in Rwanda has benefitted from several technical and financial cooperation initiatives and there exist several viable business models for ICS entrepreneurs. Instead, Output 1.5 supports the sector by stimulating demand amongst participating farmers. Output 1.5 will be linked to Activity 2.3.1 under the financial services development and the groups will be supported in savings mobilization and access to other types of financial services including loans for expanding and rolling out the use of cookstoves. This will contribute to sustainability beyond the initial subsidy period. Similarly, viable business practices and models of successful value chain development under Output 2.2 will be scaled to the national level by interacting with value chain actors and service providers beyond Eastern Rwanda. Countrywide dissemination of the innovative financial products developed and tested under Output 2.3

lessons learned will feed into dissemination efforts to ensure eventually availability at national level and emphasize scaling and paradigm shift throughout the financial sector and scale up the level of investment in climate resilient agroforestry, silvopastoral and forestry practices and associated value chains. The project will ensure that MFIs have relevant financing mechanisms supporting the envisaged value chains by targeting smallholders and relevant value chain actors in the Eastern Province.

Social sustainability

The project's interventions will directly enhance the climate resilience of farming communities and thus contribute to lasting transformative change. Private sector resources will be leveraged to partake and invest in long-term gender responsive climate-smart agriculture, sustainable management of forest and tree resources, and improved cook stove interventions through inclusive value chain and market-based approaches. Value chain actors (including women, youth and disadvantaged groups and micro, small and medium enterprises) will be trained (including training of trainers), empowered, rewarded and incentivized through systems established during the project lifetime and maintained beyond to protect and improve their productive natural (land, soil, water, forest, rivers, marine) and other assets whilst generating ecosystem services for the local community and reducing local pollution and GHG emissions. World Vision's (WV) Citizen Voice and Action (CVA) social accountability methodology is an effective way to transform dialogue between communities and government into improved services. As a delivery partner for this project WV will employ this methodology and will maintain it beyond the scope of the project. Smallholders are determinant stakeholders in the Eastern Province and their resilience is critical to maintain livelihoods. This project will ensure that smallholders' livelihoods, which are the main suppliers of the value chains in the EP, will be made more adaptive and resilient to climate change.

C. FINANCING INFORMATION						
C.1. Total financing						
(a) Requested GCF funding (i + ii + iii + iv + v + vi + vii)		Total amount			Currency	
		33,783,755			Options	
GCF financial instrument		Amount	Tenor	Grace period	Pricing	
(i)	Senior loans	Enter amount	Enter years	Enter years	Enter %	
(ii)	Subordinated loans	Enter amount	Enter years	Enter years	Enter %	
(iii)	Equity	Enter amount	Enter years		Enter % equity return	
(iv)	Guarantees	Enter amount				
(v)	Reimbursable grants	Enter amount				
(vi)	Grants	33,783,755				
(vii)	Results-based payments	Enter amount				
(b) Co-financing information		Total amount			Currency	
		15,839,042			million USD (\$)	
Name of institution		Financial instrument	Amount	Currency	Tenor & grace	Pricing
Enabel		Grant	1.030	million USD (\$)	Enter years Enter years	Enter%
IUCN		Grant	3.456	million USD (\$)	Enter years Enter years	Enter%
Government of Rwanda		In kind	10.625	million USD (\$)	Enter years Enter years	Enter%
ICRAF		In kind	0.727	million USD (\$)	Enter years Enter years	Enter%
(c) Total financing (c) = (a)+(b)		Amount			Currency	
		49,622,797			million USD (\$)	
(d) Other financing arrangements and contributions (max. 250 words, approximately 0.5 page)		<p>Please explain if any of the financing parties including the AE would benefit from any type of guarantee (e.g. sovereign guarantee, MIGA guarantee).</p> <p>NA</p> <p>Please also explain other contributions such as in-kind contributions including tax exemptions and contributions of assets.</p> <p>The Government of Rwanda is providing in-kind financing via the Ministry of Agriculture and the Rwanda Forestry Authority. These government agencies have committed to second staff to the project in support of implementation across Components 1-3, as reflected in the detailed activity budget. Activities performed by Government staff will be additional to their normal responsibilities, which will be deferred or undertaken by other people.</p>				
		<p>IUCN and ICRAF are providing a combination of grants and in-kind financing in support of the project. Both institutions have made a commitment to second staff to the project in support of implementation, mainly across Component 1, as reflected in the detailed activity budget. Activities performed by ICRAF and IUCN staff will be additional to their normal responsibilities, which will be deferred or undertaken by other people.</p>				

C.2. Financing by component

Please provide an estimate of the total cost per component and output as outlined in section B.3. above and disaggregate by source of financing. More than one co-financing institution can fund a single component or output. Provide the summarised cost estimates in the table below and the detailed budget plan as annex 4.

Component	Output	Indicative cost Options	GCF financing		Co-financing		
			Amount Options	Financial Instrument	Amount Options	Financial Instrument	Name of Institutions
Component 1	Output 1.1	7,373,365	4,303,588	Grant	3,069,777	Grant	GoR RWFA/ ICRAF / IUCN
	Output 1.2	11,955,528	7,220,651	Grant	4,734,876	Grant	GoR / IUCN
	Output 1.3	2,368,400	1,859,900	Grant	508,500	Grant	GoR / ICRAF
	Output 1.4	2,309,729	2,262,359	Grant	47,370	Grant	GoR / IUCN
	Output 1.5	5,678,429	5,652,353	Grant	26,076	Grant	GoR
Component 2	Output 2.1	1,253,766	1,129,113	Grant	124,653	Grant	GoR
	Output 2.2	4,397,513	2,784,167	Grant	1,613,346	Grant	GoR / ICRAF
	Output 2.3	3,866,829	2,563,506	Grant	1,303,323	Grant	GoR
Component 3	Output 3.1	1,256,270	1,256,270	Grant	-	Grant	
	Output 3.2	126,115	126,115	Grant	-	Grant	
	Output 3.3	3,906,772	2,367,561	Grant	1,539,211	Grant	GoR / ICRAF
	Output 3.4	2,649,210	650,000	N/A	1,999,210	Grant	Enabel / IUCN
PMC		2,480,871	1,608,172	Grant	872,700	Grant	IUCN
Indicative total cost (USD)		49,622,797	33,783,755		15,839,042		

This table should match the one presented in the term sheet and be consistent with information presented in other annexes including the detailed budget plan and implementation timetable.

C.3 Capacity building and technology development/transfer (max. 250 words, approximately 0.5 page)

C.3.1 Does GCF funding finance capacity building activities? Yes No

C.3.2. Does GCF funding finance technology development/transfer? Yes No

If the project/programme is expected to support capacity building and technology development/transfer, please provide a brief description of these activities and quantify the total requested GCF funding amount for these activities, to the extent possible.

The project will support a range of capacity building activities. Capacity building at all governance levels is central for achieving Outcome 3 to enhance climate adaptation in national and sectoral strategies creating an enabling

environment for long-term and sustainable adaptation project results and beyond. Objective 3 is targeted to address the specific capacity gaps including limited knowledge outlined in Annex 2 – Feasibility Study. Capacity development measures include workshops to identify and integrate climate resilience metrics into district development strategies and performance contracts and monthly round tables to facilitate the collaboration for adaptation actions between institutions.

Training includes sessions at central and district level, to enhance capacities for funding mobilization, planning, and delivery of climate adaptation actions. Cross sectoral teams of technicians will also be trained to become landscape restoration planners and managers. Trainings will be provided for managing information systems and integrating climate-related aspects, Multi-agency working groups will be trained on seed-seedlings and climate adaptation.

Training combined with technical assistance will also be provided to develop the capacity of district authorities in 7 targeted areas for landscape restoration plans with climate resilience protocols / technical packages at the district level. Technical assistance includes capacity building for the design and implementation of a cross-sectoral monitoring and reporting and collaborating with communities to define priority criteria and select primary target intervention areas to restore ecological functionality.

The project supports a variety of ICS technology interventions. Under Component 1, the project will work to address simultaneously four challenges related to more efficient cooking in Eastern Province (EP): (1) need to use higher efficiency stoves, (2) need to use cleaner / more efficient fuels, (3) need to improve stove and fuel affordability, (4) need for policies and regulations enforcing a shift to clean / efficient ICS and fuels. Each proposed ICS technology will be tested and supported to further improve efficiency before being sponsored for household adoption. Under Component 3, technology development will be supported through training local artisans and small-scale business entrepreneurs as well as a small start-up advance to the local ICS producers for equipment purchase to design and adapt ICS models. The project will also establish “Cooking fuel and technology” hubs in 14 main local markets of TREPA intervention area. Under Component 3, the project will establish a large-scale experiment in participatory development that emphasises **local technology** based on farmer-led testing of agroforestry options, where farmers themselves select agroforestry technologies, implement the field tests and assume responsibility for disseminating the results locally.

The total requested GCF funding for capacity building is approximately 4.9 million USD and technology development / transfer is 5.6 million USD.

D. EXPECTED PERFORMANCE AGAINST INVESTMENT CRITERIA

This section refers to the performance of the project/programme against the investment criteria as set out in the GCF's [Initial Investment Framework](#).

D.1. Impact potential (max. 500 words, approximately 1 page)

The proposed GCF project contributes to increased climate-resilient sustainable development. More specifically, the project seeks to reduce the exposure of Rwanda's Eastern Province to the impacts of extreme weather events (including intensified drought and flooding) due to climate change which results in the reduction of crop and woodlot yields and crop losses (especially for smallholder farmers), which are exacerbated in areas exposed to degradation due to inadequate agro-silvicultural practices and high pressure on tree resources. For high adaptation impact to be achieved, it is essential to ensure ecosystem resilience where soil conservation, water regulation and other services are rehabilitated and sustained. Therefore, the project promotes suitable landscape practices that restore tree and forest services, ensure long-term soil protection and improve organic matter cycle to sustain the capture and regulation water flows under the climate scenarios (Section B.1), both in the rainy season (through infiltration and recharge of aquifers) and in the dry season (through a gradual release of stored water in soil and aquifers).

The project prioritizes gender-sensitive measures to address the adaptation needs of small farmers / woodlot growers-who have limited access to markets, financial instruments, agricultural and climate technological advice and who suffer from poor basic infrastructure. The project will benefit directly 556,252 people (4.4% of the national population and 18.2% of the population in the target area), of which over 50% are women. Around 1,364,185 people are expected to benefit indirectly (10.8% of the national population). The total project beneficiaries (both direct and indirect) will be 1,920,710 (15.2% of the national population). The beneficiaries of the project will be smallholder farmers and woodlot growers living in the Eastern Province (see methodology for selection of beneficiaries in section 6 of the Feasibility Study). Women will be a significant part of the project beneficiaries considering their important role in rural agriculture. The gender assessment and gender action plan describes how all project activities have been designed considering the differing roles played and challenges faced by women and girls in the project area.

The project has been designed to deliver on the adaptation goals set out in Rwanda's NDC and to contribute to three of the GCF's adaptation results areas:

- GCF adaptation results area 1 (A1) – Increased resilience of vulnerable people, communities and regions: The project will develop actions in strategic agroecosystems that will not only support the restoration of ecosystem services for regulation of the hydrological cycle but will also generate income and improve the livelihoods of prioritized communities. In support of these actions, FFPOs, considering gender mainstreaming, will be organised and strengthened to increase their capacity to access extension services, finance and markets. The project will ensure that government extension service providers have the knowledge and tools to deal with the effects of climate change. A microfinance lending mechanism will be developed (Outcome 2), which will allow farmers to have funds to develop forestry, agricultural, agroforestry and conservation activities through which ecosystems and livelihoods resilience will be promoted. These interventions will increase the resilience of 75,000 smallholder farmer families (556,252 people) in the Eastern Province against drought and floods. Of this total, an estimated 200,000 people are adult women, who tend to be more vulnerable than men.
- GCF adaptation results area 2 (A2) - Health and well-being, and food and water security: The project will improve food and water security by supporting climate resilient agricultural and livestock practices that are less susceptible to extreme weather events. Furthermore, agroforestry, forest management, silvopastoral and other interventions will contribute to improved water security by decreasing runoff and enhancing infiltration during rainy periods, and conserving groundwater and soil moisture during dry periods.
- GCF adaptation results area 4 (A4) – Increased resilience of ecosystem and ecosystem services: The project will have a positive impact to improving ecosystems and restoring/sustaining their services, particularly the soil conservation and the regulation of hydrological cycle by promoting landscape restoration activities (agroforestry, silvopastoral activities, woodlot restoration). The project will contribute altogether to the restoration of **99,345ha** ha. Such restoration actions from the project will reduce erosion, decrease loss of soil organic matter, and thus increased water infiltration rate, which increases water recharge.

Table 8 shows how the expected adaptation impacts from the TREPA project contribute to the achievement of the GCF Core Impact Indicators for Adaptation. The methodology for calculating the impact indicators is described in Section 6.4 of the Feasibility Study.

Table 8. GCF Core impact indicators and expected adaptation impacts from TREPA project.

GCF Core Impact Indicators for Adaptation	Expected adaptation impacts from TREPA project
<p><i>Expected total number of direct and indirect beneficiaries, disaggregated by gender (reduced vulnerability or increased resilience);</i></p> <p><i>Number of beneficiaries relative to total population, disaggregated by gender (adaptation only)</i></p>	<p>Direct beneficiaries 556,252 people direct beneficiaries in the target Eastern Province (18.2% of total EP population, 4.4% of Rwanda’s population) become climate resilient through adoption of improved and transformative agroforestry, woodlot and tree plantation, silvopastoral, protective restoration practices and other practices that increase, sustain and diversify their incomes and livelihood strategies (50% women).</p> <ul style="list-style-type: none"> - 260,000 people will directly benefit from enhanced financial inclusion and access for climate resilient investments (60% women), 95,000 households. <p>Indirect beneficiaries:</p> <ul style="list-style-type: none"> - 664,057 people in the target Eastern Province and 700,129 in the rest of Rwanda (total 1,364,185, 10.8% of total population) will benefit indirectly. - Total beneficiaries in Eastern Province including direct and indirect are 1,220,582 or 40% of the target region population. <p>Other adaptation benefits:</p> <ul style="list-style-type: none"> - Approximately 69,185ha will benefit from grants for productive and restoration activities directed toward water and food security - 40,150 ha of agroforestry systems will provide improved hydrological services - Restored 700 ha district forest, 700 ha degraded state forests and 6,545 ha in private woodlot contribute to climate resilient supply of wood

The TREPA project will also contribute to the following GCF outcomes:

GCF Outcome (A5): Engaging with Rwandan institutions as implementing partners (*Outcome 3*), will enhance their capacity to mainstream and implement climate adaptation in cross-sectoral policy frameworks and create enabling conditions for upscaling of climate resilient practices.

GCF Outcome A7: Through integrating climate variables and market information into decision making tools (*Outcome 2*) and making these widely available for smallholder farmers, the use of climate information for decision making will be more effective and the capacities at community, municipal and national level will be strengthened for the planning and implementation of climate resilient practices and technologies.

GCF Outcome A8: The projects activities around capacity building (*Outcome 1*); establishment of agricultural associations (*Outcome 2*); and enhancement of District landscape restoration opportunities assessments (*Outcome 3*) will enable beneficiaries to understand the threats and risks posed by climate change, as well as the strategies that can be followed to reduce these risks. Beneficiaries will also gain insights into how climate change and variability threaten their livelihoods, and will gain access to climate resilient management practices, and more timely information and warnings.

While the project focuses on adaptation, the intervention will bring additional impact and co-benefits via carbon sequestration from tree/forest resources restored under Outputs 1.1 to 1.4 and GHG emission reduction from ICS delivered under Output 1.5.

D.2. Paradigm shift potential (max. 500 words, approximately 1 page)

A comprehensive transformation of natural resource management is required to ensure a future in which resilient ecosystems support adaptive livelihoods. The GCF project will lead to a paradigm shift in natural resource management away from reliance on degraded ecosystems that are highly sensitive to climate risks and affect production systems of smallholder farmers. The approach to developing value chains for climate resilient agricultural and tree products, developing innovative finance products and services, and leveraging responsible public and private investments, combined with comprehensive management and implementation shifts across the project’s three components, will result in restoration of healthy landscapes and agro-ecological systems, which support climate resilient production, food security and employment and income opportunities for smallholder farmers, and benefits of climate resilience for all primary beneficiaries and society at large. The program will also stimulate a paradigm shift in financing agriculture and side by side with forest landscape restoration by introducing a wider variety of financial products and tools to measure climate risk impacts at the financial service providers’ level. The targeted GCF funding will reinforce landscape transformation in the most vulnerable province of Rwanda (Eastern Province) to achieve climate resilience of agro-ecosystems and farmers affected by extreme weather events induced by climate change, and overall land degradation. In support of transformative change, the project creates enabling environment conditions for achievement and

replication of the adaptation and climate resiliency targets set out in Rwanda's NDC, National Strategy for Climate Change and Low-Carbon Development - Green Growth and Climate Resilience (see section D.5).

Short- (1-3 years), medium- (3-10 years) and long-term (10 years an onward) changes, during or after project implementation, that will expand the project's scope and impact without increasing its costs are presented below.

Contribution to enabling environments: The targeted interventions are proven and validated measures (see section 7 of the Feasibility Study) that contribute to enabling environment for climate resilience through systematically addressing information, technical, financial, social and institutional barriers that prevent a transition from conventional land management to climate resilient land management and landscape restoration. Addressing these barriers (as demonstrated in the project's ToC, see Section B.2) will improve the resilience of local production systems, increase the capacity of ecosystems to provide hydrological regulation services and improve cross-sectoral coordination and local governance capacity.

Component 1 will restore the most highly degraded land during the project lifetime, while ensuring the capacity exists to continue restoration in the long term based on landscape restoration planning systematised through component 3. In the short term, component 1 provides grant investments for farmers, FFPOs and state agencies to manage more costly restoration actions to restore the most degraded land in order to make agro-forestry, forest and silvopastoral land management financially sustainable in the medium and long-term. In delivering this support component 1 also addresses barriers such as limited knowledge and skills in applying short-term and long-term climate adaptive solutions to land management practices and technologies preventing the long term transition to restored and productive landscapes. With on focus on effective management of existing poorly managed forests including establishing new markets and long-term buyer relations, the project secures long-term contracting of 10,000ha state owned forests. Given the project's focus on long-term agroforestry, landscape restoration and silvopastoralism activities, the 20-year investment lifetime is considered most appropriate for this analysis and shows favourable returns for farmers and FFPOs while at the same time generating robust medium and long-term economic benefits from a societal perspective.

The project supports a paradigm shift in the way future climate resilience interventions are developed, sustained and financed. Value chain actors, including individual farmers and FFPOs will be supported in becoming better organised and informed (Output 2.1) and in building capacities for business administration, the development of business/ investment cases, attracting finance for their implementation, and ensuring economic and financial viability of resilience measures in their businesses/business (Outputs 2.2 and 2.3). A key element of this paradigm shift is supporting microfinance institutions to include improved agroforestry and land management practices in their mainstream agri-loans assessment, and incentivize farmers to employ these methods. The innovations include: 1) a combination of short term and longer term financing for FLR, 2) introduction of climate sensitive risk monitoring systems in agri-lending, 3) new loan products for value chains that address climate impact and value chain actors with clear commitment to climate action, 4) improved digital links for lending and climate information, and 5) adequate tools for risk mitigation.

Farmers and FFPOs will then be linked to suitable financial products and services (Output 2.3). Component 2 ensures that in the long-term, farmers and FFPOs can both diversify livelihoods through gender inclusive agricultural value chains and have the financial resources required to add value to the agricultural and tree products derived from landscape restoration activities as a means to improve adaptive capacity to climate shocks and loss of income induced by impacts such as prolonged drought and floods. Interventions will enhance the long-term sustainability and economic viability of the project by improving farmer and FFPOs capital base through savings stimulation and the design and prototype testing of financial services and financial education which will stimulate access to financial services in the medium term, including savings and loans, by the targeted population. A major existing market failure that the project will remedy is limited access to long-term finance by the targeted vulnerable farmers. The initial use of grants, to be replaced gradually by private sector investments, is key to ensuring sustainability and scalability of the investments. As such, activities in component 2 are expected to mobilize approx. USD 10M of lending by local financial intermediaries during the project lifetime. Once financial services are shown to be successful, financial institutions will gradually take ownership. Similarly, financial education activities will be handed over to actors such as farmer organizations and financial institutions. Alongside this, private companies and investors that are willing to operate in the area and provide services and equipment will be stimulated and connected to financial service providers that will eventually be able to provide relevant finance well beyond GCF financial exit. Furthermore,

affordable loans for the expansion of woodlot activities led by farmers and contracting cooperatives will secure long-term biomass supply while also supporting a transition to clean cooking.

Through component 3, the project also strengthens the enabling environment for implementing coordinated restoration practices to build resilience of landscapes for long-term and sustainable adaptation project results and beyond. It will do so by strengthening the collaboration and capacities of institutions at national, provincial and district levels to effectively mainstream climate resilience in a coherent and gender-responsive manner in sectoral and community restoration planning (Output 3.1).

The project is also transformative and creates enabling environments for women's participation through its focus on promoting women's equitable representation in project activities and enabling women's greater economic empowerment and participation in decision making.

Potential for scaling up and replication: The project has specific activities for 1) ensuring successful measures are documented in the most effective way and demonstrated, and 2) activities that ensure access to additional capacity, finance or knowledge in order to replicate these measures and then scale up restoration practices, agroforestry and silvopastoral systems (Outputs 1.1, 1.2. and 1.3) in other regions of Rwanda and Sub-Saharan Africa. Additional replication potential and contribution to climate-resilient development pathways consistent with national climate change adaptation strategies and plans will come from leveraging the existing resources and commitments of Rwanda institutions and policies to promote ecosystem-based approaches to adaptation and reforestation of critically- degraded lands, rural and rural areas (targeted under the National Strategy for Climate Change and Low-Carbon Development - Green Growth and Climate Resilience). The project will demonstrate how to scale-up landscape restoration practices through:

- Knowledge and success stories captured and exhibited (through various media and demonstrations) under the components 3.2 which will demonstrates short-term and long-term adaptation benefits from implementing concrete adaptation interventions at a landscape scale and conducting participatory action research to monitor, evaluate and document success factors and limitations for replication (Output 3.2 and 3.4);
- Enhancing capacities and governance, appropriately targeting and devolving responsibility, empowering through capacity and financial resources, creating incentives, knowledge management at local, regional and national levels to enable stakeholders to adopt natural resource management and targeted adaptation approaches and financial management to climate-resilient landscape planning.
- Providing financial support through innovative financial instruments that specifically target restoration actions, create a virtuous circle of sustainable investment and have a strong focus on social inclusion.

Potential for knowledge sharing and learning: The project is based on collective learning, knowledge generation and dissemination at community/FFPO, landscape and national levels. In particular, the project will appraise and improve existing knowledge and information systems at national and provincial level through the TREPA-Rep mechanism to ensure the integration of climate-related data to contribute to climate-informed decision-making, monitoring and reporting for different sectors and at all levels in order to inform a scale-up of project results (Output 3.2). *Output 3.4 will support research action that will generate new knowledge based on programs results and lessons learned.*

D.3. Sustainable development (max. 500 words, approximately 1 page)

The project is aligned with the United Nations 2030 Agenda for Sustainable Development as part of IUCN's comprehensive approach in the field. The project is aligned directly with SDGs 5, 13 and 15. Important contributions to SDGs 1, 2, 3, 5 and 10 will also be made. More specifically, the project will deliver the following co-benefits:

Environmental co-benefits

The project activities will deliver a number of specific environmental benefits that include:

- Improved soil conservation and reduction of erosion and sedimentation as a result of restoration of degraded lands;
- Increased number of native trees on farms with improved agroforestry and silvopastoral systems will improve biological connectivity;
- Improved sustainability of land management, including direct improvements in soil fertility, organic matter content as a result of agroforestry and silvopastoral climate change adaptation measures and reduced land degradation through protective measures, increased numbers of trees on farm and reductions in the use of burning agriculture;
- Improved tree cover in home gardens and river basin areas will have several interlinked environmental benefits, such as improved micro-climate, improved soil structure, and increased biodiversity;
- Stabilized slopes and buffer zones will reduce soil erosion, sedimentation and the risk of floods;

- Restored pasture landscapes will conserve more water, reducing the impact of drought and reducing moisture deficits in normal dry seasons;
- Restored pasture landscapes will provide a range of resources that are used to reinforce rangeland livelihoods, including drought coping strategies.
- Improved tree cover through restored forest plots combined with agroforestry and silvopastoral activities will increase carbon sequestration potential of plants and soils. The project is expected to sequester approximately 91,967 tCO₂e during the 6-year implementation period, and 3,206,820 tCO₂e over the 20-year project lifetime.
- Reduced enteric fermentation as a result of decreased cattle densities will reduce emissions by approximately 8,741 tCO₂e during the 6-year implementation period, and approximately 41,042 tCO₂e during the 20-year project lifetime.
- GHG emissions also will be reduced through more fuel efficient and cleaner burning improved cook stove technologies. The improved cook stove activity is expected to yield cumulative savings of approximately 1,207,354 tCO₂e during the 6-year implementation period and 6.414.579 tCO₂e over the 20-year project lifetime.

Economic co-benefits

Several economic benefits will be derived with the introduction of restoration and sustainable land-use practices with positive effects on livelihoods in the Eastern Province, including:

- Enhanced agricultural production of 75,000 smallholder farmer families (556,252 people) and increased productivity and incomes through improved land, soil and water conditions;
- Increased rainfall infiltration in restored landscapes will recharge aquifers, contributing to increased groundwater resource availability and increased livestock productivity and health;
- Resilient production systems through adoption of climate-adaptive practices and technologies for production, processing and marketing of livestock and agricultural goods, improving producers' access to markets, and revenues generated.
- Improved grazing management in the selected landscapes will contribute to increased livestock health, productivity, survival rates and post-drought recovery;
- Farmers will increase incomes and investment capacity as a result of direct access to climate adapted financial instruments designed under Output 2.3 and implemented by selected financial institutions. Working with farmer cooperatives with existing infrastructure, networks and linkages to local and domestic markets will bring opportunities to engage with value chains and add value to existing products.
- Sustainable forest management practices will increase drastically forest productivity and the incomes of landowners (approximately 6,490 families), while increasing the supply capacity of woody biomass, particularly for cooking fuel used by rural households
- Use of Improved Cooking Stove and efficient biomass fuel will reduce households' monthly expenditure for cooking, will reduce the time for wood collection (saving time for other income/educational activities), and critically will reduce the overall demand pressure on the available wood resource (avoiding soaring prices on market);
- Create direct and indirect employment opportunities, which will benefit approximately 75,000 families and stimulate the local economy.

Social co-benefits

Social benefits will be delivered throughout the project activities and include:

- Awareness will be raised about climate change effects and adaptation in 556,252 people living in the Eastern Province;
- Deliver capacity building to approximately 150,000 people, with at least 50% representation of women, in a wide range of topics aimed at increasing ecosystem and social resilience;
- Create significant social capital through co-designing and co-managing a range of adaptation strategies. The project will indirectly promote social cohesiveness among villages in the target areas;
- Additionally, the project will result in health and nutritional improvement for 126,483 families (556,252 people);
- Increase in crop diversity will reduce exposure of 100,000 families (440,000 people) to the risks of climate change-related crop failure.
- Farmers will benefit from increased social cohesion created through working into association/cooperative establishing joint saving and landing system

Gender-sensitive development impact

The project will result in positive outcomes related to access to resources, improved livelihoods, and income generation opportunity and capacity for women through various project interventions. With support from a dedicated gender specialist the project will engage women in project planning, investment and decision making from the start. Gender

benefits include partnerships with the private sector and stimulus programs targeting women, youth and marginalized groups, which will help build resilience of these groups along value chains. With opportunities to generate additional income, women will be more likely to respond to incentives that address their family's basic needs, such as better health and nutrition, linking to agriculture and food security improvements. Women will benefit from training and educational activities related to climate change, agriculture, water management, leadership, entrepreneurship and decision making. More information on gender-sensitive impacts can be found in Annex 8.

D.4. Needs of recipient (max. 500 words, approximately 1 page)

Vulnerability of the country and/or specific vulnerable groups, including gender aspects

With a population density of 470.6 per km² and an annual population growth rate of 2.7%, Rwanda is one of the most densely populated countries in Africa (in comparison to mean population densities in Eastern Africa - 59.2 per km², respectively) as of 2015.¹¹⁰ Eastern Province is one of the most highly populated areas of the country (24.7% of total population).¹¹¹ This zone is one of the most threatened by climate change in the country due to both environmental conditions and social vulnerability. The province has the high rates of poverty (36.5%) and food insecurity (16.2% of households are food insecure).¹¹² Smallholder farmers rely on family labour and have limited access to the human, physical and financial resources required for adaptation. More than 80% of rural households own less than 1 ha of land which, in combination with the outlined factors leads to significant food insecurity.¹¹³

In the project area, women are particularly vulnerable as they traditionally manage household water and family gardens and are thus on the frontline of managing and face the impacts of reduced water availability and crop failure. This poses threats to family food security, particularly for women headed households and especially in periods of prolonged droughts. Further information regarding women's vulnerability to climate change is presented in Annex 8.

As mentioned in section B1, the country's most exposed areas to drought are in the Eastern Province.¹¹⁴ Vulnerable farmers in the areas targeted by the project are at greatest risk of being pushed into conditions of extreme poverty and food insecurity due to projected climate stressors, prevalent socioeconomic conditions, scarce private investment and uncoordinated governance. Land in the Eastern Province is primarily used for farming and grazing (72.3%) and only 18% of the total area is covered by forest. Due to the lack of conservation practices and poor soil management, 374,128ha (40 %) are considered very degraded due to inappropriate land management exacerbated by climate shocks. For instance in 2018, 40% of households were affected by irregular rains and drought periods which increased their food insecurity. Climate change forecasts indicate that the Eastern Province will be the region suffering greatest hydrological stress in the medium and long-term (see section B.1). Furthermore, poor management practices and loss of forest cover reduce the landscape's capacity to regulate the hydrological cycle. The baseline scenario will result in significant water scarcity as climate change affects the region in the long-term.

The project interventions have been designed to meet the needs of recipient beneficiaries to adapt to the impacts of climate change given the region's socioeconomic conditions, scarce private investment and uncoordinated governance to address. For more information on the selection methodology for beneficiaries see Section 6 of the Feasibility Study (Annex 2).

Need for strengthening institutions and implementation capacity

The gaps in coordination mechanisms are a constraint to sustainable land management through ecosystem restoration. The sectoral nature of planning and implementation in Rwanda and limited inter-institutional engagement at the regional and local levels has hindered the development of a common approach to adaptation at a landscape scale. As identified in Section 4 of the Feasibility Study (Annex 2) there are weaknesses and overlaps in the role of government institutions and the current institutional arrangement and capacity of the national and local governments, which requires strengthening to enable the adoption of a sustainable landscape management approach. Additionally, there is a shortage of institutional technical knowledge and capacity and know-how about proven climate risks and solutions. There is insufficient budget allocated from national to district government level to implement such activities in the absence of the project, furthermore, district governments have no way of self-funding given their limited income streams and budget deficits. As such the project provides the necessary technical assistance will establish the necessary conditions to ensure national ownership ensuring districts play a key role in implementing TREPA on ground both in terms of day to day engagement of community members, local mobilization, and ownership of interventions and long-term sustainability of the project. There will be project implementation team at each district mostly to manage activities.

¹¹⁰ United Nation. World Population Prospects: The 2015 Revision. Population Division. 2015. Available online: <http://esa.un.org/unpd/wpp/>

¹¹¹ see: Fourth Population and Housing Census: Main Indicators Report (Final Results)", Rwanda Population and Housing Census 2012, Kigali: National Institute of Statistics of Rwanda, p. 3, 2014,

¹¹² Reference in: <https://reliefweb.int/report/rwanda/rwanda-comprehensive-food-security-vulnerability-analysis-cfsva-2018-data-collected>

¹¹³ More than 60% of household cultivate less than 0.7ha, 50% cultivate less than 0.5ha and 30% cultivate less than 0.2ha. UNEP 2011, Rwanda: from post conflict to sustainable development.

¹¹⁴ MIDIMAR, 2015. The National Risk Atlas of Rwanda

The Lead Executing entity will be responsible for ensuring districts are fully engaged, project is integrated in the district plans and involved in its day to day monitoring of performance. Each district have a strong Agriculture and Natural resources unity with technical teams, who will be supporting the project. However, as they may be required to deliver other duties, the project will provide additional staffing needed to support implementation in close collaboration with district teams. Wherever possible the project will also work closely with local private sector and CSOs to support mobilization and education of communities in line with the project.

Absence of alternative sources of financing

Rwanda is a Least Developed Country¹¹⁵ and has one of the highest rates of inequality and one of the worst rates of poverty and malnutrition in the region (39%). Public as well as private investment is essential to overcome these problems but constrained by lack of resources. Rwanda has one of the world's lowest government revenue bases in relation to the size of its economy. A number of barriers remain to firstly attract farmers to understand the benefits of resilience measures and take appropriate measures and make investments in climate resilience and secondly access conventional commercial finance. Given this situation and that climate-responsive investment is not an urgent priority (between 2019-2020 climate change accounted for only 2% or USD 55 million of the national budget), and a lack of liquidity for small-holder farmer investments, the most vulnerable populations have few opportunities for effective adaptation.

Climate impacts are reducing the financial capacity of Rwanda to respond to its vulnerabilities; climate change is already reducing GDP by 1-2% each year¹¹⁶. While this project supports Rwanda's ambitious Green Growth plan, that plan overstretches government coffers and is inadequately funded.¹¹⁷ Likewise, the private sector ambition in Rwanda to invest in climate resilient agriculture outweighs its financial and technical capacity to do so. Despite the strong economic benefits of this project, **Rwanda's fiscal gap prevents addressing financing needs.** Rwanda, as a least developed country has a per capita GDP of less than USD 700. It had a severe balance of payments deficit on its current account of over USD 2 billion in 2018 with net borrowing at over USD 1 billion. Imports amount to almost three times the level of exports, and tax revenues are low, leaving Rwanda's fiscal capacity weak. The country is heavily dependent on international donors to finance its annual budget.

Despite significant GoR and ODA funding that has been dedicated to various forestry and adaptation interventions from 2011 to 2018 in Rwanda, the funds and the interventions themselves have been insufficient to achieve the desired progress towards transforming two million ha of deforested and degraded land into restoration by 2030 as pledged in the Bonn Challenge. A recent assessment carried out by IUCN revealed that a total of USD 530,762,526 was invested in various forestry and adaptation interventions from 2011 to 2018. Public investments represent USD 274,479,097 (51.71%) and projects co-funded by international donors and the government represent a total of USD 188,555,240 (35.61%). International donor support represents USD 67,490,843 (12.63%), whereas the contribution of the private sector and non-profit organisations was still very low – USD 237,345 (0.045%). The financial flow mapping showed that more resources were invested in the Western part of the country than in the Eastern province¹¹⁸. This reflect more funding directed towards floods and landslides management than in drought resilience in the East. The solicited funds from GCF in this TREPA project will be completely invested in the Eastern Province which is the least funded despite being the most degraded and most vulnerable to drought exacerbated by climate change.

Despite the significant level of GoR, ODA and other international finance for forestry and adaptation projects in Rwanda, none are considered to systematically address the financial barriers that would enable/leverage large scale private capital investment necessary for sustainable non-grant dependent ecosystem and forest landscape restoration in the Eastern Province. Existing interventions fail to address the financial capacity gaps of FFPOs to support restoration measures, ensuring income can be directly re-invested in forestry and agricultural practices aiming to increase resilience through private capital. Likewise, these interventions fail to adequately map and consider climate change risks and integrate these in community-led landscape level management planning. Nor do these interventions target necessary adaptation measures across agriculture or forestry value chains which are necessary to support private sector led landscape restoration. In addition to targeted community led investments in agroforestry, silvopastoral and forestry landscape restoration measures in drought prone and degraded areas, TREPA addresses these issues through proposing financial capacity development, innovative financing mechanisms and value chain approaches to bridge the

¹¹⁵ World Bank, 2019. Country classification per income. URL: <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>

¹¹⁶ SEI, Economics of Climate Change in Rwanda (2009), Kigali. Rwanda.

¹¹⁷ Domestic revenues do not sufficiently support the national budget making it difficult for Rwanda to make sufficient investment in the implementation of the Green Growth Strategy due to multiple competing priorities. For example, the 2019/20 budget is FRW2,876.9 bn whereas the domestic revenue (including domestic financing) is assumed to only contribute 68% of the budget see: <https://www.pwc.com/rw/en/pdf/rwanda-budget-analysis-2019-20.pdf>

¹¹⁸ https://www.iucn.org/sites/dev/files/content/documents/second_bonn_challenge_progress_report_-_application_of_the_barometer_in_2018.pdf

gap and ensure the sustainability of the programme, achieving a paradigm shift towards private led investment in adaptation and landscape restoration.

The national Forestry Sector Strategic Plan projected a five year action plan and required budget of about USD 68 million (approx. USD 13.6M per each fiscal year) would be needed for transforming very degraded forest areas to sustainable private sector led concession management from 2018 to 2023. The situation is not expected to improve as ODA partners are reducing their contributions to the sector. For the next five years (2021-2025), investments so far committed by ODA partners and international funds (including ongoing GEF and GCF funding) specifically for forest landscape restoration amount to only USD 8.4 million (USD 1.6M per year), at minimum a deficit of approximately USD 11 million per year. Therefore, the financial gaps between ongoing/actual and the estimated targeted/necessary investments in forests and agroforestry restoration do not address ongoing degradation of the forest and agricultural landscapes. The estimated economic impact of forest resources degradation is estimated at USD 278 million per year.

The COVID-19 pandemic has added to the challenges faced by the Rwandan economy, with GDP growth projected to contract by 0.2 percent in 2020 before recovering to 5.7 percent in 2021. The spending needs as a result of the authorities' policy measures in response to the pandemic coupled with revenue underperformance due to the crisis have led to an expected fiscal deficit of 8.5 percent of GDP in FY2020/21, with public debt projected at 67 percent of GDP at end-2020.¹¹⁹ Under the baseline, debt will remain sustainable with a moderate risk of debt distress. Given this risk, a limit on the present value of new external public and publicly guaranteed debt is introduced to preserve debt sustainability.

While project partners are contributing co-finance for the implementation of the project, this represents only a fraction of the resources required for implementation. The project cannot be accomplished without GCF support.

D.5. Country ownership (max. 500 words, approximately 1 page)

The project builds on Rwanda's national priorities for low-emission and climate-resilient development. The project targets national climate development priorities and has been designed to align with national strategies and policies.

Rwanda has one of the most advanced climate policy frameworks in Africa. It published a National Strategy for Climate Change and Low Carbon Development in 2011 and has an operational climate fund (FONERWA). The country also has a Strategic Programme for Climate Resilience (2017) published by the Ministry of Environment. Both strategies target the development of agricultural markets for climate resilient products that have specifically informed the design of the credit, savings and value chain resilience activities under Component 2. The National Economic Development and Poverty Reduction Strategy and the associated Sector and District Plans have mainstreamed environment policy and there are explicit climate resilience/mitigation indicators in the budget (DFID and DGIS, 2016) to which the project will contribute. The National Strategy for Transformation 2017-2024 (NST1) also targets to increase resilience to climate change through forest landscape restoration targeted under component 1. The Government has demonstrated its commitment to address land degradation in supporting legislation; and its intent to contribute to global efforts to mitigate GHG emissions through forest carbon sequestration. In 2011, Rwanda was the first country in Africa to commit to a restoration target of degraded lands and forests under the Bonn Challenge, pledging to restore 2million ha, corresponding to 76% of the country. A Forest Landscape Restoration Opportunity Assessment for Rwanda was prepared in 2014 (Ministry of Natural Resources, 2014). That assessment identified approximately 2.25 million hectares of land and freshwater resources in Rwanda that could directly benefit from forest landscape restoration, including agroforestry on steep sloping land, agroforestry on flat or gently sloping land including rangelands and pasture, improved silviculture and rehabilitation of poorly managed woodlots and plantations, protection and restoration of forests around protected areas, and establishment or improvement of protective forests on sensitive sites including riparian zones and wetland buffer zones. These opportunities are well-aligned with the activities to be undertaken by the TREPA project.

Rwanda has an extensive policy framework in terms of its climate strategy, guided by its Green Growth Strategy and supported by policies such as: the Five Year Strategic Plan for the Environment and Natural Resources Sector; Rwanda Biodiversity policy; National Land Policy; Forest Policy; Rwanda national agroforestry strategic plan; the Integrated Water Resources Management policy; and the National Environment and Climate Change Policy (2018). The interventions proposed for this project will contribute to 8 of the 14 programmes of action in the Rwanda national plan for Green Growth and Climate Resilience, National Strategy for Climate Change and Low Carbon Development (2011).

The project will support implementation of the Green Growth and Climate Resilient Strategy (GGCRS) which aims at achieving a climate-resilient and low-carbon economy by 2050. The proposed interventions will also support implementation of the Rwanda National Strategy for Transformation –NST1 (2017-2022) and Strategic Plans for the Transformation of Agriculture 4 (PSTA4). The project supports the strategies to put into practice the updated National

¹¹⁹ IMF Country Report No. 21/1, Rwanda: Third review under the policy coordination instrument (2021), Washington D.C.

Agriculture Policy with a vision of having a productive, green and market-led agriculture sector. The project targets directly the four key pillars of the PSTA4 creating: 1) enabling environment & responsive institutions, 2) productive and inclusive markets and value addition, 3) Increased productivity, diversity, sustainability and resilience of agricultural production 4) research, innovation and empowerment. The project has also worked with the Ministry of Environment (MoE) in partnership with national stakeholders, to align the project with the revised Environment and Climate Change Policy approved by the Cabinet on 7 June 2019. The updated policy contains a number of new provisions to better align it with Rwanda's overarching medium-term National Strategy for Transformation, long-term Vision 2050 as well as multilateral commitments including the EAC Vision 2050, African Union Agenda 2063 and the Sustainable Development Goals. The project ensures that the 2019 policy is adhered to supports national development goals, particularly in green growth, climate resilience, and the sustainable management and consumption of natural resources outlined in Rwanda's NDC, National Strategy for Climate Change and Low-Carbon Development - Green Growth and Climate Resilience documents.

Government agencies such as Rwanda Forestry Authority (RFA), Rwanda Natural Resources Authority (RNRA), Rwanda Environment Management Authority (REMA) will maintain strong ownership and support activities under component 1 as aligned with their mandates and the aforementioned plans and strategies.

The project is deeply aligned with the goals and targets of the recent Rwanda National Forestry Policy 2018 the Forest Sector Strategic Plan 2017-2022 (FSSP) and National Forest Management Plan 2017-2026 (NFMP) all reflecting the government's intentions and projects support to address climate change impacts and mitigation targets by improving forest management in collaboration with the private sector. The country has reached 30.4% of forest cover, nevertheless, the density of these areas is still very low and productivity is suboptimal. Major efforts will be directed towards reconversion of old forests and enrichment. Tree diversity is also another challenge as more than 70% of forest plantations are eucalyptus. The project will contribute to these efforts by directly resulting in 40,000 ha agroforestry, 10,700 ha for forests, 6,545 ha for woodlots. The project also contributes to the achievement of the 18.7% target of the reforested land area allocated to satisfy the needs of the population in terms of biomass energy, timber and service wood. Furthermore, the project directly supports formulation and implementation capacity of District Forest Management Plans (DFMPs) accelerating the pace at which they become new policy tools to provide guidance and targets at local level, for public and private forest management, agroforestry dissemination and reduction of demand for woody biomass under the 2013 Forest Law. The government will maintain strong ownership of forestry activities through district forestry management plans as well as through district and state-owned forestry lots.

The project's Forest Landscape Restoration monitoring system is aligned with and will build on two existing monitoring systems: the District Forest monitoring information system (DFMIS) which has already been developed and now operational, and the National Forest Monitoring information System which is connected with the District one.

Existing GCF country programme

The current GCF country programme targets forest management through restoration and protection of natural forests, afforestation and agroforestry. Also prioritized in the country programme are distribution of high-quality forestation inputs and capacity development. Agricultural priorities identified include improved soil health (to increase long-term sustainability), crop diversification and intercropping (training and supply of climate resilient seed varieties), optimized seed choice (equipping farmers with optimal seed varieties) and modern agricultural training (delivering field based trainings on sustainable intensification). The existing GCF project "Strengthening climate resilience of rural communities in Northern Rwanda" aims to restore and enhance ecosystem services in Gicumbi District in Northern Rwanda and increase the capacity of communities to renew and sustainably manage forest resources and support smallholders to adopt climate resilient agriculture. Additionally, the project invests in climate resilient settlements, and in knowledge capacity and development. Many of the project's interventions target those who farm marginal land and are highly vulnerable to landslides, flooding and droughts. Moreover, the existing GCF project outputs are: (1) the sub-catchment of the Muvumba watershed restored and small scale farmers supported to adopt climate resilient practices; (2) Communities supported to implement sustainable forest management and adopt fuel-efficient cooking methods; (3) Human settlements developed and/or modified to increase climate resilience; and (4) Successful adaptation and mitigation approaches communicated and mainstreamed at the national level.

While this project proposal to GCF focuses on a different geographic area - with specific adaptation needs through land restoration, development of markets and finance mechanism, as well as support to the decision making tools - the early and ongoing lessons from the experiences of Gicumbi on reducing the pressures on and restoring land and forests will be applied during the implementation of the project in the Eastern Province.

TREPA will significantly leverage FP 073 Green Gicumbi experience through various mechanisms including:

- Shared chairmanship of the steering Committee: The implementation will be steered by the Ministry of Environment who at the same time chairs the Green Gicumbi project. This will enable sharing of experience at PSC level, and thus downscale to implementation and streamlined work planning.
- Shared senior members of Technical advisory group: Since Green Gicumbi has already been under implementation, lessons learnt will significantly inform the successes of TREPA in the Eastern province of Rwanda. The senior members of project advisory group such as Rwanda Agriculture Board, Rwanda Environment management Authority (NDA), Ministry of Local government among others will help to ensure the effectiveness of implementation while learning from Green Gicumbi which will be in its 3year of implementation.
- In terms of execution, the two project operates in two different province but luckily neighbouring each other, thus exchange between communities of both province will enable on ground sharing of experience.

There will be no duplication of actions both at local and national levels since the steering committee will be chaired by the Ministry of Environment for both projects. This is a great opportunity to leverage on previous experiences and bring the best to TREPA implementation.

Alignment with existing policies such as NDCs, NAMAs, and NAPs

The project is aligned with two of the priority sectors of Rwanda's NAMA, 1) Forestry sector: where alternative emission scenario is Improved Management of Forests through multi-activities, where it is estimated that improved management carried out on 50% of the existing plantations will increase productivity leading to combined sequestration potential for the NAMA period of 2016 – 2030 of a net 4,000,000 tCO₂. New Forest Plantations will lead to a net sequestration potential for the NAMA period of 2016 – 2030 of over 3,500,000 tCO₂. 2) Agriculture Sector: where NAMA applicable alternative emission scenario is for an improved fertilizer sector, to include better fertilizer management, lime grinding, and soil management.

The project also contributes to targets outlined in Rwanda's NDC, namely "Sustainable Forestry, Agroforestry and Biomass Energy, Integrated approach to Sustainable Land Use Planning and Management, integrated water resources management, and sustainable intensification of agriculture"¹²⁰.

Capacity of Accredited Entities or Executing Entities to deliver

IUCN as the AE, has over 70 years of experience in nature conservation (e.g. forest management, sustainable agriculture, and community financing for nature conservation) across the world. For the last 7 years, IUCN has been a key player in the matters of landscape restoration, conservation, integrated water resources management for climate resilience, and inclusive climate finance in Rwanda. Dating back in 2016 when the Regional FLR hub office was set in the capital, Kigali, IUCN began a journey to implement FLR in the country. With the need for technical support to implement the 2014 Restoration Opportunities Assessment Methodology (ROAM), IUCN began by implementing a pilot project, "Piloting landscape restoration in Rwanda and scaling up in Africa" funded by Germany Ministry of Environment and Nuclear Safety (BMU) which sought to develop a scalable restoration model in the two districts on Rwanda. IUCN's total investment in Rwanda across all projects to date EUR 17,362,993. IUCN's convening power and working modalities will allow to efficiently execute its role as the oversight and governance on both technical and financial aspects of the project. IUCN Africa Regional office in Kenya and IUCN's GEF/GCF Unit in Head Quarters, Switzerland will provide necessary technical backstopping for smooth implementation of the project and to ensure quality reporting to GCF. IUCN, through its regional Forest Landscape Restoration hub, is implementing a Forest Landscape Restoration Programme, working to effectively manage and conserve the forests and woodlands. This project will draw on IUCN's global programmes of work on Forests, Water, Ecosystem-based Adaptation, and Disaster Risk Reduction.

This project will be implemented in partnership with The Rwanda Forestry Authority (RFA), The Ministry for Agriculture and Animal resources (MINAGRI) Rwanda Agricultural Board (RAB), Ministry of Local Government (MINALOC). Rwanda Environment Management Authority (REMA) of the Government of Rwanda (GoR), which is anticipated to ensure any licenses or permits required in a timely manner.

In particular RFA has been implementing several initiatives related to reforestation and land restoration and has an established single project unit (SPIU) which is fully staffed and equipped with both programme managers and technical advisors. RFA also is strongly involved in the GCF FP073 Green Gicumbi project to provide technical leadership of forest landscape restoration interventions. FP073 and TREPA will be jointly coordinated to avoid any duplication of activities. This helps learning and bringing this experience to TREPA once the implementation have started. RFA have worked with several donors in the past years to implement multiyear and multimillion projects. These includes among others:

- Re-Afforestation and rehabilitation of the degraded area of Jali, Mont Kigali and Rebero- Domestic public funding \$0.5million

¹²⁰ https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Rwanda%20First/INDC_Rwanda_Nov.2015.pdf

- Forest Management And Woody Biomass Energy Support Project (FMBE): Belgian cooperation –\$ 3.4m
- Urban Forestry For Sustainable City (Phase I)- Domestic public funding \$1.5M
- Improving The Efficiency And Sustainability Of Charcoal And Woodfuel Value Chains- World Bank/IDA- \$1.5
- Sustainable woodland management and natural forest restoration Project. (PGrEF)- AFDB/CBFF – \$5.2million

Enabel as an executing entity has 20 years operation experience in Rwanda and with an average annual budget around 20 M US\$ in the last 10 years. An important part of this budget is executed for the Kingdom of Belgium, but year after year the budget from other donors is increasing. End of 2019 a 2M euros grant has been provided by EU for the implementation of the agroforestry DESIRA project (2020-2024). From 2009 to 2013 ENABEL has been executing a 10 M euros forest project (PAREF/NL) for the Dutch cooperation. From 2008, ENABEL is partnering with the department in charge of forestry in Rwanda for the implementation of forestry programs in 19 District of the country (PAREF.Be1, PAREF.be2, PAREF.NL, FMBE) which are totalizing around 23 M Euros. On top of that different key studies on biomass (National Forest Inventory, BEST review, Forest Policy, etc.) have been executed by ENABEL for a total of around 1 M Euros.

ICRAF has continuously been present in Rwanda since 1988 and has generated and promoted scientific agroforestry practices. For over 30 years of experience in Rwanda, ICRAF has generated and fostered adoption of agroforestry technologies in sustainable land use management in various land use systems of Rwanda for improving livelihood of smallholder farmers while developing options for adaptation and mitigation of climate change.

Role of National Designated Authority

The project was initiated by Ministry of Environment and supported by the NDA - Rwanda Environment Management Authority (REMA) due to the high climate sensitivity of the Eastern Province. Selection of IUCN as the AE was made by the Rwandan Government.

How decision-making responsibility related to implementation will be placed with in-country institutions and how domestic systems will be used to ensure accountability.

The project will be locally steered by the Ministry of environment. The PSC will be comprised of local institutions both public, private sector and civil society. The current proposed members of PSC includes: Ministry of Finance and Economic Planning, and selected representatives from among: the Ministry of Agriculture (MINAGRI), National Agricultural Export Development Board (NAEB), Ministry of Infrastructure - Energy department, and Rwanda Cooperative Agency (RCA), Rwanda Development Board (Akagera national park), academia-University of Rwanda, Civil society organizations (RCCDN), Rwanda Youth Alliance for Climate Action (Rwanda YACA), community representatives (a man and a woman) from Eastern Province, and other relevant institutions and agencies including private sector. This will enable strategic ownership of the in –country institutions as well as benefiting from this diverse Steering group's experience and voices to successfully implement TREPA.

It is expected that at District level, a district project coordination committee will be established. This will manage day to day activities at each district level and will enable accountability for both communities and lead implementers. The project will be integrated as part of District plans from the beginning and will form part of their district's performance contracts. This will help quality implementation and high level attention to results.

Engagement with civil society organizations and other relevant stakeholders, including indigenous peoples, women and other vulnerable groups

Stakeholder consultations engaged with a wide range of stakeholders including CSO's women and other vulnerable groups (See Annex 7) for full stakeholder consultation process. The NDA has invited and engaged a number of technical support agencies, decision-makers and planners from RFA, RAB, REMA, MINAGRI, EU, GIZ, KfW, ENABEL, IUCN, WB, WV, APN and other key agencies in a multi-stakeholder consultative process, they were engaged in field visits and in project preparatory stages. As part of project preparation a complete stakeholder mapping was carried out during the feasibility study and the roles and potential interactions of each entity is identified. A number of civil society organizations were consulted during the development of the concept and the feasibility for proposal including ARCOS, REDO, ARECO, WCS, Vi-Life Agroforestry among others. Consultation with women and vulnerable groups were part of the gender analysis. Their inputs have helped to design appropriate approach towards community based restoration actions that benefits both land and people. Degradation of the Eastern province affects all type of social and economic clusters in Rwanda which turns this into a major challenge for the province. All activities proposed have been discussed and validated with community representatives through various meetings.

Stakeholder consultations began in 2017 during the preparation of the GCF Concept Note. Bilateral meetings continued and culminated in a large stakeholder meeting in August 2018. During discussions a wide range of possible project activities were discussed and defined and the project scope was specifically narrowed by through discussions based on a) a list of identified needs and b) consideration of existing interventions. The institutional arrangements were discussed drafted, tables were generated that highlighted the potential executing and technical support entities for each of the proposed project outputs (or sub-components) that participants decided upon. Following this, participants strongly agreed the next critical step of discussing and reviewing relevant lessons learned from successful projects in agriculture, forestry, agroforestry and landscape restoration. These discussions also provided the technical options and

inputs and determined the scope of analysis for the feasibility study. The results of the feasibility study were shared with these same stakeholders who shared feedback into the design of the project and ultimately the selection of targets, investments and overall adaptation measures. Once the feedback was integrated stakeholders then validated the technical approach and the overall project design through bilateral and virtual meetings throughout 2020 (given restricted travel opportunities due to COVID-19). Another example of how the projects interventions have been shaped by stakeholder inputs is the selection of preferred species for agroforestry measures proposed. The projects feasibility study (Annex 2) presents the preferred tree species based on analysis of farmer preference and suitability based upon stakeholder consultations as well as surveys of farmers in Eastern Province.

The stakeholder mapping exercise was conducted to determine each key stakeholders' importance to and influence over the project. The mapping exercise was conducted with participants during consultations, and helped stakeholders to understand the nuanced issues each stakeholder group may face during implementation. This analysis was based upon each stakeholder groups relevant influence over and importance in the project. In particular, the importance and influence of MINAGRI was discussed and feedback provided by stakeholders helped to design the specific activities necessary such as necessary community level engagement, consideration of farmers and far groups needs and the necessary measures that the ministry would need to take. Measures included in project design as a result of this exercise include community-based consultations during project implementation, community-based mapping of targeted areas and community group enterprise empowerment and training activities that would be necessary for the project to be successful. Such measures ensure stakeholder ownership of the restoration measures and mitigate possible risks identified during the exercise including resistance or indifference from farmers or farmer field schools which could slow the pace of new practice implementation/adoption rates. Similarly, the mapping exercise identified opportunities for private sector engagement in landscape restoration and value chain activities and thus shaped the design of those interventions in agroforestry value chains and targeted technical assistance to microfinance institutions to provide innovative financial products.

To ensure strong country ownership, the project also involved consultation with the private sector. Specific private actors consulted included:

- Cooperatives of rice producers in Eastern Province,
- Cooperatives of dairy collectors and farmers
- Financial institutions
- New Forest Company
- Saw Mill Eastern Africa

There will be further opportunities to collect additional inputs during baseline establishment and during the inception phase (see Annex 8) and environment and social screening (see ESMF annexe). Communities were consulted throughout the process, specifically for the project design purpose (See Annex 7).

D.6. Efficiency and effectiveness (max. 500 words, approximately 1 page)

Describe how the financial structure is adequate and reasonable in order to achieve the proposal's objectives, including addressing existing bottlenecks and/or barriers, and providing the minimum concessionality to ensure the project is viable without crowding out private and other public investments. Refer to section B.5 on the justification of GCF funding requested as necessary.

The GCF project requests USD 33,784,000 to support resilience activities in Rwanda's Eastern Province. In addition to GCF support the project will benefit from USD 15,839,000 of co-finance from the Government of Rwanda (USD 10.6 million) ICRAF (USD 0.7 million), IUCN (USD 3.4 million) and Enabel (USD 1.0 million). Sections C.1 and C.2 above provide a breakdown of co-financing by project Component and Output. This co-finance includes IUCN investments in the Forest Landscape Restoration Programme, in Outputs 1.2 and 3.4. The following table provides a breakdown of the GCF investment and co-financing by budget category.

Table 7 - Breakdown of co-financing by source and budget category

Cost Category	Total Budget	GCF Funding	Co-finance	MINIAGRI Co-Finance	RWFA Co-Finance	ICRAF Co-Finance	IUCN Co-Finance	ENABEL Co-Finance
PMU Costs	2,480,871	1,608,172	872,700				872,700	
Staff Cost	16,487,370	10,632,151	5,855,218	3,326,347	946,780	228,600	830,794	522,697
Local consultants	634,795	634,795	-	-	-	-	-	-
International consultant	446,550	446,550	-	0	0	0	0	0

Equipment	18,105,420	11,667,380	6,438,039	951,073	3,678,373	308,300	1,306,900	193,393
Constuction cost	1,747,880	1,357,500	390,380	199,980	-	190,400	-	-
Training, workshops, and conference	3,575,989	2,945,970	630,019	370,178	-	-	78,268	181,573
Travel	3,439,976	2,910,037	529,938	86,257	-	-	344,131	99,551
Professional/ Contractual Services	2,703,946	1,581,199	1,122,748	1,066,164	-	-	23,606	32,978
TOTAL	49,622,797	33,783,755	15,839,042	6,000,000	4,625,153	727,300	3,456,398	1,030,191

The GCF project will de-risk the Rwandan economy from climate change threats via a series of interrelated silvopastoral, forestry and agroforestry interventions that climate proof agriculture and forestry practices. a. The financial structure of the project consists of GCF grant resources and co-financing from the Government of Rwanda, IUCN and ICRAF, which together will establish the key investments costed out under outputs 1.1, 1.2, 1.3, 1.4 and 1.5. While the cost per ha are difficult to compare to other projects and depend on a number of factors such as level of degradation, number of tree per ha planted, number of ditches /firebreak and of stump de-barking which are required, for a comparison sake, the reforestation costs per hectare are similar to other projects. For the ENABEL FMBE project activity in Rwamagana from 2017 to 2020, the private Forestry Management Unit cost was USD 1.191 per ha and agroforestry was USD 164 per ha, for TREAP these figures are USD 1.267 and USD 150 per ha.

GCF resources for Component 2 will attract private sector investment and will mobilize the increased provision of credit to Rwandan farmers and foresters by local banks (see letters of support included as an Annex to this funding proposal), in support of agroforestry and silvopastoralist value chains. Coupled with further co-financing from ICRAF, Enabel and IUCN, GCF grant support for Component 3 be used to establish the systems needed to attract further investments from the public sector to develop and maintain capacity of key stakeholders. Annex 2 provides additional detail on the rationale and feasibility of the proposed measures, which are budgeted in Annex 3.

Public as well as private investment is essential to overcome these challenges as the ultimate beneficiaries are constrained by lack of resources. Even though the proposed interventions promise a positive return at the project level, GCF grant resources are justified given the poor performance of Rwanda's capital markets, with low levels of direct investment and overall negative net investment on the capital accounts. GCF financing of investments will attract and build up the private as well as public investment capital that is essential to further address key bottlenecks created by such barriers (see section B.5).

The project will ensure no crowding out of private and other public investments. As described above, Rwanda's capital markets currently are not able to serve the needs of rural farming beneficiaries. The project uses GCF resources to increase the capacity of local MFIs to mobilize leveraged private sector co-finance, effectively crowding in private sector investments by actively connecting farmers with commercial sources of finance. Furthermore, the project has attracted approximately \$4.5million USD in public sector programming for climate resilient agro-forestry and silvopastoral activities.

The project budget and the financial and economic analysis below take into account those activities that are covered by public funds. However, these are only part of the activities that are necessary for reforestation and climate resilient farming activities. In-kind contributions by the land-owners cover many essential activities. In activity 1.1 (agroforestry) non-monetized activities include the land clearing, tree/ditches/firebreak maintenance, protection and control, harvesting, re-planting after full rotation harvesting, etc. In the case of the restoration of state forests in activity 1.2. the restoration and management costs will be covered fully by private operators and have not been included in the budget. While these contributions are included in the financial analysis, they are not presented as co-financing due to the challenging of obtaining up-front written commitments from thousands of participating farmers and other private actors.

A major existing market failure that the project will remedy is limited access to finance by the targeted vulnerable farmers. The project will increase the financial capacity of these farmers as well as developing micro-finance instruments adapted to the type of activity and the type of target groups. The initial use of grants, to be replaced gradually by private sector investments, is key to ensuring sustainability and scalability of the investments.

A second market failure is the lack of long-term finance. It is foreseen that loans will be provided for reforestation activities (alongside with agri-loans for agriculture) as part of the initial investments. Long-term finance will be combined with short-term investments to address the perceived risks of long-term finance by financial service providers and investors. Activities in component 2 are expected to mobilize approx. USD 10M of lending by local financial intermediaries. This leveraged co-finance is subject to review of individual loans to value chain participants and cannot be confirmed prior to project implementation. It therefore has not been presented in the budget totals.

Given the income constraints facing most farmers in the Eastern Province, initial costs of integrating trees in farming systems and of reforestation will be fully covered by grants. Over time, the combined effects of savings programs at community level, the building of business and financial capacities of FFPOs and other groups, and the strengthening of financial service provision will be the basis for self-sustained processes of land restoration and economic growth. Efficiency and gradual handover to private operators and farms themselves is demonstrated over time. For example, Regarding the direct financing by the project of the forest restoration in the 6545 ha of small holder (without initial financing capacity) degraded private woodlots (1.1.3), it will concern mainly the initial tree seedling production and planting, the establishment of anti-erosive ditches and firebreak, while other works will be handle by land owners themselves (land clearing, tree/ditches/firebreak maintenance, protection and control, harvesting, re-planting after full rotation harvesting, etc). Likewise, For the 10,000 ha of State forests to be contracted to private operator (activity 1.2.2), the restoration and management cost will be taken in charge fully by private investors themselves according approve management plans, except for 700 ha of very degraded/bare land which are requiring restoration before being contracted.

Please describe the efficiency and effectiveness of the proposed project/programme, taking into account the total financing and mitigation/ adaptation impact the project/programme aims to achieve, and explain how this compares to an appropriate benchmark.

As noted above, the project provides large up-front investments to support resilience activities with long lead-times. The key indicators describing the project's efficiency and effectiveness are provided below:

- Estimated economic benefit per beneficiary, defined as economic benefit / benefited population over the 6 years implementation period

(a) Total to Finance by Project	USD 49,622,797
(b) Amount requested from GCF	USD 33,783,755
(c) Estimated economic benefits	USD 104,065,669
(d) Number of beneficiaries (people)	1,920,710
(e) Estimated GCF cost per beneficiary (e=b/d)	USD 17.59
(f) Estimated economic benefit per person (f=c/d)	USD 54.91

- Estimated economic benefit per hectare, defined as total economic benefit / benefited hectares

(g) Benefited hectares	99,345ha
(h) Estimated GCF cost per hectare (h=b/g)	USD 340.06
(e) Estimated economic benefit per hectare (i=c/g)	USD 1,061

Please specify the expected economic rate of return based on a comparison of the scenarios with and without the project/programme

An economic analysis of the project was performed to assess the net incremental benefits the project yields for society. The economic analysis compares costs and benefits in the counterfactual (business-as-usual) scenario versus the costs and benefits that accrue in the improved (with-project) scenario.

The analysis considers two types of benefits: (1) marketable benefits that come from avoiding climate change related losses and increasing production in climate resilient agricultural systems, and (2) non-market benefits that result from the provision of ecosystem services as a result of project activities. Since most of these ecosystem services

represent public goods, they are not captured by markets and are not usually included in farmers' decision-making processes.

The incremental economic benefit from agriculture comes from a cost-benefit analysis, which considers the increase in production in climate resilient agricultural systems, comparing the situation with and without project. It considered the same methodology and assumptions that is specified in the financial analysis, but with the difference that the full costs of project implementation are included. This includes GCF investment, co-finance from partners and Government during the project period as presented in Annex 4 (Detailed Budget Description). It also includes continued Government financial support for the remainder of the 20-year investment lifetime that is directly linked to project activities and therefore represents an opportunity cost for Government. The net present value (NPV) of the project-level investment is calculated using a discount rate of 12.1%. This figure represents the Rwanda Central Bank 10-year bond rate, last published September 2020. The use of the Government base rate is justified as this is the rate at which the Government would have to borrow to fund equivalent investments in the absence of grant financing.

As described in Section B.5 (justification for GCF funding), the project generates very strong and positive economic returns when both marketable and non-market benefits are included, as indicated in Tables 6, 7 and below. Non-marketable benefits include the social value of GHG emission reductions using a shadow price of USD 40/tCO₂e and the time savings from reduced fuelwood collection using a shadow price of USD 0.28 per hour¹²¹.

Table 8 - Cumulative GHG emission reductions

GHG emissions reduction summary	6-YEAR TOTAL, tCO ₂	20-YEAR TOTAL, tCO ₂
Output 1.1 - Diversified agroforestry packages scaled-up	85,169	516,223
Output 1.2 -Woodlots and tree plantations are rehabilitated and sustainably managed for productive and ecological services	- 39,082	2,250,784
Output 1.3 - Scale-up climate resilient silvopastoral packages to restore degraded rangelands	22,741	204,042
Output 1.4 - Protective restoration measures are scaled up to climate-proof fragile, ecologically sensitive and erosion prone lands	31,881	276,814
Output 1.5 - Clean and efficient cooking energy technologies promoted through support to private sector and communities to transition/reduce biomass fuel consumption	1,207,354	6,414,579
Total GHG emission reductions, tCO₂	1,308,063	9,662,441

Table 9 - Economic value of non-market benefits

GHG emissions reduction benefits (USD)	6-YEAR TOTAL, USD	20-YEAR TOTAL, USD
Output 1.1 - Diversified agroforestry packages scaled-up	3,409,539	20,665,800
Output 1.2 -Woodlots and tree plantations are rehabilitated and sustainably managed for productive and ecological services	1,564,570	90,105,018
Output 1.3 - Scale-up climate resilient silvopastoral packages to restore degraded rangelands	897,329	8,102,986
Output 1.4 - Protective restoration measures are scaled up to climate-proof fragile, ecologically sensitive and erosion prone lands	1,276,292	11,081,620

¹²¹ USD 0.28 per hour is the equivalent of the 2019 Rwanda per capita GDP of USD 820 (source, WB country profile website), amortized over 365 days, and 8 hours per day.

Output 1.5 - Clean and efficient cooking energy technologies promoted through support to private sector and communities to transition/reduce biomass fuel consumption	48,294,155	256,583,158
Total GHG Benefits (USD)	52,312,744	386,538,582
Time savings - fuelwood collection (USD)	43,332,201	163,847,414

Table 10 - Expected economic rate of return

Economic returns - base case - discount rate			12.1%
Direct (marketable benefits only)	6 Years	20 Years	
NPV	- 35,373,663	- 6,513,618	
EIRR	N/A	10%	
Direct, incl non-marketable benefits	6 Years	20 Years	
NPV	20,504,468	160,764,861	
EIRR	41%	62.07%	

The financial rate of return is calculated separately for each major intervention in Component 1. The measures are not perfectly separable in that many farmers may engage in multiple activities covered by the project. The costs and benefits are calculated based on the activities undertaken in the same geographic areas in the baseline scenario.

Note also the contribution made by the activities in Components 2 and 3 to the success of Component 1. In particular, Component 2 addresses the financial barriers that might prevent farmers from investing in resilience activities. The project aims to diversify and enhance the variety of financial services for farmers engaged in different project activities. The project will facilitate both group and individual loan services. The loan terms will vary depending on the crops, size of farmer groups, resilience technology, past credit history, and source of capital that the MFI is accessing to service the farmers. These will be the result of commercial agreements between the farmers/groups and MFIs – GCF funding will not cross-subsidize these loans or interest rates.

Given the broad spectrum of parameters, the financial analysis does not directly model the impacts of these different types of loans. Instead, the financial analysis assumes that these resilience measures are possibly in large part as a result of having access both to technical assistance and to greater and more affordable access to credit.

Financial returns are calculated (1) assuming business-as-usual, (2) assuming the project investments are made directly by farmers without external support, and (3) assuming GCF support and co-financing. Note that scenario (2) is considered highly unlikely, in that the project will provide considerable capacity building and support to strengthen the enabling environment. Scenario (2) assumes farmers will spontaneously overcome the information, capacity, policy and coordination barriers that hinder climate action. Furthermore, it assumes that farmers will find the means to implement these measures independently, perhaps by taking out commercial loans, when there is no evidence of this happening in reality. The estimated financial returns in Scenario (2) therefore represent the most extreme optimistic case of what is possible without GCF support.

The financial analysis for each output is calculated from the private perspective using a discount rate of 15.28%. This rate was chosen by using the most recent documented interest rate on bank deposits¹²² and multiplying by 2 to reflect

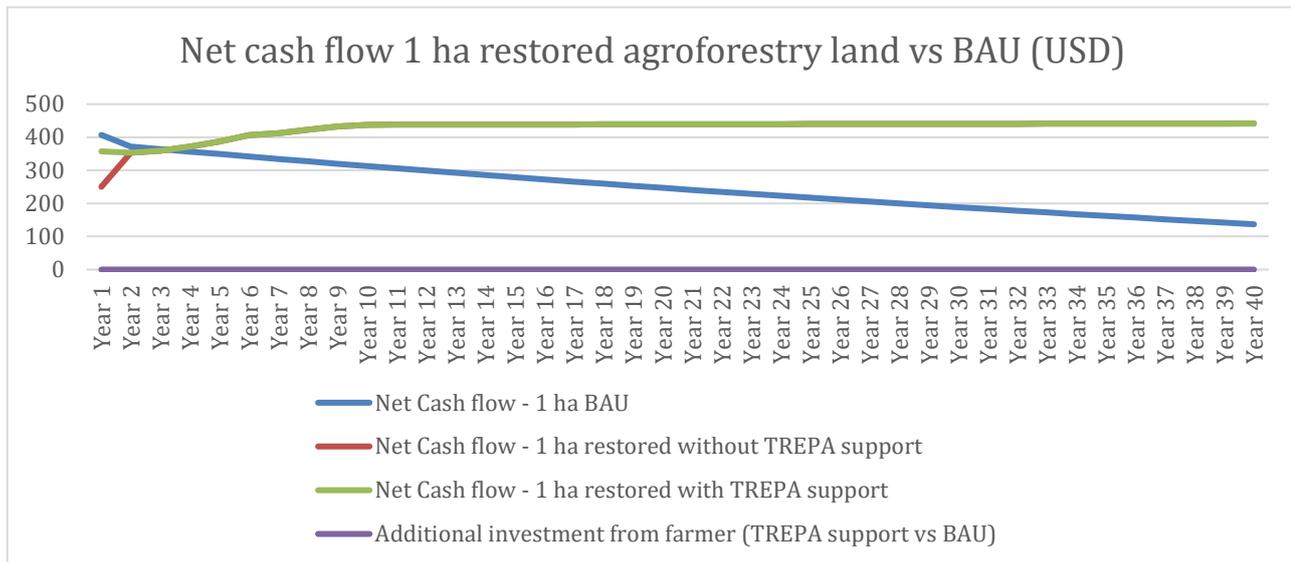
¹²² The World Bank lists the 2019 bank deposit rate as 7.64%
<https://data.worldbank.org/indicator/FR.INR.DPST?locations=RW>

inherent risks of agricultural activities. While most loans to farmers will have a tenor between 1-5 years, the financial analysis considers the full life of agroforestry and other landscape restoration investments. The discount rate is intended to capture the time element of risk in such an analysis. For example, a promised payoff of USD 100 in 20 years has a net present value of less than USD 6 using the 15% discount rate in this analysis.

The financial analysis for **Output 1.1 (agroforestry)** evaluates the costs and benefits of resilient agroforestry-based land restoration versus business as usual (BAU). The GCF investment case yields a lower per-hectare NPV than business-as-usual (BAU) over the initial 6-year implementation period but remains positive. With-project NPV becomes higher than BAU over 10 and 20 years as the long-lived agroforestry investments bear fruit. for agroforestry measures to generate a flow of revenues. The simple payback time for the additional up-front investments in the GCF TREPA scenario is 6 years.

Table 11- Financial analysis Output 1.1

Climate resilient agroforestry	6 years	10 years	20 years
NPV - BAU	1,389.73	1,782.53	2,121.90
NPV - restored without TREPA support	1,291.06	1,804.70	2,329.77
NPV - restored with TREPA support	1,383.79	1,897.44	2,422.50
NPV - Net cash flow Increment (TREPA support vs BAU)	-5.94	114.90	300.60
IRR - Increment TREPA support vs BAU	12%	38%	43%



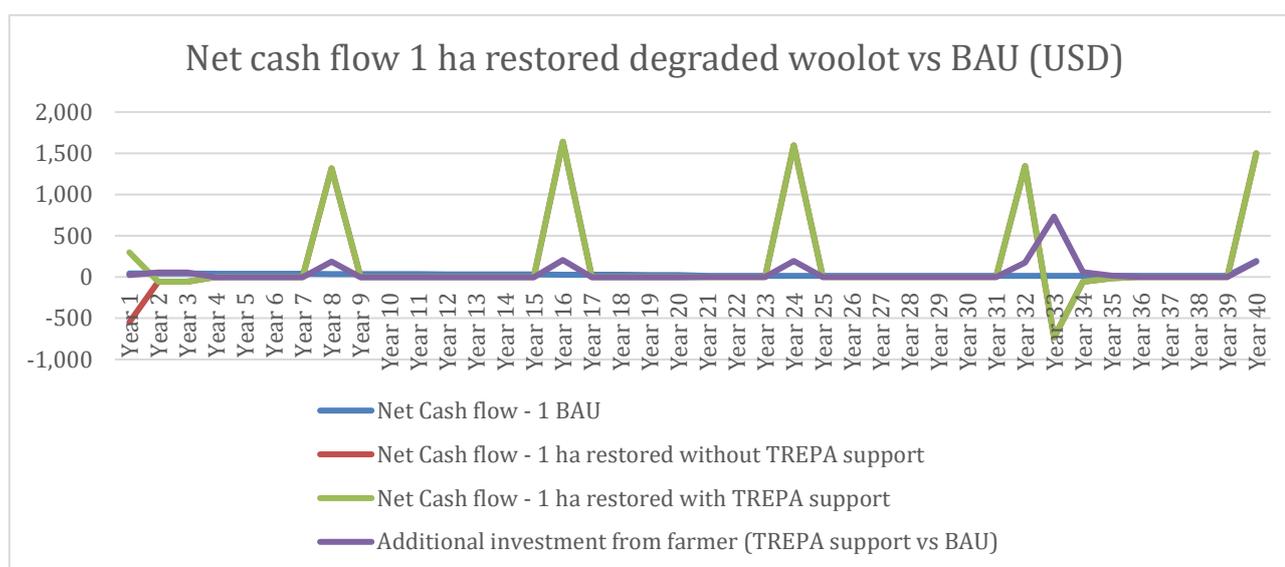
For **Output 1.2 (sustainable forest management)**, the financial analysis examines the NPV and IRR for multiple restoration scenarios:

- Restoration of 1 ha of degraded small-holder woodlot
- Farmer family scenario with 0.5 ha of agroforestry land (including crops, fruit, fodder and wood) 0.25 ha of woodlots, and adoption of an improved cook stove (ICS)
- A small holder forest cooperative of 100 ha (around 200 land owners) restored from year 2 to 6 (in average 20 ha per year) and set under management plan
- Restoration of 1 ha of very degraded State forest
- Restoration of 1 ha of very degraded State forest
- Restoration of a State forest FMU concession of 10,000 ha, with 700 ha very degraded restored with TREPA support from year 3 to 5 and the remaining 9300 ha restored from year 3 to year 9 by a private contractor

For scenario (a) TREPA support overcomes the initial costs of restoration activities, and leads to increased cashflows during the initial clearing and during periodic woodlot rotations. As a result, NPV is higher than BAU for all periods.

Table 12 Financial analysis Output 1.2 (scenario a)

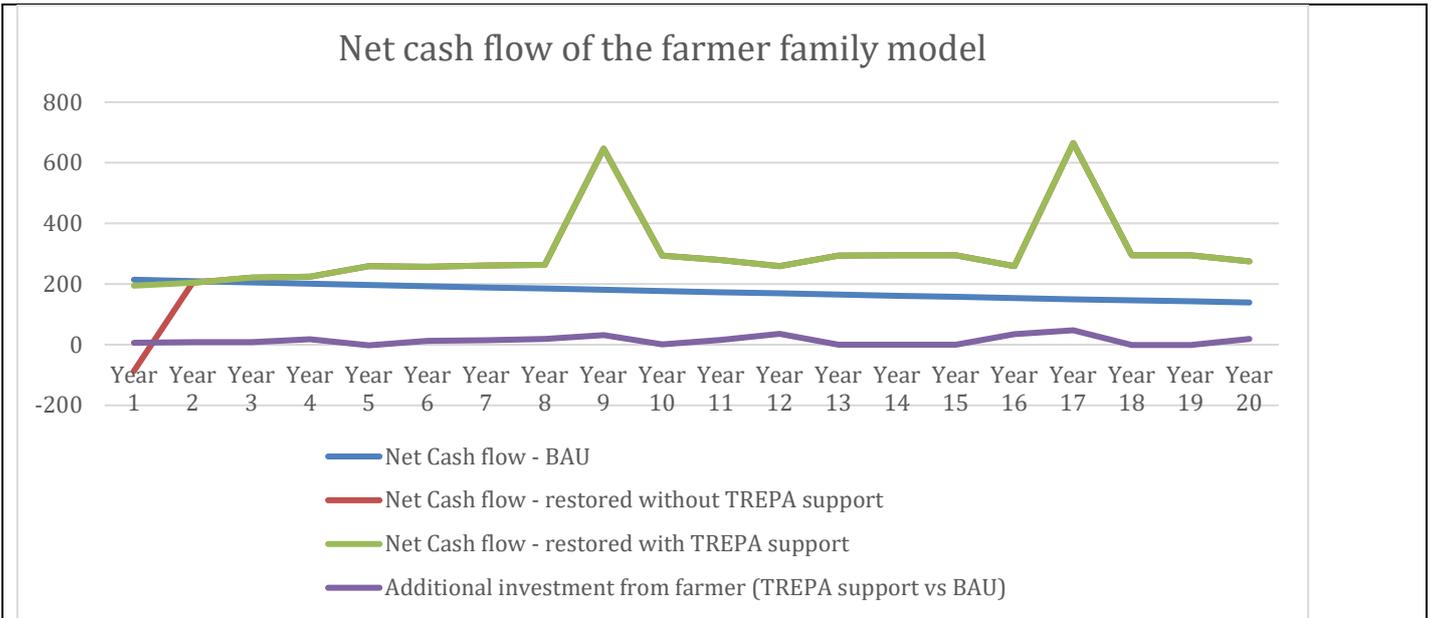
1 ha of restored degraded Small-holders woodlot	6 years	10 years	20 years
NPV - BAU	155.63	199.90	235.75
NPV - restored without TREPA support	-558.77	-136.56	31.96
NPV - restored with TREPA support	176.66	598.87	767.39
NPV - Net cash flow Increment (TREPA support vs BAU)	21.03	398.97	531.65
IRR - Increment TREPA support vs BAU	10%	N/A	N/A



The farmer family scenario (b) provides an illustration of how various project activities combine to smooth out dips and peaks in farmer income. In this scenario, with-project NPV is higher than BAU over all periods of analysis.

Table 13 Financial analysis Output 1.2 (scenario b)

Farmer family with 0,5 ha of agroforestry land (including crop, fruits, fodder and wood), 0,25 ha of woodlot and using ICS	6 years	10 years	20 years
NPV - BAU	6 years	10 years	20 years
NPV - restored without TREPA support	771.03	993.14	1,185.00
NPV - restored with TREPA support	586.81	1,018.67	1,390.25
NPV - Net cash flow Increment (TREPA support vs BAU)	830.78	1,262.64	1,634.22
IRR - Increment TREPA support vs BAU	59.74	269.50	449.22



Scenario (c) compares the costs and benefits of restoration of 100 ha by a small holder forest cooperative. While each parcel must be protected during the restoration period, the cooperative undertakes this work progressively over a period of 6 years. In this way, farmers are able to continue collecting wood from other parcels, thereby reducing the short-term financial impact of this initiative.

NPV remains positive in the with-project scenario for all periods of analysis, albeit lower than BAU during the initial 6-year and 10-year timeframes. With-project cashflows dramatically outpace BAU after Year 11, as the restored forest is much more productive than the degraded baseline situation.

Table 14 Financial analysis Output 1.2 Scenario (c)

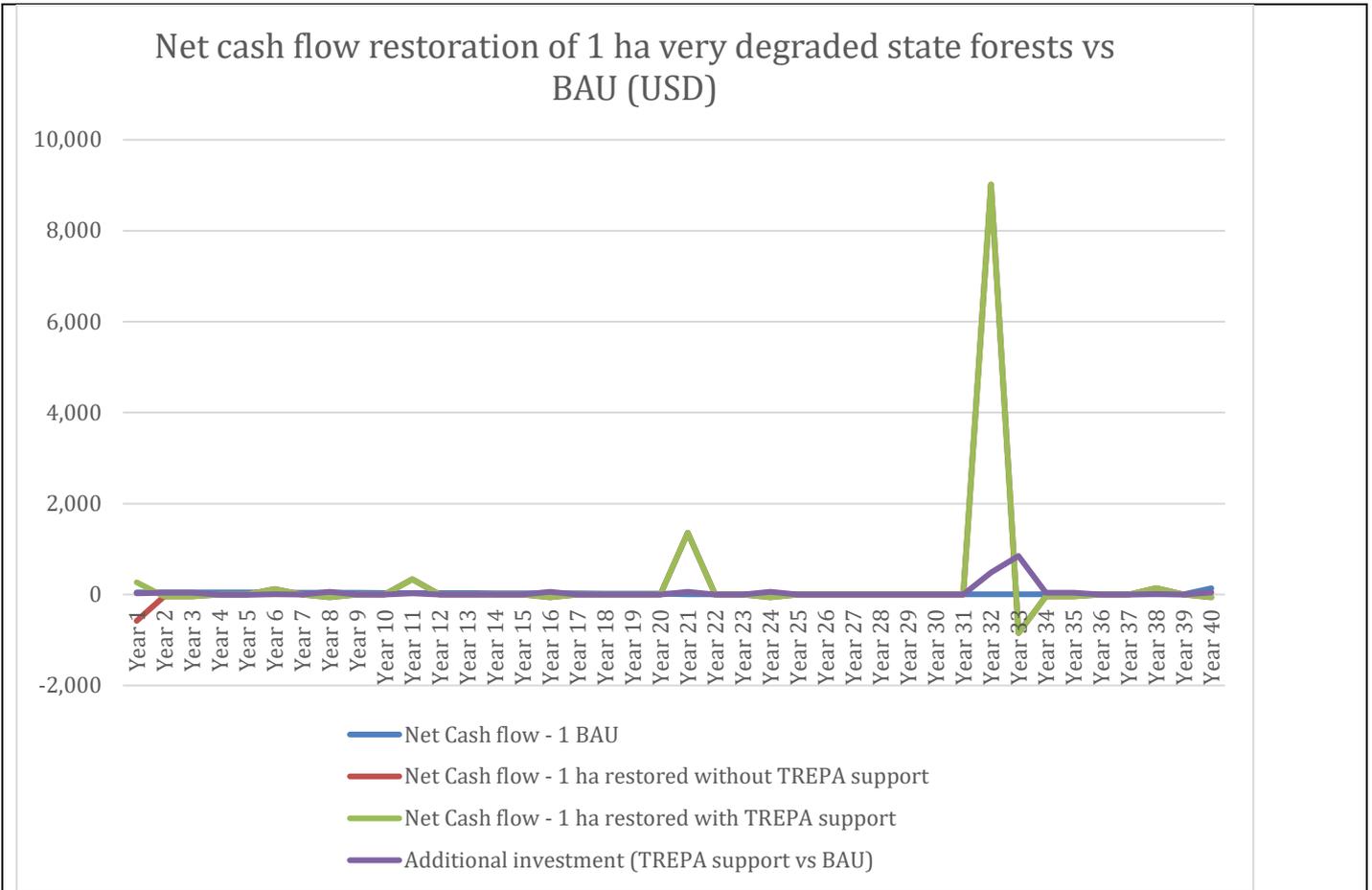
A small holder forest cooperative of 100 ha (around 200 land owners) restored from year 2 to 6 (in average 20 ha per year) and set under management plan	6 years	10 years	20 years	40 years
NPV - BAU	845,419	1,157,824	1,414,093	1,465,687
NPV - restored without TREPA support	-3,784,479	-3,978,503	-2,634,357	-2,228,217
NPV - restored with TREPA support	384,012	189,988	1,534,134	1,940,274
NPV - Net cash flow Increment (TREPA support vs BAU)	-461,408	-967,836	120,041	474,587
IRR - Increment TREPA support vs BAU	N/A	N/A	17%	20%



Scenario (d) evaluates the restoration of 1 hectare of very degraded State forest land from the farmer perspective. While restoration without TREPA support is financially unattractive, the with-project scenario has positive NPV across all timescales. With-project NPV is marginally lower than BAU over the 10 year period due to the timing of forest management activities, but higher in all other periods. Note that these are long-term investments; the normal rotation period for State forests is 32 years, leading to a sharp increase in revenues in the with-project scenario at this point. As noted, however, the high discount rate dramatically reduces the present value of that future income.

Table 15 Financial analysis - Output 1.2 (scenario d)

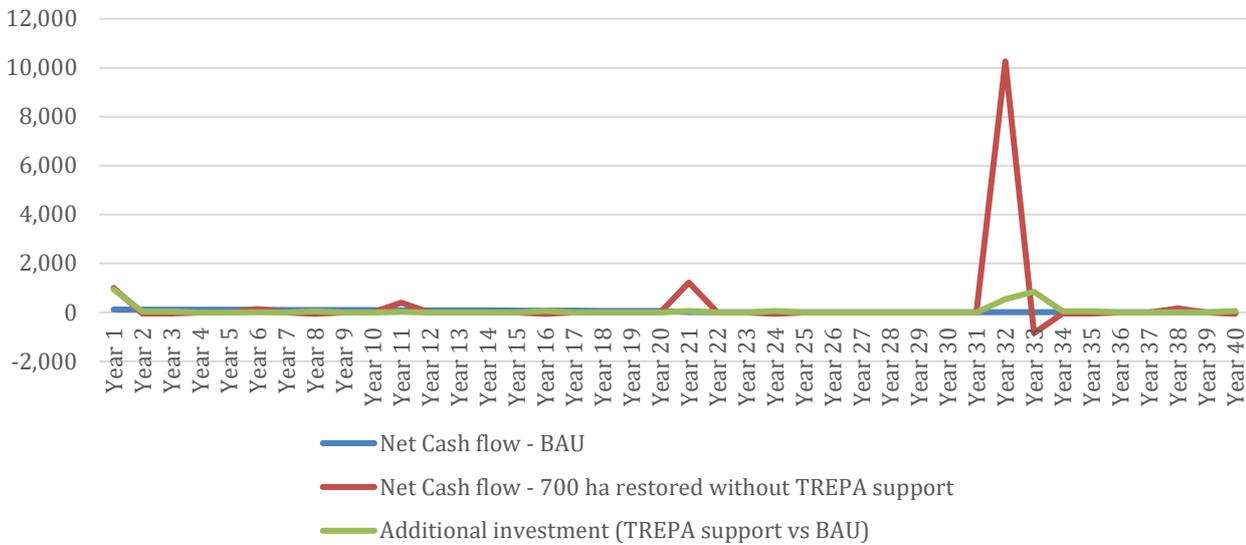
1ha of very degraded State forest restored	6 years	10 years	20 years	40 years
NPV - BAU	172	218	251	253
NPV - restored without TREPA support	-508	-527	-463	-309
NPV - restored with TREPA support	228	209	273	426
NPV - Net cash flow Increment (TREPA support vs BAU)	56	-9	21	173
IRR - Increment TREPA support vs BAU	N/A	17%	11%	N/A



In Scenario (e) the project provides technical support and capacity building to facilitate the restoration of degraded state forest by private small contractors. The contractor can earn income in Year 1 from the sale of cleared shrubs and stumps, and then earns income during 10-year rotations. As a result, NPV is higher in the project scenario than BAU over each time period.

1 ha of State forest contracted to and restored by a private forest operator	6 years	10 years	20 years	40 years
NPV - BAU	432	553	648	652
NPV - 1 ha restored without TREPA support	874	855	931	1,092
NPV - Net cash flow Increment (Restored vs BAU)	442	302	283	440
IRR - Increment Restored vs BAU	-23%	2%	6%	N/A

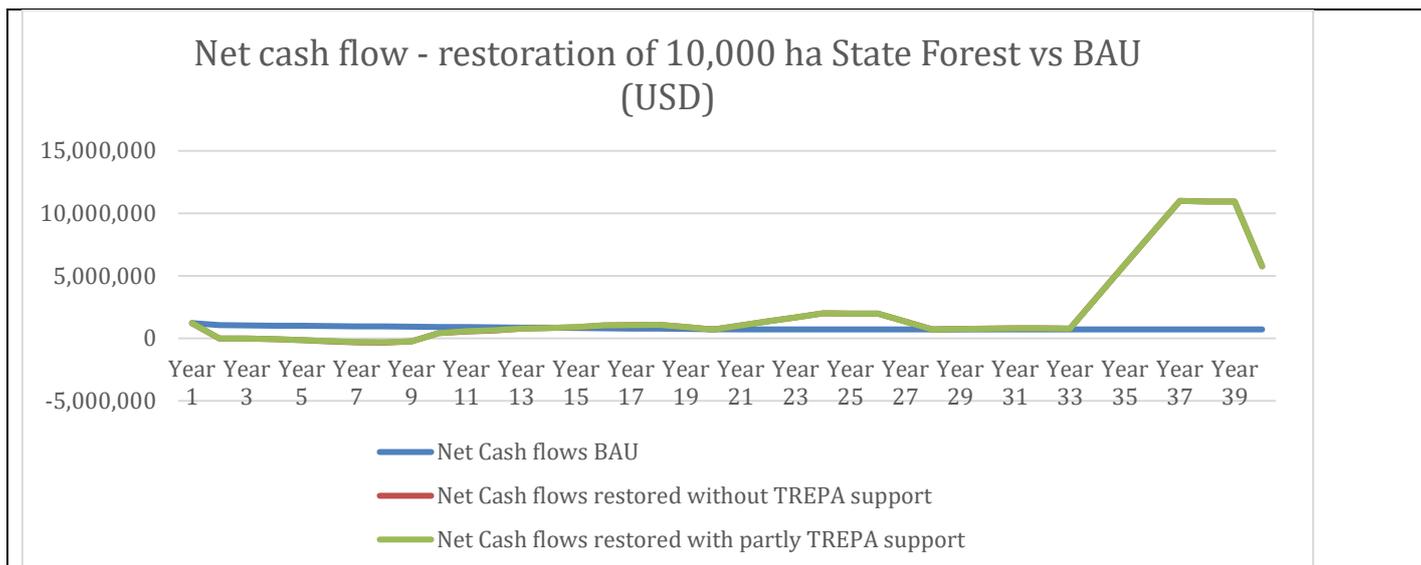
Net cash flow restoration by private operator of 1 ha state forests contracted vs BAU (USD)



Scenario (f) examines the costs and benefits of restoration of a state forest concession restored through a mixed management approach. Of the 10,000 ha area covered by the project, 700 ha of very degraded forest would be restored with TREPA support and the remaining 9300 ha restored privately by the contractor. NPV in the project mixed management scenario remains positive throughout the period of analysis but is lower than BAU in all periods. As noted in the Feasibility Study, demand for wood in Eastern Province is estimated at 1.65 million m³/year while the current sustainable supply capacity of overall forest, shrubland and agroforestry tree resources is only approximately 0.53 million m³/year. The forest restoration activity is profitable for farmers and private actors, but less profitable than illegal overexploitation of forest resources.

Table 16 Financial analysis - Output 1.2 (scenario f)

State forest FMU concession of 10,000 ha, with 700 ha very degraded restored with TREPA support from year 3 to 5 and the remaining 9300 ha restored from year 3 to year 9 by the contractor	6 years	10 years	20 years	40 years
NPV - BAU	4,013,447	5,156,074	6,158,923	6,415,856
NPV - 1 ha restored without TREPA support	825,233	627,078	1,585,790	2,310,104
NPV - 1 ha restored with partly TREPA support	863,879	693,740	1,662,282	2,386,596
NPV - Net cash flow Increment (TREPA support vs BAU)	-3,149,568	-4,462,334	-4,496,640	-4,029,259
IRR - Increment TREPA support vs BAU	N/A	N/A	N/A	6%



Note also that the forest restoration activities described in Output 1.2 generate large and positive externalities beyond ensuring sustainability of supply and enhancing livelihoods:

1. Increased resiliency of the woodlots to climate impacts through sustainable forest management practices.
2. Improved climate resiliency of forests that will reduce topsoil erosion, improve water quality; protect source water; and ensure uninterrupted water supply for household needs, drinking and irrigation (Wilson and Lovell, 2016. Garrity *et al.*, 2010).
3. Reduced stormwater runoff resulting in flood risk mitigation (e.g. Matthews et al. 2004; Ranieri *et al.* 2004).
4. Increased carbon sequestration in soil and forest biomass.

These benefits, while significant, are not captured by the farmers who restore the forests and collect wood and are therefore not included in the financial cost-benefit analysis.

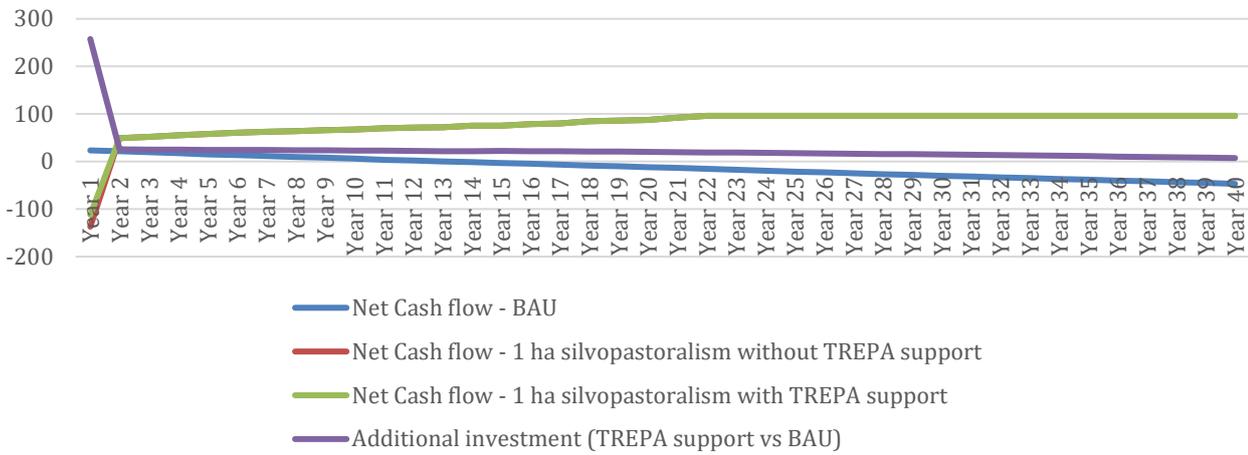
As indicated in the analysis above, most of the climate resilient forest restoration activities present better returns than BAU, and even the ones that do not present positive financial returns for participating farmers over all periods of analysis.

For **Output 1.3 (silvopastoralism)**, investments in resilience activities would yield a negative per-hectare NPV over 6- and 10-year timeframes. GCF support results in a positive financial return for farmers over all timeframes, although lower than BAU during the 6- and 10-year periods as a result of high up-front investment costs on the part of participating farmers.

Table 17 Financial analysis - Output 1.3

Silvopastoralism	6 years	10 years	20 years	40 years
NPV - BAU	72.02	83.00	80.51	72.16
NPV - 1 ha restored without TREPA support	36.66	114.77	205.47	239.73
NPV - 1 ha restored with TREPA support	58.35	136.45	227.16	261.42
NPV - Net cash flow Increment (TREPA support vs BAU)	-13.67	53.46	146.65	189.26
IRR - Increment TREPA support vs BAU	11%	25%	31%	31%

Net cash flow - 1 ha climate resilient silvopastoralism vs BAU (USD)

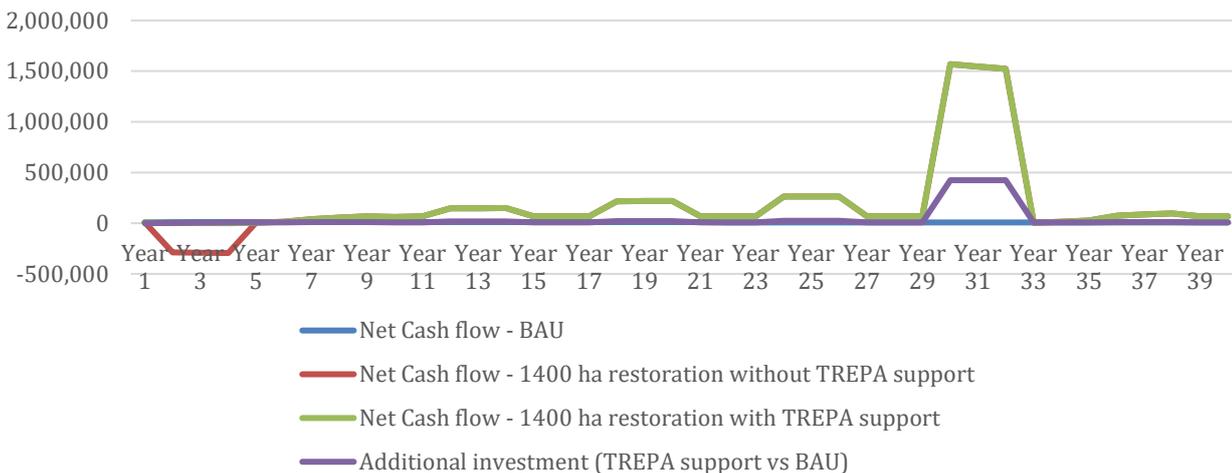


Output 1.4 focuses on restoring forest and woodland along roadsides and riversides, and in the Akagera National Park Buffer Zone. For the roadside and river / lake shore restoration activities, GCF investment mean that climate resilient restoration activities yield net financial benefits over all periods of analysis. During the initial 6-year period NPV is lower than BAU, and becomes significantly higher in subsequent periods.

Table 18 Financial analysis - Output 1.4 (Roadside, river & lake shore)

Roadside and river / lake shore 1400 ha	6 years	10 years	20 years	40 years
NPV - BAU	40,972	55,040	68,782	71,544
NPV - 1400 ha restored without TREPA support	-560,841	-494,508	-344,959	-250,413
NPV - 1400 ha restored with TREPA support	18,759	85,093	234,642	329,187
NPV - Net cash flow Increment (TREPA support vs BAU)	-22,213	30,053	165,860	257,644
IRR - Increment TREPA support vs BAU	N/A	36%	49%	49%

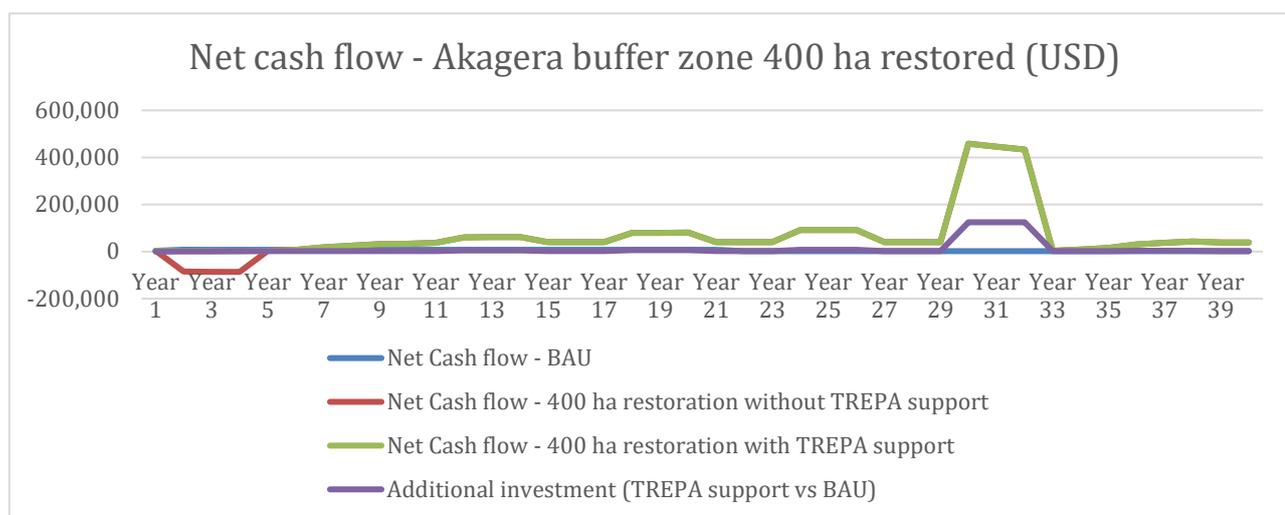
Net cash flow - restoration 1400 ha roadside land from neighboring farmers' perspective (USD)



For the Akagera buffer zone activity financial returns are positive for every period of analysis. Project returns are lower than BAU for the 6- and 10- year periods, and higher thereafter. These results are indicative of the degree of overexploitation of resources in the base case and the investment in time and resources required to restore forest productivity.

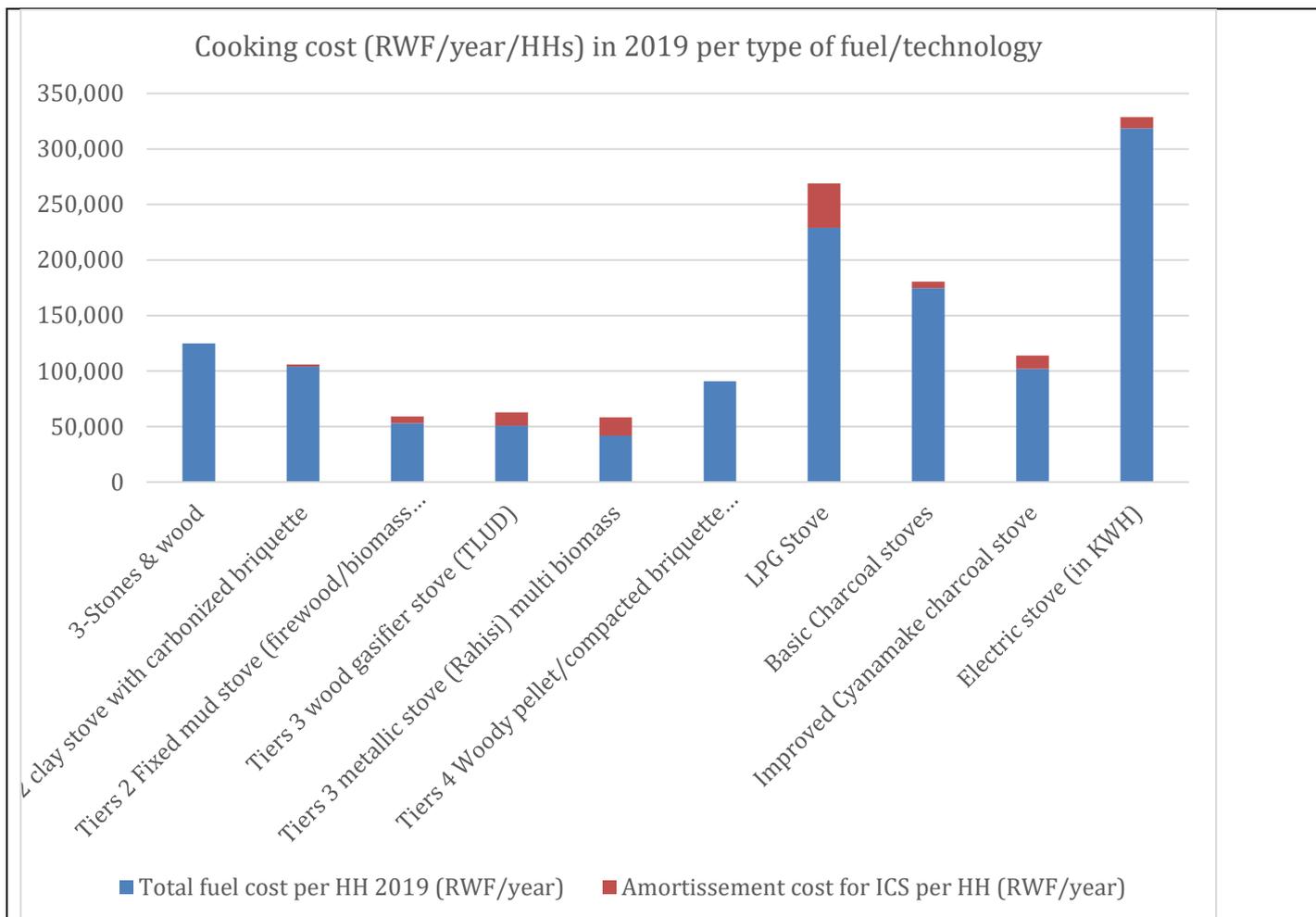
Table 19 Financial analysis - Output 1.4 (Akagera)

Akagera buffer zone 400 ha	6 years	10 years	20 years	40 years
NPV - BAU	26,277	35,713	44,690	45,612
NPV - 400 ha restored without TREPA support	-160,353	-128,292	-62,759	-29,797
NPV - 400 ha restored with TREPA support	11,818	43,880	109,413	142,375
NPV - Net cash flow Increment (TREPA support vs BAU)	-14,458	8,167	64,723	96,763
IRR - Increment TREPA support vs BAU	N/A	25%	40%	41%



In each climate resilience scenario, GCF investment makes the project interventions more financially attractive for farmers, forest harvesters and pastoralists, than would be the case if the measures were undertaken without GCF support. GCF support provides incentives for long-term sustainability beyond the implementation phase.

Finally, the financial analysis is used in Output 1.5 to identify the technological interventions that will be used to reduce the use of biomass fuel for cooking and thus reduce reliance on climate sensitive forest resources. The interventions in Output 1.5 are complementary to the measures in Outputs 1.1 – Output 1.4, in that they reduce demand for fuelwood and thereby reduce the demand-supply imbalance that must be addressed by the on-farm resilience activities. These efficiency measures are presented as a separate Output because the nature of the interventions is qualitatively different than for the on-farm resilience activities. Here, the BAU scenario is continued use of traditional 3-stone fires and inefficient charcoal stoves. Project activities are focused on promotion of improved stoves, with subsidies provided only for the poorest households. Affordability is ensured by facilitating access to short term credit, buttressed by the financial and time savings that come from adoption of ICSs.



Since most households will have to make the investment themselves, simple payback period is the critical financial measure for this analysis. The results identify four stove types where the initial investment plus ongoing fuel costs make financial sense for unsubsidized households, meaning they will recoup their initial investment within the lifetime of the product. On the other hand, two improved stove types (LPG and electric) are not cost-effective and will not be promoted by the project because poor households would never recoup their initial investment based on typical usage patterns without subsidies.

Table 20- Payback analysis for efficient stoves in Output 1.5

Payback period: Tier 3 wood gasifier stove (TLUD) without TREPA, years	0.2
Payback period: Tier 3 metallic stove (Rahisi) multi-biomass without TREPA, years	0.3
Payback period: Tier 4 Woody pellet/compacted briquette gasifier stove without TREPA, years	0.0
Payback period: LPG Stove without TREPA, years	NA
Payback period: Improved Cyanamake charcoal stove without TREPA, years	1.4
Payback period: Electric stove without TREPA, years	NA

The cost-benefit analysis spreadsheet (Annex 3) presents these calculations in detail

Please explain how best available technologies and practices have been considered and applied. If applicable, specify the innovations/modifications/adjustments that are made based on industry best practices.

IUCN, Enabel and ICRAF will introduce a series of climate resilient agriculture practices, including silvopastoralism, agroforestry, forest landscape restoration. The project will build on a range of lessons learned and innovations from Rwanda including restoration technical packages for the Eastern Province, ROAM, village land use plans, and other resilient land use practices already piloted. .

The following is a list of some of the key technologies and approaches to be introduced:

- Climate resilient tree and fodder species, including breeding for future climate,
- Tree fodder, grasses and herbaceous leguminous production for improving milk production and restore degraded rangelands.
- Biomass incorporation from fertilizer trees for improving soil fertility
- Establish Rural Resource Centre for quality seedling production and in seedling business production
- Improved silvopastoral systems (e.g. paddocking and innovative fodder conservation for increased resilience to drought),
- Water supply through Rain water harvesting and boreholes without destabilize ground water,
- Climate proof seed sector policy and business
- Clean and efficient cooking technologies,
- Inclusive financial instruments for climate resilient value chains, and
- Cross-sectoral planning and community landscape restoration planning,

E. LOGICAL FRAMEWORK

This section refers to the project/programme's logical framework in accordance with the GCF's [Performance Measurement Frameworks](#) under the [Results Management Framework](#) to which the project/programme contributes as a whole, including in respect of any co-financing.

E.1. Paradigm shift objectives

Please select the appropriated expected result. For cross-cutting proposals, tick both.

- Shift to low-emission sustainable development pathways
 Increased climate resilient sustainable development

E.2. Core indicator targets

Provide specific numerical values for the GCF core indicators to be achieved by the project/programme. Methodologies for the calculations should be provided. This should be consistent with the information provided in section A.

E.2.1. Expected tonnes of carbon dioxide equivalent (t CO ₂ eq) to be reduced or avoided (mitigation and cross-cutting only)	Annual	483,122 t CO ₂ eq
	Lifetime	9,662,441 t CO ₂ eq (20 years)
E.2.2. Estimated cost per t CO ₂ eq, defined as total investment cost / expected lifetime emission reductions (mitigation and cross-cutting only)	(a) Total project financing	<u>49,622,797</u> USD
	(b) Requested GCF amount: total GCF contribution	<u>33,783,755</u> USD
	(Considering the 19% mitigation cost share: 6,418,913 USD)	
	(c) Expected lifetime emission reductions	9,662,441_ t CO ₂ eq
	(d) Estimated cost per t CO₂eq (d = a / c)	<u>5.14</u> USD / t CO ₂ eq
	(e) Estimated GCF cost per t CO₂eq removed (e = b / c), considering total GCF contribution	<u>3.50</u> USD / t CO ₂ eq
	Considering the 19% mitigation cost share:	0.66 USD/t CO₂ eq
E.2.3. Expected volume of finance to be leveraged by the proposed project/programme as a result of the Fund's financing, disaggregated by public and private sources (mitigation and cross-cutting only)	(f) Total finance leveraged	<u>15,839,042</u> USD
	(g) Public source co-financed	15,839,042 USD
	(h) Private source finance leveraged	Choose an item.
	(i) Total Leverage ratio (i = f / b)	<u>0.47</u>
	(j) Public source co-financing ratio (j = g / b)	<u>0.47</u>
	(k) Private source leverage ratio (k = h / b)	---
E.2.4. Expected total number of direct and indirect beneficiaries, (disaggregated by sex)	Direct	556,252 ¹²³ 50% of female
	Indirect	1,364,185 50% of female
	<i>For a multi-country proposal, indicate the aggregate amount here and provide the data per country in annex 17.</i>	
E.2.5. Number of beneficiaries relative to total population (disaggregated by sex)	Direct	4.4% (2.2% of total female population, 2.2% of total male population) (Expressed as %) of country(ies)
	Indirect	10.8% (5.4% of total female population, 5.4% of total male population) (Expressed as %) of country(ies)
	<i>For a multi-country proposal, leave blank and provide the data per country in annex 17.</i>	

¹²³ Please refer to section 6.4 'project beneficiaries' in annex 2: feasibility study for detailed explanation of the methodology for calculating beneficiary numbers,



E.3. Fund-level impacts

Select the appropriate impact(s) to be reported for the project/programme. Select key result areas and corresponding indicators from GCF RMF and PMFs as appropriate. Note that more than one indicator may be selected per expected impact result. The result areas indicated in this section should match those selected in section A.4 above. Add rows as needed.

Expected Results	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term	Final	
<i>M4.0 Reduced emissions from land use, reforestation, reduced deforestation, and through sustainable forest management and conservation and enhancement of forest carbon stocks</i>	<i>M4.1 Tonnes of carbon dioxide equivalent (t CO₂ eq) reduced or avoided (including increased removals) - forest and land use</i>	LULUCF GHG inventory report in UNFCCC National Communication (circa 2023) and Biennial update reports (circa 2025) (P) Greenhouse gas emission assessment (S)	0	131,061	1,307,819	Government priorities remain focused on long-term forestry restoration plans Farmers and FFPOs remain committed to long-term private sector forestry concessions do not fail to rehabilitate degraded state and district forests. Absence of major natural disasters including forest fires in target areas. State budget allocated to fulfil NDCs is guaranteed during and after the project. The economic, social and political context in the country and project areas remain stable.
<i>A1.0 Increased resilience and enhanced livelihoods of the most vulnerable people, communities and regions</i>	<i>A1.2 Number of males and females benefiting from the adoption of diversified, climate resilient livelihood options (including fisheries, agriculture, tourism, etc.)</i>	National census, Household Income Survey (HIES) and Multiple Indicator Cluster Surveys (MICS) ¹²⁴ (P) Annual Agricultural Survey ¹²⁵ (P) Gender responsive household survey (S) Vulnerability assessment (S)	0	Total = 278,262 Female = 139,131 Male = 139,131	Total = 556,252 Female = 278,262 Male = 278,262	uptake of diversified, climate resilient livelihood options in agriculture lead to greater livelihood security of vulnerable people Government maintains a strong commitment to drought management in the country.
<i>A2.0 Increased resilience of health and well-being, and food and water security</i>	<i>A2.2 Number of food secure households (in areas/periods at risk of climate change impacts)</i>	National census, HIES, and MICS Annual Agricultural Survey (P) Gender responsive Comprehensive Food Security and Vulnerability and Nutrition Analysis	TBD during baseline establishment	63,241 households	126,483 households	Absence of extreme natural disasters and economic shocks affecting yields and household economy; migration patterns do not significantly affect the number and status of households.

¹²⁴ National census, HIES and MICS are being conducted in late 2021 and 2022 and will inform the baseline and progress towards targets during project inception.

¹²⁵ The National Institute of Statistics of Rwanda conducts the Agricultural Survey yearly. Available at: <https://www.statistics.gov.rw/statistical-publications/subject/agriculture-and-environment>

		Survey (CFSVA) ¹²⁶ (P)				
<i>A4.0 Improved resilience of ecosystems and ecosystem services</i>	<i>A4.1 Coverage/scale of ecosystems protected and strengthened in response to climate variability and change</i>	Annual Forest Cover Report ¹²⁷ GIS Data/Remote Sensing Participatory ecosystem services assessment surveys (P).	TBD	Approx. 30,000ha will benefit from grants for productive and restoration activities directed toward water and food security	Approx. 69,185ha will benefit from grants for productive and restoration activities directed toward water and food security	No perverse incentives (policies, prices, monoculture industries that affect natural capital) are introduced in the project area. The country's investment priorities on forestry remain constant. The project's area is not seriously disrupted by a major climate extreme event affecting restored areas.

E.4. Fund-level outcomes

Select the appropriate outcome(s) to be reported for the project/programme. Select key expected outcomes and corresponding indicators from GCF RMF and PMFs as appropriate. Note that more than one indicator may be selected per expected outcome. Add rows as needed.

Expected Outcomes	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term)	Final	
A8.0 Strengthened awareness of climate threats and risk-reduction processes	<i>A8.1 Number of males and females made aware of climate threats and related appropriate responses</i>	National census, HIES, and MICS (P) Knowledge, Attitude and Practice (KAP) surveys (P); Baseline, interim and final evaluation reports (S) Training report (S)	0	Total = 75,000 Male = 37,500 Female = 37,500	Total = 150,000 Male = 75,000 Female = 75,000	No perverse incentives (policies, prices, monoculture industries that affect natural capital) are introduced in the project area
A7.0 Strengthened adaptive capacity and reduced exposure to climate risks	<i>A7.1 Use by vulnerable households, communities, businesses and public-sector services of Fund-supported tools instruments, strategies and activities to respond to climate change and variability</i>	National census, HIES, and MICS (P) Household surveys (S); Vulnerability assessments (P) Interim Evaluation and Final Evaluation Report (S)	0	17,333 households 2 institutions at national level 7 district offices	64,605 households 3 institutions at national level 14 district offices	Institutions are willing to use standardized approaches and ensure that future actors are willing and able to support the established institutionalized approaches. Farmers have access and are willing to use the information provided.

¹²⁶ The National Institute of Statistics of Rwanda conducts the CFSVA every 3 years.

¹²⁷ The Annual Forest Report is prepared by Rwanda Water and Forest Authority. The Monitoring system for the preparation of these reports is currently being developed.

M5.0 Strengthened institutional and regulatory systems	<i>M5.1 Institutional and regulatory systems that improve incentives for low-emission planning and development and their effective implementation</i>	Published Landscape Restoration Plans within annual district development strategies ¹²⁸ (P) Institutional and regulatory systems improvement Scorecard ¹²⁹ . (S)	0	7 draft Landscape Restoration Plans	7 finalised Landscape Restoration Plans	National and devolved policy remains favourable to stronger institutional systems for climate responsive planning and development. Constructive relations for collaboration between Government agencies, municipalities and social organizations to refine policy, regulatory and planning frameworks.
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E.5. Project/programme performance indicators

The performance indicators for progress reporting during implementation should seek to measure pre-existing conditions, progress and results at the most relevant level for ease of GCF monitoring and AE reporting. Add rows as needed.

Expected Results	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term	Final	
Component 1: Restored landscapes that support climate resilient agro-ecological systems and livelihoods in Eastern Province.						
Main Output 1: Priority landscapes brought under restoration to support climate resilient agro-ecological systems and livelihoods in Eastern Province.						
1.1 Agroforestry packages are scaled-up on rain-fed farmlands for improved soil and water management	Number of beneficiaries and farmer groups in target districts who have applied agro-forestry measures (and report improvements in soil and water management) and no longer need TREPA grant support to maintain agro-forestry measures on their land Average tree density in restored AF lands	Bi-annual technical report Interim Evaluation and Final Evaluation Report	0 farmer groups 16 tree/ha	10 farmer groups 2,000 beneficiaries (of which 1,000 are female) 100 tree/ha	160 farmer groups 32,000 beneficiaries (of which 16,000 are female) 100 tree/ha	Farmers and women groups in targeted districts are motivated to invest time and efforts in the activities. Farmers continue to engage in project trainings for the full duration of these trainings (i.e. weekly sessions for the entire year or entire cropping season).

¹²⁸ Published Landscape Restoration Plans within annual district development strategies must include landscape restoration plans and improved incentives for investment in long-term silvopastoral, agri-forestry and forestry restoration activities by private sector forestry concession holders, farmers and FFPOs

¹²⁹ In order to monitor, report and verify improvements in institutional and regulatory conditions, IUCN will develop a scorecard matrix which establishes a number of objective criteria to evaluate the capacity of district governments and evaluate the seven cross-sectoral planning and community Landscape Restoration Plans. During project inception, the scorecard and baseline will be established. Metrics include: 1) degree of integrating climate resilience metrics, 2) presence of annual performance contracts, 3) degree of harmonizing cross-sectoral monitoring and reporting mechanisms, 4) established and functioning incentives for actors at local, district and provincial levels to integrate adaptation considerations within their activities. Particular consideration will be given to incentives for participation of men and women and marginalised groups, and 4) contribute to coherent reporting at all governance level.

<p>1.2 Woodlots and tree plantations are rehabilitated and sustainably managed for productive and ecological services</p>	<p>Area/number of hectares (ha) with woodlots and tree plantations brought under rehabilitation and sustainable management;</p> <p>Area (ha) with improvements in measured agro/forestry resilience metrics such as 1) increased soil moisture and nutrient content, 2) increased biomass productivity and 3) reduced soil erosion rates</p> <p>-</p>	<p>Bi-annual technical report</p> <p>Catalogue of geo-referenced area under restoration</p> <p>and</p> <p>Degradation Surveillance Framework</p> <p>Interim Evaluation and Final Evaluation Report</p>	<p>0</p>	<p>9,245 ha put under rehabilitation or sustainable management.</p> <p>Improvements in measured metrics observed in:</p> <p>District-owned tree plantations = 175 ha</p> <p>State-owned tree plantations = 280 ha</p> <p>Concession tree plantations = 5,000ha</p> <p>Private tree plantations = 2291 ha</p>	<p>17,945 ha put under rehabilitation or sustainable management.</p> <p>Improvements in measured metrics observed in:</p> <p>District-owned tree plantations = 700 ha</p> <p>State-owned tree plantations = 700 ha</p> <p>Concession tree plantations = 10,000ha</p> <p>Private tree plantations = 6,545 ha</p>	
	<p>For the metric 2) average biomass productivity in restored forest of more than 2 years, in M3/ha/year</p> <p>- In degraded state forest</p> <p>- In degraded district forest</p> <p>- In degraded small-holder forest</p>	<p>Random sample Inventory</p>	<p>3</p> <p>3</p> <p>2.3</p>	<p>To young forest (1year old), cannot be measured</p>	<p>7.97</p> <p>6.2</p> <p>9.07</p>	
<p>1.3 Scale-up climate resilient silvopastoral packages to restore degraded rangelands</p>	<p>Area (ha) of pastoral lands brought under climate resilient silvopastoral packages;</p> <p>Area (ha) with improvements in measured silvopastoral resilience metrics such as 1) increased cattle productivity and increased pasture productivity¹³⁰</p>	<p>GIS mapping of pastureland</p> <p>Studies conducted under activity 1.3.1 to characterize the climate resilience features of the existing pasture lands</p>	<p>0</p>	<p>2,000 ha put under climate resilient silvopastoral interventions.</p> <p>Improvements in measured metrics observed in 2,000 ha</p>	<p>10,000 ha put under silvopastoral interventions.</p> <p>Improvements in measured metrics observed in 10,000 ha</p>	

¹³⁰ The project baseline will be established under activity 1.3.1. which will characterize the climate resilience features of the existing pasture lands and establish baseline levels of pasture and cattle productivity to measure improvements attributable to the project

	Average tree density in restored Silvopastoral lands	Bi-annual technical report Interim Evaluation and Final Evaluation Report	10 tree/ha	100 tree/ha	100 tree/ha	
1.4 Protective restoration measures are scaled up to climate-proof fragile, ecologically sensitive and erosion prone lands	Area (ha) of ecologically sensitive and erosion prone lands with reduced erosion and improved ecological integrity measured by reduced soil erosion rates Average tree density in restored - Road/rive side Buffer Akagera	Land Degradation Surveillance Framework Bi-annual technical report Interim Evaluation and Final Evaluation Report	0 12 tree/ha 25 tree/ha	reduced soil erosion rates in: 1) 300 ha of lake/river shorelines and 2) 300 km of roadside 2) 175 ha of Akagera Buffer zone 1400 tree/ha 2000 tree/ha	reduced soil erosion rates in: 1) 700 ha of lake/river shorelines and 2) 700 km of roadside 2) 400 ha of Akagera Buffer zone 1400 tree/ha 2000 tree/ha	
1.5 Clean and efficient cooking energy technologies promoted through support to private sector and communities to transition/reduce Biomass fuel consumption	Number of households adopt efficient cooking energy technologies	Bi-annual technical report Interim Evaluation and Final Evaluation Report	0	70,000 households	100,000 households	
Component 2: Market and value chain development for climate resilient agricultural and tree products linked to financial products and services for sustainable management of agro-ecological systems.						
Main Output 2: Climate resilient agricultural and tree product markets and value chains developed and linked to financial services to promote investments in forests, rangelands and agroforestry.						
2.1 Farmers' groups strengthened to adopt climate resilient land use	Number of Farmers' groups representatives that report an increased level of	Bi-annual technical report	0	20,396 FFPO representative s report an increased level	47,591 FFPO representatives report an increased level	Willingness of FFPO reps, Rwanda Cooperative Agency - RCA to participate in the project.

practices with access to market and finances	capacity of cooperatives to conduct business ¹³¹	Interim Evaluation and Final Evaluation Report Training report		of capacity of cooperatives to conduct business	of capacity of cooperatives to conduct business	
2.2 Enhanced climate resilience of agricultural value chains and commodities	Number of businesses/cooperatives with viable business plans established and operational for climate resilient value chains (VC)	Bi-annual technical report Interim Evaluation and Final Evaluation Report	0	0 seed enterprises, nurseries and wood farm cooperatives 0 beekeeping cooperatives 0 livestock feed enterprises and youth oriented restoration enterprises	<i>Tree crop VC:</i> 1) 3 seed enterprises, 2) 3 nursery enterprises, and 3) 50 wood farms cooperatives <i>Bee VC:</i> 20 beekeeping cooperatives <i>Fodder VC:</i> 1) 3 livestock feed enterprises, and 2) 7 youth-operated restoration enterprises	
2.3 Enhanced financial inclusion and investments in climate resilient value chains for climate resilient agricultural and tree products	Number of financial products developed, tested and rolled out to improve access to finance for agriproducts for 1) vulnerable groups/ smallholders and 2) tree crop, bee products, and fodder VCs	Bi-annual technical report Interim Evaluation and Final Evaluation Report	0	4 financial products developed and tested. At least 1 for each VC (3 total) and 1 for vulnerable groups/ smallholders	9 financial products developed and tested, and at least 7 rolled out at the national level. At least 1 for each VC and 2 for vulnerable groups/ smallholders	MFIs are willing to contribute in terms of staff and resources
Component 3: Strengthening of national and local institutional capacity and cross sectoral coordination to mainstream climate resilience in land management and planning.						
Main Output 3: Local and national institutional capacity for climate adaptation in land planning and management strengthened.						
3.1. Strengthened gender-responsive climate resilience for coordination cross-sectoral planning & community landscape restoration plans developed	Number of districts with integrated climate resilient metrics in Landscape Restoration Plans within annual district development strategies	Published Landscape Restoration Plans within the district plans Interim Evaluation and Final Evaluation Report	0	7 districts have integrated climate resilient metrics in Landscape Restoration Plans within annual district development strategies	7 districts have integrated climate resilient metrics in Landscape Restoration Plans within annual district development strategies	District planning strategies are in a process of revision during the project intervention.

¹³¹ The level of capacity of cooperatives to conduct business will increase, as measured by a capacity scorecard which will be deployed under activity 2.1.2.1. Progress will be measured/verified at mid-point and end of project.

3.2 Enhanced and coordinated knowledge and information systems for decision support	number of staff from national government and district authorities ¹³² reporting improved capacity to manage information systems and integrate climate-related aspects ¹³³	Bi-annual technical report Interim Evaluation and Final Evaluation Report Training report	0	national level staff Total = 6 Female = 3 Male = 3 district level staff Total = 28 Female = 14 Male = 14	national level staff Total = 6 Female = 3 Male = 3 district level staff Total = 28 Female = 14 Male = 14	Central and district authorities are committed to assign the appropriate individuals for the capacity building trainings and workshop
3.3. Seed and seedling supply systems enhanced to provide diverse climate adapted species and varieties.	national breeding program for adapted seed and seedling supply systems (including # agro-climatic maps) is in place	Agro-climatic map catalogue Bi-annual technical report Interim Evaluation and Final Evaluation Report	0	1 National Breeding Program established 3 agro-climatic maps for the suitability of tree and crop species	1 National Breeding Program established and maintained by national government and supported by district governments and private sector 5 agro-climatic maps for the suitability of tree and crop species	
3.4 Evidence from best practices generated and disseminated	Number (#) of climate resilience related research publications or knowledge materials produced	Review of review of research or other knowledge materials	0	12	24	

E.6. Activities

All project activities should be listed here with a description and sub-activities. Significant deliverables should be reflected in the implementation timetable. Add rows as needed.

Activity	Description	Sub-activities	Deliverables
Component 1. Restored landscapes that support climate resilient agro-ecological systems and livelihoods in Eastern Province			
Output 1.1 Diversified agroforestry packages scaled-up			
1.1.1: Identify 100 sub-areas of intervention (400 ha each) for agroforestry dissemination over Eastern Province	This activity is a significant undertaking and will use community participatory mapping and geo-referencing to identify the site intervention among 40,000 ha where soil erosion is prevalent. It is critical that this activity is conducted at the project inception	1.1.1.1: Based on existing thematic maps, identify most exposed crop/agroforestry lands over the EP 1.1.1.2: Based on local consultation, select the 100 sub-areas where agroforestry will be disseminated	1. List with 100 selected sub-areas for agroforestry plantation 2. Participatory maps indicating intervention sites

¹³² 18 staff (14 from districts, 1 from RAB, 1 from RFA, 1 from RLMUA and 1 from Meteo-Rwanda)

¹³³ Baseline will be established during project inception through a training need assessment. Improved knowledge and capacity to manage information systems and integrate climate-related aspects will be established through independent assessment of training participants improved capacity to maintain, establish or revived climate information systems supporting the eastern Province.

	<p>as site choice will need to be made based on the latest characteristics of ecological and soil stability conditions (based on physical observation and latest existing thematic maps) and willingness of farmers to participate (based on participatory approaches) at the time mapping. The slopes will be characterized (different % of slopes) before deciding on the agroforestry packages suited for specific contexts (Right tree for right place and right purpose). The agroforestry interventions options will be packaged based on farmer needs and preferences at the farm, village and landscape level. The activity will involve local government staff (District Forest Officer, District Agronomist, forest and agronomy extensionists) and will be technically supported by national and international agroforestry and landscape restoration experts availed by TREPA.</p>	<p>1.1.1.3: Participatory mapping of agroforestry block of intervention</p>	
<p>1.1.2: Train 160 farmers groups on agroforestry techniques and establish 160 MoUs with local authorities</p>	<p>This activity aims to adopt Farmer Field Schools (FFS) and Twigire Muhinzi approaches as strategies to scale-up agroforestry technologies. Farmers' promoters/FFS facilitators and sub-unit farmer leader will be sensitized and trained on agroforestry technologies and specific skills to transfer knowledge and information to the large number of farmer leaders. Farmers will be organized in 160 innovative platform to facilitate effective transfer of information and knowledge and will evolve into cooperatives to allow access to finance and to value chains. Each farmer promoter/facilitators will supervise between 20-30 sub-unit's farmer leaders, which will supervise each 10-20 farmers.</p>	<p>1.1.2.1: Organize, sensitize and train 100 farmer's leaders/promoters 1.1.2.2: Identify and implement agroforestry systems and species 1.1.2.3: Established MoUs between local authorities and supported farmer groups to sustain agroforestry investment 1.1.2.4: Organize regular learning exchange meeting between farmer's groups and reward champions</p>	<p>1. Design instructions for the agroforestry systems 2. Established MOUs</p>
<p>1.1.3: Establish and sustain one agroforestry/fruit trees nursery in each of the 100 sub-areas of intervention</p>	<p>This activity will be done with the support of the national agroforestry expert seconded by a tree nursery expert, both availed by TREPA, taking advantage of ICFAP and IUCN experience. While identifying/assessing groups in charge of nursery, the project will target a ratio of 1:1 men to women to ensure good integration of women in targeted groups. The MoUs that will be signed between selected groups and local authorities has to integrate specific gender measures ensuring place of women in decision and implementation processes. Seedling of tree species addressing interests of both men</p>	<p>1.1.3.1: Select existing private actors and/or FFS groups champions that will be in charge of nurseries and signed long-term MoUs. 1.1.3.2: Establish nursery, train 263 responsible staff and produce seedlings 1.1.3.3: Support cooperative establishment and develop management capacity</p>	<p>1. List with selected private actors and FFS groups 2. Gender-sensitive tailored training materials for nursery management</p>

	and women will be growth in these nurseries.		
1.1.4: Provide technical assistance to farmers in planting agroforestry/fruit trees and in implementation of agroforestry technologies in their owned parcels	Provide technical assistance to farmers to support them (on the job training) in hole digging, in tree/shrub seedling planting and beating-up, in weeding and in tree protection and maintenance. Seedlings will be provided freely to farmers (see activity 1.2.3). Special attention will be given to the support and guidance (on the job training) of farmers on right management of fruit trees which are requiring specific technics and skills to maximise the production. Also, for farmer introducing for the first time in their parcel a new species/variety of crops they will have to be closely guided to ensure the full success. Advice on right use of agriculture input will be provided and contact with provider will be facilitated.	1.1.4.1: Technical assistance to farmers in planting agroforestry/fruit trees 1.1.4.2: Technical assistance and training to farmers in good management of fruit trees and right use of new climate resilient crop species/variety	Technical assistance trainings delivered to farmers.
1.1.5: Establish and sustain 1 demonstration plot of 1-2 ha in each of the 100 sub-areas	This activity will involve a forest/agronomy staff of District/Sector staff technically trained and guided by international and national agroforestry experts, taking advantage of ICRAF experience and knowledge. As these plots will serve as demonstration for other farmers, gender considerations be addressed (such as choice of species and design of rainwater collection considering both men and women's interests, women's representation in decision making and implementation, etc).	1.1.5.1 For each of the targeted 100 villages/sub areas, select 1 champion FFS group and 1 site of around 1-2 ha in which demonstration plot will be established 1.1.5.2: Establish framing contract between selected FFS groups and local authorities for maintaining the demonstration plot 1.1.5.3: Established demonstration plots, train responsible farmer leaders and ensure maintenance	1. MoUs between FFS groups and local authorities
1.1.6: Monitoring, control and evaluation of supported agroforestry areas	Agroforestry area will be mapped and registered in the agroforestry database which is embedded in the RFA DFMP database. GPS tablet and specifically designed user friendly agroforestry functionalities will allow direct mapping on the field, of every consolidated block of 5-10 ha, the registration of list of owner and of names of farmer leaders/FFS facilitators/FPs, the registration for each block of the number of existing and /or planted trees per species, the archiving and consultation of the signed MoU, etc.	1.1.6.1: Collect and register baseline data in agroforestry database 1.1.6.2: Perform regular M&E	1. Baseline report for agroforestry systems 2. M&E reports
Output 1.2 Woodlots and tree plantations are rehabilitated and sustainably managed for productive and ecological services			
1.2.1: Restore 700 ha of degraded District owned tree plantations and provide technical assistance for their sustainable management	The project will restore 700 ha of degraded district owned forest land by promoting the adoption of a Simplified Forest Management Plan (SFMP), as recommended by 2013 forest law. Awareness campaign for local stakeholders will promote district forest concession as a sustainable strategy in a long-term.	1.2.1.1 Design first SFMPs of District owned forests of Kayonza and Nyagatare 1.2.1.2 Support district land ownership/demarcation conflict cases solving and management plan updating 1.2.1.3 Plant differentiated species to demarcated district forest land borders on the field	1. Design of SFMPs of district owned forests 2. Restoration plans for degraded or sloppy areas 3. 1000 ha of District forest brought under restoration

		<p>1.2.1.4 Restore 1000 ha of District forest which are the most degraded and/or located in sloppy areas most exposed to soil degradation</p> <p>1.2.1.5 Ensure awareness and identify local stakeholders for district forests concession</p> <p>1.2.1.6 Support long-term contracting of restored 700 ha of District forest to selected local actors</p>	
<p>1.2.2 Restore, in collaboration with RFA and Districts, an area of 700 ha of very degraded State-owned tree plantations and in long-term concession of 10,000 ha of State FMUs to private investors</p>	<p>The project will adopt an integrated approach for restoration of 700ha highly degraded state-owned tree plantation and support RFA and Districts providing guidance on processes for long-term concession of 10,000 ha.</p>	<p>1.2.2.1 Design DFMP of Kayonza and Nyagatare</p> <p>1.2.2.2 Support State forest stand ownership/demarcation conflict cases solving and management plan updating</p> <p>1.2.2.3 Restore 700 ha of very degraded State forests which are the most exposed to soil degradation</p> <p>1.2.2.4 Conduct awareness campaign on State FMUs concession</p> <p>1.2.2.5 Support long-term contracting of 10,000 ha of State FMUs</p> <p>1.2.2.6 Monitoring and evaluation of contracted State FMUs</p>	<ol style="list-style-type: none"> 1. Restoration plans for degraded state forests 2. Awareness raising and communication materials
<p>1.2.3 Restoration, in collaboration with smallholders, the area of 6,545 ha of very degraded private tree plantations and their sustainable management under private FMUs according to approved SFMPs</p>	<p>This activity aims to develop a participatory land mapping with the communities to identify blocks of small-holder private lands (on average 40 ha per block, so around 160 groups) which are degraded and/or located in sloppy areas most exposed to soil degradation for which restoration is highly required. The mapping will be guided by Forest Sector Extensionists (trained and supervised by TREPA forestry experts) assisted by DFMP software tools and related GPS/tablets, which will provide automatic statistics, maps and register owners. When the list of owners and map of parcels is completed, groups will then be trained and supported (on the job training) in administrative process to establish cooperatives, including election of committee members and elaboration of their internal rules, where all required elements referring to the respect of SFMPs and to investment/benefit sharing mechanisms will be integrated (this will be done under output 2.1). The restoration works in selected small-holder forests will be tendered to forest private operators. TREPA forest experts will work with RFA officer, District Forest Officers and of Forest Sector Extensionists in monitoring and evaluation of contracted State FMUs.</p>	<p>1.2.3.1 Identify 6545 ha of blocks of private forest lands to be restored</p> <p>1.2.3.2 Build capacity of local stakeholders on new private FMU approach and methods</p> <p>1.2.3.3 Establish an MoU for each small-holder group to engage in private FMUs management</p> <p>1.2.3.4 Support smallholders in private FMU cooperatives establishment</p> <p>1.2.3.5 Restore the targeted 6545 ha of smallholder forests</p> <p>1.2.3.6 Design and approved SFMPs of private FMUs and support their right implementation</p>	<ol style="list-style-type: none"> 1. Cartography of identified land of private forest lands to be restored 2. Guidelines for establishment of cooperatives 3. Design of SFMPs of private FMUs

Output 1.3 Scale-up climate resilient silvopastoral packages to restore degraded rangelands			
1.3.1 Characterize the climate vulnerabilities of the existing pasture lands	Existing pasture lands will be characterized and livestock farmers clustered according to the size of their grazing lands. Tree and grass species that exist on their grazing land will be identified and grouped according to the level of their resilience to climate change. Pasture productivity will be estimated considering current and future climate projections while assessing the impact of adaptation benefits of this project implementation. In addition, a study will be conducted on the carrying capacity of the grazing land annually. The pastures will be categorized and mapped in categories of high degraded and vulnerable lands that need strong intervention, moderate degraded and low degradation with minimum intervention.	<p>1.3.1.1 Identification and clustering livestock farmers according to the size of grazing lands</p> <p>1.3.1.2 Identification of existing tree and forage species composition in grazing land</p> <p>1.3.1.3 Identification of existing grasses and plant species composition in grazing lands and support degraded pasture lands by re-seeding with grass and suited fodder tree species</p> <p>1.3.1.4 Estimation of pasture productivity, cost benefit analysis in current climate trends and prediction of the change after intervention and in future climate trends</p> <p>1.3.1.5 Conduct carrying capacity study of the grazing land</p> <p>1.3.1.6 Design silvo-pastoral plan, integrated with the District Land Use Plan</p>	<ol style="list-style-type: none"> 1. Inventory of tree and forage species in grazing land 2. Study with analysis of pasture productivity and cost-benefit analysis 3. Study of carrying capacity of the grazing land 4. Plan for silvopastoral systems
1.3.2 Select fodder trees, shrubs, grasses, and herbaceous legumes with high drought resilience potential to increase the climate adaptive capacity of the pasture lands	Sites will be identified for tree nursery establishment and nurseries will be established in project sites. It will be managed by the livestock communities under supervision of ICRAF and RAB. The preferred agroforestry trees and grasses will be identified according to livestock farmers' needs in livestock communities. A list of potential species is included in Annex 1. Tree and grasses seeds sourcing and prioritization will be combined with output 3.3 work on quality germplasm access. Trainings will be conducted on nursery management for fodder trees and multiplication of grass forages for wider distribution and local enterprise development.	<p>1.3.2.1 Identification of sites and tree nursery construction</p> <p>1.3.2.2 Identification of preferred agroforestry trees, grasses and fodder legumes in the area by livestock communities through rapid participatory survey</p> <p>1.3.2.3 Tree seeds and forage species acquisition</p> <p>1.3.2.4 Training on tree and forage nurseries set-up, management, planting material distribution and enterprise development</p>	<ol style="list-style-type: none"> 1. Cartography of identified sites for tree nursery construction 2. List of prioritized agroforestry trees, grasses and fodder legumes 3. Training materials on tree and forage nurseries.
1.3.3 Purchase and disseminate agroforestry fodder trees, improved grasses and herbaceous legumes to improve grazing land and build resilience of degraded lands	This activity aims to select, organize, sensitize and motivate lead farmers on using improved fodder technologies. Model pastureland will be established for fodder trees and different grasses as pilot demonstration for farmers in project sites. Farm demarcation and paddocking will be established using agroforestry fodder, timber, poles and fruit trees. Farmers will be supported in planting agroforestry fodder trees, grasses, timber, fruits, in	<p>1.3.3.1 Stakeholders engagement: Dialogue/ negotiation, selection, organization and awareness creation for farmer promoters on improved fodder technologies and their motivation</p> <p>1.3.3.2 Establishment of pilot demonstration as model pasture lands including different grasses and fodder legumes</p> <p>1.3.3.3 Support farmers in planting agroforestry fodder trees, timber, fruit trees and grasses in</p>	<ol style="list-style-type: none"> 1. Cartography of farms demarcation and paddocking using agroforestry, timber and fodder trees

	farmlands. Farmers will also be trained on management of existing trees in pasture lands using Farmer managed natural regeneration (FmNR) approach.	farmers pastures, in contour or scattered in pasture 1.3.3.4 Establish farms demarcation and paddocking using agroforestry, timber and fodder trees	
1.3.4 Organize two Training of Trainers (ToT) sessions per year for 30 lead farmers on management grazing lands for climate resilient pasture productivity	This activity aims to train farmers on tree management practices including harvesting tree leaves and pruning to improve grazing land productivity and milk production. Farmers will be trained on practices of mixing fodder tree leaves and grasses to improve cattle nutrition. Experiences of ICRAF and RAB in feeding livestock with trees fodder and high-quality grasses will be adapted to the context of the Eastern Province and tailored to the specific needs of the livestock communities. Moreover, farmers will be trained on manure recycling to restore degraded land and maintain high productivity of pasture lands. Farmers will also be trained on harvesting time of grasses to optimize the use of grasses, reduce fodder deficit during the prolonged dry season and grazing management to restore degraded lands and enhance fodder budgeting, i.e. grazing rotation. Livestock communities will be also equipped and trained for fodder conservation. An acquisition of hay baling boxes for 60 farms with 3 boxes each and 500 plastic tubes for silage making will provided.	1.3.4.1 Training 30 leader farmers (ToTs) on management of trees (harvesting tree leaves for feeding the cows, pruning, thinning) for improving milk and meat productivity 1.3.4.2 Training 30 farmers on mixing fodder tree leaves and grasses for improved animal nutrition 1.3.4.3 Training 30 farmers on manure composting for enhanced rangeland productivity 1.3.4.4 Training on harvesting time of grasses for optimizing grasses use, reduce fodder deficit during the dry season and grazing management for restoring degraded lands and fodder budgeting (grazing rotation) 1.3.4.5 Acquisition of hay baling 3 boxes for each of 60 farms and 500 plastic tubes for silage making	1. Gender-sensitive tailored training materials on management of trees, manure composting and enhanced rangeland productivity
1.3.5 Assess water availability and rainwater potential harvesting in 60 pastures and purchase 60 water tanks of 5000 m ³ and construction of 60 water trough to reduce drought stress for the livestock	Building on the Master Plan for Irrigation and Rainwater Harvesting, water availability will be mapped in pastures of the Eastern Province, followed by the construction of water trough for livestock communities. Sites for rainwater harvesting will be identified and mapped in pasture lands for the construction of 5000 m ³ dams for each targeted pasture. The livestock community will be therefore sensitized for water infrastructure management to maintain rainwater harvesting facilities. Ideally, it will be good to provide for each individually pasture one tank for rainwater harvesting if budget allows but in case where it will not be possible, farmers will be grouped and share available water and then livestock communities will be trained on water management.	1.3.5.1 Mapping water availability in pastures of the Eastern Province for boreholes 1.3.5.2 Water construction for livestock communities 1.3.5.3 Identification and mapping of sites for rainwater harvesting in the pastures 1.3.5.4 Organize and training 15 livestock communities for water infrastructure management (water through, rainwater harvesting and water use)	1. Maps of water availability in pastures 2. Maps of sites suitable for rainwater harvesting
1.3.6 Conduct twice per year capacity building workshops for 30 leaders farmers, 7 government extension staff, 7 church leaders	This activity aims to organize capacity building workshops for stakeholders including lead farmers, government extension	1.3.6.1 Meeting with livestock communities 1.3.6.2 Identification of knowledge gaps in management of	1. Assessment on knowledge gaps in management of rangelands for government extension services

<p>and 7 local authorities in charge of development in 7 districts</p>	<p>church leaders and local authorities. Government extensionists will be trained on fodder production and pasture management using grasses, water and trees. Extension materials will be produced and published, and information will be disseminated through radio, TV, and newsletters. Regular learning exchange visits between livestock farmer groups will be organized to share the experience and champion farmers will be rewarded</p>	<p>rangelands for government extension service and farmer leaders 1.3.6.3 Awareness raising for 7 local authorities and 7 church leaders for mobilizing livestock communities 1.3.6.4 Training 7 government extension staff and 30 farmer leaders on fodder production and pasture management (grasses, water and trees) 1.3.6.5 Develop extension materials (Training manuals, posters and leaflets) and involve media for information dissemination through radio, TV and newsletters 1.3.6.6 Organise regular learning exchange visits between livestock farmer's groups and reward champion farmers</p>	<p>2. Awareness raising and communication materials 3. Training manuals for fodder production and pasture management.</p>
<p>Output 1.4 Protective restoration measures are scaled up to climate-proof fragile, ecologically sensitive and erosion prone lands</p>			
<p>1.4.1 Restore 700 ha of lake/river shorelines and 700 km of roadside through tree/shrub planting and participatory management</p>	<p>This activity focuses on detailed participatory scoping and identification, mapping and classification of potential priority river/lake shorelines and roadside requiring restoration (considering erosion and water management risks, existing tree density), using existing thematic maps (forest cover, road, river, etc.). To ensure the effectiveness and sustainability of this activity, the project team will establish 210 river/lake shorelines and roadside Community Vigilance Committee (CVC) and sign participatory management MoUs. It will further conduct training and support RFA/District foresters and Sector extensionists in establishment of CVC using the method experienced successfully by RFA/FMBE project in Rwamagana in 2018-2020.</p>	<p>1.4.1.1 Identified priority lakes and rivers shorelines and roadside to be protected reassessed at time of inception for changes since project submission 1.4.1.2 Establish 210 river/lake shorelines and roadside Community Vigilance Committee (CVC) and sign participatory management MoUs 1.4.1.3 Conduct participatory tree/shrub planting campaign</p>	<p>1. List with prioritized lakes and river shorelines and roadsides for protection. 2. MOUs with Community Vigilance Committee 3. Materials for campaign</p>
<p>1.4.2 Restore and protect 400 ha of Akagera Buffer zone through tree/shrub planting and implementation of participatory silvopastoral plan</p>	<p>This activity focuses on the restoration and protection of 400ha buffer zone by facilitating the participatory design and implementation of 20 silvopastoral plans for buffer zone and neighbouring ranches. TREPA silvopastoral experts, in collaboration with District and sector officer in charge, will support CVCs (and related ranches owners) in design of silvopastoral plans where the protected buffer zone will be used as a specific area for wood/fodder production and beekeeping. The TREPA project will contract a forest operator to produce required tree seedling and ensure their proper planting on buffer zone while involving CVC</p>	<p>1.4.2.1 Establish 20 buffer zone's Community Vigilance Committee (CVC) and sign 20 participatory management MoUs 1.4.2.2 Participatory design and implementation of 20 silvopastoral plans for buffer zone and neighbouring ranches 1.4.2.3 Conduct participatory tree/shrub planting campaign on the buffer zone</p>	<p>1. Silvopastoral plans for buffer zone protection 2. Materials for campaign</p>

	<p>according modalities set in MoUs. Gender attention will be given for the labour employment (at least 50% of manpower should be women).</p>		
<p>1.4.3 Provide technical support to 3 local nurseries in production of selected climate resilient multipurpose trees/shrub seedlings</p>	<p>This activity aims to provide technical support to at least one local nursery for multipurpose silvopastoral/fruit trees seedlings per sub-area. This activity will take advantage of the agroforestry nurseries establishment, which is foreseen in output 1.1 to avoid duplication, ensure better nursery sustainability and be more cost efficient by benefiting of synergies</p>	<p>1.4.3.1 Assess and identify at least 3 champion nurseries 1.4.3.2 Provide technical support and additional required equipment/tools to nurseries for specific tree seedling production</p>	
<p>1.4.4 Provide technical assistance to the seven Districts to perform monitoring and evaluation of restored areas under protection integrating climate resilience</p>	<p>The activity will provide technical assistance to RFA in design of required regulation for management of the specific cases of roadside plantation and river/lake shore plantation integrating climate resilience. The project specialists will support RFA with technical inputs to the process of formulating a regulation (such as ministerial decrees) to enforce their proper participatory management and integrate climate resilience. The project will support the District Forest Officers and Forest Sector Extensionists in monitoring and evaluation of restored lake/river shorelines and Akagera buffer zone integrating climate resilience indicators. It will consist in field mission for: (1) provision of technical guidance to local actors to strengthen the understanding/implementation of agreed MoUs; (2) oversight of MoUs and (3) production of periodic District reports on management of these type of restorations. The MoU's control and M&E of these areas under special protection will be done using the user-friendly DFMP software tools and related GPS/tablets. The national and international forestry experts will provide technical support for the on the job training of officers in these M&E activities.</p>	<p>1.4.4.1 Provide technical assistance to RFA in design of required regulation for management of the specific cases of roadside plantation and river/lake shore plantation integrating climate resilience 1.4.4.2 Integrate new specific functionalities for M&E of these protected areas in the DFMP database (see output 3.2) 1.4.4.3 Organise annual M&E field missions for the restored areas under special protection</p>	<p>1. Technical inputs to draft regulation for roadside and river/lake plantations 2. Technical recommendations made for integration of new functionalities for M&E 3. Annual M&E reports</p>
<p>Output 1.5 Clean and efficient cooking energy technologies promoted through support to private sector and communities to transition/reduce Biomass fuel consumption</p>			
<p>1.5.1 Conduct a large scale and intensive awareness campaign across the Eastern Province on ICS and cooking fuel solutions and opportunities</p>	<p>Identify, compare and select, in collaboration with MININFRA, District and different actors of the biomass energy sectors the different models of ICS and in collaboration with ICS producers/cooking fuel to prepare a communication strategy, tools and messages specifically targeting and adapted to each</p>	<p>1.5.1.1 Select the ICS models adapted to household needs 1.5.1.2 Develop the communications strategy, tools and messages adapted to rural households</p>	<p>1. Communications strategy, messages and tools.</p>

	profile of households in the Eastern Province.		
1.5.2 Support access to ICSs for over 100.000 rural Households of EP	In collaboration with ICS producers/cooking fuel dealers and central (RFA, MININFRA) and local authorities (Districts), TREPA biomass and micro-finance experts will develop, for each type of ICS/fuel to be promoted, the category/profile of households to be targeted and the related subsidy/microcredit schemes to be implemented to facilitate their adoption of the stoves with minimum concessionality. These schemes will be designed to align with the procedures and rules of identified local partner financial institutions identified in output 2.3, and comply with the modalities of collaboration to be signed between these finance institutions, the concerned local companies selling the identified fuel/ICS combinations and the “Cooking fuel and technology” hubs (see 1.5.3 below).	<p>1.5.2.1 Develop and establish subsidy/microcredit scheme and rules with local finance institutions and other economic actors</p> <p>1.5.2.2 Subsidize dissemination of improved cookstoves for poorest households</p> <p>1.5.2.3 Support private sector in biomass fuel / ICS business development.</p>	<p>1. Subsidy/micro credit scheme technical outline drafted</p> <p>2. Business models for private sector (report and guidance)</p>
1.5.3 Establish “Cooking fuel and technology” hubs in 14 main local markets of TREPA intervention areas	This activity will establish the “Cooking fuel and technology” hubs will have to offer only ICS and fuels that are certified/recognized by the MININFRA energy team. In addition, the hubs will have to deliver to clients advice/training/demonstration service (see Activity 1.5.1) in order to help households identify the model which best suited to their need/capacity.	<p>1.5.3.1 Develop the business model and internal rules for the “cooking material and technology” hubs</p> <p>1.5.3.2 Identify the most strategic market locations for hub establishment</p> <p>1.5.3.3 Design the hub architectural plan</p> <p>1.5.3.4 Establish 14 Hubs</p> <p>1.5.3.5 Train hub staff and establish accounting and financial procedures</p>	<p>1. Business model for cooking fuel and technology hub (report and guidance)</p> <p>2. Hub architectural drawings</p> <p>3. Training materials and training</p>
1.5.4 Provide feedback into enabling environment activities supporting the shift from traditional cooking to clean ICS and fuels	provides ICS-specific inputs into the enabling environment activities described in Component 3 to support the viability of measures to promote improved cookstoves and fuels. The sub-activities under Activity 1.5.4 will allow regulatory and taxation measures to be grounded in real-world experience and provide rapid feedback on their effectiveness in support of TREPA project objectives.	<p>1.5.4.1 Develop standard and minimum performance requirements for ICS that will be disseminated through “Cooking material and technology” hubs</p> <p>1.5.4.2 Provide input into policies and taxation systems incentivizing adoption and use of high-efficiency stoves</p>	<p>1. Standards and minimum performance requirements (report)</p> <p>2. Technical notes/reports for policies</p>
Component 2. Market and value chain development for climate resilient agricultural and tree products linked to financial products and services for sustainable management of agro-ecological systems			
Output 2.1 Farmers’ groups strengthened to adopt climate resilient land use practices with access to market and finances			
2.1.1. Integrate targeted farmers into existing FFPOs or where appropriate form new ones	Updated list of cooperatives and farmers groups with their characteristics including location, membership, type of activity/value chains in which they are involved as well as the identification of pertinent issues which prevent the	<p>2.1.1.1 Updated analysis of existing cooperatives</p> <p>2.1.1.2. Analysis and identification of new cooperatives</p> <p>2.1.1.3. Formalization of new groups and cooperatives</p>	<p>1. Updated analysis report of existing cooperatives</p> <p>2. Analysis report of new cooperatives</p> <p>3. 30 cooperatives legally registered</p>

	<p>groups from and deliver their function as intended.</p> <p>Secondly, a gap analysis will be conducted to ascertain whether there is still low participation in formal farmer groups and cooperatives in dairy, fruits, timber, firewood, dairy fodder and beekeeping across the seven districts and where there is sufficient demand, support will be provided to farmers to form new cooperatives.</p>		
<p>2.1.2. Conduct capacity assessment on organizational and financial management of existing FFPOs and develop a comprehensive strengthening plan</p>	<p>This activity aims at identifying capacity enhancement opportunities and governance, financial and cooperative management issues that hinder competitiveness and the potential to increase productivity and sustainable, climate resilient farming practices (production, processing and marketing). The assessment will inform a capacity enhancement program for cooperatives to deliver livelihood and environment benefits.</p>	<p>2.1.2.1 Capacity needs assessment 2.1.2.2. Development organizational strengthening plan</p>	<p>1. Capacity needs assessment report 2. Organizational strengthening plan report</p>
<p>2.1.3 Capacity enhancement programme for farmer groups and cooperatives (FFPOs)</p>	<p>This activity will focus on enhancing farmer capacity in cooperative management, financial literacy and value chains production of products based on climate resilient land use . Under this activity members of cooperatives will be guided on the best way to engage and acquire economic benefits from targeted value chains including; Tree-based value chain development, Honey and beeswax value chain development and Fodder value chain development This will be achieved through training, exchange/learning visits and established demonstration sites under TREPA component 1 building on the Farmer Field Schools</p>	<p>2.1.3.1 development of training programme 2.1.3.2 Delivery of training programme 2.1.3.3 Direct provision of organisational strengthening 2.1.3.4 FFPOs coordinate activities to achieve economies of scale and collective</p>	<p>1. Training program</p>
<p>2.1.4. Support FFPOs to conduct advocacy around climate change related policies and market reforms to regularize prices and subsidies</p>	<p>WVR Work with community leaders at sector level to identify and form Citizens Voice Action (CVA) Groups, Strengthen the capacity of farmers' organizations to conduct advocacy through CVA (Citizen Voice and Action) Groups, Conduct community dialogues for monitoring standards and community score cards and Monitor the implementation of community scorecard action plans through CVA Quarterly Reflection Meetings which will as well include presentations of advocacy papers.</p>	<p>2.1.4.1 Work with community leaders at sector level to identify and form Citizens Voice Action (CVA) Groups 2.1.4.2 Strengthen the capacity of farmers' organizations to conduct advocacy through CVA (Citizen Voice and Action) Groups 2.1.4.3: Conduct community dialogues for monitoring standards and community score cards. 2.1.4.4. Monitoring the implementation of community scorecard action plans through CVA Quarterly Reflection Meetings</p>	<p>1. Reports from CVA Groups 2. Community score cards and reviews</p>
<p>Output 2.2 Enhanced climate resilience of agricultural value chains and commodities</p>			

<p>2.2.1: Tree crop value chain development</p>	<p>Key to sustainable supply of planting materials is a functioning private sector enterprises and sustainable business models. As such, community-managed tree seed enterprises will be established to secure the continued supply of quality seeds for the production of seedlings in nurseries in support of restoration efforts in the province and beyond. This activity builds on farmer technical capacity developed under component 1 output 1.1, 1.2, 1.3 and 1.4. which support initial forestry and agroforestry seed production and nursery cultivation. The intention is to transfer some of these responsibilities to the private sector. The transition to private sector ownership will likewise be supported by output 3.3 which will enhance the national seed and seedling supply system and promote climate adaptation through access to high quality and climate resilient planting material.</p>	<p>2.2.1.1 establishment of seed enterprises 2.2.1.2 establishment of nursery enterprises 2.2.1.3 establishment of contractual wood farming</p>	<ol style="list-style-type: none"> 1. Seed enterprises 2. Nursery enterprises 3. Contractual wood farms
<p>2.2.2: Bee product value chain development</p>	<p>An estimated 20 beekeeping cooperatives operate in the Eastern Province or its surroundings. Members of these cooperatives will be trained on improved honey production techniques and value-adding through wax-based products. This involves establishing honey and wax storage stations and associated processing facilities Cooperatives are also an important vehicle for fostering tree growing for improved bee forage. The project will foster interactions between the cooperatives and private companies through business round tables, trade fairs and similar events around honey and products based on beeswax. Each beekeeping cooperative will have established at least 10 ha of diverse bee fodder species in their localities will lead to the establishment of about 25,000 bee forage trees sourced from the nurseries established under component 1. The activity will also introduce improved beehives for at least 50% of the cooperatives and establish the 'Akagera brand' for Eastern Province landscape labelled honey and wax products.</p>	<p>2.2.2. Strengthening beekeeping cooperatives 2.2.2.2 Improving tree-based bee forage 2.2.2.3 Introduction and distribution of modern beehives 2.2.2.4 'Akagera brand' establishment for landscape labelled honey and wax products</p>	<ol style="list-style-type: none"> 1. Landscape level brand development 2. Bee forage stands 3. Technical capacity for improved beehives management
<p>2.2.3: Fodder value chain development</p>	<p>This activity will focus on the development of sustainable business models and establishing livestock feed and fodder landscape restoration enterprises with an emphasis on involving youth and women who will be</p>	<p>2.2.3.1 Establishment of livestock feed enterprises and storage areas 2.2.3.2 Establishment of restoration enterprises</p>	<ol style="list-style-type: none"> 1. Livestock feed enterprises 2. Restoration enterprises 3. Milk and milk products storage techniques

	<p>trained (under activity 2.1.5) to establish and manage such enterprise at district level in groups and cooperatives. The enterprises will harvest livestock feed which is abundant during the rainy season, preserve and package it, and sell it during the dry season.</p>	<p>2.2.3.3 Proper management of existing cooling and storage stations</p>	
<p>2.2.4 Building local capacity and knowledge for climate resilience in value chains</p>	<p>Building local capacity for climate resilience, use of renewable energy facilities and energy efficiency in the targeted value chains will be critical in response to climate change and associated challenges. A short training program will be developed and differ in terms of form and content across the following stakeholder groups: 1) political decision makers, 2) providers of technical, business and financial services, 3) agribusiness and cooperative management (which will be covered under 2.1.3), and 4) farmers. Coordinated with farmer group and cooperative training delivered under activity 2.1.3, the training will be conducted at rural resource centres developed under output 2.2.5</p>	<p>2.2.4.1 Development of training modules on climate-resilient agribusiness 2.2.4.2 Delivery of training modules on climate-resilient agribusiness</p>	<p>1. Training modules developed 2. Community members whose capacity is strengthened.</p>
<p>2.2.5. Establish/rehabilitate seven Rural Resource centers and market infrastructures for value chains for climate resilient agricultural and tree products</p>	<p>To support ongoing delivery of production and marketing services close to the sites of large agroforestry/fruit trees nurseries (under activity 1.1.3), the project will establish or rehabilitate seven rural resource centers, where appropriate and feasible, in FFPOs and linked to State-borne extension services. Service offer will include information on climate resilient production, marketing of products derived from it, and options for accessing public-private funding. Service provision includes ICT-based services and linkages with technical, businesses and financial service providers.</p>	<p>2.2.5.1 Establish rural resource centers that serve as the go to centres for training and learning processes for farmers and local communities.</p>	<p>1. Rural resource centres equipped with the necessary materials to boost resilience at local levels</p>
<p>2.2.6. Trade fairs and business roundtables connecting farmers with other value chains actors for marketing products based on climate-resilient land use</p>	<p>The main task here is to facilitate trade fairs and business roundtables that serve as a networking point for FFPOs, other value chain actors, service providers and investors. It is intended to create exposure of local products to national and global buyers and processors.</p>	<p>2.2.6.1. Organize annual trade fairs and business roundtables in Years 2, 3, 4 and 5</p>	<p>1. Trade fairs focusing on portfolio of targeted value chains 2. Business roundtables for specific value chains</p>
<p>2.2.7 ICT supported climate risk, market information and knowledge products for climate resilience in value chains</p>	<p>The activity will include support to the Digital Inclusion in Rwanda" to promote climate resilience in agricultural and tree crop value chains. Activity 2.2.5 will be linked with output 3.2 and provides the direct support to farmers to participate in information sharing</p>	<p>2.2.7.1 Compile and disseminate market information 2.2.7.2 Establish farmer-to-farmer communication 2.2.7.3 Produce user friendly knowledge products</p>	<p>1. Packages of market information for relevant value chains 2. climate information packages 3. Knowledge products</p>

	and use of knowledge platforms and products. Activities will include, but not limited to, mobile phone updates through short-message services (SMS) and information dissemination through existing mobile applications ¹³⁴ loaded with the up-to-date climate risk and market information and data on pertinent value chains, as well as citizen science to effectively engage the users with prompt responses and updates.		
Output 2.3 Enhanced financial inclusion and investments in value chains for climate resilient agricultural and tree products			
2.3.1: Financial education and savings mobilization for groups involved in restoration activities and linked with MFIs	Farmers and FFPOs involved in activities under 1.1-1.5 and 2.2 will be educated in financial services and savings to service their businesses. The groups will be linked to MFIs and will be able to receive loans or loan contributions for example for equipment	<p>2.3.1.1 Financial education and introduction to financial services</p> <p>2.3.1.2 Savings mobilization and linking to MFIs</p> <p>2.3.1.3 Develop group loan products for cost sharing to acquire envisaged equipment, for example ICS access for targeted households.</p> <p>2.3.1.4 Evaluation of mechanism and potentially develop product under 2.3.3</p>	<p>1. Financial education package for financial services providers.</p> <p>2. Savings linkage model with MFIs,</p> <p>3. Cost sharing modalities, including matching loans for equipment – Evaluation report report</p>
2.3.2: Promote and upscale agri-finance products of MFIs (maize, beans and rice) including water collection, planting of trees, soil erosion mitigation	This activity focuses on including climate resilient methods of land management into mainstream agricultural products which are maize, rice and beans. ICCO works already with MFIs on these crops and also knows the value chains well. The activity focuses on integrating indicators to assess improved methods of land management farmers undertake alongside with the production. Eventually they will get an incentive in form of faster and bigger loans	<p>2.3.2.1 Training MFIs staff</p> <p>2.3.2.2 Include indicators in credit assessment</p> <p>2.3.2.3 Establish monitoring system to verify indicators</p> <p>2.3.2.4. Test revised products</p> <p>2.3.2.5 Evaluate revised products for mainstreaming</p>	<p>1. Training package for MFIs on climate resilient farming/ landscape restoration etc</p> <p>2. Clear climate sensitive indicator included in loan assessment</p> <p>3. Monitoring system to report on indicators in place (GIS?)</p> <p>4. Testing report available</p> <p>5. Evaluation report available</p>
2.3.3 Detailed and comprehensive scoping of financial service potential in the respective value chain for detailed product design and development.	In-depth analysis of the three prospective value chains and financial flows in the chain (including informal and embedded finances) will inform financial product development. Key financial gaps will be identified along with required market linkages for finance in the chain (POs, companies and financial service providers) * this analysis is very time sensitive and needs to be undertaken no longer than three months before the product development process starts	<p>2.3.3.1 Screening products and services</p> <p>2.3.3.2 Design products and services</p> <p>2.3.3.3 Facilitate linkages between chain actors and financial service providers</p>	<p>1.A detailed report on financial flows, profit opportunities and financial gaps</p> <p>2. Draft design of key relevant financial products in collaboration with chain actors and MFIs</p> <p>3. Linkages between key chain actors and financial service providers established. These linkages can serve as alternative securities for eventual financial products</p>
2.3.4: Supporting MFI to design and pilot test financial products for the selected value chains	Financial products are designed in detail, approved by the management and board of financial service providers. Detailed client and staff training packages are designed and implemented and the trajectory for pilot testing of financial products is	<p>2.3.4.1 Approval of products and services</p> <p>2.3.4.2 Mobilization and education of savings groups</p> <p>2.3.4.3 Sensitization and financial education of saving groups, already trained on climate impact,</p>	<p>1. Financial products approved for pilot testing by each MFI</p> <p>2. Client and staff training packages designed and implemented including climate resilient methods of agriculture and monitoring of the VCs</p>

¹³⁴ Existing mobile applications will include: "Cure and feed your livestock", "eNtrifood", "Weather and crop calendar" and "AgriMarketplace"

	started. The financial institutions capacity will be strengthened in key domains: risk management., portfolio management and social performance.	to find fund facilities to implement their solutions 2.3.4.4 Training of staff and clients 2.3.4.5 Pilot testing and monitoring products 2.3.4.6 Capacity building of 3 financial institutions in key areas: risk management, portfolio management and social performance	3. Pilot test trajectories are started with all MFIs and regularly monitored 4. Capacity of the financial institutions are strengthened in key areas such as risk management, social performance and portfolio management.
2.3.5: Evaluate the financial products	After the pilot tests, the products are reviewed on: -Client satisfaction with the products terms and conditions -Relevance for climate resilient methods and impact on climate resilience -Internal capacity of MFI to incorporate the products in a sustainable manner - Upscaling possibilities identified	2.3.5.1 Evaluate financial product 2.3.5.2 Assess and adapt financial sustainability of product 2.3.5.3 Confirm products for upscaling at MFI level	1. Product evaluation reports on client satisfaction and impact on climate resilience. 2. Internal reports on MFIs potential and challenges to incorporate and grow the new products
2.3.6: Implement the roll out and upscaling plan of financial products developed	-MFIs will be guided to mainstream the products in their operations based on the evaluation reports. Organizational mainstreaming of products includes: -Adapting their lending procedures to include new products, -install in-house training unit at MFI level -Install digital tools such as A-CAT and data management systems to support new products.	2.3.6.1 Adapt product for mainstreaming at branch and national level 2.3.6.2 Develop each MFI capacity to replicate product 2.3.6.3 Digitalization of tools and systems to support the financial products	1. Updated procedural manuals in place at MFI level 2. In house training unit per financial service provider to replicate products for existing and new staff 3. Supportive digital and data management systems in place to properly manage new products
2.3.7: Facilitate impact investors to engage in investment for SMEs in the relevant value chains and connect to insurance companies	This activity includes scoping of prospective investors, identifying and developing attractive business propositions for both financial service providers and SME's as well as guide investors through the process of due diligence resulting in conclusive funding contracts. Awareness is raised among the financial institutions on agri-insurance available.	2.3.7.1 Business proposals development 2.3.7.2 Identification of investors and Due diligence 2.3.7.3 Financing contracts 2.3.7.4 Linkage with agri-insurance scheme	1. Business proposals developed for interested funders. 2. Organize ratings for prospective investees 3. Successful conclusion of due diligence process 4. Funding contracts in place for 3 MFIs 5. Funding contract in place for 3 MFIs 6. MFIs are aware of agri-insurance services available.
2.3.8: Facilitate learning and sharing for replication in the financial sector	In collaboration with other output teams, the ICCO financial team will disseminate relevant experiences to the broader financial sector who might be interested to replicate products and services targeting climate resilient financial products. This will be done in a way that competitiveness of selected MFIs will not be decreased but to create an interest at finance industry-level for climate-resilient financial products.	2.3.8.1 Regular collaboration with all program stakeholders and chain actors to tune up all implementation activities. 2.3.8.2 Organize learning events on relevant financial products 2.3.8.3 Introduce financial service perspectives in regular program reporting and planning 2.3.8.4 Organize financial sectors seminars to share lessons learned and solicit interest of other financial sector actors	1. Report and action plans from learning events 2. Financial services incorporated in project reports and plans 3. Sector wide knowledge, understanding and inspiration to finance climate resilient interventions shown through reports and PR materials
Component 3. Strengthening of national and local institutional capacity and cross sectoral coordination to mainstream climate resilience in land management and planning			
Output 3.1 Mainstreamed gender-responsive climate resilience for coordination cross-sectoral planning & community landscape restoration plans developed			
3.1.1 Organize and facilitate 10 multi-stakeholder workshops to identify and integrate climate resilience metrics into 35 (7 district*5years) annual district	Supporting the integration of climate resilience metrics into district development strategies and annual performance contracts	3.1.1.1 Organise and facilitate annual planning of restoration interventions	1. annual plans for restoration interventions in component 1 2. annual evaluations

development strategies and performance contracts	through the facilitation of joint planning workshops.	3.1.1.2 Organise and facilitate annual evaluation and setting up of performance targets	
3.1.2 Hold monthly round tables to facilitate the collaboration for adaptation actions between institutions in charge of agriculture and agroforestry	Strengthen collaborative efforts, in particular between institutions in charge of agriculture and agroforestry (i.e. MINAGRI, RAB and RFA) to encourage synergies and avoid overlapping mandates and redundancy in different climate resilience interventions. The involved staff at both national and local levels shall be empowered to readily share information and activity plans through regular (e.g. monthly exchange) communication.	3.1.2.1 Hold monthly round tables with both national and district administrations in Eastern Province. 3.1.2.2 Facilitate discussions and provide technical support in decision-making for cross-sectoral collaborative efforts at landscape scale.	1. Round table and technical support meeting notes
3.1.3 Deliver 5 training sessions at central and district level, to enhance capacities for funding mobilization, planning, and delivery of climate adaptation actions	Training of technical staff including agriculture, livestock and forestry extension agents and planners on climate risks and their implications for cross-sectoral aspects. District level planners will also be better equipped to access funding for adaptation actions from FONERWA and other sources.	3.1.3.1 Develop curricula and training materials on climate risks for the sectors agriculture and forestry and adaptation solutions with cross-sectoral implications. 3.1.3.2 Deliver in collaboration with other partners 10 training sessions for 35 people.	1. training curricula 2 training material
3.1.4 Provide technical assistance for the design and implementation of a cross-sectoral monitoring and reporting mechanism for climate resilient actions	Organisation of knowledge exchange on cross-sectoral monitoring and evaluation.	3.1.4.1 Organize and facilitate cross sectoral annual monitoring and reporting workshops 3.1.4.2 Support joint annual knowledge sharing events (forum) for technicians, decision-makers, planners, policy-makers and landscape restoration managers 3.1.4.3 Carry out joint 40 (2 times per quarter) field interventions by mixed teams of development agents, in particular RFA and RAB	1. Annual monitoring and reporting workshop materials 2. Knowledge sharing events materials and products 3. 40 field intervention reports
3.1.5 Identify and train cross-sectoral teams of technicians to become landscape restoration planners and managers in collaboration with communities	Strengthen the capacity of the cross-sectoral teams of technicians in the East Province for better outreach beyond the project sites, promotion scaling-up of landscape restoration for climate resilience.	3.1.5.1 Identify cross-sectoral teams of technicians to be trained and become landscape restoration planners and managers 3.1.5.2 Organize training materials on planning and implementation of integrated landscape restoration 3.1.5.3 Undertake training of selected teams of technicians on integrated landscape restoration	1. Report identifying targeted cross sectoral teams 2. Training materials/manual for integrated landscape restoration
3.1.6 Collaborate with communities to define priority criteria and select primary target intervention areas to restore ecological functionality	Organize demonstrating activities at the pilot sites to present intervention results to decision-makers and planners to upscale or replicate interventions in other parts of the country.	3.1.6.1 Identify and assess actors in community restoration plans 3.1.6.2 Update primary target intervention areas on maps 3.1.6.3 Refine in collaboration with communities, priority criteria for landscape restoration	1. Report identifying and assessing actors in community restoration plans 2. Updated maps of intervention areas 3. Manual for prioritisation criteria for landscape restoration
3.1.7 Train 28 staff in the district authorities and provide technical assistance for the preparation of 7 landscape restoration plans with climate resilience protocols /	Assist districts authorities to prepare 7 landscape restoration plans (one per district). This will involve not only training but also provide technical assistance,	3.1.7.1 Facilitate logistics and acquisition of satellite imagery, GIS system and other surveying equipment 3.1.7.2 Organize and facilitate training of 28 district staff (4 per	1. Satellite imagery (digital) 2. GIS system and survey equipment recommendations report 3. Training manual for operating technical tools and systems

<p>technical packages at the district level</p>	<p>logistics, acquisition of satellite imagery, GIS system and other surveying means, and guidance in terms of technical analyses as well as economic and financial assessment.</p>	<p>district) in operating acquired technical tools and systems 3.1.7.3 Provide guidance in terms of technical analyses as well as economic and financial assessment</p>	<p>4. Training manual/guidelines for economic/financial analysis</p>
<p>Output 3.2 Enhanced and coordinated knowledge and information systems for decision support</p>			
<p>3.2.1 Improve existing knowledge and information systems to ensure effective integration of climate risk related data to support climate informed decision making.</p>	<p>Support the revival and establishment information systems that will enable easy access to knowledge and information by project beneficiaries and stakeholders. Such information systems may include FLR monitoring systems, Climate early warning systems and Knowledge/information exchange systems. The project will first conduct an updated gap analysis on the status of knowledge and information systems on climate resilience in the Eastern Province and then determine the needs in terms of technical and financial assistance to update and improve the knowledge and information systems in the Eastern Province to support climate resilience activities.</p>	<p>3.2.1.1. Conduct an updated gap analysis on the status of knowledge and information systems on climate resilience in the Eastern Province 3.2.1.2 Determine the needs in terms of technical and financial assistance to update and improve the knowledge and information systems in the Eastern Province to support climate resilience activities 3.2.1.3 Improve, and where necessary, establish new communication channels between the existing information platforms</p>	<p>1. Updated gap analysis report on knowledge and information systems 2. Needs assessment report for technical and financial assistance for improving knowledge and information systems for climate resilience activities 3. Reports on established platforms and their design, implementation and user guidelines</p>
<p>3.2.2 Organize 4 trainings for 18 staff (14 from districts, 1 from RAB, 1 from RFA, 1 from RLMUA and 1 from Meteo-Rwanda) on managing information systems and integrating climate-related aspects</p>	<p>Identify knowledge needs for managing information systems with integrated climate information. Conduct training for technical experts.</p>	<p>3.2.2.1 Carry out training needs assessment for different information systems 3.2.2.2. Organize and facilitate training of staff operating the knowledge and information systems in Eastern Province 3.2.2.3 Follow up performance of trained staff and support maintenance of established or revived information systems</p>	<p>1. Training needs assessment for different types of information system. 2. Training manuals/guidelines for different information systems 3. Performance review of trained staff and systems</p>
<p>Output 3.3 Seed and seedling supply systems enhanced to provide diverse climate adapted species and varieties</p>			
<p>3.3.1 Integrate climate change aspects in policies and strategies for the seed sector and develop business models to promote climate resilient varieties</p>	<p>Enhance the enabling conditions for strengthening the seed sector and promoting climate resilient seed and seedling varieties. This will be achieved by conducting an assessment is to analyse the needs and opportunities for the growth of the sector, the actors, and influential factors in the agribusiness system. The project will identify appropriate business models for seed supply in order to develop business development services to promote climate resilient seeds and seedlings.</p>	<p>3.3.1.1 Conduct situational assessment on the seed and seedling sector to identify opportunities for promoting climate resilient varieties and development of climate proof business models. 3.3.1.2 Assess sector policies and legal framework to identify entry points and integrate climate change aspects to promote climate resilient seed and seedling varieties. 3.3.1.3 Support establishment of public-private collaboration platforms based on demand-supply scenarios developed for tree species priority groups, based on which location and size of seed sources to be established can be determined, and quality material promoted through the</p>	<p>1. Situation assessment report of seed and seedling sector 2. Assessment report of seed sector legal frameworks 3. Demand supply scenario studies for climate resilient tree species 4. Seed promotion material 5. Report on identified seed marketing associations/networks and recommendations</p>

		most appropriate channels of supply, including possible seed marketing associations/networks.	
3.3.2 Prepare climate informed maps and information portal for habitat suitability for up to 100 climate resilient tree and crop species in Rwanda	Provide the knowledge and information required to establish a national modality for conservation, improvement and utilization of tree genetic resources, leading to establishment of improved seed sources <i>cum</i> conservation areas, as well as delivery of germplasm of the priority climate resilient tree species in Rwanda. The generation of the maps will be based on climate suitability modelling, and knowledge of genetic differentiation from field trials and genomic studies.	3.3.2.1 Prepare high resolution maps for habitat suitability and recommendation domains for up to 100 priority tree and crop species in Rwanda. 3.3.2.2 Document important patterns of genetic differentiation of selected indigenous species to identify climate resilience characteristics and potential for climate adaptation 3.3.2.3 Develop and introduce a user-friendly decision support system and interactive information portal (“what to plant where”), allowing stakeholders to make informed choices regarding the best-suited tree species and their seed sources location for all relevant sites and functions. .	1. High resolution maps for habitat suitability for up to 100 priority tree species 2. Reports on important patterns of genetic variation to identify climate resilient characteristics 3. Website / platform 4. Decision support tool (MS Excel)
3.3.3 Design and establish a national-level breeding programme for up to 25 climate resilient priority species of fruit, food, fodder and timber species	Conduct trainings and education modules for national and grassroot actors on climate resilient seeds, germplasm handling, phytosanitary regulations to raise awareness and improve on material sourcing, storage, need for documentation and management of invasive species. Technical backstopping will be offered to nursery operators on proper planting material handling to reduce pest and disease problems at the nursery stage and mix up of varieties for different ecological settings. The activity will further identify existing- and establish new seed production <i>cum</i> conservation areas of the priority tree species in Rwanda with focus on the Eastern Region. The project will design a breeding programme for up to 25 priority species, including identification of distribution and deployment zones - considering climate change; and including design, establishment, management and use of breeding seedling orchards (BSOs) for selected model species.	3.3.3.1 Design a breeding programme for up to 25 priority species, including identification of distribution and deployment zones based on climate information 3.3.3.2 Range wide acquisition of priority species from their distribution area, including procurement of superior fruit planting materials and develop germplasm exchange protocols/agreements with regional and international research and development bodies; and range wide collections of plus tree families (from natural stands as well as possible landraces) complementing existing collections 3.3.3.3 Design and establish mother blocks and BSOs in relevant deployment zones. 3.3.3.4 Assess, manage and use the mother blocks and BSOs for breeding, acquisition of vegetative propagules and seed procurement.	1. Breeding programme design documents 2. Seed and germplasm exchange protocol documents and agreements 3. Design documents of mother blocks 4. Seed procurement protocol 5. Catalogue with tailored and gender-sensitive breeding programme adaptation measures
3.3.4 Conduct 12 trainings for six multi-agency working groups on seed-seedlings and climate adaptation	Raise awareness and conduct trainings for district and national sectoral working groups and district level NGO coordination board on matters concerning diverse quality seed and climate resilience. Trainings may include (i) short course on developing climate resilient seed and seedling systems for national and local institutions conducted covering decision support tools on	3.3.4.1 Conduct training needs assessment for key stakeholders to develop climate resilient seed and seedlings supply systems with the establishment of a tree seed network of local and national stakeholders; and assess the need for introduction of climate proof standards in existing tree germplasm facilities 3.3.4.2 Conduct 12 trainings for 6 multi-agency working groups in	1. Training needs assessment for seed supply systems 2. Training manual and materials for climate resilience tree seed procurement 3. Training manual/guidelines and materials for nursery development and business operation 4. Published training and extension information on seeds and climate adaptation

	climate adaptation and plant varietal suitability mapping, (ii) trainings of trainers on germplasm handling, phytosanitary regulations, and (iii) development of 'nursery hygiene' best practices to manage pest and disease problems, depending on the needs identified	relevant methods and relevant technologies in climate resilient tree seed procurement, nursery development and business operation as well as extension of knowledge to target beneficiaries. 3.3.4.3 Prepare, publish and distribute training, extension and information material in all aspects of the program.	
Output 3.4 Evidence from best practices generated and disseminated			
3.4.1 Produce 6 research publications on the role of agroforestry systems for building climate resilience in semi-arid landscapes	document research results on a specific set of research questions related to the role of agroforestry for increasing resilience of semi-arid landscapes. While the initial phases of activities have been selected under Output 1, the outcomes from this research will be used to inform ongoing on-the-ground activities under Output 1 to improve the projects impact over time as well as to inform policy revision and formulation under Output 3.	3.4.1.1 Conduct a field research and survey to assess the different agroforestry practices in the Eastern Province 3.4.1.2 Assess the productivity characteristics of the identified types of agroforestry systems and develop a framework for evaluation 3.4.1.3 Determine the effect of agroforestry trees on biodiversity richness 3.4.1.4 Estimate the carbon sequestration potential by different agroforestry systems via dendrometry, tree ring analysis and tree growth studies 3.4.1.5 Assess the available knowledge about the effect of trees on water balance in semi-arid landscape to provide baseline information 3.4.1.6 Assess the role of agroforestry systems for the dynamics of the microclimate 3.4.1.7 Conduct scenarios to determine trade-offs of agroforestry systems	1. Field research and survey report on agroforestry practices in EP 2. Assessment report on productivity characteristics of agroforestry systems 3. framework for evaluation of agroforestry systems 4. Carbon sequestration report through tree ring analysis 5. Report on water balance Scenario report on different agroforestry systems 6. Report on agroforestry systems and micro climate
3.4.2 Produce 2 publications on the role of agroforestry systems for food security and building socio-economic resilience of local communities.	Analyze the value chains in selected landscapes of the Eastern Province and identify the different financing options for high nutritious agroforestry products, identifying the various organizational and institutional arrangements which support value chain development as well as assessing and profiling the associated business opportunities. The initially considered commodities for the value chains include fruit, nuts.	3.4.2.1 Identify high nutritious (fruits/nuts/fodder) value chains and characterise at least 4 with high potential for building resilience to the local population 3.4.2.2 Market analysis for selected potential value chains analysed	1. 4 reports on value chains for building resilience of local populations 2. Market analysis for the 4 selected value chains
3.4.3 Locally test user-friendly improved cooking stoves (ICS) and produce 4 knowledge materials to train 6 local producers and 12 national/district staff and inform best practices	This activity will focus on producing inventory of available ICS technologies in the project area and documentation of stove characteristics, including efficiency, fuel consumption, health effects, cooking behaviours, and user acceptability will be assessed through in-depth interviews and focus groups. Project experts will carry out laboratory testing of the most	3.4.3.1 Conduct baseline studies on availability and accessibility of biomass fuel in the Eastern Province 3.4.3.2 Prepare inventory on the efficient ICS best adapted to raw material availability and user appreciation in the Eastern Province 3.4.3.3 Train 6 local producers in design and technology development for ICS	1. Baseline studies on biomass 2. Inventory report on ICS 3. Training materials for local ICS producers

	<p>promising ICS efficiency focusing on gas emission and acceptability by farmers. Efficient and low gas emission selected models of ICS will further be tested in kitchen participatory testing at households' level and compared to traditional cook stoves (3 stones stove). Finally, financial analysis and cost-benefit simulations for assessing the net benefits of changes in ICS technologies will be conducted to demonstrate how the economic case for ICS is contextual, pointing to the households' choice among ICS. A training will support local artisans and small-scale business entrepreneurs, composed of youth and women, in design and adaptation of their models based on user's feedback</p>		
<p>3.4.4 Produce 4 knowledge and research materials on the socio-economic barriers to adoption of climate resilient practices for land restoration and identified opportunities for economic incentives.</p>	<p>This activity will focus on producing studies on (i) barriers for low adoption of agroforestry and (ii) socio-economic benefits from agroforestry to inform future actions and policies. The project will establish a large-scale experiment in participatory development that emphasises local technology based on farmer-led testing of agroforestry options, where farmers themselves select agroforestry technologies, implement the field tests and assume responsibility for disseminating the results locally. An evaluation the on-farm agroforestry plots will provide useful supplementary information for the design of improved agroforestry systems.</p>	<p>3.4.4.1 Assess the barriers/causes to low adoption of agroforestry for building resilience in semi-arid landscapes 3.4.4.2 Assess socio-economic benefits from agroforestry systems and identify incentive mechanisms for farmers 3.4.4.3 Test different kind of extension mechanisms as one of the barriers, and analyze answer from farmer to each system</p>	<ol style="list-style-type: none"> 1. Barrier assessment report of low adoption of agroforestry 2. Assessment/analysis report of socio-economic benefits of agroforestry 3. Report and financial/economic analysis of Identified incentive mechanisms for farmers 3. Market study / consumer preference survey on incentives
<p>3.4.5 Conduct 8 capacity building sessions and develop 8 knowledge sharing tools to foster scaling-up of agroforestry systems for climate resilient landscapes and promote sustainable use of biomass energy.</p>	<p>This activity will focus on improving the monitoring system and capacity for the agroforestry activities. The project experts will review and test the existing M&E system to understand the gaps and weaknesses that need to be improved. Indicators for agroforestry monitoring will be developed with active participation of key actors, stakeholders and beneficiaries' groups. The right tools and methods to measure indicators will be selected in a participatory manner to ensure common understanding and responsibility among agroforestry stakeholders. Policy support tools for agroforestry monitoring and evaluation will be developed to ensure that agroforestry M&E system is integrated into the overall planning of land use.</p>	<p>3.4.5.1 Agroforestry monitoring capacity enhanced 3.4.5.2 Develop 8 of knowledge sharing tools to improve up-take of research for policy and practice 3.4.5.3 Conduct 8 training sessions for extension services and other relevant actors on incentive mechanisms in agroforestry sector 3.4.5.4 National capacity in ICS testing and standardisation improved. 3.4.5.5 Train four PhD students on applying research methodologies for agroforestry systems to strengthen national research capacity and excellence in the field</p>	<ol style="list-style-type: none"> 1. Training materials on monitoring 2. Outline of 8 knowledge sharing tools 3. 8 training session materials for extension services on incentive mechanisms 4. Training manual on ICS testing and standardisation 5. Training report for PhD students and their applied research outputs

E.7. Monitoring, reporting and evaluation arrangements (max. 500 words, approximately 1 page)

Besides the arrangements (e.g. annual performance reports) laid out in AMA, please give a summary of the project/programme specific arrangements for monitoring and evaluation. Please provide the types of interim and final evaluations. Describe Accredited Entity (AE) project reporting relationships, including to the NDA/Focal Point and between AE and Executing Entity (EE) as relevant, identifying reporting obligations from the EE to the AE. This should relate to the frequency of reporting on project indicators, implementation challenges and financial status.

The activities on monitoring, action learning, evaluation and reporting are incorporated Component 3. IUCN will lead this activity through the development and implementation of a monitoring, evaluation, reporting and learning (MERL) system. The key elements of the project's monitoring, reporting and evaluation system are outlined below and mainstreamed by project actors in the inception phase.

The project logical framework outlines the expected results, indicators, means of verification, baseline values and target values at mid-term and end-term.

(a) Data collection, management and reporting system: A fit-for-purpose data collection, management and reporting system will be deployed. Progress reporting undertaken by the PMU will be on annual and semi-annual basis throughout the life of the programme. The annual/semi-annual reports will provide information on the performance of the project against planned activities and set targets. Reports will also provide details on the project achievements, evidence of success during the reporting period, constraints during implementation and how they were addressed. Reporting results will help strategize interventions within the project logic model and allow for adaptive project management to respond to needs. Reports will also include a compilation of lessons learned, adaptive management, and financial expenditure statements. Mobile data collection apps will be integrated and used in conjunction with tablet technology particularly for forestry and agroforestry management proposed under component 1. **(b) Methodology and tools for monitoring and reporting of key outcomes:**

In monitoring project results, project managers and independent assessors will utilize various tools and methodologies to measure and monitor the three key outcomes of the programme. The main tools include Participatory Assessment of Land Degradation and Sustainable Land management in Grassland and Pastoral Systems -PRAGA¹³⁵, Stakeholder Approach to Risk Informed and Evidence Based Decision Making (SHARED)¹³⁶, Saiku¹³⁷ and InVEST.¹³⁸ These tools are widely used by IUCN, are user friendly and customizable for specific data collection and analysis. They will be used as tools to monitor biophysical changes in the landscapes and therefore will help inform the indicators for use in project M&E.

The main methodological approaches will include:

- Participatory rangeland assessments, combined with remote sensing to specifically monitor areas covered by rehabilitated/protected ecosystems;
- Regular field/site monitoring visits to document and validate the number and coverage of ecosystem-based adaptation systems that have been established/enhanced through programme activities;
- Knowledge, Attitude and Practice (KAP) survey to monitor programme beneficiaries;
- Scorecards to assess degree of awareness and integration of climate change to national and sector plans; and
- Vulnerability assessments to monitor changes in adaptive capacity and reduced exposure to climate risks.

(c) Outputs: A simple progress ranking tool will be used to assess the delivery of project outputs. This ranking tool will be part of the project results dashboard. A description of the progress ranking tool is provided below:

Ranking	Description	Criteria
1	Above expectations	<ul style="list-style-type: none"> • Activities and results exceed workplan targets • There have been significant time and/or resource efficiencies • Results are being achieved significantly faster than expected • Project activities have contributed to unexpected positive results (e.g. among non-target beneficiaries, or outside target areas)

¹³⁵ <https://www.iucn.org/theme/ecosystem-management/our-work/global-drylands-initiative/gdi-projects/participatory-assessment-land-degradation-and-sustainable-land-management-grassland-and-pastoral-systems-praga>

¹³⁶ <http://www.worldagroforestry.org/shared>

¹³⁷ Saiku Server is a web-based open source software that facilitates data visualization and data querying. www.openforis.org/tools/collect-earth/tutorials/saiku.html

¹³⁸ InVEST is an ecosystem services analysis and mapping tool that is effective for balancing competing environmental and economic goals.

2	On target	<ul style="list-style-type: none"> Activities and results align with workplan
3	Below expectations	<ul style="list-style-type: none"> Activities and results fall below workplan targets There are significant delays in delivery There are significant delays in achieving results Results are significantly lower than expected
4	Completed	<ul style="list-style-type: none"> Activities and results have been completed (No further reporting is required)
5	Cancelled	<ul style="list-style-type: none"> Activities have been cancelled (a justification should be provided)

(d) Monitoring and Evaluation Plan: IUCN has overall responsibility for monitoring and evaluation of the project and these responsibilities will be detailed in the M&E Plan. IUCN will report to the GCF as follows:

(a) Annual performance reports (APRs), including financial management reports, which will include dates and amounts disbursed for each funded activity and compliance with financial covenants; and

(b) An interim evaluation report and a final evaluation report for the project. The evaluations will assess the performance of the project against its project results which include the relevant GCF investment framework criteria, including financial/economic performance as part of the project efficiency and effectiveness criterion.

The APR will include a narrative report (with supporting data) on implementation progress based on the logical framework in the project, including a report on ESMS as well as gender. The report will be aligned with the modalities set out in the GCF results management framework and its performance measurement frameworks.

The M&E plan will detail the tools mentioned above including the progress ranking tool, the KAP survey, the policy influence scorecard, PRAGA, SHARED, Saiku, InVest, DevResults and will have set targets for specific deliverables

F. RISK ASSESSMENT AND MANAGEMENT

F.1. Risk factors and mitigations measures (max. 3 pages)

Please describe financial, technical, operational, macroeconomic/political, money laundering/terrorist financing (ML/TF), sanctions, prohibited practices, and other risks that might prevent the project/programme objectives from being achieved. Also describe the proposed risk mitigation measures. Insert additional rows if necessary.

For probability: High has significant probability, Medium has moderate probability, Low has negligible probability

For impact: High has significant impact, Medium has moderate impact, Low has negligible impact

Prohibited practices include abuse, conflict of interest, corruption, retaliation against whistleblowers or witnesses, as well as fraudulent, coercive, collusive, and obstructive practices

Selected Risk Factor 1

Category	Probability	Impact
Technical and operational	Low	Low
Description		
Inefficient data collection processes limit effective monitoring and reporting.		
Mitigation Measure(s)		
IUCN and ICRAF will assist with the development of tools and methodologies for efficient data collection. The PMU will build the capacity of staff and targeted personnel, and the project will invest in technical capacity building for beneficiaries.		

Selected Risk Factor 2

Category	Probability	Impact
Technical and operational	Medium	Low
Description		
Limited availability of qualified human resources with the necessary experience to manage issues concerning risk, governance, landscape management approaches and others.		
Mitigation Measure(s)		
The project will strive to hire qualified personnel with the required experience to deliver on the needs of the project and uphold IUCN standards. The personnel selection process will be rigorous and will account for gender equity and social inclusion. This will ensure that the project has qualified professional teams to make up the Program Management Unit and field staff. Trained technical staff in the PMU will lead the training of project personnel in the project areas (community extension workers) to facilitate the implementation of project activities and ensure the expected outcomes and impacts from the project.		

Selected Risk Factor 3

Category	Probability	Impact
Technical and operational	Medium	Medium
Description		
Natural disaster and extreme climate-induced events such as prolonged droughts or higher frequency of drought as well as torrential rainfalls destroy or delay project interventions		
Mitigation Measure(s)		
The project is designed to operate within the context of recurrent drought, and it is likely that drought will occur during the project period. The occurrence of drought will inevitably have consequences for project delivery but will also strengthen support for the role of the project in mitigating such risks in the long-term. Enhanced information and early warning systems will strengthen drought management while restoration of natural resources in drought will reinforce adaptive capacity and demonstrate the value of the project. Additional livelihood activities will also reinforce adaptive capacities and resilience. The project will develop planning tools that are explicitly designed to mitigate this recurrent risk.		

Selected Risk Factor 4

Category	Probability	Impact

Other	Low	Medium
Description		
<p>Social risks related to potential peoples' equity and access to project benefits, , including:</p> <ul style="list-style-type: none"> - Risk of unjustified preferential treatment when selecting sites and beneficiaries of project services - Risk of discrimination or unjustified preferential treatment when choosing farmer as promoters/ facilitators and when selecting farmers to participate in training - Risk of excluding gender groups through design of training measures (e.g. timing of training, composition of groups etc.) - Risk of unjustified preferential treatment in case owner of the plots will receive benefits and as such would benefit from privileged treatment. - Risk of impacting vulnerable groups whose livelihood depend on forest resources or on biomass resources from the buffer zones - Potential risk of discrimination or preferential treatment when selecting the FMUs that will benefits from project services and resources. - Potential risk of discrimination or preferential treatment when distributing tree seedlings - Potential risk of discrimination or preferential treatment when distributing water tanks and constructing troughs - Risk of unjustified preferential treatment and elite capture in the distribution of the ICSs (e.g. per credit or subsidy) 		
Mitigation Measure(s)		
<p>Through in-depth consultations with communities and stakeholders during the proposal development process and throughout project implementation, and through the engagement of community leaders, this project will ensure that no activity will exacerbate existing inequities. This project will promote the equitable access to activities and assets by youth, elders and women in targeted communities. A rigorous methodology for beneficiaries' selection is in place to ensure the equitable access of the most vulnerable people to the project's benefits Gender sensitive approaches will be taken in training activities. In relevant activities, the Ubudehe social categorization will be taken into consideration, established by the Ministry of Local Government and the National Institute of Statistics of Rwanda (NISR). Communities periodically rank the households in their area on a scale of 1 to 6 according to their perceived poverty and vulnerability status, with a score of 1 being the most vulnerable and 6 the least. This will ensure that the social status of the target group is appropriately taken into consideration. Where appropriate, the project will make use of traditional dispute resolution mechanisms such as gacaca and abunzi.</p> <p>More details on mitigation of social risks are provided in the ESMF.</p>		
Selected Risk Factor 5		
Category	Probability	Impact
Technical and operational	Medium	Medium
Description		
Inadequate operational capacity to support the introduction of the proposed project approaches		
Mitigation Measure(s)		
<p>The project aims to build the resilience in the landscape and strengthen the adaptive capacity of men and women in the Eastern Province. These communities will be dependent on the additional capacity that the project will provide in order to address the climate change challenges they face and builds sustainable and resilient livelihood. The required operational capacity has been identified through project design and planning, and the various institutions involved have committed to provide the support essential to success. Each of the sectors will be fully represented by the relevant line ministries. The risk of this capacity not being available is considered low, given that all project plans are clearly aligned with the evolving strategies of the relevant line ministries, which in turn are clearly aligned with national priorities. The levels of support required will be continually monitored and adjusted through the project's M&E system. In the unlikely event of capacity gaps arising, these will be addressed through the cross-sectoral project governance system, reflecting the shared responsibility for the success of the project.</p>		
Selected Risk Factor 6		
Category	Probability	Impact
Governance	Medium	Medium
Description		

The project governance mechanisms fail to bring about the necessary collaborative work and/or the new institutional systems for climate-responsive planning and development. For example, potential conflict between communities who are claiming ownership on the state land

Mitigation Measure(s)

A key element of the project is the participative planning that will bring about cross-sectoral integration and institutionalization of new systems for climate-responsive planning and development. This implies the need good governance and adoption of effective coordination mechanisms. The project design considers collaborative mechanisms such as cross-sectoral thematic tables and development of cross-sectoral monitoring and evaluation systems to ensure that enabling factors for cross-sectoral collaboration are at place. Should difficulties be encountered in introducing necessary changes, the cross-sectoral project governance mechanisms will provide a forum in which the nature of obstacles can be determined, and political solutions can be conceived. This is expected to minimize the likelihood of occurrence of silo approach in climate-responsive planning and development across implementing entities.

The risk of conflict over land ownership is considered low risk because the project will carry out spatial mapping of the state forest land in an open and transparent way through community meetings; this will involve recording any existing land title of all adjacent land owners and achieve common agreement on boundaries. Such community land consultation meetings are common practice in Rwanda; they have proven effective for preventing or solving potential disputes over land ownership

Selected Risk Factor 7

Category	Probability	Impact
Technical and operational	Low	Medium

Description

Lack of engagement of producers to coordinate production planning and market access may result in maintenance of the status quo (low prices, quality and reliability).

Mitigation Measure(s)

The project will engage farmers who demonstrate willingness and commitment to participate in demand-driven activities. These groups will be screened; their strengths and weaknesses identified, and the organizational strengthening activities of the Project will improve their functioning. In the consultation process smallholder farmers showed high interest in the activities relevant to value chains, therefore probability of occurrence is low.

Selected Risk Factor 8

Category	Probability	Impact
Technical and operational	Low	Low

Description

The project does not include any activities that require physical displacement (resettlement) or involuntary taking of land (land acquisition). However, there is a possibility that restoration measures implemented in the three land use systems (i) state and district owned tree plantations, (ii) road side and shoreline areas and (iii) the buffer zone of the Akagera National Park might require new access restrictions or strengthening enforcement of existing access restrictions. While the restoration and forest management practices are expected to increase the productivity of woodlots and tree plantations and through elevated supply capacities bring down costs for woody biomass and as such household expenditures (in particular for cooking fuel), for restoration measures to be effective, often temporary restrictions on the use of forest land and resources are required. This might affect the livelihood of vulnerable people who are highly dependent on these forest resources and display a low adaptive capacity.

Mitigation Measure(s)

To identify, avoid and address livelihood impacts from access restrictions a Process Framework (PF) has been developed. In adherence with the ESMS Standard on Involuntary Resettlement and Access Restrictions the PF includes a dedicated social impact assessment; it further establishes the need to direct project benefits to people affected by access restrictions and in case this was not sufficient to restore their livelihoods, the requirement to provide additional mitigations measures (see Annex 5 of the ESMF).

Selected Risk Factor 9

Category	Probability	Impact
Other	Low	Low

Description

Environmental risks include:

- Impacts on biodiversity from non-native species with risk of developing invasive characteristics
- Water use for irrigation of nurseries /abstraction from local sources incl. ground water sources potentially affecting water table.
- Negative impact on water balance in the watershed due to the use of water competitive Eucalyptus.
- Risk of fires propagation into the new restored tree plantation, caused by accidental fires from nearby shrubland

Mitigation Measure(s)

Table 20 in the FS lists the species that have been pre-selected for the agroforestry systems and in Annex 1 the FS provides a list of pre-selected tree and shrub species per intervention. This work will be further refined under Output 3.3 which enhances the seed and seedling supply systems to provide diverse climate adapted species and varieties and includes the production of instructive materials on tree selection to control risks related to invasive species.

For forest restoration, the project will continue with plant eucalyptus or pine species as these are already there and focus on effective management of existing poorly managed forests including establishing new markets and long-term buyer relations. While it is recognized that existing species composition includes exotic with impacts on local soil moisture, light availability, fire patterns, nitrogen mineralization rates and soil chemistry, it is not intended to introduce new species but instead the focus will be in improving management practices to restore degraded forests. Where appropriate, restocking by adding new plants will be done. Where possible, introduction of diversified species (including native) to replace Eucalyptus spp will be done in collaboration with forests owners. Note that the project will not use any genetically modified organisms (GMOs).

For the selection of fodder species, because of the difficulty of finding native species that can serve as fodder while displaying strong climate resilience features, it is quite likely that non-native species will need to be introduced. The introduction will be guided by ICRAF who, based on comprehensive research and tests in the Eastern Province of Rwanda, suggest the use of drought resistant fodder trees such as leuceana diversifolia, Leuceana tricandra, Leuceana palida, Calliandra calothyrsus and Vernonia amygdalina. None of them have known invasive characteristics.

Nurseries will be placed in sites where there is availability of water (e.g. close to wetlands or to exploited agriculture land with sufficient quantity of irrigation water or in sites with rain water collection ponds etc.). It will be ensured that nurseries will not use community water points.

Regarding the risk on water competition from the use of Eucalyptus, it has to be noted that the use of Eucalyptus will be restricted only to restore existing very degraded Eucalyptus small-holder woodlot (6545 ha = 0,7 % of the EP land area), where the existing very degraded Eucalyptus plantation will be replaced by a new productive one, to increase significantly the sustainable supply capacity of wood, the carbon sequestration, the restoration of forest ecosystem services, while reducing the pressure on neighbouring biomass resources subject to depletion (tree in crops, crop residues, shrubland areas). However, with the establishment of farming contracts with sawmill/wood pellet factory companies, the champions woodlot growers will be motivated to shift to other high value commercial value lowering the risk on water competition. Also, most of the tree plantations are located on the upstream areas of water catchment on slopy marginal lands not adapted for crops, and are not located in downstream areas which are kept for agriculture. In consequence, risk of competing with crops for groundwater resources is very limited. Anyway, to mitigate any minor risk on water use, the project will ensure the selection of species/origin which are adapted to drought condition and are using less water, while applying silviculture techniques (longer coppice period, avoid removal of leaves and small branches to secure the increase of soil organic matter, avoid big clear cutting during dry season, etc) allowing the restoration/improvement of forest ecosystem services (soil erosion and fertility control, water regulation).

Firebreaks are used only in a few areas where fire risk exists, especially nearby shrubland of Kirehe, Gasabo and Nyarugenge where accidental fires can exist in July-August. These risks are linked to human bad practices, rather than by climate change impact itself. This fire risk is usually and systematically mitigated by the establishment of firebreak, and most importantly by the good silviculture practices with good forest coverage limiting small dry grasses that could support fire propagation.

Selected Risk Factor 10

Category	Probability	Impact
Legal	Low	Low

Description		
Labour condition – risk of contracted third party (forest operator) no complying with national /international labour laws/standards		
Mitigation Measure(s)		
The contract with the contractor will require compliance with national labour laws.		
Selected Risk Factor 11		
Category	Probability	Impact
Technical and operational	Medium	Low
Description		
COVID-19 – risk of operational disruptions due to travel and meeting restrictions		
Mitigation Measure(s)		
The project team will adopt an adaptive approach to dealing with COVID-related restrictions on travel and face-to-face meetings. This may involve rescheduling activities so as not to delay the overall implementation plan, holding meetings remotely via teleconference, and holding gatherings outdoors to reduce the risk of transmission.		

G. GCF POLICIES AND STANDARDS

G.1. Environmental and social risk assessment (max. 750 words, approximately 1.5 pages)

The project was designed considering the potential social and environmental risks and impacts as well as IUCN's relevant safeguard Standards. The proposal has been screened on social and environmental risks following the procedures of the IUCN Environmental and Social Management System (ESMS). The screening resulted in the project being classified as a moderate risk project (category B). The detailed results of the ESMS screening and the rationale for classifying the project are presented in the ESMS Screening Report attached as Annex 6a.

The project is expected to lead to positive environmental and social impacts as its aim is to transform drought-degraded land in the Eastern Province into restored, productive and climate-resilient ecosystems. In addition to environmental benefits, the project will also improve livelihood conditions through enhanced ecosystem services relevant for local communities including water and enhance food security and will further provide tangible economic benefits for small holders and households – including energy efficient cooking stoves and new income opportunities associated with the promoted value chains. However, there is a possibility that some project activities might involve minor or moderate E&S risks if not carefully managed. The key risks and mitigation strategies are described below. It is not expected, however, that any of the identified risks would likely cause significant adverse environmental and/or social impacts that severely affects sensitive receptors (biodiversity, humans etc.), that were diverse, unprecedented, irreversible or permanent. Most of the risk issues are judged as low risks, only one as moderate and it is expected that the low risk issues can be readily addressed through good management practices and mitigation measures. The project is therefore categorized as moderate risk project.

While the geographical focus of the project has been defined as the Eastern Province and its seven districts, the target pilot sites for the restoration interventions can only be selected during project implementation. Their determination will be based on the climate vulnerability of the sites based on exposure, sensitivity, and adaptive capacities, state of ecosystem degradation as well as respective physical and socio-economic drivers for degradation. This analysis is guided by the spatial assessment of landscape restoration opportunities following the ROAM approach. As a consequence, a more detailed risk analysis will be undertaken once the sites have been selected and the restoration interventions are formulated in form of sub-projects. An Environmental and Social Management Framework (ESMF) has consequently been prepared (see attachment 6b) that delineates the process of assessing risks and identifying suitable mitigation measures and spells out requirements for consultation and disclosure.

A high-level assessment of environmental and social risks has been carried out based on the generic interventions established in the Full Proposal and a preliminary Environmental and Social Management Plan (ESMP) has been presented in the ESMF (table 4) assessing the significance of the identified risks based on estimated likelihood of impacts occurring and the severity/magnitude of potential impacts. The ESMP also presented generic mitigation measures. Because the final location of the activities and related context-specific details are not known yet, the table needs to be understood as indicative; its purpose is to provide general guidance for the detailed design of the interventions.

The key environmental and social risks and impacts and the measures on how the project will avoid, minimize and mitigate negative impacts are presented below.

Risks from temporary use restrictions: The project will focus the restoration measures on three land use systems, (i) state- and district-owned tree plantations, (ii) road side and shoreline areas owned by the State and (iii) the buffer zone of the Akagera National Park which is under joint management authority of the Rwanda Development Board and African Parks Network. While the restoration and forest management practices are expected to increase the productivity of woodlots and tree plantations and through elevated supply capacities bring down costs for woody biomass and as such household expenditures (in particular for cooking fuel), for restoration measures to be effective, often temporary restrictions on the use of forest land and resources are required. This might affect the livelihood of vulnerable people who are highly dependent on these forest resources and display a low adaptive capacity. To identify, avoid and address livelihood impacts from access restrictions a Process Framework (PF) has been developed. In

adherence with the ESMS Standard on Involuntary Resettlement and Access Restrictions, the PF includes a dedicated social impact assessment; it further establishes the need to direct project benefits to people affected by access restrictions and, in case this was not sufficient to restore their livelihoods, the requirement to provide additional mitigations measures (see Annex 5 of the ESMF).

Vulnerable groups / indigenous people: While consultation during project design have not revealed the presence of particular vulnerable groups or individuals and there is no evidence that individuals from the Batwa community which are often affected by marginalisation, poor health and living conditions, lack of education, inadequate housing and are recognized by the Government as historically marginalized people, are present in the project site. However, the rapid social analysis that will be carried out after the final selection of the sites for field interventions will give special attentions to vulnerable groups such as Batwa people but also other groups or individuals which may be vulnerable or marginalized in the specific context. Potential risks from restrictions and respective assessment and mitigation measures have been described in the previous paragraph.

Risks related to cultural heritage: Risks from encountering hidden cultural resources when undertaking earth movements are considered unlikely given the small-scale and low impact nature of the restoration works. As precautionary measure Chance Find Procedures will be put in place.

Impacts on biodiversity: Impacts on biodiversity are expected to be positive, given the inclusion of a broad array of native and a few non-native tree species of high commercial value in local production systems which will increase biodiversity in terms of both composition and structure. The project will ensure that non-native commercial tree species common in Rwanda are combined with native tree species producing fruits, fodder for livestock, wood and timber to increase on-farm diversity and avoid any undue risks. Local nurseries will produce tree seedlings of up to 50 native and non-native timber and fodder species and grafted common fruit tree species for selection by farmers to plant on their land (0.6-0.8 ha on average). Most of the plant species to be used in the agroforestry systems are commercial species prioritized by farmers which have long been in wide use in Eastern Province and elsewhere in Rwanda. These are mainly native tree species, along with a few non-native species such as *Grevillea robusta*, *Eucalyptus* spp., mango, and avocado. Table 20 in the Feasibility Study lists species that have been pre-selected for the agroforestry systems. Annex 1 of the same document provides a detailed list of pre-selected tree and shrub species per intervention. The promotion of diversified agroforestry systems will be further refined under Output 3.3 to enhance the supply systems for seeds and seedlings of diverse, climate adapted species and varieties, coupled with the production of instructive materials on tree selection to control risks related to invasive species. It is important to note that the project will not include the use of any genetically modified organisms (GMOs).

In addition to providing the high level risk management for the identified risks, the ESMF also delineates the procedures and steps to be taken for screening the sub-project on risks, for carrying out impact assessments and for monitoring risks during project implementation (chapter 5). Chapter 6 presents requirements for stakeholder consultation and disclosure and outlines the project-level Grievance Mechanism. Implementation arrangements, provisions for safeguard training for staff of executing entity and relevant stakeholders and budget allocation for the ESMF implementation are presented in chapter 7.

G.2. Gender assessment and action plan (max. 500 words, approximately 1 page)

For full gender assessment and project-level gender action plan see annex 8.

IUCN undertook a gender assessment based on community consultations and statistical analysis to identify principal gender gaps and gender differentiated climate vulnerability in the Eastern Province of Rwanda. In Rwanda women constitute 66% of the agricultural work force, however only 19.7% of women are paid for their labor. The study concluded women in the project area are particularly vulnerable due to limited access to resources that would enhance their capacity to adapt to climate change—including land, credit, agricultural inputs, access to markets, decision-making, technology and training services. Women's coping mechanisms to climate change are still limited due to high poverty, low literacy rates, limited access to extension services and different cultural norms, traditional roles, and power

relations between men and women. Findings highlight women's limited mobility outside their homes. In the case of hunger/famine due to prolonged drought, women and children are the most affected, because men can move in search of food or money and can come back home even after one or two months.

As women are key players in the agricultural sector this project seeks to address the identified gender gaps. Mechanisms to ensure women's participation have been developed in different components and indicators. Around 20% of the households in the project areas are female-headed households. At least 220,132 women in the project areas will benefit from alternative income opportunities and the implementation of climate resilient agriculture technologies and market linkages. Approximately 220,131 women will benefit from skills development and access to extension services.

The design of the project integrates gender sensitive planning and implementation, particularly for women farmers and women-headed households. Within the project design and implementation, the interventions will provide gender responsive and transformative results. The project seeks to improve the access for women to the benefits from agroforestry and silvopastoral systems as well as sustainable energy resources while enhancing women's opportunities for access to credits and markets.

Component 1 supports female population by increased capacities for implementing resilient forest and land use management through agroforestry and silvopastoral systems to strengthen food security and use of improved cookstoves to improve the fuelwood supply/demand imbalance. The project will promote tailored trainings through FFS, which address the specific needs of women (especially indigenous women) and enable them to be risk informed and adopt resilient agricultural practices to secure food even in drought periods. Outcomes from Component 2 include increased opportunities for women by focusing significantly on woman's cooperatives for fodder value chains to generate additional income as well as increased access to sustainable finance and business development support. In particular, the project addresses barriers to finance and capacity gaps to establishing businesses, diversifying income in the face of climate related shocks caused by drought. Other proposed diversified activities particularly focus on opportunities for women such as managing seed nurseries and adopting agroforestry systems.

In addition, project actions will be developed in alignment to the Vision 2020 strategy, which emphasises that gender equality will be one of the driving factors towards achieving rapid growth and sustainable development and hence the Vision's goal.

G.3. Financial management and procurement (max. 500 words, approximately 1 page)

Describe the project/programme's financial management including the financial monitoring systems, financial accounting, auditing, and disbursement structure and methods. Refer to section B.4 on implementation arrangements as necessary.

The financial management between the AE and EEs of the project will be governed by IUCN's finance manual and policy and procedure on procurement of Goods and Services. Further, IUCN financial management policies comply with Swiss Accounting Law. GCF funds will be transferred to IUCN according to the Accreditation Master Agreement (AMA) and the Funded Activities Agreement (FAA) related to this project. IUCN Headquarters' Global Finance Unit will manage fund disbursements to the Project Management Unit based on semi-annual work plans agreed by IUCN supervision team based in the regional office. Funds will be hosted in a bank account dedicated to the project. As outlined in section B.4, the PMU is then responsible for transferring the funds to the executing entities and the service providers or suppliers that would have been competitively selected. The PMU is also responsible for the accounting and fiduciary management of all funds disbursed. The PMU will adopt IUCN's accounting systems and will be audited independently (auditors selected through a competitive bidding process where TORs are approved by IUCN Global Finance Unit) on a yearly basis.

Articulate any procurement issues that may require attention, e.g. procurement implementation arrangements and the role of the AE under the respective proposal, articulation of procurement risk assessment undertaken and how that will be managed by the AE or the implementing agency. Provide a detailed procurement plan as annex 10.

IUCN carried out capacity assessments for all RFA, IUCN Rwanda and ENABEL Rwanda, the three executing entities of the GCF investment project and are satisfied with the outcome as provided in the letter from IUCN Regional Director for Africa.

IUCN has a comprehensive procurement policy in place which is available at https://portals.iucn.org/union/sites/union/files/doc/procurement_policy_and_procedure_v_1_3_february_2018.pdf.

The policy outlines formal procurement standards and guidelines across each phase of the procurement process, and they apply to all procurements undertaken by IUCN. The purpose of the policy is to ensure that IUCN obtains value for money in all its procurement activities and that procurement is conducted in an efficient and cost-effective manner that respects sustainability, the environment and ethical principles.

In addition to the above policies, delegation of authority plays an integral part of the above policies. This policy mainly outlines the limitation of authority delegated to each category. The policy is available at https://confluence.iucn.org/display/ERP/IUCN+Policies?preview=%2F589929%2F1605663%2FIUCN_Delegation+of+Authority_August2011.pdf

G.4. Disclosure of funding proposal

Note: The Information Disclosure Policy (IDP) provides that the GCF will apply a presumption in favour of disclosure for all information and documents relating to the GCF and its funding activities. Under the IDP, project and programme funding proposals will be disclosed on the GCF website, simultaneous with the submission to the Board, subject to the redaction of any information that may not be disclosed pursuant to the IDP. Information provided in confidence is one of the exceptions, but this exception should not be applied broadly to an entire document if the document contains specific, segregable portions that can be disclosed without prejudice or harm.

Indicate below whether or not the funding proposal includes confidential information.

No confidential information: The accredited entity confirms that the funding proposal, including its annexes, may be disclosed in full by the GCF, as no information is being provided in confidence.

With confidential information: The accredited entity declares that the funding proposal, including its annexes, may not be disclosed in full by the GCF, as certain information is being provided in confidence. Accordingly, the accredited entity is providing to the Secretariat the following two copies of the funding proposal, including all annexes:

- full copy for internal use of the GCF in which the confidential portions are marked accordingly, together with an explanatory note regarding the said portions and the corresponding reason for confidentiality under the accredited entity's disclosure policy, and
- redacted copy for disclosure on the GCF website.

The funding proposal can only be processed upon receipt of the two copies above, if containing confidential information.

H. ANNEXES

H.1. Mandatory annexes

- Annex 1 NDA no-objection letter(s) [\(template provided\)](#)
- Annex 2 Feasibility study - and a market study, if applicable
- Annex 3 Economic and/or financial analyses in spreadsheet format
- Annex 4 Detailed budget plan [\(template provided\)](#)
- Annex 5 Implementation timetable including key project/programme milestones [\(template provided\)](#)
- Annex 6 E&S document corresponding to the E&S category (A, B or C; or I1, I2 or I3):
[\(ESS disclosure form provided\)](#)
 - Environmental and Social Impact Assessment (ESIA) or
 - Environmental and Social Management Plan (ESMP) or
 - Environmental and Social Management System (ESMS)
 - Others (please specify – e.g. Resettlement Action Plan, Resettlement Policy Framework, Indigenous People’s Plan, Land Acquisition Plan, etc.)
- Annex 7 Summary of consultations and stakeholder engagement plan
- Annex 8 Gender assessment and project/programme-level action plan [\(template provided\)](#)
- Annex 9 Legal due diligence (regulation, taxation and insurance)
- Annex 10 Procurement plan [\(template provided\)](#)
- Annex 11 Monitoring and evaluation plan [\(template provided\)](#)
- Annex 12 AE fee request [\(template provided\)](#)
- Annex 13 Co-financing commitment letter, if applicable [\(template provided\)](#)
- Annex 14 Term sheet including a detailed disbursement schedule and, if applicable, repayment schedule

H.2. Other annexes as applicable

- Annex 15 Evidence of internal approval [\(template provided\)](#)
- Annex 16 Map(s) indicating the location of proposed interventions
- Annex 17 Multi-country project/programme information [\(template provided\)](#)
- Annex 18 Appraisal, due diligence or evaluation report for proposals based on up-scaling or replicating a pilot project
- Annex 19 Procedures for controlling procurement by third parties or executing entities undertaking projects financed by the entity
- Annex 20 First level AML/CFT (KYC) assessment
- Annex 21 Operations manual (Operations and maintenance)
- Annex x Other references

** Please note that a funding proposal will be considered complete only upon receipt of all the applicable supporting documents.*