GEF-6 PROJECT IDENTIFICATION FORM (PIF)

PROJECT TYPE: FULL SIZE
TYPE OF TRUST FUND: GEF TRUST FUND
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PART I: PROJECT INFORMATION

Project Title:	Forest Landscape Restoration in the Mayaga region		
County	Rwanda	GEF Project ID:	9385
GEF Agent:	UNDP	GEF Agency Project ID:	5702
Other Executing Partners	REMA (Rwanda Environmental Management Authority), Gisagara, Ruhango, Nyanza and Kamonyi Districts	Submission Date:	July 19, 2016
GEF Focal Areas:	Multi Focal Areas	Project Duration (Months)	60
Integrated Approach Pilot	IAP-Cities ☐ IAP-Commodities ☐ IAP-Food Security ☐	Corporate Program: SGP ☐	
Name of parent program	N/A	Agency Fee ($)	590,286

A. INDICATIVE FOCAL AREA STRATEGY FRAMEWORK AND OTHER PROGRAM STRATEGIES[1]

Objectives/Programs (Focal Areas, Integrated Approach Pilot, Corporate Programs)	Trust Fund	(in $)	
		GEF Project Financing	Co-financing
BD4 Program 9	GEF TF	1,776,484	4,000,000
CC2 Program 4	GEF TF	980,000	4,750,000
CC1 program 1	GEF TF	1,509,726	5,000,000
LD2 Program 3	GEF TF	1,084,086	4,000,000
SFM 3 Program 3	GEF TF	863,242	8,027,500
Total		6,213,538	**25,777,500**

B. INDICATIVE PROJECT DESCRIPTION SUMMARY

Project Objective: To secure biodiversity and carbon benefits while simultaneously strengthening the resilience of livelihoods, through forest landscape restoration and upscaling clean technologies in selected Districts of Southern Province

Project Components	Fin Type	Project Outcomes	Project Outputs	Trust Fund	(in $)	
					GEF Fin	Co-fin
Component 1: Decision support tools for planning of forest landscape rehabilitation	TA	Outcome 1: Forest management and decision-making on land use supported by decision support tools at all levels (covering over 160,000 ha in four Districts): Indicators: i. Compendium of best practices on forest landscape restoration, ecosystem resilience and restoration; and plantation management, as well as monitoring carbon and BD available, and published widely; ii. Four land consolidation plans completed - informed by best practices and integrating forest rehabilitation, ecosystems	Output 1.1: Four land consolidation plans (one per District) delivered that integrate forest rehabilitation needs, ecosystems restoration and resilience and resilient food production regimes: the plans cover 160,000 ha and identify areas of forest protection, areas suitable for afforestation and areas for increasing tree based food production via agroforestry; planning is informed by: i) cost benefit analysis of deforestation; ii) vulnerability assessment (which also contributes to monitoring of changes in vulnerability); Output 1.2: Monitoring program delivering results on Carbon mitigation, Forest restoration and improvements in livelihoods. This ensures that; i) lessons shared widely: ii) learning is supported by a landscape level multi-stakeholder learning and knowledge generation platform and a	GEF TF	800,000	5,200,000

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[1] When completing Table A, refer to the excerpts on *GEF 6 Results Frameworks for GETF, LDCF and SCCF*.

		iii. and livelihood resilience; Species diversity of the plantation estate increased by 150% over baseline	Landscape Restoration Implementation Task Force[2]; iii) it provides an opportunity to engage the wider stakeholder group in planning, adaptive management and learning processes, and thus ensure coordination among the various existing and proposed activities for an area.			
Component 2: Skills and capacity for implementation of Forest landscape restoration plans	TA	Outcome 2: Forest restoration and carbon protection leading to enhancement of carbon stocks by 5,500,000 tCO2 in 20 years, and increase availability of wood resources; Indicators: i. 354 ha of forests under CFA management; including restoration; secures current carbon stocks (quantified at PPG); ii. 1,000 hectares of new natural forest planted, and reporting more than 70% seedling survival by the end of the project; iii. 10,000 ha of new plantation forest planted – with fast growing species, to reduce pressure from natural forests; iv. Rate of deforestation at Districts level reduced from 5% to <2% (both baseline and target confirmed at PPG); v. Plantation forest productivity increase from 8m3 to 20m3 (150%): vi. Emissions reduced by 5,500,000 tCO2 in 20 years;	Output 2.1: Participatory forest management of the 354 ha Kibirizi-Muyira and Karama natural forests and rehabilitation of over 1,000 ha of public forests scattered over the landscape in the four Districts; achieved through formation and empowerment of CFA which: i) establishes forest boundaries; revises forest assessment to establish levels of degradation; iii) designs and starts the implementation of the restoration programs; iv) establishes and enforces rules and regulations of managing the forest in partnership with GoR. Output 2.2 (co-finance): Establishment of 10,000 hectares of new plantation forests. These will: i) be made up of fast growing species; ii) will NOT replace natural forests; iii) be implemented in conjunction with component 1 to ensure that best practices inform individual farmers to improve species composition and productivity of the plantations. Output 2.3: Applying best practices to improve species composition and genetic material to increase productivity and species diversity of the 30,000 ha of existing plantation forest by 150% over current baselines for both.	GEF TF	2,117,538	8,350,000
		Outcome 3: Resilience of agriculture and livelihoods increased in area covering 96,000 ha: Indicators: i. Capacity of extension service institutions, Farmer Field Schools and Cooperatives increase by 50% over baseline values (baselines established at PPG); ii. 40,000 ha under climate smart agriculture that also incorporates agroforestry; iii. productivity of 5 key crops increase by over 50% of	Output 3.1: Extension service capacitated with appropriate technologies, and operational capacity to support Farmer Field Schools-led improved agricultural production in tandem with ecosystem rehabilitation. This provides: i) Training programs developed and implemented to improve skills for technical staff and land users/farmers (such as climate resilient crop development) ii) Farmer Field Schools constituted and trained on relevant subjects (based on training needs assessment); iii) operational capacity (such as motor cycles and other operational needs met/provided. Output 3.2: Four land consolidation plans (covering at least 40,000 ha) implemented; where farmers are: i) supported to			

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[2] Information sharing will be through activities such as farmers/community training forums, radio programmes (with possibility to use those REMA TV & Radio broadcast already booked on local media), video production, SMS, exchange visits among different districts, information website portal, brochures and fliers etc.

		baseline (key crops and baselines identified at PPG); iv. Vulnerability of agriculture and livelihoods to impacts of climate change decline by at least 40% (measured by standard vulnerability assessment methods); v. Tree cover on agricultural land increase by at least 30%; vi. Soil erosion from selected plots of lands reduced by at least 25% (baselines and targets confirmed at PPG); measurements methods selected at PPG but might include erosion plots, change in quantities of soils reaching the specific banks and areas of streams.	consolidate land parcels; ii) grow cash crops (in line with the land consolidation plan), preferably tree based cash crops such as coffee, cassava, etc.; iii) adopt climate smart production techniques; iv) adopt SLM measures on land that doesn't qualify for land consolidation (about 56,000 ha); v) establish tree nurseries, plant trees on farms and in designated areas for afforestation and reforestation, protect areas where natural regeneration is deemed most appropriate; protect river banks. Output 3.3: Livelihoods diversified to reduce pressure on natural resources; through provision of alternative livelihoods, new livelihood activities based on the value addition of wood and non-wood forest products with sustainable harvesting practices (in conjunction with component 1 and 3).			
Component 3: Incentives for adopting energy efficient technologies reduce pressure on forest resources while simultaneously securing household access to energy and reducing emissions 150	TA	Outcome 4: Uptake of smart technologies and sustainable charcoaling reduce woodfuel demand by 30%, contributing to mitigation and improvement in local economic development: Indicators: i. 10% increase in number of households adopting biogas and solar lighting in target communities (baseline and targets confirmed at PPG); ii. 30% reduction in woodfuel use per household in target communities (baseline and targets confirmed at PPG); iii. NAMA on sustainable charcoal completed and financing mechanism confirmed; iv. Percentage of charcoal being produced sustainably in the country increase by 30% over baseline (baseline and targets confirmed at PPG); v. Income from NTFPs increase by at least 25% for participating households (baseline and targets confirmed at PPG).	Output 4.1: A system of incentives for private sector engagement in green businesses piloted and leads to a 10% increase in number of households adopting green technologies via the private sector (biogas, improved stoves, solar lights); this leads to: i) barriers to private sector participation refined and removed; ii) 10% increase in adoption of energy efficient and smart technologies with a 30% reduction in wood fuel use for households participating (target communities identified at PPG). Output 4.2: NAMA focused on improving the uptake of sustainable charcoal processes (targeting national level) developed and implementation started: this leads to: i) NAMA focused on policy and institutional framework, practices and standards for improving charcoal production, transportation, retail and consumption; ii) implementation increases the number of formal private sector enterprises (companies & cooperatives) within the value chain, and provide policy and institutional enabling environment for increased private sector participation in the industry. Output 4.3: Viable and sustainable NTFP-based businesses identified and establishment facilitated, linking private sector to communities: this leads to: i) identification of forestry-based investments that provide an attractive return profile; ii) identification of barriers to investing in forestry-based businesses and their removal; iii) increased opportunities for	GEF TF	3,000,000	11,000,000

			sustainable forest-based income generating activities (including sustainable charcoal); iv) increased incomes for participating households (baseline and targets set at PPG)			
Subtotal				GEF TF	5,917,538	24,550,000
Project Management Cost (PMC)[3]				GEF TF	296,000	1,227,500
Total Project Cost				GEF TF	6,213,538	25,777,500

C. INDICATIVE SOURCES OF CO-FINANCING FOR THE PROJECT BY NAME AND BY TYPE, IF AVAILABLE

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Amount ($)
Recipient Government	GoR – Ministry of Agriculture (MINAGRI)	Grants	8,000,000
Recipient Government	GoR - MINIRENA - Ministry of Natural Resources of Rwanda	Grants	4,350,000
Recipient Government	GoR – Rwanda Environmental Management Authority	Grants	5,000,000
Donor Agency	The Dutch Government	Grants	5,600,000
GEF Agency	UNDP	Grants	1,000,000
Recipient Government	National Climate and Environment Fund (FONERWA)	Loans	1,827,500
Total Co-financing			**25,777,500**

D. INDICATIVE TRUST FUND RESOURCES REQUESTED BY AGENCY(IES), COUNTRY(IES) AND THE PROGRAMMING OF FUNDS

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	(in $)		
					GEF Project Financing (a)	Agency Fee (b)[b)]	Total (c)=a+b
UNDP	GEFTF	Rwanda	Climate Change	n/a	2,489,726	236,524	2,726,250
UNDP	GEFTF	Rwanda	Biodiversity	n/a	1,776,484	168,766	1.945,250
UNDP	GEFTF	Rwanda	Land Degradation	n/a	1,084,086	102,988	1,187,074
UNDP	GEFTF	Rwanda	Multi-focal Areas	SFM	863,242	82,008	945,250
Total GEF Resources					6,213,538	590,286	6,803,824

E. PROJECT PREPARATION GRANT (PPG)

Is Project Preparation Grant requested? Yes ☒ No ☐ If no, skip item E.

PPG AMOUNT REQUESTED BY AGENCY(IES), TRUST FUND, COUNTRY(IES) AND THE PROGRAMMING OF FUNDS

Project Preparation Grant amount requested: $200,000					PPG Agency Fee: $19,000		
GEF Agency	Trust Fund	Country	Focal Area	Programming Funds	(in $)		
					PPG	Agency Fee	Total
UNDP	GEFTF	Rwanda	Land Degradation	n/a	50,000	4,750	54,750
UNDP	GEFTF	Rwanda	Biodiversity	n/a	50,000	4,750	54,750
UNDP	GEFTF	Rwanda	Climate Change	n/a	50,000	4,750	54,750
UNDP	GEFTF	Rwanda	Multi-focal Areas	SFM	50,000	4,750	54,750
Total PPG Amount					200,000	19,000	219,000

F. PROJECT'S TARGET CONTRIBUTIONS TO GLOBAL ENVIRONMENTAL BENEFITS

Corporate Results	Replenishment Targets	Project Targets

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[3] It is expected that UNDP will provide some tendering support services upon REMA's official request when deemed necessary. These direct project costs have been estimated at $50,000. This estimate will be validated and confirmed during the PPG stage.

| Sustainable land management in production systems (agriculture, rangelands, and forest landscapes) | 120 million hectares under sustainable land management | 160,000 hectares |
| 4. Support to transformational shifts towards a low-emission and resilient development path | 750 million tons of CO2e mitigated (include both direct and indirect) | A cumulative total of 5,500,000 tonnes of CO_2 sequestered over 20 years |

PART II: PROJECT JUSTIFICATION

1 Project Description

1.1 Forests, carbon stocks and biodiversity context -- The global environmental problems, root causes and barriers that need to be addressed

1. Known as the 'land of a thousand hills' Rwanda is a relatively small, land-locked and mountainous country in East Africa, neighboring Uganda to the north, Tanzania to the east, Democratic Republic of Congo to the west and Burundi to the south. Most of the country is at an altitude above 1,000 meters, which creates a moderate climate despite being 2 degrees south of the Equator.

2. The country experiences two wet periods - short rains from September to November and the long rains between March and May; interspersed by two dry seasons - a short one between December and February and a long one from June to August. Rainfall ranges from about 900 mm in the east and southeast to 1,500 mm in the north and northwest volcanic highland areas. The rainfall is generally well distributed throughout the year, with some spatial and temporal variability. Eastern and south-eastern regions are more affected by prolonged droughts while the northern and western regions experience abundant rainfall that at times cause erosion, flooding and landslides. The spatial variability has been attributed to the complex topography and the existence of large water bodies within the Great Lakes Region.

3. The country is covered by diversified natural ecosystems, ranging from afro-montane in the northern and western regions to lowland forests, savannah woodlands and savannah grasslands in the southern and eastern regions. The country also has a large number of inland fresh water lakes and wetland ecosystems, as well as volcanic hot springs and old lava flows that mainly occur in the northern and western parts of the country. Combined with the fact that it is situated in the heart of the Albertine Rift, these rich and largely hilly landscapes make Rwanda a biodiversity and forests hotspot; well-known flagship species include gorillas and chimpanzees, currently classified as endangered in the IUCN Red List of Threatened Species. Indeed, the country is home to 40% of Africa's mammal species (402 species), 1,061 bird species, 293 amphibian species, and 5,793 species of higher plants (280 endemics in the region)[4]. It is also recognized for hosting more endemic mammals, birds, butterflies, fish and amphibians than anywhere else in Africa[5]. In addition, more than 80% of Rwanda's territory is within the Lake Victoria Basin; most of the waters coming out of the country are channeled by the Kagera River into Lake Victoria, a globally recognized freshwater biodiversity hotspot.

4. Most of the biodiversity conservation is concentrated in three national parks: the Volcanoes National Park, the Nyungwe National Park, and the Akagera National Park. However, there is also much biodiversity outside these PAs, especially plant biodiversity found in the productive landscapes in the savannah areas covering most of the Southern Province. The country boasts a high 28.8% forest cover (of which 37% are humid natural forests and Savannahs). Although forest cover has registered a growth of 1% per year for the last decade, forest distribution is uneven and forest regeneration is skewed. Most of the forests are found in the west, with fewer forests in the East and in the Mayaga regions, where forest cover is a low 5%. Of specific importance however are the many and scattered patches of indigenous forests in Mayaga region, which in addition to hosting important plant biodiversity and carbon stocks, provide critical watershed services to the agricultural landscapes surrounding them.

5. An example is the Kibirizi-Muyira Natural Forest, which is made up of two separate but neighboring relict savanna forests, located in Nyanza District, in Kibirizi and Muyira Sectors respectively. The vegetation is typical of savanna species, with scattered tuffs of bushes dominated by thorny acacias. Other most represented species include *Combretum molle, Lannea, Parinari curatelifolia,* various *Rubiaceae* species dominated *by Euclea racemosa* and *Pavetta ternifolia*, and the currently highly exploited *Osyris lanceolata*. Covering an area of 351.1 hectares, the forest is considered extensive

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[4] Chemonics International Inc. 2003, MINITERE 2005, Rwanda Environment Outlook, 2009.
[5] Chemonics International Inc. 2003, MINITERE 2005, Rwanda Environment Outlook, 2009

under Rwanda's context; however, it has undergone serious degradation in the recent past, and is considered endangered (IUCN Category – ibid). It is expected that, if current threats are not mitigated, the forest will continue to lose both geographic spread and integrity, and might be extinct in the coming 50 years. Another example is the Rukaragata forest (2.5ha), which is located in Kamonyi District.

6. These and other forest patches are important carbon stocks. The two sets of forests makes 353.6 (approximated to 354 ha) currently store 1,809,309 t CO2 ha-1 yr^{-1}. Assuming a deforestation rate of 0.5% per year, protecting these forests reduces emissions by 475.5 t CO2 ha-^{1} yr-1[6]: amounting to a total avoided emissions from forest protection of MF$_{FP}$ = 354 ha *0.005 yr^{-1} * 475.5 t CO2 ha^{-1} yr^{-1} = 844 t CO2 ha^{-1} yr$^{-1.}$

7. Forests provide ecosystem services and products including protection of water catchments, regulation of water flow, climate regulation, and protection against soil erosion, water purification, and food, wood for fuel and construction, tourism, as well as non-timber forest products such as medicinal plants, honey and handcrafts. The role of forests in preserving ecological balance is particularly important in the Mayaga region, where they contribute greatly to watershed protection against erosion, thus making agriculture viable and covering the daily basic needs of rural communities.

Threats to biodiversity, carbon stocks and other ecosystem services;

8. Despite their importance, the natural forests in the Mayaga are threatened by agricultural expansion and overharvesting of products. Many of the threats to Rwanda's important biodiversity, carbon stocks and livelihoods originate from the fact that the country has a relatively small surface area (26,338 km^2) supporting a high and growing population with high dependence on agriculture for subsistence, economic growth and woodfuel for energy. The current population is estimated at 11 million[7] with a growth rate of 2.6%. Under these circumstances, poverty and food insecurity are linked by poor agriculture production and dependence on rain-fed agriculture in small production units. Although only 52% of the land is considered suitable arable lands, currently agriculture covers 70% of the country's land area, with a further 16% of land allocated to fuel wood and timber production[8]. The subsistence nature of agriculture drives farmers to cultivate continuously, which depletes soil nutrients and reduces future crop yields. Cultivating steep slopes with inadequate ground cover to prevent erosion exacerbates the problem. The FAO estimates that as much as 40% of cultivated land in Rwanda is at risk of severe erosion and requires anti-erosion investments before cultivation begins. Some reports have estimated that as much as 10 tons of soil is lost per hectare each year, and that more than 14 million tons of humus and top layers of soil flow directly into rivers and streams that are not adequately protected, ending up in Lake Victoria[9].

9. **Threats specific to the Mayaga region:** The project will be implemented in four districts in the Mayaga landscape: Kamonyi, Gisagara, Ruhango and Nyanza (Table 1 shows basic statistics). Like the rest of Rwanda (and the region), Mayaga landscape has, over the decades, experienced loss of biodiversity at the ecosystem level, where extinct habitats, species assemblages, and natural processes have steadily diminished or degraded in quality, weakening the fabric of ecological processes and prospects of sustaining economic growth[10]. Ecosystems degradation has taken three pathways in Mayaga: i) quantitative loss – leading to a decline in areal extent of discrete ecosystem types; ii) qualitative loss, leading to degradation in the structure, function, or composition of several ecosystems; and iii) fragmentation, caused largely by encroachment for agriculture[11].

10. Although arable land is fertile in Mayaga region, many areas are affected by land degradation and are suffering soil loss, deforestation and forest degradation, with accompanying loss of carbon stocks. Cultivation is taking place in some very steep hills, for example Ijuru rya Kamonyi and "Cubi na Marenga". Some wetlands have been converted into farms without appropriate conservation measures; some river banks have been cultivated and forests have been converted into farms. Perennial crops (bananas and coffee) are being replaced by annuals (tubers such as cassava), making the land more susceptible to soil erosion, and carbon loss. Although the country as a whole has increased forest cover in the last ten years, this has not been so in the four Districts targeted by the project, where encroachment into the forests is reported to

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[6] Using the FAO methodology for carbon calculations – Annex 3 describes the detailed calculations
[7] Zambia has the same population although it is x times larger than Rwanda
[8] Habiyambere, T., Mahundaza, J., Mpambara, A., Mulisa, A., Nyakurama, R., Ochola, W. O., *et al*. (2009). *Rwanda State of Environment and Outlook*. Kigali: REMA.
[9] Habiyambere, T., Mahundaza, J., Mpambara, A., Mulisa, A., Nyakurama, R., Ochola, W. O., *et al*. (2009). *Rwanda State of Environment and Outlook*. Kigali: REMA
10 REMA 2015: Threatened Terrestrial Ecosystems and Species
[11] Habiyambere, T., Mahundaza, J., Mpambara, A., Mulisa, A., Nyakurama, R., Ochola, W. O., *et al*. (2009). *Rwanda State of Environment and Outlook*. Kigali: REMA

have increased in the past 10 years[12], causing habitat fragmentation, forest degradation and loss of biodiversity. In some areas there is no demarcation between farms and the many small forest patches dotting the landscape.

11. Forest resources are also threatened by overharvesting for fuel wood. In the four target districts, 84% of households depend on wood or charcoal (Table 1), driving forest degradation and fragmentation. This is in line with national statistics. The Energy Sector Strategy (2015)[13] reports approximately 85% of primary energy still comes from biomass, in the form of wood that is used directly as a fuel (57%) or is converted into charcoal (23%), together with smaller amounts of crop residues and peat (5%)[14]. The Energy Policy further reports that demand for conventional fuel wood and charcoal exceeds supply (by 4.2 million tonnes in 2009, resulting in a deficit of 870,000 tonnes per year). Although at the national level over 80% of the firewood and charcoal comes from privately operated plantations of eucalyptus trees and other small-scale agro forestry programs, the balance comes from natural forests. This deficit shows how the forest sector is and likely to remain under pressure, because the household incomes in rural areas are likely to enable a switch to non-wood fuel sources in the near future. These circumstances make it difficult for Rwanda to achieve three important targets it has committed to at the international arena: i) 30% forest cover[15] and 85% agroforest cover on productive landscapes by 2030; the country attained a forest cover of 28.8% in 2013 (including 10% natural forest). "The last mile in the target is hardest to attain"; ii) reaching the 2 million hectares of forested landscape restoration pledged under the Bonn Challenge; iii) maintaining its current very low per capita GHG emissions estimated at 0.99 tCO2eq/person (2013) - noting that the country had negative emissions (sink) of -2,540,000 tCO2e in 2012). It is particularly hard to reach all three targets given the high population density, small land parcels, high reliance on agriculture and the need to create wealth needed to meet the other goal of elevating the country to a medium income category by 2030.

12. Illegal exploitation of *Osyris lanceolata* has worsened the situation. Local villagers reported that tens of trucks transport tons of this species every year[16]. The forests are also threatened by invasive species of *Lantana camara* which cover big spaces around and inside many of the natural and plantation forests.

Table 1: Basic statistics of the four districts targeted by the project

District	Size (ha)	Population	Number of villages (Imidugudu)	% households with electricity	% households using wood and/or biomass for cooking
Kamonyi	65,550	340,501	317	11	85
Nyanza	67,210	323,719	420	17	85
Gisagara	67,920	322,506	524	8	90
Ruhango	62,680	319,885	533	11	76.4
Total	263,360	1,306,611	1,794	11.75	84.1

13. **Climate change:** Forests and other ecosystem services are threatened by progressive changes in climate and climate variability, as these combine with the impacts of unsustainable practices as outlined above. Rwanda current climate is complex, with wide variations across the country and with very strong seasonality, making the country highly vulnerable to current climate variability and natural hazards. It is particularly affected by floods and landslides, and periodic droughts, driven by El Niño – Southern Oscillation (ENSO) events. A Climate Change and Science Dialogue on Rwanda held in 2010 reported that the past decade experienced increased climate and other risks such as increased occurrence of extreme drought and floods, and increased incidence of soil erosion and landslides, lowering of lake and river water levels, and loss of biodiversity, decrease in agricultural productivity, worsening food security and malnutrition, spreading of diseases, and human population migration. Prolonged cyclical droughts are frequent in the east and southeast, especially in Mayaga and Umutara.

14. Furthermore, projections of climate change in Rwanda are hampered by the high heterogeneity (terrain, climate) and the lack of long-term meteorological data. However, the limited projections predict an increase in temperature of 2.5°C by the 2050s. Changes in precipitation are more uncertain, though there are some indications of increasing variability[17]. The Climate Monitoring International Partnership (CMIP3) projections indicate average temperature will increase, higher average annual rainfall (under most models), with the intensity / frequency of heavy rainfall extremes also increasing, but highly uncertain signals for dry periods/drought. As most agriculture in Mayaga (and the country) is rain fed, people rely

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[12] Gisagara, Kamonyi, Nyanza and Ruhango District Development Plans for 2014-2015
[13] National Energy Sector Strategic Plan (2008-2020) – Government of Rwanda
[14] Of the 14% of non-biomass primary energy, petroleum products account for 11% (used mainly in the transport sector) and electricity for approximately 4%.
[15] This includes 10% natural forest and 20% plantation forests
[16] REMA, 2015: Threatened Terrestrial Ecosystems and Species.
[17] Baseline Climate Change Vulnerability Index for Rwanda: Rwanda. Environment Management Authority, Kigali, 2015

on the rains to survive. This, combined with its current level of development and the country's mountainous landscape, makes Rwanda particularly vulnerable to climate variability and change.

15. **Long-term vision and barriers to achieving it**: The desired long-term situation is to restore the ecological functionality and biological productivity of the deforested landscapes in the four districts, to enhance carbon storage and forest biodiversity conservation, resilience of agricultural production and livelihoods. This is in line with the national target of increasing forest cover to 30% and agro-forest cover to at least 85% of productive landscapes, and for maintaining the low per capita GHG emissions while increasing economic growth. To achieve the vision, an integrated approach is needed because the challenges facing forest resources in the landscape cut across multiple pillars and institutions and impact diverse groups of stakeholders. Rwanda has recently committed to adopting the forest landscape restoration (FLR) methodology, which is an integrated approach for addressing environmental, social, and economic challenges that involve multiple institutions and stakeholders[18]. By taking a landscape perspective, FLR brings stakeholders and institutions together to overcome challenges by designing more efficient land-use plans. This approach is particularly relevant in Rwanda where landscapes are used for many different purposes, are governed by many different institutions, and have many different stakeholder groups. Reducing emissions from biomass energy is also critical for Rwanda maintaining its current very low per capita GHG emissions in a country where 95% of cooking energy and 85% of primary energy is woodfuel.

Barriers

16. Increasing forest and agroforest cover in the Mayaga region from the current 5%[19] in the four Districts to close to the national target[20] is hampered by three key barriers: inadequate use of knowledge based planning for resource use and forest management; inadequate technical skills and institutional capacities for increasing land productivity while simultaneously restoring ecosystems, and inadequate market-based incentives to adopt climate smart technologies, forestry and biodiversity friendly businesses.

17. ***Barrier 1: Inadequate knowledge base to support decisions on forest management and effective integration of forest management in district land use plans and decision making by land users***: the implementation of landscape level planning is hampered by inadequate knowledge, and low capacity to generate it. This barrier takes two forms. First, at the national level, inadequate investment in knowledge generation has hampered the improvement in forest species and genetic material. Site quality of plantation forests, which constitute 42% of all forest cover, is low (mainly due to inappropriate management during planting, thinning and harvesting). The country is indeed importing high quality wood products from Uganda, DRC or Dubai and China, increasing the pressure on forex[21]. In addition, there is low species diversity in plantation forests: tree cover is dominated by a small number of Eucalyptus species, which has undergone genetic erosion, mainly due to inbreeding. Seeds are provided by the Tree Seed Centre in the Southern Province, but generally the genetic quality of germplasm is poor[22]. There are no dedicated seed orchards to provide a variety of quality seeds to forest growers. The quality of germplasm is also limited by low levels of knowledge on harvesting and post-harvest handling.

18. Second, at the Mayaga landscape level, although it is clear that the communities in the landscape derive a multitude of benefits from indigenous forests, biodiversity and genetic resources in the landscape, there is no up to date assessments of the value of these forests and biodiversity, and the costs and benefits of protecting existing forests as well as increasing tree cover in forests and on the productive landscape, via agroforestry. This is due in part to the lack of integration of SFM, biodiversity and mitigation considerations in the current land consolidation planning process and a lack of monitoring related to these. REMA's recent report on threatened terrestrial ecosystems identified two remnant forests in the region that need to be protected: The Kibirizi-Muyira (listed as Critical under IUCN) and the smaller Rukaragata forest (both of them now protected under National Gazettement Order of 2015). However, there are numerous small patches of indigenous forests in the landscape, especially on hilltops that are significant for watershed services in the micro catchments. The contribution of these additional indigenous forests to ecosystems services is not yet determined or captured in the planning processes. In particular, there is a need to empirically demonstrate that sustainable use of forests and integration of trees into cropping systems (via agroforestry) have positive economic values and that these economic

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18 Ministry of Natural Resources – Rwanda (2014). Forest Landscape Restoration; Opportunity Assessment for Rwanda. MINIRENA (Rwanda), IUCN, WRI.

[19] Calculated from data provided in the District Forest Management plans for 2015, but to be confirmed during the PPG.

20 The national target is 10% natural forests and 30% total cover, including plantations; however, the potential for increasing forest cover in the four districts will be assessed during the PPG (and confirmed during project implementation) – and a realistic target for the four districts established. Due to the current population density and need for food production, this target is not likely to be more than 3-5% of District land cover.

[21] Ministry of Natural Resources – Rwanda (2014). Forest Landscape Restoration; Opportunity Assessment for Rwanda. MINIRENA (Rwanda), IUCN, WRI

[22] Ministry of Natural Resources – Rwanda (2014). Forest Landscape Restoration; Opportunity Assessment for Rwanda. MINIRENA (Rwanda), IUCN, WRI

values are higher than the value of alternative resource uses which threaten forests. This is necessary to raise the profile of forests and the mainstreaming of considerations for forest conservation/expansion in the land consolidation process and plans.

19. ***Barrier 2: Inadequate capacity/skills for adoption of climate smart agriculture, forestry and biodiversity friendly practices at many levels***: Although the Four Districts have relatively fertile soils and adequate rainfall, land productivity has declined in the recent past due to land and ecosystems fragmentation, compounded by changing and unreliable weather patterns. Ecosystem fragmentation in particular has led to loss of ecosystems services to agriculture and led to accelerated soil erosion, floods, droughts, etc., and increased vulnerability of livelihoods to the negative effects of climate change. Although there are land and ecosystems management solutions to these challenges, adoption in the four Districts is hampered by inadequate application of climate smart agricultural practices (including sustainable land management techniques), driven by low levels of skills of farmers, and compounded by weak extension service that does not deliver an updated extension package to the land users. Due to the high population density and high reliance on agriculture in Rwanda, increasing productivity of the land has to be achieved in tandem with restoration of the ecosystems to sustain the flow of goods and services required to increase resilience and reduce vulnerability of natural resources and livelihoods from effects of climate change. This is critical if the region is to increase forest cover despite the high population density. Yet there is inadequate systematic updated information on best climate smart agricultural practices; the links between research and extension service are weak and research findings remain largely un-disseminated. As a result, there is inadequate multi-sectoral research on land and water management in general and soil and water conservation in particular. Consequently, current land and resource management options are mostly generic in nature with limited area specificity.

20. Tree planting is limited by inadequate knowledge on propagation, nursery and tree husbandry, uncertain markets and low prices. Often seeds of well-adapted species of trees are not available to farmers, NGOs or other organizations that promote tree planting. As a result, there is ineffective use of soil and water conservation measures to increase productivity of land, needed to curb conversion of forests and natural woodlands into additional agricultural lands. Watersheds are degraded and water harvesting is inadequately practiced. This is critical because the rainfall that infiltrates and remains in the soil (also called green water) is the largest fresh water resource and the basis of rain-fed agriculture. With climate change threatening harsher droughts and water scarcity, water will become increasingly critical to any vision of sustained agricultural production. Currently, much of the rainwater is being converted to "brown water" – running off the surface and transporting soil and nutrients into Lake Victoria. In addition, productivity of plantation forest is currently low. More than 50% of forest plantations are at the end of their productive life[23]. Due to short rotations, stumps are exhausted and in the last three decades, the annual wood increment dropped from 20m³ to 8m³ per hectare[24].

21. The low capacity of the extension service and technical agencies introduces a sub-barrier – inadequate coordination across sectors and poor enforcement of regulations relating to natural resources management. Although Rwanda has introduced performance based management at the district level, the master plans, there are difficulties with coordination across agencies. As the landscape approach to forest restoration is relatively new, there is no shared common vision and framework for restoration among stakeholders (e.g. Forests promotes woodlots and Agriculture promotes traditional methods of intensification). In addition, there are inconsistencies between policies and strategies of various Ministries, especially related to agroforestry; responsibilities and mandates often overlap; planning is often not coordinated, sometimes leading to areas being overcommitted to multiple land uses. For successful forest restoration in the four districts, a stronger coordination mechanism is required. This sub-barrier is exacerbated by inadequacies of the policy environment. Despite the high commitment and leadership from government on restoration, afforestation and agroforestry, these commitments are not coded in law.

Barrier 3: Inadequate incentives for adopting energy efficient technologies to reduce pressure on the forests and maintain low per capita GHG emissions without compromising household energy and economic development

22. Achieving the target 30% forest cover and 85% agroforestry cover on productive landscapes will be difficult without i) reducing the amount of biomass consumed to provide domestic and commercial energy; ii) increasing the number of households accessing energy efficient cooking and lighting technologies; and, iii) increasing opportunities for viable, sustainable forest-based income generating activities – which increase household incomes and affordability of energy smart technologies.

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23 Ministry of Natural Resources – Rwanda (2014). Forest Landscape Restoration; Opportunity Assessment for Rwanda. MINIRENA (Rwanda), IUCN, WRI
24 Ministry of Natural Resources – Rwanda (2014). Forest Landscape Restoration; Opportunity Assessment for Rwanda. MINIRENA (Rwanda), IUCN, WRI

23. While the government has implemented considerable measures to disrupt the relationship between charcoal consumption and deforestation from the 10% of its natural forests, the National Energy Strategy (2014-2018) recognizes that Rwandan households will not eliminate the use of traditional biomass fuels in the short run. Indeed, the Energy Policy estimated a 21% shortfall in annual woodfuel supply from 2009[25]. Demand for biomass energy is projected to grow with increased urbanization. This is because charcoal, which takes more wood to produce, is preferred in urban areas, and precedes transition to other forms of fuels for the majority of households. The objective of the Biomass energy sub-sector policy is therefore to promote environmentally sustainable use of biomass fuels, thereby mitigating negative environmental, social and health impacts. The subsector policy aims to increase the efficiency of harvesting and consumption through cleaner cooking and lighting technologies, which can increase household access to energy while maintaining low per capita GHG emissions, rendering biomass energy a sustainable solution. This can also provide employment in the rural areas. The energy policy targets to have 80% of all households in Rwanda using cleaner cooking technologies by 2018. In line with this, it targets to increase access to improved cooking stoves by up to 50% of all rural households, to distribute 3,500 domestic biogas digesters and 15 institutional biogas digesters annually, and to increase average charcoal yields by 30% from a 2009 baseline.

24. Achieving the above targets within the Mayaga region, which has less forest cover than the rest of the country, is however hampered by limited economically competitive, culturally acceptable alternatives. This is because biomass energy remains the most affordable option to most households, relative to the alternatives which are either less convenient (such as agricultural residues) or much more expensive (such as electricity and LPG, which is currently heavily taxed). There is no clear alternative that provides the same service for a similar price. Due to high levels of poverty, many households simply cannot afford cleaner alternatives at the current comparative prices. In addition, changing predominant cooking fuel use is a behavior adjustment that is deeply culturally conditioned. To be successful, campaigns for alternatives require to be accompanied by behavioural change or social marketing campaigns.

25. While the country has progressive charcoal regulations and licensing regime for tree harvesting and replacement, they are not well known or understood by the majority of households in the Mayaga region, affecting compliance. While the charcoal production and supply chain provides important rural employment and income opportunities, there are no formalized supply chain management or functional charcoal producer cooperatives/ associations in the region; this is a missed opportunity for local economic development. Indeed a 2009 Biomass Energy Assessment found that biomass is big business in the national economy, raising $120-150 million per year, constituting 5% of GDP with 50% of market value remaining in rural areas[26]. However, there is very limited participation by the four Districts in this market (baseline to be established at PPG). In addition, sustainable charcoal[27] can reduce the amount of wood being used to produce charcoal, especially when combined with a program of expanding adoption of high-efficient cook stoves. However, the existing charcoal value chain in Rwanda is weak. Currently, it is predominantly an informal private sector driven system. There is inadequate capacity to formalize it or to increase the number of formal private sector enterprises (companies and cooperatives) within the value chain. In addition to cutting emissions, such a formal and better organized value chain would result in fairer payments for charcoal producers and increased tax revenues.

26. The barriers above are exacerbated by low levels of private sector participation in the energy sector in the rural areas, hampering the widespread upscaling of demonstrated alternatives. Indeed, the Government and its development partners have piloted several initiatives that promote alternatives which improve livelihoods while simultaneously promoting ecosystem restoration and reducing emissions. These include introduction of green technologies (biogas, solar lights and cookers) in the Imidugudus (under land consolidation); the National Domestic Biogas Programme (NDBP); and widespread promotion of plantation forestry. The uptake of these and similar, proven initiatives in the four Districts targeted by this project is limited, hampered by inadequate incentives for a vigorous private sector participation in the local level economic development. Uptake of agroforestry-based businesses for example is hampered by a lack of proven economic case for the forest landscape restoration interventions, made worse by low levels of awareness of the benefits of restoration by business. General poverty and lack of access to credits makes the situation worse. Many smallholder

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[25] National Energy Sector Strategic Plan (2008-2020) – Government of Rwanda
[26] Rwanda Biomass Energy Strategy, GoR, 2009
[27] **Sustainable charcoal**– refers to charcoal that has been produced from sustainably managed woodlots, woodlands or forests combined with improved processing and utilization techniques, where the conversion along the charcoaling chain is as efficient as the current levels of technology allow (ESD, 2007). The sustainable charcoal concept aims at minimizing material and energy losses at all stages of the charcoaling chain. In this case, wood obtained from sustainably produced biomass resource is harvested using efficient ways ensuring minimum waste is generated. The wood is then converted into charcoal using improved and efficient kilns after which proper handling is ensured during packaging, storage and transportation to minimize waste. The generated charcoal is consumed using improved cook stoves such as the Kenya Ceramic Jiko (KCJ), and finally, the charcoal dust is used as fertilizer. Sustainable charcoal can earn carbon credits under the CDM (and voluntary markets). Measurement of emissions mitigated through sustainable charcoal can be done in accordance with the CDM approved baseline and monitoring methodology AM0041 -"Mitigation of Methane Emissions in the Wood Carbonization Activity for Charcoal Production" – UNFCCC CDM EB.

farmers are poor and have limited access to appropriate loans, grants and/or incentives. There is a need for innovative financing mechanisms to help build the capacity of cooperatives, NGOs and private sector companies to take up restoration friendly businesses, and to mainstream climate friendly technologies and energy efficient production and consumption processes, e.g. sustainable charcoal.

1.2   Baseline programs:

27. The proposed project builds on a large baseline investment (at national and regional level) of US$ 95 million, of which US$ 25,950,000 serves as co-finance. The baseline programs are described below.

28. **Government investments in Vision 2020 – US$ 40 million** for the Mayaga region (2013-2018): Rwanda's Vision 2020 document provides an outline of how the country plans to address its environmental, social, and economic challenges and become a middle-income country by 2020[28]. Vision 2020 is based on six pillars designed to overcome barriers to growth: good governance and a capable state; human resource development and a knowledge based-economy; a private sector-led economy; infrastructure development; productive and market oriented agriculture; and regional and international economic integration. Implementation of the Vision is outlined in mid-term strategies – Economic Development and Poverty Reduction Strategy (EDPRS I & II[29]). EDPRS II (2013-2018) highlights forestry as a main concern in recognition of its prime contribution to the GDP. The government has set the following targets in relation to the forestry sector: i) increasing forest cover from 28% to 30% by 2018 (including plantations); ii) sustainable management of forest biodiversity and natural ecosystems through protection and maintenance of 10% of the existing cover by Natural Forests and Savannah forests; iii) increasing jobs in the sector from 0.3% to 0.5% by 2017; iv) reducing biomass use from 86.3 % to 50% by 2020[30]; v) 75% of charcoal to be made using improved kilns by 2017.

29. **The National Energy Sector Strategic Plan (2008-2020) - US$ 5 million:** implementation of the EDPRS is supported by the National Energy strategic plan, which aims to: i) to reduce fuel wood consumption from 94% to 50% - via wide spread adoption of biogas in residential homes and public institutions (schools, hospitals, prisons etc.); ii, to ensure that 52% of households have electricity from off-grid sources (solar or mini-hydro) systems by 2017/2018. The country has also developed (and submitted to UNFCCC) a Nationally Appropriate Mitigation Action (NAMA), which reinforces the objective set by the Sustainable Energy for All (SE4ALL) calling for renewables to contribute 80% of the share of all cooking fuels in Rwanda by 2030; and, to reduce GHG emissions by approximately 5,500,000 tCO2e in the same period (from reduced deforestation).

30. **Land consolidation and Imidugudu roll out program – 2013-2020:** The Ministry of Local government will invest over US$ 30 million during the project period, in the roll out of the land consolidation program. The land consolidation program aims to overcome the problem of land fragmentation, allowing farmers to consolidate their small plots for commercial farming, without losing their rights to the land. Under the program, the government facilitates farmers in an area to identify a commercial crop that can be grown by a majority of farmers, and to recruit enough farmers to join the scheme so as to reach a threshold of production that would justify the installation of an agro-processing plant. Land consolidation is accompanied by the development of green villages, which are equipped with climate friendly technologies such as communal biogas plants, solar lighting, communal cattle sheds, etc. The farmers are organized into cooperatives to facilitate delivery of extension service on the selected commercial crops and to access marketing. It is expected that the private sector will pick up and advance green businesses to support creation of jobs and advance the growth of the green economy. The long-term plan is to introduce agro-processing centers in each area, for example the new cassava processing plant in a cassava specializing area in Nyanza.

31. **The Bonn Challenge 2011 to 2020 and the IUCN/German Government project on Piloting Multiple-Benefit Investment Packages through forest/landscape restoration and REDD+ in Rwanda for scaling up in Africa– US$ 5 million:** In 2011, Rwanda made an ambitious pledge to the Bonn Challenge to restore 2 million hectares of forest and agricultural land. This is part of the commitment made by the Global Partnership on Forest Landscape Restoration "The Bonn Challenge" to restore 150 million hectares of deforested and degraded land in the world by 2020. Rwanda intends to use this exercise to improve ecosystem quality and resilience, providing new opportunities for rural livelihoods, and securing adequate water and energy supplies, as part of the low carbon economic development. Rwanda's pledge represents a significant commitment to both its people and environment; and recognizes the value of the goods and

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[28] Republic of Rwanda Ministry of Lands, Environment, Forestry, Water and Mines. (2003). *National Environmental Policy 2003*. Kigali: Ministry of Lands, Environment, Forestry, Water and Mines.
[29] GOVERNMENT OF RWANDA (2013). Economic development and poverty reduction strategy 2013 – 2018. Shaping our future. Kigali
[30] MINIRENA (2013). Five year strategic plan for the environment and natural resources sector - 2014 – 2018. Kigali

services provided by landscapes and a platform for the country to achieve many of the goals outlined in EDPRS 2 and Vision 2020. With support from IUCN and WRI (World Resources Institute) the Department of Forestry and Nature Conservation conducted a countrywide assessment and identified restoration opportunities, including a cost and benefit analysis of restoration of degraded forested landscapes. Following the launch of the Restoration Opportunity Assessment and Mapping Report (ROAM) in December 2015, IUCN with financial support from the Government of Germany is implementing a 3 million Euro project to implement the findings in two pilot landscapes in Gatsibo and Gicumbi districts. The project aims to promote the restoration of a mosaic of forest landscapes and enhance carbon stocks in Rwanda as well as deepen commitments to FLR across Eastern Africa. It aims to stimulate increased public and private investment in FLR at community, district, national and regional levels. The planned measures will support enabling conditions through policy and programatic frameworks, the establishment of a Public-Private Partnership (PPP), and pilot restoration of carbon intensive landscapes in two districts. The measures will also stimulate market demand for restoration products and increase structured investment mechanisms that target small and large investors. The project will support a number of multiplying effects that will benefit the whole country. It will further elaborate and pilot FLR interventions and support the improvement in tree seed supply, a fundamental building block of FLR.

32. **Environment and Climate Change Fund (FONERWA) – US$ 10 million:** FONERWA was established in 2012 as a national basket fund through which climate change finance is channeled, programmed, disbursed and monitored. The Fund is organized around four thematic windows: conservation and sustainable management of natural resources; renewable energy, R&D and technology transfer and implementation; environment and climate change mainstreaming; and environmental impact assessment monitoring and enforcement. The fund is being dispersed (initially) through a project application process, from line ministries, government agencies, districts, civil society organizations (CSOs) and the private sector. It is expected that the fund will disburse loans and grants of up to US$ 10 million to businesses and government agencies during the life of the project.

33. **United Nations Development Assistance Plan (UNDAP) 2013-2018: US$ 5 million:** The United Nations will invest upwards of US$ 34,878,977 between 2013 and 2018, in the implementation of Outcome 3 of Results Area 1: *Rwanda has in place improved systems for: Sustainable management of the environment, Natural Resources and Renewable energy resources, energy access and security, for environmental and climate change resilience, in line with Rio+20 recommendations for sustainable development.* It is estimated that about US$ 5 million of this investment will support energy and environment programs in the Mayaga region.

1.3 The proposed alternative scenario, GEF focal area strategies, with a brief description of expected outcomes and components of the project

34. The project will engineer a shift from the 'business as usual' scenario of insufficient consideration of biodiversity conservation, sustainable land management practices or ecosystem-based mitigation that would maximise multiple global environmental benefits, to a scenario of green growth that realizes development, at the same time, securing forests and biodiversity areas and advancing towards a green economy based on sustainable use of natural capital. The project will do this by providing knowledge systems, incentives, skills and capacities for the adoption of a landscape approach to reverse the loss of ecosystem services within degraded forest landscapes. Building on the baseline programs described in section 2, it will promote climate smart agriculture (including SLM and agroforestry), rehabilitation of degraded forests and establishment of forests and biodiversity conservation friendly businesses, including sustainable charcoal supply chain and green technologies in the Green Villages. The project will enhance carbon protection via participatory forest management (PFM) of 354 ha of natural forests and afforestation of 1,000 ha with native tree species and will also establish a total of 10,000 ha of plantation forests that will not replace any natural forests; it will also put 160,000[31] ha under improved climate smart agriculture (including agroforestry based cropping regimes), to increase food productivity without undermining the mitigation efforts. It will further put 30,000 hectares of existing plantations and woodlots under improved management (improving species diversity and productivity). This will deliver a triple win of food security, climate change mitigation, and resiliency of agricultural systems. All of the above will be supported by a knowledge management system that will provide the cost benefit analysis of ecosystem degradation, to be used in advocacy and landscape level planning. Finally, it will introduce incentives for the private sector to support the adoption of green technologies in a sustainable manner and ensure that the economic case for forestry and agroforestry based business is well defined and understood, and that there are better opportunities for private sector, better access to credit for farmers and improved access to better

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[31] 40,000 ha under possible land consolidation, for cash crops regimes that integrate forestry and agroforestry; 78,646ha under agforestry and climate smart agriculture, but not under land consolidation program; 30,000 under existing plantation forests, 1,000 ha to be reforested with natural forests and the 354 ha of Kibirizi-Muyira and Karama forests. All these figures will be reconfirmed during PPG.

markets for tree products. This will include supporting formulation and implementation of a NAMA focused on sustainable charcoal – whose implementation will lead to significant additional CO_2 emission reductions by 2030.

35. The objective of the project is "To secure biodiversity and carbon benefits while simultaneously strengthening the resilience of livelihoods, through forest landscape restoration and upscaling clean technologies in selected Districts of Southern Province". This will be achieved through three components, each with several outcomes and outputs, described in the sections below. The project will work with central and local governments, civil society and academia. In line with the government policy and VUP[32] program, public works will be performed by community members who will receive money for work. Both women and men, including the youth will be targeted, with careful consideration of their experience, strategic needs and priorities for livelihood support systems and economic advance

36. **Component 1: Decision support tools - Forest management and decision-making on land use supported by decision support tools at all levels.** This component will provide knowledge to support landscape level planning processes and in particular refinement of opportunities and areas for forest landscape restoration; in particular landscape plans that integrate forest rehabilitation in the land consolidation plans, in support of local economic development that promotes rehabilitation/ forest restoration. The planning will be informed by cost benefit analysis and best practices. It will also provide knowledge to improve genetic material, species composition and productivity of the current forest plantation. The component will be implemented via one outcome (outcome 1 - Forest management and decision-making on land use supported by decision support tools at all levels (covering over 160,000 ha in four Districts) with the following outputs: i) 4 land consolidation plans that integrate forest rehabilitation ecosystems restoration and resilient food production: the plans will identify areas of forest protection, areas suitable for afforestation and areas for increasing tree based food production via agroforestry. Planning will be informed by cost benefit analysis of deforestation in the four districts and assessments of potential areas for forest restoration opportunities; and, a vulnerability assessment to be undertaken during the inception period; ii) Biodiversity and SFM monitoring programs implemented: A monitoring plan will be designed and implemented to monitor carbon stocks, biodiversity and livelihoods. Lessons from the project will be collated and shared widely, to support upscaling of the initiative in other sectors of the four target districts and the rest of the country. Learning and coordination will be supported by a landscape level multi-stakeholder learning and knowledge generation platform and a Landscape Restoration Implementation Task Force (coordinated closely with that established by the World Bank under a GEF-5 Restoration project in a different part of the country). This will provide an opportunity to engage the wider stakeholder group in planning, adaptive management and learning processes, and thus ensure coordination among the various existing and proposed activities for an area.

37. **Component 2: Forest landscape restoration plans implemented within the context of land consolidation plans.** Building on the Forest Landscape Restoration and Land Consolidation under Imidugudu programs, the project will provide skills and capacity required for implementing the plans formulated under outcome 1 of component 1; to increase tree cover, ecosystem and resilience of livelihoods. Since broad-scale landscape restoration requires the combination of mixed land uses in a landscape, the project will support synergies between reforestation efforts, local community livelihood opportunities, and the protection of existing forests as well as restoration of degraded forests and ecosystem services. Building on the traditional knowledge and management practices, local communities will be empowered to develop and implement a range of options that increase and maintain agricultural productivity, enhance resilience of agriculture, address drivers of carbon depletion within the forests and on farmlands and implement alternative livelihood activities that reduce pressure on natural resources. The project will also implement interventions to prevent erosion on the many steeply-sloped ridges and hillsides and to protect rivers and wetlands from the erosion by creating buffer zones of natural forest around water bodies.

38. Part of capacity building for the extension service will focus on strengthening coordination between sectors at the District level, to improve service delivery and enforcement of environmental regulations at the local level. Potential activities include integrating project activities in the joint work plans of the extension service and other District sectors and joint implementation. Others will include enforcement of regulations regarding cultivation of sensitive sites such as ridge tops with steep (20-55%) and very steep sloping land (>55%), riparian zones and wetland buffer zones and margins. Other activities will include reviewing district level Participatory Forest Management policies and legal provisions, and making recommendations for strengthening them in support of community forest management. The component will be implemented through two outcomes (project outcomes 2 and 3), described below:

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32 Vision 2020 Umurenge Program (public work for money, a sort of money transfer scheme)

39. Outcome 2: Forest restoration and carbon protection leading to enhancement of carbon stocks by 5,500,000 t CO_2 over 20 years. This will be achieved through several outputs: i) Participatory forest management of the current 354 ha of Kibirizi-Muyira and Rukaragata natural forests and rehabilitation of over 1,000 ha of public forests scattered over the landscape in the four Districts. The project will facilitate the formation of a Community Forest Association (CFA), which will be supported by the government to rehabilitate and manage the natural forests. This will include establishing the boundaries, revising the forest assessment to establish levels of degradation, design and start the implementation of the restoration programs. The restoration program will include planting a buffer zone around the natural forest and zonation of areas that can be utilized for non-timber forest products (NTFPs). It will also include establishing rules and regulations for managing the forest and empowering the CFA to partner with the government to secure enforcement. It will also include clearing of invasive alien species that currently threaten both natural and planted forests. In line with GEF guidelines, the project will prioritize restoration efforts that utilize natural processes as far as possible, including natural regeneration, assisted natural regeneration, and planting of indigenous tree species: ii) establishment of 10,000 hectares of new plantation forests (co-finance). These will be made up of fast growing species that will not replace any part of the natural forests. These plantation forests are needed in the Rwanda context to reduce pressure on the natural forests by increasing the sustainable supply of wood fuels. The project will therefore support tree planting and increase the productivity of private small-holder tree farms. This outcome will be implemented in conjunction with component 1 to ensure that best practices inform individual farmers to improve species composition and productivity of the plantations. The third output entails iii) Productivity and species diversity of the plantation increased: best practices will be applied to improve the management of the current (and to be established) plantation to restore productivity to the recommended 20m^3 per hectare (up from an average of 8m^3). This will include applying best practices to improve species composition and the genetic material in the arboretum.

40. Outcome 3: Increasing resilience of agriculture and livelihoods: Under this outcome, the project will provide the skills and capacitate the extension service to support climate smart agriculture technologies that increase land productivity while simultaneously restoring the functionality of the agro-ecosystems. This will include the following outputs: i) At least four land consolidation plans integrating forest landscape restoration (covering at least 40,000 ha) implemented – where farmers are supported to adopt climate smart production techniques; and, preferably, growing tree based cash crops such as coffee, cassava, etc. (to be identified during PPG), ii) farmers in areas that do not qualify for land consolidation supported to adopt sustainable land management practices, particularly agro-forestry based production systems that will increase food production in over 78,646 hectares. Identifying and implementing alternative livelihood support systems that reduce pressure on the natural resources (including growing crops for markets, improving supply chains and value addition for livestock products, and testing index-based insurance schemes). The project will provide training to farmers and the technical officers to support implementation of the outputs. Extension service will be complimented by the introduction of Farmer Field School concept where the farmers learn from applied-research mode of implementation, which enhances farmer-led learning, in particular learning from each other. Emphasis will be placed on practices that restore watersheds, increases tree cover on land, improves productivity of the key crops, protects river banks and enhances resilience to climate change.

41. Potential activities include identifying capacity gaps, designing and delivering training and other capacity enhancement programs; establishing tree nurseries and planting trees on farms and in designated areas for afforestation and reforestation, protecting areas where natural regeneration is deemed most appropriate; identifying most appropriate means of protecting river banks and implementing them, designing and implementing index-based crop insurance schemes, identifying and implementing new and/or alternative livelihood support activities, etc.

42. **Component 3: Incentives for adopting energy efficient technologies reduce pressure on forest resources while simultaneously securing household access to energy and reducing emissions**. This component will be implemented via one outcome - project outcome 4: Uptake of energy efficient technologies reduces woodfuel demand by 30%[33], contributing to mitigation and improvement in local economic development. Under this outcome, the project will refine market incentives for private sector-led upscaling of green technologies in the Green villages, uptake of forestry and agroforestry based business, uptake of sustainable charcoal and adoption of efficient cooking stoves amongst public institutions and homesteads. The component will be implemented via three outputs: i) increasing the number of households accessing energy efficient cooking and lighting technologies via the private sector. Under this output, the project will work with FONERWA and the financial institutions in the Four Districts to identify current barriers to private sector uptake of the supply of green technologies as businesses (such as energy efficient cookstoves, solar lamps, biogas).

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[33] There are modern energy efficient stoves in the market that reduce woodfuel use by up to 60% -- so an estimate of 30-40% is well within target.

It will then involve all relevant stakeholders in identifying a system to overcome these barriers, and to pilot the system in four villages – one per District (specific villages selected at PPG). The system is likely to include a combination of measures such as subsidies from government, loans and/or grants from FONERWA to cooperatives and individual traders, via local banks and electronic money management systems, etc. The green technologies include communal biogas and solar lamps and cookers in the homesteads, green villages and public institutions. The output will also design and implement a communications/campaign strategy to: i) increase awareness of the charcoal/forestry/tree regulations; ii) influence change in behavior, to make it more likely for the replacement of traditional technologies by clean ones. It is anticipated that implementation of the system in the four villages will increase access to clean technologies by at least 10% in the project area and reduce the demand for firewood by at least 30% per household (the percentage of reduced demand, along with the avoided emissions will be confirmed at PPG).

43. The second output will focus on improving the uptake of sustainable charcoal processes in the country (targeting national level) and the four districts. The project will support the development a Nationally Appropriate Mitigation Action (NAMA) on sustainable charcoal, focused on the policy and institutional framework, practices and standards for improving charcoal production, transportation, retail and consumption. The NAMA will increase the number of formal private sector enterprises (companies and cooperatives) within the value chain, and provide a policy and institutional enabling environment for increased private sector participation in the industry. It will complement and strengthen on-going and proposed activities related to improved forest management (e.g., under REDD+ program) and distribution of efficient cook stoves (existing CDM PoAs and cook stove programs). Potential activities include institutional framework and policy assessment, stakeholder consultation, review of current and projected charcoal production and consumption (building on similar assessments), formulation of the NAMA, implementation planning, financial structuring, and MRV system design and management. It is projected that the implementation of the NAMA activities during 2016 – 2030 will result in direct estimated net GHG emission reductions of approximately 5,500,000 tCO2e based on carbon sequestration potential from avoided deforestation.

44. The third output will focus on identifying viable and sustainable NTFP-based businesses, and supporting their establishment. This will increase opportunities for sustainable forest-based income generating activities to increase household incomes and reduce vulnerabilities. Private sector investment in the producer-end of agroforestry will require identification of investments that provide an attractive return profile. Building on the business case analysis made by the Forestry and Nature Conservation/Rwanda Natural Resources Authority (RNRA), IUCN and WRI (2014)[34], the districts need to find business ideas that overcome the perception that tree-based production takes too long to pay back. Early ideas include i) formation of charcoal producer associations and empowering them to engage in sustainable charcoal production (including training and access to higher efficiency kilns); ii) bundling agro-systems with different return profiles such as fast growing value-added crops with tree crops, in combinations such as bananas, shade coffee; iii) intercropping avocados; essential oils – Geranium, Patchouli; food crops that can grow in and around trees – tree tomatoes, cassava, taro, chilies, and passion fruit, and honey production. In addition to getting the business case, the project will facilitate smallholder farmers to access financing, either as loans, grants and/or incentives. Cooperatives are common in the four Districts, and are likely to be an innovative vehicle for linking communities to financial institutions. A clear implementation mechanism for business ideas will be identified during the PPG in order to facilitate access of individuals and cooperatives to loans for specific business ideas.

45. All three outputs will be supported by training of potential entrepreneurs on business development and management (including financial management, processing and packaging, marketing, etc). Partnerships across value-chains will be facilitated and supported.

1.4   *Incremental and expected contributions from the baseline, the GEFTF and co-financing;*

46. **Under the baseline scenario**, ecosystem services in the globally significant Albertine Rift part of Rwanda and associated agro-ecosystems in the forested landscape of southern Province will continue to be severely threatened. Without this project, the baseline programs described in section 1.2 will not be effective in restoring the degraded forested ecosystem or in protecting the 5,500,000 tonnes of CO_2 over 20 years (see Annex 1 for details). In the absence of the GEF investment, implementation of the baseline is likely to proceed without adopting the knowledge-based landscape approach to ecosystem restoration, and without changing the economic development paradigm; which is currently not taking cost benefit analysis of degrading forests and their associated ecosystem services into consideration in decision making.

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[34] Ministry of Natural Resources – Rwanda (2014). *Forest Landscape Restoration: Opportunity Assessment for Rwanda*. MINIRENA (Rwanda), IUCN, WRI. viii + 51pp.

Plantation forests will continue with productivity values well below normal, thereby failing to reduce pressure on the natural forests for the supply of needed wood products for a high and growing population. Farmers will not adequately adopt climate smart practices (including agroforestry and SLM), and agriculture will continue to course forest and ecosystem degradation, exposing livelihoods to negative impacts of climate change. Moreover, the private sector will not sufficiently embrace the advancement of the green economy at the District level; thus it will inadequately support the adoption of a green economy at the local level. Thus, despite the efforts of the government and its partners, the forests and biodiversity will continue to be degraded; ecosystems services will decline and millions of tons of soil will continue to flow down the water system into Lake Victoria, compounding poverty and vulnerability to climate change.

47. **With the GEF funding**, the project will engineer a shift from the 'business as usual' scenario of economic growth at the expense of natural capital, to green growth that: i) realises development while at the same time securing forests and biodiversity areas; ii) advances a green economy at the local level, based on active participation by private sector that links the communities/land users to the financial institutions. The project will do this by providing knowledge systems, incentives, skills and capacities for the adoption of a landscape approach to reverse the loss of ecosystem services within degraded forest landscapes, by promoting good practices conducive to SLM and biodiversity conservation; and, reducing pressure on the forest resources (and emissions) from rural energy demands. With the GEF and co-finance funding the GEF will deliver the incremental changes described in the table below:

Baseline	Alternative	Global environmental benefit
Deforestation (at 0.5% per year) and forest degradation of the Kibirizi-Muyira and Rukaragata Natural Forests	Forests put under Participatory Forest Management, a Community Forest Association formed, empowered to partner with GoR to restore the forest and secure its management	Improved ecosystem functionality; avoided emissions of 844 t CO_2 ha^{-1} yr^{-1};
Continued land fragmentation due to traditional agriculture on the 160,000 ha, with continued loss of tree cover on the agro-ecosystems.	Land consolidation that accommodates restoration of forests on hilltops and other areas lead to 1,000 ha of afforestation (including river banks); Adoption of climate smart agriculture on 56,000 ha, including SLM and agroforestry increases tree cover on the rest of the agro-ecosystem.	Restoration of forest landscape; improved ecosystem functionality and improved ecosystem's services; reduction in soil erosion (that ends up in Lake Victoria and the Nile).
With over 84% of households depending on wood for fuel, high demand on forests for wood, including unsustainably produced charcoal drives further deforestation	Incentives for private sector engagement in advancing the uptake of energy efficient and green technologies (improved stoves, solar, biogas) reduce wood consumption by at least 30%; NAMA on sustainable charcoal increases percentage of charcoal made sustainably by at least 20% country-wide; forest-based businesses increase tree cover on farms and value of forests to the local economies	Significant additional CO_2 emissions mitigated as a result of NAMA implementation between 2016 – 2030; Measurable decrease in demand of wood resources leading to reduced deforestation, improved soil conditions, waterway conditions from decreased runoff, and forest health; decreased air pollution as improved kilns can significantly reduce air pollution from the carbonization process.

1.5   *Innovation, sustainability and potential for scaling up*

48. Rwanda's National Forest Policy has been recognized as one of the world's most innovative, receiving the Future Policy Award in 2011. The policy aims to make the forestry sector one of the bedrocks of the economy and for sustainable development. This UNDP-GEF project will help implement that policy in the Mayaga region, where forest cover is only 5% and there are significant threats to the forests and their biodiversity and carbon stocks. The project is testing the innovative approach to increasing tree cover in a landscape where land holding per household is less than half a hectare (the population of Southern Province is 1.3 million against a surface area of 263,360 ha, giving a per capita land holding of 0.2 ha). The project introduces forest landscape restoration to protect important remnant forests and numerous forest patches in an area where pressure from economic development is immense, threatening an important habitat for the Albertine Rift biodiversity. Notably, the project will promote the integration of biodiversity conservation, sustainable land management practices and ecosystem-based mitigation in the planning process and involve communities in forest protection and restoration through participatory forest management. The approach taken by this project will enable the country to achieve 4 important targets within the constraints of small land parcels, high population densities and high dependence on agriculture and wood-based energy: i) move closer to 30% forest cover and 85% agroforest cover. As

explained above, forest cover was at 28.8 in 2013, and the last percentage points are harder to achieve under the Rwandan context. Baseline agroforestry cover will be established during project design; ii) maintain low per capita GHG emissions without compromising household energy access or economic growth; iii) sustainable charcoal will contribute to increasing household incomes without compromising goals for emissions reductions; iv) move towards the 2 million hectares forest landscape restoration goal. To achieve the ambitious target towards the pledge to the Bonn challenge will inevitably require an increase in tree cover on small properties; the innovation is to introduce native species in the landscape. This needs to master germination techniques for indigenous species of trees (forest and agroforestry) on small farms typical to Rwanda as well as multiplication and propagation of fast growing trees (mostly agroforestry) of indigenous species that can provide multiple benefits to the population.

49. The project has sustainability and replicability features built in its design. By going through the local government of the four districts, the project ensures sustainability and enhances the chances of upscaling in the rest of the Southern Province, through improved extension service and cross sectoral coordination. The support to the tree seed centre will produce high-quality genetic stocks of native and non-native agroforestry species that will be made available to farmers throughout the country. The training of potential entrepreneurs on business development and management, along with incentivising the private sector to operate sustainable, forest-based businesses and to disseminate energy efficient technologies will contribute to the project's sustainability. The NAMA on the sustainable charcoal value chain is expected to attract international financial assistance, which could be used to scale up project results in the charcoal sector. A subsequent, follow on Green Climate Fund (GCF) program for the forestry sector could be another important means to scale up activities to other parts of the coutnry. Efforts will be made to ensure that this GEF project will generate the data and detailed analysis that would be required to put together a GCF proposal at a later stage.

2. Stakeholders. Will project design include the participation of relevant stakeholders from *civil society* and *indigenous people*? (yes ☒ /no☐)

Stakeholder	Role and responsibility
District Development Committees housed by the Ministry of Local government at the district level	Rwanda has devolved responsibility for local development considerably, along with transfer of funds for development. The key entity driving coordination of development at the local level is the Joint Action Development Forum (JADF). The project will utilize the JADFs as entry points for targeting benefits to project areas and communities. They will therefore be involved in planning the SLM and extension part of the project.
REMA – Rwanda Environmental Management Authority	REMA is the Agency responsible for project coordination at national/central level: the PPG period will be used to identify implementation arrangements between REMA and the agencies on the ground and to establish MoU agreements spelling out roles and responsibilities as well as reporting arrangements between them and REMA. REMA will lead the project formulation and chair the Project Board and Technical Committees and provide substantive technical advice to the project.
Ministry of Natural Resources (via the Rwanda Natural Resources Authority)	The Ministry of Natural Resources has been very active in advancing the agenda for forest landscape restoration in Rwanda. In 2014, they implemented an assessment of opportunities for advancing landscape restoration in Rwanda, with technical assistance from IUCN and WRI – the result of which has informed the formulation of this PIF. In addition to being actively involved in the project design phase, they will be part of the Project Technical Committee and will provide technical advice, together with REMA.
Ministry of Agriculture	The Ministry of Agriculture is part of the JADF; however, the Ministry is responsible for extension services. Most of the SLM and agroforestry activities will be implemented through the Ministry's extension service. It will therefore be involved in mobilizing stakeholder consultation for the project formulation.
NGO/CSO	Several local and International NGOs will be involved in both project formulation and implementation. Wildlife Conservation Society (Rwanda), ICRAF, IUCN and WWF. The roles and specific responsibility of each will be determined during the PPG. PPG will also be used to identify other Community Based Organizations (CBOs and specific Cooperative Societies) that will be necessary for the delivery of the project, especially on component 3 (advancing a forest product-based income generating activities). Other relevant components that might be implemented via the CSO will be identified and implementation arrangements negotiated. This is important to link the local communities with the project.
Private sector	The private sector will provide the link to business. The PPG will be used to identify relevant

	business and to involve them in the project planning, in particular in identifying forest based value chains and assessing the barriers to entry in business and entrepreneurship.
FONERWA	FONERWA is the National Environment and Climate Change Fund. It is likely that the business component may be co-implemented with FONERWA, which is disbursing loans and grants to business and government agencies to implement climate change related projects.
Community members	Communities will be the most important beneficiaries of the project. They will therefore also be involved in project formulation and implementation. PPG will undertake extensive consultations, through Imidugudu and the existing cooperatives.

3. Gender Considerations: Are *gender considerations* taken into account? (yes ⊠ /no☐).

50. UNDP and the Government of Rwanda systematically integrate gender equality and a social inclusion perspective in programme/project planning and implementation. This is to ensure equal participation of both women and men and people from different economic and social backgrounds in project planning and decision making, in order to make certain that neither of the groups is disadvantaged by the project activities and will derive equal benefits from the project activities. In order to achieve gender mainstreaming in this project, the PPG will conduct a thorough gender and social analysis as part of the baseline survey, and ensure equal participation of men and women in consultations among the key stakeholders, including the national and local governments, local communities and others as relevant, so as to fully take into account the different perspectives, priorities and socio-economic realities that women and men face[35]. Project design pertaining to institutional strengthening and capacity building will ensure target trainees include all gender groups and institutional development will mainstream gender in the institutional system and decision making mechanisms. At the site level, the project will examine the conditions of local livelihoods and the main factors affecting the livelihoods of gender groups (women, men, youth) in the selected target landscapes. Gender disaggretated indicators and targets will be established where appropriate and tracked through the project monitoring plan.

4 Risks and proposed mitigation

Risk	Rating	Risk Mitigation Strategy
Short-term economical and livelihood requirements may take precedence over long term gains from landscape restoration	Medium-High	The project is oriented towards meeting both short-term livelihood needs (increased food production, clean energy, household incomes) and securing long-term needs (ecosystem restoration, reduce vulnerability by increasing resilience of agriculture and livelihoods). The project will develop and establish sustainable livelihood and income generation activities to contribute to meeting immediate needs, particularly of the vulnerable poor.
The currently high political support at the national, district and community level may wane due to long planning processes (and perception that GEF project planning is too complex)	Medium	Stakeholders will be involved at all stages of project planning, and will be kept informed of any complexities that may arise.
Securing private sector engagement may be difficult due to the low levels of economic development at the local level, and limited cash economy	Medium	Component 3 of the project is set up to reduce this risk by identifying a model that introduces a cash economy at the local level to enable private sector players to operate. The project will link communities to financial institutions (through cooperatives and resource user groups), and work with government to provide incentives to the private sector. Despite this, there is still a slight risk that the model is not fully successful. The project will monitor this carefully and use adaptive management to correct course as issues arise.
Increase in the frequency and severity of extreme weather events in areas beyond those identified as critical in the NAPA	Medium-Low	The project seeks to restore the ecological integrity of the agro-ecological system within the forest landscape restoration approach. This will strengthen the role of ecological infrastructure in providing cost effective adaptation and reducing vulnerability in the face of climate change. Climate smart agriculture, restoring watersheds and adoption of agro-

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35 The Initiation Plan for the PPG includes ToRs and a budget for the gender assessment: Gender analysis and strategy: Undertake a gender analysis, identifying various gender groups, examining the rules and regulations, and cultural norms that influence their interactions, especially access to, and control of natural resources; further examining how the effectiveness and efficiency of implementation of the proposed project activities are likely to be affected by these gender arrangements, and how the project implementation, results and impacts are likely to affect the gender arrangements. Use the findings to formulate a gender strategy, to guide the project to mainstream gender considerations in its implementation, to ensure that the project is inclusive, and that benefits, as well as responsibilities are adequately targeted. Examine the proposed project targets and indicators to ensure that they are gender sensitive and that monitoring data will be gender/sex disaggregated.

		forestry are good ways of adapting livelihoods to effects of climate change.
The continued reliance of biomass as a source of energy through charcoal production could create a perverse incentive to cut down native forest or convert fertile agricultural land to make space for fast-growing exotics.	Medium	The land consolidation plans developed under Component 1 will be designed to mitigate this risk by making sure that high conservation value forest is protected and restored, and monocrop plantations are sited appropriately, on already transformed or degraded land.

5. Coordination. Outline the coordination with other relevant GEF-financed and other initiatives.

51. There are many projects under implementation or being planned that have relevance, since they focus on biodiversity conservation, land and forest restoration The project will be closely linked with baseline initiatives described under Section B.1. Representatives from these initiatives (at decision-making levels) will be engaged primarily in the multi-stakeholder learning and knowledge generation platforms. At landscape level, this will allow for their involvement in the development and review of the Landscape Restoration and Management plans – as well as the identification of synergies between initiatives to ensure that duplication of efforts is avoided.

52. The proposed project will in particular be closely coordinated with two important GEF initiatives: i) World Bank led GEF-5 project on SFM in Gishwati landscape; and, ii) the GEF funded IUCN/UNEP/WWF-led The Restoration Initiative (TRI).

53. REMA is the implementing partner for the World Bank supported GEF-5 project on "Landscape Approach to Forest Restoration and Conservation (LAFREC)". While both projects address forest landscape restoration, they focus on different landscapes. The two initiatives are complementary as the World Bank project focuses on the Gishwati-Mukura landscape in the Western Province, while this UNDP-GEF project will work in the Southern Province. LAFREC will provide important synergies and lessons for the proposed project. It addresses the policy reform that is needed for effective landscape restoration work at scale. The proposed project will not replicate this important component, but rather will coordinate with the LAFREC on this important aspect of landscape restoration; ii) LAFREC also proposes a landscape level multi-stakeholder learning and knowledge generation platform and a Landscape Restoration Implementation Task Force, which the proposed project will collaborate closely with. All other early lessons that emerge from the World Bank initiative will be incorporated at the time of CEO endorsement. Further relations, synergies and complementarities will be explored during project formulation and reported at CEO request.

54. The project will also be coordinated very closely with the current GEF-financed The Restoration Initiative (TRI) which is supporting advancement towards the Bonn Initiative in Africa, Asia and Latin America. Implemented by IUCN, UNEP and WWF, the program is expected to make a significant global contribution to restoring ecosystem functioning and improving livelihoods on priority degraded and deforested landscapes, in support of the Bonn Challenge, and in response to the expressed needs of several countries. Through the GEF programmatic approach, the TRI will create synergies, provide a wider array of tools and resources to national projects, and leverage key partnerships to yield cost savings and realize greater impact than possible under a fragmented, project-by-project approach. The Program consists of national projects supported by a Global Learning, Financing, and Partnerships project to develop and disseminate best-practices and tools, catalyze investment in restoration, expand the scope of countries and actors engaged in forest and landscape restoration, and realize benefits at scale. Rwanda has been a very active participant in the Bonn Initiative; this project will benefit from and contribute to learning, tools and methods for forested landscape restoration within high density agriculture dependent economies. Specific avenues for collaboration will be established during the project formulation.

55. The project will also be very closely coordinated with the IUCN baseline project on "Piloting Multiple-Benefit Investment Packages through forest/landscape restoration and REDD+ in Rwanda for scaling up in Africa". This project will promote the restoration of a mosaic of forest landscapes and enhance carbon stocks in Rwanda as well as deepen commitments to FLR across Eastern Africa. In Rwanda, it will be piloted in two districts (Gicumbi and Gatsibo) which are not in the Mayaga landscape. Started in September 2015, the project aims to develop investment models at different levels to enable replication outside of project sites to stimulate community livelihood improvements and market value chains for private sector investments. The project will support scaling up in Africa through providing technical support to other countries and sharing the lessons and experiences in regional fora. The goal of the project is "Demonstrated and verified enhancement of carbon stocks and other ecosystem services delivered through landscape scale restoration in two Rwandan districts with the institutional and investment means in place to upscale nationally and promote regionally". It has four outputs all of

which have relevance to the proposed GEF project: Output 1. National and district institutional policy and programmatic frameworks are effectively coordinated, mandated, streamlined and regularly assessed in terms of their ability to stimulate public and private investments in landscape restoration – with an emphasis on optimizing the contribution to Rwanda's Vision 2020 and its Intended Nationally Defined Contribution (INDC); Output 2. Early public-private partnership investments stimulate demonstrable and verifiable carbon intensive forest landscape restoration interventions within pilot landscapes in Gatsibo and Gicumbi districts that involve and build synergies between small-scale farmers, government and private companies; Output 3. Market, policy and regulatory conditions that stimulate and reward the delivery of, and investment in, specific goods and services from forest landscape restoration fully understood and proactively encouraged; and Output 4. Innovative and reliable financial mechanisms and incentive arrangements for FLR which can be accessed by both larger and smaller land owners are identified, tested in the pilot sites in two districts and evaluated for national up-scaling. Specific avenues for collaboration will be established during the project formulation.

56. Lessons from all three projects will inform the implementation of the proposed GEF project – and will be coordinated through the LAFREC supported national dialogue platform on FLR. Some early lessons from LAFREC include the fact that implementation is being done in the context of a complex stakeholder environment involving several agencies within government, as well as local, private sector, academic and development partner stakeholders; it will provide lessons on how better to engage and create synergies in a multi-stakeholder environment. Lessons on tree-based approaches will highlight the improved land management options available that will promote both agricultural productivity and environmental services, including soil and water conservation structures and agro-forestry techniques.

57. Indeed, the PIF formulation has been informed by lessons from past and current GEF projects in Rwanda. These lessons include: (i) It is crucial to also conserve biodiversity in areas outside protected areas, such as in the larger production landscapes; (ii) The commitment to inter-sectoral collaboration should be very well defined and established a priori; (iii) Project activities should be mainstreamed into existing institutions as much as possible; and (iv) Community level investments, even if small, can have a transformative effect in terms of developing new paradigms. The PPG will build on these lessons and will be closely coordinated with the following additional projects: i) LDCF Adaptation project currently being formulated by FONERWA with the AfDB as the IA; the project aims to mainstream adaptation into construction of infrastructure (including roads in the rural areas): ii) The Dutch funded rural infrastructure development, which is financing construction of rural roads in the rural areas, including the four districts targeted by the proposed project. The Dutch funded project will be followed by another phase focused on food security, which will also cover the four targeted districts. Mainstreaming forest restoration in food security programs will be critical to the achievement of forest restoration at scale, and increasing productivity of the land without compromising the forest/tree cover and emissions reduction strategies: iii) The project will learn crucial lessons, and build on results of the recently concluded project on "Reducing Vulnerability to Climate Change by Establishing Early Warning and Disaster Preparedness Systems and Support for Integrated Watershed Management in Flood Prone Areas" The project objectives were to reduce the vulnerability of communities in Gishwati forest and the associated Congo-Nile watershed area to climate change impacts. Specifically, the project prepared an early warning and disaster management plan for the Gishwati forest and the Congo-Nile watershed; (ii) produced a land use master plan for climate resilience; (iii) introduced improved land use management practices; and (iv) disseminated the lessons learned from pilot areas to the rest of the country. During PPG, the lessons generated through this project will be assessed and ways to build on them identified. In particular, lessons on land use planning for climate resilience and early warning information may become part of the project extension package.

6. Consistency with National Priorities. Is the project consistent with the National strategies and plans or reports and assessments under relevant conventions? (yes ☒ /no☐).

Instrument	Alignment of project to the instrument
EDPRS (formerly PRSP)	Vision 2020 makes provisions for the implementation of adequate land and water management techniques coupled with a sound biodiversity policy, in order to ensure sustainable development. The EDPRS II (2013-2018) identifies the attainment of 30% forest cover by 2020 and increasing the percentage of forest related jobs from 0.3% to 0.5% in the same time frame. The government is mainstreaming climate risks into the EDPRS and greening the District Development Plans. The National Environment Policy calls for the conservation and sustainable utilization of biodiversity of natural ecosystems and agro-ecosystems in compliance with the equitable sharing of benefits derived from biological resources.
NAPA	Several project outcomes contribute directly to the NAPA priorities 1. IWRM: Integrated water resource management; 3. Promotion of non-agricultural activities of income generating schemes; and 6. Development of energy sources alternative to firewood.
NAP	The project contributes directly to the following NAP objectives: ii) Awareness raising and training; v) Afforestation and agro-forestry; vi) Development and use of alternative energy sources; ix) Community

	initiatives and alternative livelihood systems; and viii) Marketing systems and infrastructure
NBSAP	The project contributes to all 5 goals of the NBSAP and several of the Aichi targets, namely: i) to address the main causes of national biodiversity loss by mainstreaming biodiversity conservation in the decision making process across all governmental, private and civil society's development programs; ii) to reduce anthropogenic pressures on biodiversity resources and promote their sustainable use; iii) to improve the status of national biodiversity by expanding and safeguarding priority protected ecosystems and maintaining biological communities in equilibrium state; iv) to ensure equitable sharing of benefits arising from the use of biodiversity and ecosystem services.
NPFE	Rwanda undertook an NPFE for GEF 5 which identified forest restoration as an area of focus for the next several GEF cycles. For this reason the country opted to not do an NPFE for GEF 6.
GGCRS[36]	Rwanda's long term vision is to become a climate resilient economy, with strategic objectives to achieve Energy Security and a Low Carbon Energy Supply that supports the development of Green Industry and Services; Sustainable Land Use and Water Resource Management that result in Food Security, appropriate Urban Development and preservation of Biodiversity and Ecosystem Services, as well as to ensure Social Protection, Improved Health and Disaster Risk Reduction that reduces vulnerability to climate change impacts. The following strategies, to be supported by the project, are included in the 6 priorities under the Green Growth and Climate Resilience Strategy: i) Promotion of intensive agro-pastoral activities; ii) Promotion of non-agricultural income generating activities; iii) Development of alternative sources of energy to firewood
SNC	The Second National Communication proposes the following mitigation and adaptation strategies for the forest sector: forestation; reforestation; forest management; reduced deforestation; harvested wood product management; use of forestry products for bioenergy to replace fossil fuel use; tree species improvement to increase biomass productivity and carbon sequestration; and improved remote sensing technologies for the study of vegetation/soil, carbon sequestration potential and the mapping of land use and land use change.
INDC	Rwanda's Intended Nationally Determined Contribution (INDC) includes both an adaptation contribution and mitigation contribution. Mitigation Programme of Action 7, which relates to Sustainable forestry, agroforestry and biomass energy, states that the country will apply a Sustainable Charcoal Value Chain to reduce the demand for wood in charcoal production and downstream activities, leading to a potential net reduction in wood use of approximately 5,770,000 tonnes between 2016 – 2030 (equivalent to 5,770,000 tCO2 saved). The project will also contribute to Adaptation Programme of Action 3 on Sustainable forestry, agroforestry and biomass energy. Specifically, it is aligned with and will contribute to Action 3.1 Promote afforestation/reforestation of designated areas through enhanced germplasm and technical practices in planting and post-planting processes. Finally, the project will contribute to mitigation Action 3.2 Promote environmentally sustainable use of biomass fuels where Rwanda intends to increase the diffusion of improved cook stoves and reach 100% of all households in need by 2030; and to install 35 000 domestic biogas digesters and 15 institutional biogas digesters annually, and to increase average charcoal yields up to 50% by 2030 .
BEST	The goal of Rwanda's Biomass Energy Strategy (BEST) is to ensure a more sustainable supply of biomass energy (e.g. firewood and charcoal) and to promote access to modern fuels as well as to efficient biomass combustion technologies for households and small enterprises.
Climate Change Mainstreaming Guidelines	REMA's "Guidelines to Mainstream Climate Change Adaptation and Mitigation in the Energy and Infrastructure Sector", produced in 2011, highlight the following potential mitigation measures for the biomass sector: efficient conversion technologies like improved charcoal production kilns and retorts; improving biomass fuel management and utilisation practices, e.g., improved cook stoves; promoting profitable tree planting for fuel wood production; and setting standards for biomass energy production and sales to facilitate monitoring and enforcement of sustainable practices.

7. Knowledge Management

58. As explained in the section on coordination with other initiatives, the project has already built on extensive lessons from other related and relevant initiatives. This will be deepened during PPG. At the implementation stage, the project will use two platforms for learning and sharing knowledge: i) Project monitoring and evaluation plan, which will include a large part of learning, in line with UNDP guidelines on M&E and adaptive management. The PIR and publications will be used to disseminate lessons: ii) the landscape level multi-stakeholder learning and knowledge generation platform and a Landscape Restoration Implementation Task Force established under output 1.3 (component 1). These platforms will ensure that; a) lessons are actively generated, collated and shared widely: b) learning is supported and that the project provides an opportunity to engage the wider stakeholder group in planning, adaptive management and learning processes, and thus ensure coordination among the various existing and proposed activities for an area.

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[36] Green Growth and Climate Resilience Strategy, the National Strategy for Climate Change and Low Carbon Development

PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

A. RECORD OF ENDORSEMENT[37] OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S):
(Please attach the Operational Focal Point endorsement letter(s) with this template.

Name	Position	Ministry	Date
Dr. Rose Mukankomeje	Director General	Rwanda Environment Management Authority (REMA)	October 28, 2015

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF policies[38] and procedures and meets the GEF criteria for project identification and preparation under GEF-6.

Agency Coordinator, Agency name	Signature	Date (MM/dd/yyyy)	Project Contact Person	Telephone	Email
Adriana Dinu UNDP-GEF Executive Coordinator		July 19, 2016	Faris Khader Regional Technical Advisor EITT	+251 91 250 3307	faris.khader @undp.org

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[37] For regional and/or global projects in which participating countries are identified, OFP endorsement letters from these countries are required even though there may not be a STAR allocation associated with the project.

[38] GEF policies encompass all managed trust funds, namely: GEFTF, LDCF, and SCCF

Annex 1: GHG benefits

The project will enhance carbon protection via participatory forest management of 354 ha of natural forests and afforestation of 1,000 ha with native tree species. It will also establish a total of 10,000 ha of plantation forests that will not replace any natural forests; it will also put 160,000 ha under improved climate smart agriculture (including agroforestry based cropping regimes), to increase food productivity without undermining the mitigation efforts. It will further put 30,000 hectares of existing plantations and woodlots under improved management (improving species diversity and productivity).

Applying the FAO EXACT carbon balance tool, the total GHG benefits of the project interventions amount to approximately 5,500,000 tonnes of CO_2 sequestered over 20 years, or about 275,000 tonnes of CO_2 sequestered per year.

The EX-Ante Carbon-balance Tool (EX-ACT) - Standard Edition

Project Name	Forest Landscape Restoration in the Mayaga regi
Continent	Africa
Climate	Tropical Montane
Moisture regime	Dry
Dominant Regional Soil Type	HAC Soils

Duration of the Project (Years)		
Implementation phase	5	
Capitalisation phase	15	
Duration of accounting	20	

The EX-Ante Carbon-balance Tool (EX-ACT) - Standard Edition

| Project Name | Forest Landscape Restorati | Climate | Tropical Montane (Dry) | Duration of the Project (Years) | 20 |
| Continent | Africa | Dominant Regional Soil Type | HAC Soils | Total area (ha) | 41354 |

Components of the project	Gross fluxes Without All GHG in tCO2eq Positive = source / negative = sink	With	Balance	Share per GHG of the Balance CO2 Biomass	Soil	Other	N2O	CH4	Result per year Without	With	Balance
Land use changes											
Deforestation	0	0	0	0	0		0	0	0	0	0
Afforestation	0	-172,994	-172,994	-129,104	-43,890		0	0	0	-8,650	-8,650
Other LUC	0	-875,104	-875,104	-34,525	-840,579		0	0	0	-43,755	-43,755
Agriculture											
Annual	0	0	0	0	0		0	0	0	0	0
Perennial	0	-1,179,750	-1,179,750	-1,122,000	-57,750		0	0	0	-58,988	-58,988
Rice	0	0	0	0	0		0	0	0	0	0
Grassland & Livestocks											
Grassland	0	0	0	0	0		0	0	0	0	0
Livestocks	0	0	0				0	0	0	0	0
Degradation & Management	1,627,912	-1,627,912	-3,255,824	-2,524,324	-731,500		0	0	81,396	-81,396	-162,791
Inputs & Investments	0	0	0			0	0		0	0	0
Total	1,627,912	-3,855,760	**-5,483,672**	-3,809,953	-1,673,719	0	0	0	81,396	-192,788	-274,184
Per hectare	39	-93	-133	-92.1	-40.5	0.0	0.0	0.0			
Per hectare per year	2.0	-4.7	-6.6	-4.6	-2.0	0.0	0.0	0.0	2.0	-4.7	-6.6

23