SECTION 1: PROJECT IDENTIFICATION

1.1	**Project title:**	Building resilience of communities living in degraded wetlands, forests and savannas of Rwanda through an ecosystem-based adaptation approach.
1.2	**Project number:**	5194 PMS:
1.3	**Project type:**	FSP
1.4	**Trust Fund:**	LDCF
1.5	**Strategic objectives:**	Climate Change Adaptation
1.6	**UNEP priority:**	Climate Change Adaptation
1.7	**Geographical scope:**	National
1.8	**Mode of execution:**	External
1.9	**Project executing organization:**	REMA
1.10	**Duration of project:**	48 months Commencing: June 2015 Technical completion: May 2019
	Validity of legal instrument:	50 months

1.11	**Cost of project**	**US$**	**%**
	Cost to the GEF Trust Fund	**5,500,000**	**37%**
	Co-financing		
	Grant		
	Multi-Lateral Development Bank	**6,939,000**	**47%**
	Bilateral Agency and foreign government	**2,305,000**	**16%**
	Sub-total		
	Total	**14,744,000**	**100%**

Project Summary

Climate change, including increased mean temperature and erratic rainfall, is negatively affecting rural communities in Rwanda. Erratic rainfall results in flooding events in the central and north-western highlands, whereas rainfall shortage and drought occurs in the eastern and southern lowlands. Consequently, major sectors in Rwanda are affected by climate change, including agriculture and water. Such effects include: i) decreased agricultural production because of soil erosion, reduced soil moisture and water availability; ii) decreased agricultural yields because of crop damage from flooding and landslides; and iii) decreased quality and quantity of water as a result of flooding and droughts, respectively.

Rwanda's natural wetland, forest and savanna ecosystems provide a wide range of services. These include regulating services such as erosion control and flood mitigation. Subsequently, these ecosystems notably contribute to the resilience of local communities to climate change. For example, intact riverine ecosystems mitigate the effects of floods on adjacent agricultural areas. However, these ecosystems are at risk. The most prevalent threat is the unsustainable use of natural resources by local communities. This leads to the degradation of natural ecosystems and thereby reducing their capacity to provide ecosystem services. Consequently, the vulnerability of local communities in Rwanda to the effects of climate change is increased.

To address the problems caused by floods, droughts and landslides in Rwanda, the proposed project will use an Ecosystem-based Adaptation (EbA) approach to restore degraded wetland, forest and savanna ecosystems. This will enhance the resilience of these ecosystems against the effects of climate change. As a result, the climate vulnerability of local communities will be reduced. This will be achieved by: i) increasing the technical capacity to plan and implement EbA at national and local levels; ii) strengthening the national and local policies, strategies and plans to facilitate the national implementation of EbA; and iii) restoring degraded savanna, forests and wetlands to provide proof-of-concept for the role of ecological infrastructure in increasing climate resilience and providing alternative livelihoods for local communities. The EbA restoration activities will be combined with: i) bio-physical interventions to increase the climate resilience of local communities; and ii) green technologies that promote the sustainability and resilience of restoration activities. These interventions will further increase the resilience of local communities in Rwanda to the predicted effects of climate change.

The proposed project will demonstrate the benefits of EbA by using intervention sites in the most vulnerable areas in Rwanda. To maximise the sustainability and upscaling of the interventions, the project will: i) train national- and local-level authorities as well as local communities at intervention sites on the use of EbA; ii) increase scientific knowledge on the benefits of EbA and identify best practices for EbA; iii) provide guiding documents to mainstream EbA into polices, plans and strategies in Rwanda; and iv) increase local community awareness on the role of ecological infrastructure in increasing climate resilience.

The proposed project will address priorities identified in Rwanda's NAPA and will build on several on-going baseline projects including Projet d'Appui à la Reforestation au Rwanda (PAREF), Land Husbandry Water Catchment and Hillside Irrigation Programme (LWH) and Rural Sector Support Project (RSSP). The project will be executed by the Rwandan Environmental Management Authority (REMA) within the Ministry of Natural Resources (MINIRENA) in partnership with the Rwanda Natural Resource Authority (RNRA) within MINIRENA, the Ministry of Agriculture and Animal Resources (MINAGRI) and several other government ministries.

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Acronyms and Abbreviations

AAF	African Adaptation Fund
ACNR	Association for Nature Conservation in Rwanda
ARCOS	Albertine Rift Conservation Society
ARECO	Association Rwandaise des Ecologistes
AMAT	Adaptation Monitoring and Assessment Tool
AMFN	African Model Forest Network
ANP	Akagera National Park
CBD	Convention on Biological Diversity
CBO	Community-based Organisation
CCA	Climate Change Adaptation
CCIOU	Climate Change and International Obligations Unit
CMS	Convention on the Conservation of Migratory Species of Wild Animals
CSR	Corporate Social Responsibility
CTA	Chief Technical Advisor
DDP	District Development Plans
DEF	District Environment Facilitators
DEMP	The Decentralisation and Environmental Management Project
DEO	District Environment Officers
DILAM	The Lands and Mines Unit
DoF	Department of Forestry
DPME	The Planning, Monitoring and Evaluation Unit
DRC	Democratic Republic of Congo
DRR	Disaster Risk Reduction
EA	Environmental Audits
EAC	East African Community
EbA	Ecosystem-based Adaptation
EDPRS	Economic Development and Poverty Reduction Strategy
EIA	Environmental Impact Assessment
ENSO	El Niño Southern Oscillation
EWS	Early Warning System
FAO	Food and Agriculture Organisation
FFS	Farmer Field School
FONERWA	National Fund for Environment and Climate Change
FSP	Full-sized Project
GCM	Global Climate Models
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
GoR	Government of Rwanda
HDI	Human Development Index
IA	Implementing Agency
ICRAF	World Agroforestry Centre
ICT	Information and Communication Technology
ISAR	Rwanda Agriculture Research Institute

JADF	Joint Action Development Forum
KIST	Kigali Institute of Science and Technology
KWAMP	The Kirehe community-based Watershed management Project
LAFREC	The Landscape Approach to Forest Restoration and Conservation
LDCF	Least Developed Country Fund
LVEMP	Lake Victoria Environmental Management Project
LWH	The Land Husbandry, Water Harvesting and Hillside Irrigation Project
M&E	Monitoring and Evaluation
MDGs	Millennium Development Goals
MIDIMAR	Ministry of Disaster Management and Refugee Affairs
MIGEPROF	Ministry of Gender and Family Promotion
MINAGRI	Ministry of Agriculture and Animal Resources
MINECOFIN	Ministry of Finance and Economic Planning
MINICOM	Ministry of Trade and Industry
MINEDUC	Ministry of Education
MININFRA	Ministry of Infrastructures
MINISANTE	Ministry of Health
MINIRENA	Ministry of Natural Resources
MoU	Memorandum of Understanding
MYICT	Ministry of Youth and Information and Communication Technology
NAPA	National Adaptation Programme of Action
NCCC	National Climate Change Committee
NEA	National Executing Agency
NGO	Non-Governmental Organisation
NLUDMP	National Land Use and Development Master Plan
NNP	Nyungwe National Park
NTFP	Non-timber Forest Products
NUR	National University of Rwanda
NWC	National Women Council
PAREF	Project d'Appui a la Reforestation au Rwanda
PEI	Poverty and Environment Initiative
PIR	Project Implementation Review
PM	Project Manager
PMU	Project Management Unit
PPG	Project Preparation Grant
PRSP	Poverty Reduction Strategy Paper
PSC	Project Steering Committee
PV	Photovoltaic
RAB	Rwanda Agriculture Board
RCAA	Rwanda Civil Aviation Authority
RDB	Rwanda Development Board
REB	Rwanda Education Board
REMA	Rwandan Environmental Management Authority
RFLRI	Rwanda Forest Landscape Restoration Initiative
RNRA	The Rwandan Natural Resource Authority
RRA	Rwanda Revenue Authority

RSSP	The Rural Sector Support Project
SACO	Saving Cooperative
SEA	Strategic Environmental Assessment
SNC	Second National Communication
SPIU	Single Project Implementation Unit
SWAp	Sector-wide Approach
TM	Task Manager
UNCCD	United Nations Convention to Combat Desertification
UNFCCC	United Nations Framework Convention on Climatic Changes
VIA	Vulnerability Impact Assessment
VNP	Volcanoes National Park
VRA	Vulnerability Risk Assessment
WACDEP	The Water, Climate and Development Program
WCS	Wildlife Conservation Society
WUA	Water User Associations

SECTION 2: BACKGROUND AND SITUATION ANALYSIS (BASELINE COURSE OF ACTION)

2.1. Background and context

1. This proposal seeks funding from the Least Developed Countries Fund (LDCF) to implement the Full-Size Project (FSP) entitled: "Building resilience of communities living in degraded wetlands, forests and savannas of Rwanda through an ecosystem-based adaptation approach". Hereafter, this FSP will be referred to as "the proposed project".

2. The goal of the proposed project is to build the resilience of communities living in degraded wetlands, forests and savannas in Rwanda, using Ecosystem-based Adaptation (EbA). The project will include the following interventions: i) strengthening the technical capacity of Rwanda to plan and implement EbA; ii) strengthening the policy and strategy framework in Rwanda to promote ecosystem restoration and management; iii) restoring ecosystems to increase their resilience to the effects of climate change; and iv) promoting sustainable and climate-resilient livelihoods.

3. The proposed project will demonstrate innovative pilot interventions in Rwandan ecosystems that are vulnerable to climate change. These ecosystems include: i) degraded savannas in Kayonza and Bugesera districts; ii) degraded forests on hill slopes in Ngororero district; and iii) degraded wetlands in Bugesera, Gasabo and Ngororero districts. The locations of these districts are shown in Figure 1.

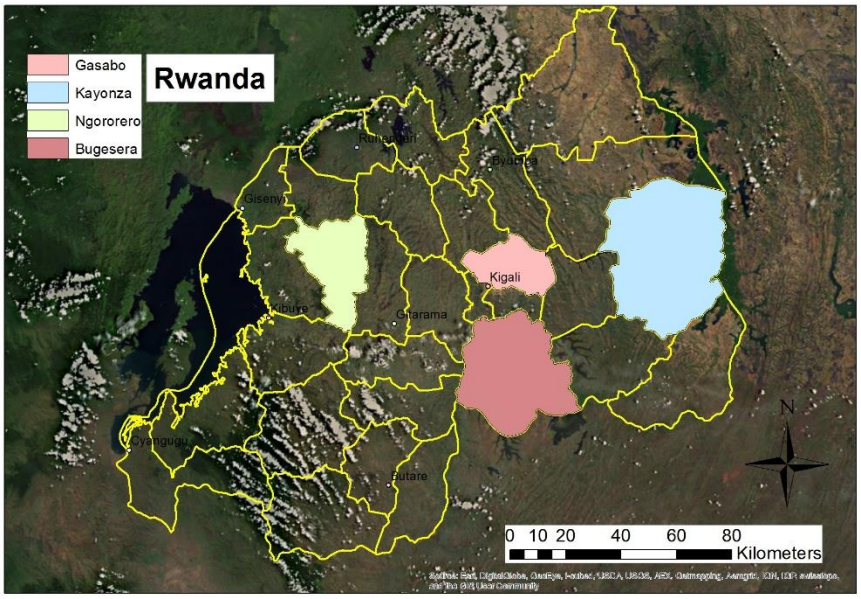


Figure 1. Location of the intervention districts of the proposed project.

4. Three of the six priorities identified by Rwanda's National Adaptation Programme of Action (NAPA) will be addressed: i) Priority 1 "Integrated water resources management"; ii) Priority 3 "Promotion of income-generating activities"; iii) Priority 4 "Promotion of intensive agriculture and animal husbandry"; and iv) Priority 5 "Introduction of varieties resisting to environmental conditions". Project interventions will conform to the standards of the Rwandan Environmental Management Authority (REMA). In addition, the United Nations Environment Programme (UNEP) will provide support to complement REMA.

Geographical context

5. Rwanda is a landlocked country in East Africa. It lies between 1 °S and 3 °S, and 29 °E and 31 °E[1]. Rwanda borders four countries: Uganda to the north, Burundi to the south, Tanzania to the east, and the Democratic Republic of the Congo to the west and north-west (Figure 2). Many of Rwanda's boundaries are geographical features. For example, the country is bound in the west by Lake Kivu and the Rusizi River; on the south by the Ruhwa and Akanyaru Rivers; on the east by the Akagera River; and on the north-west by a chain of volcanoes (Figure 2). The country is divided into five provinces, namely Kigali, Western, Eastern, Southern and Northern Provinces (Figure 2). In addition, each province is subdivided into districts. Rwanda contains thirty districts in total.

Figure 2. Geographical location of Rwanda in East Africa.

6. Rwanda's topography is characterised by steep hills and high mountains. The country is situated at high altitude with elevations ranging from 950 m at the Rusizi River to 4 507 m at the highest point of Mount Karisimbi. The altitude of the western part of the country – which lies within the Albertine Rift montane eco-region – ranges from 1 500–2 500 m. In comparison, the central part of Rwanda is characterised by rolling hills and the eastern regions consists of savannas, plains and wetlands at altitudes below 1 500 m.

Political context

7. Between 1990 and 1994, Rwanda experienced civil war. This culminated in the genocide, which ended in 1994. The war negatively affected many sectors including agriculture, natural resources management, land management, energy, health, trade and industry. The political tension also resulted in: i) the displacement of a large percentage of the population; ii) an economic crisis; and iii) the widespread destruction of natural resources (see the section below entitled "Conservation" for details).

8. Since 1994, the Government of Rwanda (GoR) has implemented initiatives to prevent future political instability. Following the approval of a new constitution and a referendum, the first post-Rwandan genocide presidential and parliamentary elections were

[1] http://www.appliedlanguage.com/country_guides/Rwanda_country_introduction.shtml. Accessed on 21 March 2014.

held in 2003. The GoR has also empowered women politically. For example, women occupy over 60% of the seats in the National Assembly. Women also account for approximately one third of the GoR's portfolios.

9. Today, Rwanda's political context is stable. Rwanda is governed by the rule of law, its institutions function well and there is low tolerance for corruption. Consequently, Rwanda has become attractive to foreign investors.

Socio-economic context

10. Rwanda's population was estimated to be ~12 million in July 2013[2]. The population growth rate is ~3%[3]. It is anticipated that Rwanda's population will reach 26 million by 2050[4].

11. The population growth rate far surpasses the rate of socio-economic development. This will exacerbate unemployment problems and pose challenges to education, health care and social protection. These challenges have already been observed in Rwanda. For example, according to the 2012 UN Human Development Index (HDI), the country has an HDI of 0.434 and is ranked 167th out of 186 countries. Rwanda's low HDI indicates that a large percentage of the population is living in poverty. In 2011, this percentage was estimated to be 45%[5].

12. Rapid population growth has resulted in Rwanda being the most densely populated country in Africa[6]. Population density is currently estimated to be 416 people km^{-2} and is predicted to reach 987 people km^{-2} by 2050[7]. As a result, there is intense anthropogenic pressure on natural resources[8]. For example, the increasing population density has caused people to move into previously unoccupied natural ecosystems, which consequently increase the rate of deforestation. The following areas have been negatively affected by increased human population density: i) Gishwati Forest in the north west of Rwanda; ii) the Umutara hunting fields; and iii) Akagera National Park in the east of Rwanda.

13. In 2010, the rural population was reported at ~81% of the total population. However, urbanisation is currently increasing at a rate of ~4% per year, with over one million people living in the capital city, Kigali. Urban slums are expanding, leading to associated health and social problems.

14. Rwanda is classified as a low-income country based on the value of its gross domestic product (GDP). In 2012, Rwanda's GDP was US $7.103 billion[9]. However, Rwanda has recently experienced significant economic growth. For example, the average income increased from US $200 per capita in 2000 to US $541 per capita in 2010[10]. The GDP growth rate from 2000–2012 averaged at ~8% per annum. Furthermore, recent economic reforms have garnered Rwanda international recognition in doing business and have increased foreign investment. Opportunities for foreign investment have been assisted by the stable political context and are available in a number of sectors including: i) agriculture (mainly tea and horticulture); ii) energy; iii) tourism; iv) infrastructure; and v) mining.

[2] https://www.cia.gov/library/publications/the-world-factbook/geos/rw.html. Accessed on 15 January 2014.
[3] https://www.cia.gov/library/publications/the-world-factbook/geos/rw.html. Accessed on 15 January 2014.
[4] UN 2011. World Population Prospects: The 2010 Revision. Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat.
[5] http://hdrstats.undp.org/en/countries/profiles/RWA.html. Accessed on 1 October 2013.
[6] https://www.cia.gov/library/publications/the-world-factbook/geos/rw.html. Accessed on 15 January 2014.
[7] Rwanda. 2011. Green growth and climate resilience. National Strategy for Climate Change and Low Carbon Development.
[8] World Bank. 2004. Education in Rwanda: Rebalancing resources to accelerate post-conflict development and poverty reduction. London, Macmillan Press.
[9] http://data.worldbank.org/country/rwanda. Accessed on 14 April 2014.
[10] Rwanda. 2011. Green growth and climate resilience. National Strategy for Climate Change and Low Carbon Development.

15. Since 2007, Rwanda's agricultural production has doubled, consequently improving food security. Although the economy was once dominated by the agricultural sector, the industrial and services sectors are expanding. The agricultural sector contributes 35% to Rwandan GDP. Industry and services contribute 14% and 45%, respectively[11].

16. The tourism sector is important to Rwanda's economy. Tourism generated US $207 million in 2010. Major tourist attractions include gorilla trekking in Volcanoes National Park (VNP) and ecotourism in Nyungwe Forest and Akagera National Park.

17. The GoR considers the Information and Communication Technology (ICT) sector to be instrumental for transforming the economy. Consequently, 2 300 km of fibre optic cable has recently been laid across the country in an effort to increase national broadband access.

Transport Infrastructure

18. Since Rwanda is a landlocked country, transport is limited to road and air. There are no railways. Rwanda has one of the densest road networks in Africa, estimated to be 0.56 km of road per km^2. However, there are few all-weather roads and many are of poor quality, which has negatively affected Rwanda's economy. The GoR is currently committed to improving road infrastructure. This is increasing Rwanda's trade: i) within the East African Community (EAC); and ii) with the Democratic Republic of Congo. In 2010, trade with the EAC generated US $395 million for Rwanda[12].

Education

19. Although the 1994 genocide negatively affected the education system in Rwanda, educational reforms have been largely successful. The focus of the education system since 1994 has been on: i) fostering unity; ii) universal primary school education; and iii) implementing ICT throughout the education system. Rwanda's goals for education are highlighted in the Poverty Reduction Strategy Paper (PRSP) in which the GoR indicates a clear ambition for "quality basic education for all". Furthermore, this ambition is further defined as "universal adult literacy by 2020" in the Rwanda 2020 Vision.

20. The commitment of the GoR to education has resulted in a steady increase in primary school enrolment rates. For example, enrolment was 95% in 2006 compared with 87% in 2003[13]. There has also been a substantial increase in the number of teachers, which reduced the student-to-teacher ratio from 60:1 in 2003 to 54:1 in 2009. In addition, gender equality in schools has improved considerably: 51% of enrolled students in primary school are girls. However, there is still a need to increase the number of primary schools and classrooms to accommodate the growing population.

Agriculture

21. Agriculture contributes 35% of Rwanda's GDP. It is also the primary economic activity and source of income for the rural population. Although agriculture is mainly for subsistence purposes, tea and coffee are grown for export. In 2011, these crops contributed US $81 million and represented 44% of export earnings[14]. Other minor agricultural exports include horticulture, pyrethrum, hides and skins.

[11] Harding, B. 2009. Ecosystems chapter, Rwanda. Review of the economic impacts of climate change in Kenya, Rwanda and Burundi. Hardin B., Devisscher, T. & African Conservation Center. October 2009. 28 p.
[12] Kiguta, P.N. 2012. Investment and Tade in the EAC: Progress and Priorities. Presented at The High Level Conference on The East African Community After 10 Years. 27–28 February 2012, Arusha.
[13] National Institute of Statistics of Rwanda. 2007. Millennium Development Goals: Towards Sustainable Social and Economic Growth.
[14] Rwanda. 2011. Green growth and climate resilience. National Strategy for Climate Change and Low Carbon Development.

22. Rwanda's soil is fertile, particularly in the alluvial valleys and in the volcanic soils of the north-western region[15]. Approximately 1.1 million hectares of land are under cultivation. Although the basic agricultural unit is the small family farm of ~1 hectare, the size of the units varies from 0.5 hectares (34% of farms) to more than 2 hectares (16% of farms). In 2001, 63% of units were less than 0.75 hectares in size.

23. The staple foods grown on family farms include bananas, plantains, cassava, beans, maize, sweet potatoes, wheat, rice and Irish potatoes. Although Rwanda has the potential to be food secure, variable rainfall patterns and limited irrigation infrastructure, transport and post-harvest storage often result in food insecurity.

24. Livestock farming is widespread in parts of Rwanda. In general, pastures are private fallows and marginal lands. These lands are increasingly overgrazed, consequently contributing to increased runoff and soil erosion. Permanent stabling, partial stabling and extensive farming constitute the three main methods of pastoral practices in Rwanda[16].

Energy

25. Biomass is the main source of energy in Rwanda and contributes 86% to the national energy requirement[17]. Woodfuel is sourced mainly from on-farm trees and eucalyptus plantations. Rwanda's capacity for electricity generation is limited (~95 MW) and the price of electricity is estimated to be US \$0.24 kWh^{-1}, which is too expensive for the majority of rural households. Consequently, most of the Rwandan population that uses domestic electricity (~13%) live in Kigali City. This electricity is produced from hydropower and oil-fuelled power plants.

26. Potential electricity generation in Rwanda is ~1,000 MW. This estimate is based on access to untapped clean energy resources such as geothermal power, regional hydropower, small-scale hydropower and solar photovoltaic (PV) systems, as well as methane gas, peat deposits and biogas. For example, Rwanda has a >300 MW methane gas resource in Lake Kivu and multiple peat deposits. If developed, Rwanda's potential for electricity generation will: i) provide enough power to meet the increasing demand for energy – maximum 400 MW – by 2020; ii) replace oil-fuelled power plants; iii) provide domestic energy security; iv) reduce greenhouse gas (GHG) emissions; v) reduce the pressure on natural ecosystems for fuelwood; and vi) be a major stimulus for the economy.

Water Resources

27. Approximately 8% of Rwanda's surface area is water. The hydrological system is characterised by a dense network of lakes, rivers and wetlands (Figure 3). The system comprises: i) 860 marshlands covering 278,536 hectares; ii) 101 lakes covering 149,487 hectares; and iii) 861 rivers with a combined length of 6,462 km[18].

28. There are two main drainage basins: i) the Nile basin in the east of Rwanda; and ii) the Congo basin in the west. The Congo basin covers 33% of the country's total area and accounts for 10% of all national waters[19]. This basin contains only one lake, Lake Kivu.

[15] http://www.nationsencyclopedia.com/Africa/Rwanda-AGRICULTURE.html. Accessed on 4 October 2013.
[16] Rwanda. 2005. Initial National Communication.
[17] Rwanda. 2011. Green growth and climate resilience. National Strategy for Climate Change and Low Carbon Development.
[18] REMA (2008). Etablissement d'un inventaire national rapide des marais et élaboration de cinq avant projets d'arrêts ministériels
relatifs aux marais (4 modules). Draft. Office Rwandais de Protection de l'Environnement (REMA), Kigali.
[19] http://pdf.usaid.gov/pdf_docs/PNADN537.pdf. Accessed 1 August 2013.

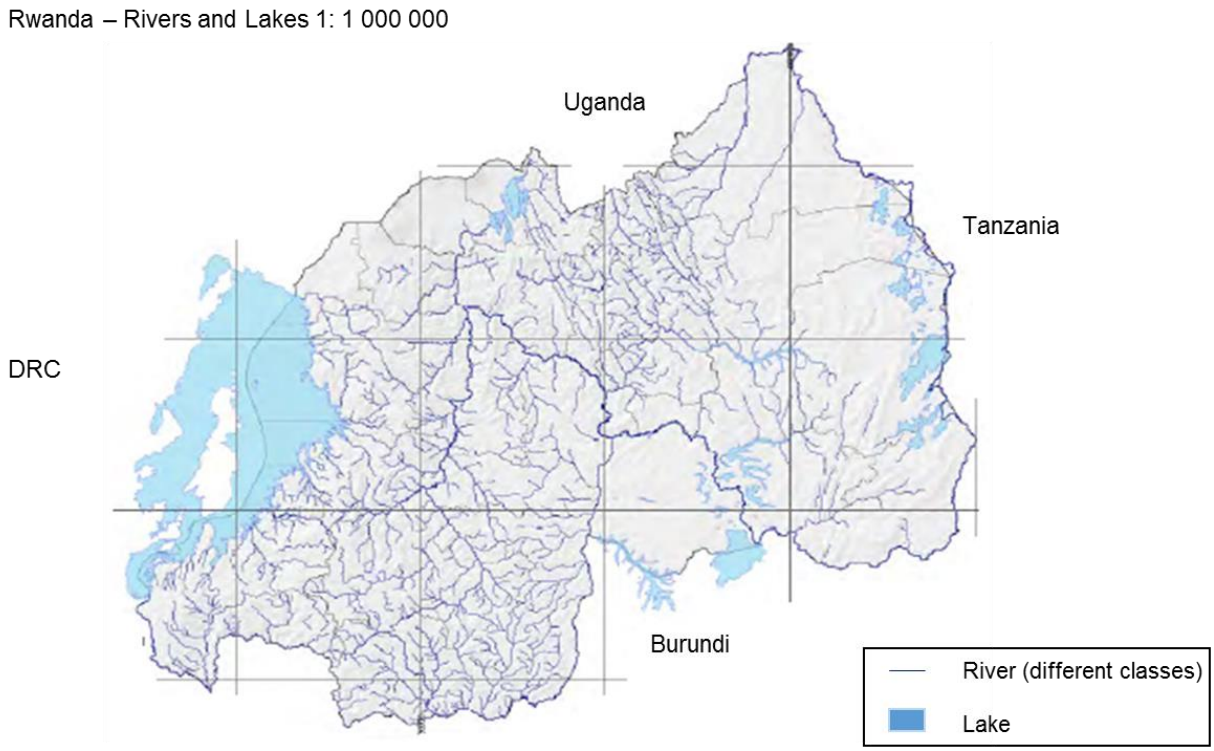


Figure 3. Rivers and lakes of Rwanda[20].

29. Data on groundwater and aquifers in Rwanda is limited, and they remain a largely unexplored water resource[21]. Current information indicates that the available groundwater discharge is ~66 $m^3 s^{-1}$.

30. In 2011, the total available renewable water resources were estimated to be 9.5 km^3 $year^{-1}$[,22]. The agricultural sector used 68% water supplies, households used 24%, and services and industry used 8%[23]. It is anticipated that household water usage will double by 2020[24].

31. Although the percentage of the population with access to clean drinking water has increased from 77% in 2005 to 87% in 2011, the supply of potable water in Rwanda is threatened. The greatest threats are related to land-use systems and soil erosion. In particular, agricultural fertilisers and pesticides are increasingly polluting Rwanda's surface water via surface runoff[25]. Other anthropogenic pollutants include household and industrial wastes. Furthermore, soil erosion increases the amount of sediment and suspended matter in surface water, reducing its quality. These threats result from: i) expansion of human settlements and agricultural lands; ii) construction of transport infrastructure; and iii) overexploitation of natural resources. The current inadequate institutional framework for water management will exacerbate these threats.

[20] http://pdf.usaid.gov/pdf_docs/PNADN537.pdf. Accessed on 1 August 2013.
[21] Aquastat. 2005. Report on Water 29. Rwanda.
[22] Aquastat. 2013. Country Profiles. http://www.fao.org/nr/water/aquastat/data/cf/readPdf.html?f=CF_RWA_en.pdf. Accessed on 1 October 2013.
[23] Aquastat. 2005. Report on Water 29. Rwanda.
[24] National Institute of Statistics Rwanda. $EICV_3$ Thematic Report Environment and Natural Resources. Kigali.
[25] Rwanda National Resource Authority. 2012. Water Quality Monitoring in Rwanda. National University of Rwanda, Faculty of Science. Butare.

Ecosystems and protected areas

32. Rwanda's ecosystems can be divided into five main categories. These are: i) croplands and natural vegetation; ii) scrublands, savannas and grasslands; iii) forests; iv) wetlands and water bodies; and v) sparse or barren vegetation[26]. Land cover in Rwanda is depicted in Figure 4.

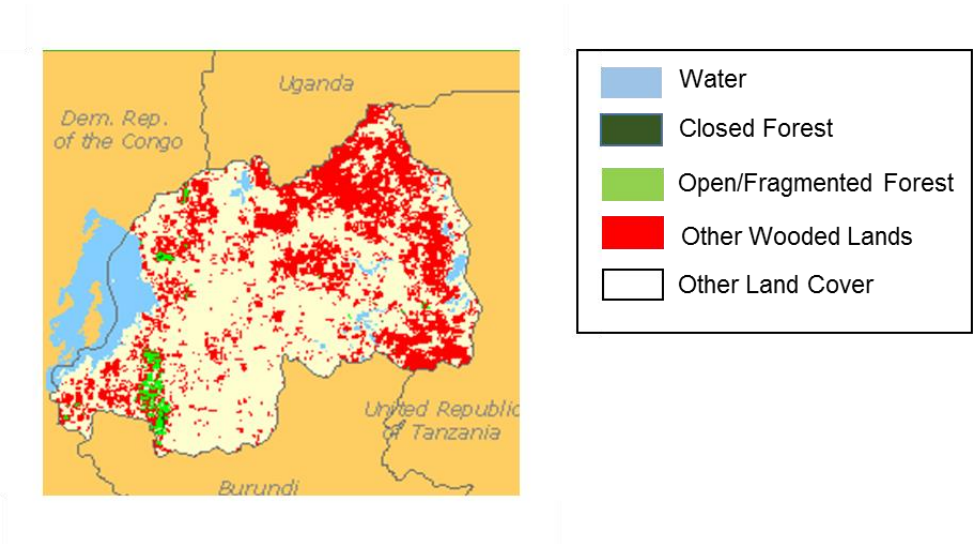


Figure 4. Land cover in Rwanda[27].

33. Forests cover ~12% of Rwanda's land area, an area of ~480,000 hectares. Forest ecosystems in Rwanda include gallery forests, which are patches of forest that are restricted to the banks of a river or stream. Gallery forests cover a total land area of 163 hectares and are mainly located in the eastern part of the country. Forests with great biodiversity or touristic value are protected in national parks such as VNP.

34. Freshwater ecosystems cover a large proportion of land surface in Rwanda. These ecosystems consist of marshlands, lakes, swamps, rivers and streams. The country's larger swamps include: i) Akanyaru (12,546 hectares) on the Burundian border; ii) Kagera along the Tanzanian border (12,227 hectares); and iii) Nyabarongo (24,698 hectares) and Rugezi (6,294 hectares) in the north of the country.

35. The various ecosystems in Rwanda provide important services for both local and global communities. An estimate of the economic values of these services are summarised in the table below.

Table 1. An estimate of economic value of ecosystem services in Rwanda[28].

Ecosystem services	**Economic value (US $.year^{-1})**	**Beneficiaries**
Watershed protection	117,757,583	Local communities, OCIR THE, Electrogaz, Regideso/Burundi
Biodiversity protection	2,000,000	Global community
Carbon sequestration and storage	162,080,000	Global community
Recreation and tourism	3,372,313	Global community, ORTPN and tour

[26] Harding, B. 2009. Ecosystems chapter, Rwanda. Review of the economic impacts of climate change in Kenya, Rwanda and Burundi. Hardin B., Devisscher, T. & African Conservation Center. October 2009, 28 p.
[27] FAO http://www.fao.org/forestry/country/en/rwa/ Accessed on 10 March 2014.
[28] Harding, B. 2009. Ecosystems chapter, Rwanda. Review of the economic impacts of climate change in Kenya, Rwanda and Burundi. Hardin B., Devisscher, T. & African Conservation Center. October 2009, 28 p.

		operators
Total	285,209,896	

Conservation

36. Currently, 7.7% of the total land area in Rwanda is protected. Protected areas include three important national parks: i) VNP; ii) Nyungwe National Park (NNP); and iii) Akagera National Park (ANP).

37. In Rwanda, conservation initiatives are primarily motivated by tourism. VNP's population of mountain gorillas is a particular draw card for tourists. Since poachers and habitat destruction have long threatened the gorilla population, the GoR is now implementing strict anti-poaching patrols. Consequently, local farmers are now used as park rangers and guards.

38. Until the early 1990s, the Rwandan conservation system was working reasonably well. However, areas of natural vegetation that were not formally protected were vulnerable to deforestation because of expanding subsistence agriculture and increased woodfuel collection. Deforestation was exacerbated during 1990–1994 because of the political unrest and the genocide. During this period encroachment on forests increased, there was a loss of skills in the environmental field and a discontinuation of the protection of many formerly protected areas[29]. Following the genocide, deforestation continued as internally displaced people returned en masse. Since then, reforestation efforts – primarily with exotic species – have increased forest cover by an average of 8% per year from 2000–2005.

General climatic conditions

39. Rwanda's climate is temperate to tropical and is characterised by four distinct seasons: two rainy seasons and two dry seasons. The long rainy season occurs from March–May while the short rainy season occurs from September–November.

40. Rainfall patterns follow an east–west gradient and are determined by altitude. The western side of Rwanda is mountainous with elevations over 2,000 m, the altitude of the central plateau ranges from 1,500–2,000 m and the altitude of the eastern plateau is less than 1,500 m. Consequently, the eastern region is drier and warmer than the western region. It has a mean annual rainfall of 900 mm and a mean annual temperature of ~20 °C. In contrast, the western region has a mean annual rainfall of 1,500 mm[30] and a cooler mean annual temperature of <17 °C.

41. The El Niño Southern Oscillation (ENSO) influences Rwanda's climate. ENSO increases: i) the variability of seasonal rainfall; and ii) the frequency and intensity of flood and drought events.

Observed and predicted climate change

42. From 1971–2010, the mean annual temperature in Rwanda increased at a rate of 0.35 °C per decade[31]. This increase is slightly larger than the mean global increase of 0.27 °C per decade recorded between 1979 and 2005[32].

[29] http://www.wcs.org/where-we-work/africa/rwanda.aspx. Accessed on 4 September 2013.
[30] REMA. 2009. Rwanda State of the Environment Outlook Report.
[31] Rwanda. 2011. Green growth and climate resilience. National Strategy for Climate Change and Low Carbon Development.
[32] Inter-governmental Panel on Climate Change (IPCC), 2007. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Avery, M. Tignor and H.L. Miller (eds.) Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

43. Rainfall records from 1931–1990 do not show a clear trend. However, data collected since 1991 show a pattern of declining rainfall: the years 1991–2000 were the driest since 1961. In addition, records show an increase in the frequency of prolonged droughts since the 1980s .However, both datasets show large variability in inter-annual rainfall and years of drought are interspersed by years of extremely high rainfall[33].

44. Global Climate Models (GCMs) predict that Rwanda's climate will become warmer. Temperature increases of up to 2.5 °C by the 2050s and up to 4 °C by the 2080s are anticipated. GCM's also show an increase in mean annual rainfall of up to 20% by the 2050s and 30% by the 2080s (Figure 5). In addition, extreme rainfall events are anticipated to increase in frequency.

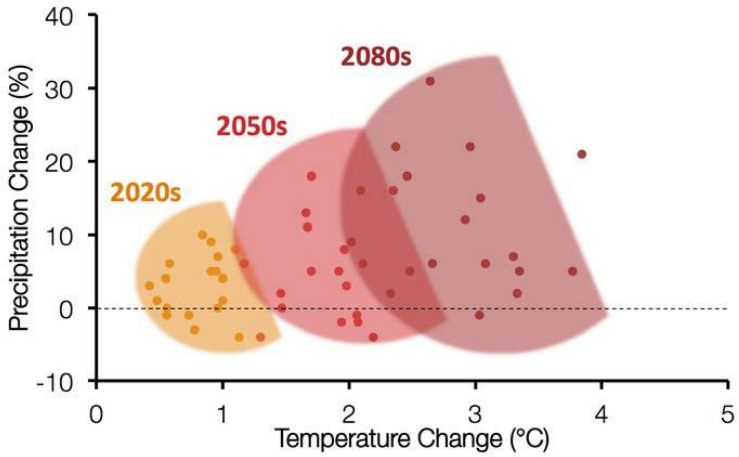


Figure 5. Predicted annual changes in temperature (°C) and precipitation (%) for Rwanda for the 2020s, 2050s and 2080s[34].

Observed effects of climate change

45. Global and regional climate models predict that Rwanda will experience:

- an increase in the frequency of extreme flood events by up to 30% in the short rainy season (September–November) and up to 50% in the long rainy season (March–May)[35];
- prolonged seasonal droughts recurring every two to three years; and
- increased frequency of prolonged drought events, particularly in the southern and eastern regions of Rwanda.

46. In 2012, the Unit of Research and Public Awareness (URPA) of the Ministry of Disaster Management and Refugee Affairs (MIDIMAR) mapped which areas of Rwanda are most vulnerable to climate change. During their study, URPA identified floods and landslides as the most frequent effects of climate change occurring in Rwanda. The sectors prone to floods and landslide are presented in Figure 6. The most vulnerable districts to floods and landslides are presented as Appendix 20. In contrast to the north and central/west, the east and south east of Rwanda were identified as the most vulnerable to prolonged drought (Figure 7).

47. URPA identified steep slopes, soil instability, limited drainage systems, land-use type and land tenure as factors that make an area vulnerable to the effects of climate change. The consequences of these hazards include:

[33] Rwanda-NAPA. 2006.
[34] Rwanda. 2011. Green growth and climate resilience. National Strategy for Climate Change and Low Carbon Development.
[35] Ensemble modelling with multiple coupled GCMs. See www.knmi.nl/africa_scenarios/technical.shtml for details.

- depletion of arable land – in Rwanda, arable surface area per capita has decreased from 0.47 hectares in 1970 to 0.13 hectares in 2000[36];
- reduced productivity of arable land;
- destruction of houses and infrastructure;
- destruction of roads, for example the roads Buringa-Nyakabanda and Muhanga-Ngororero were destroyed in 2010 owing to landslides; and
- other non-quantifiable damages such as stress and fear[37].

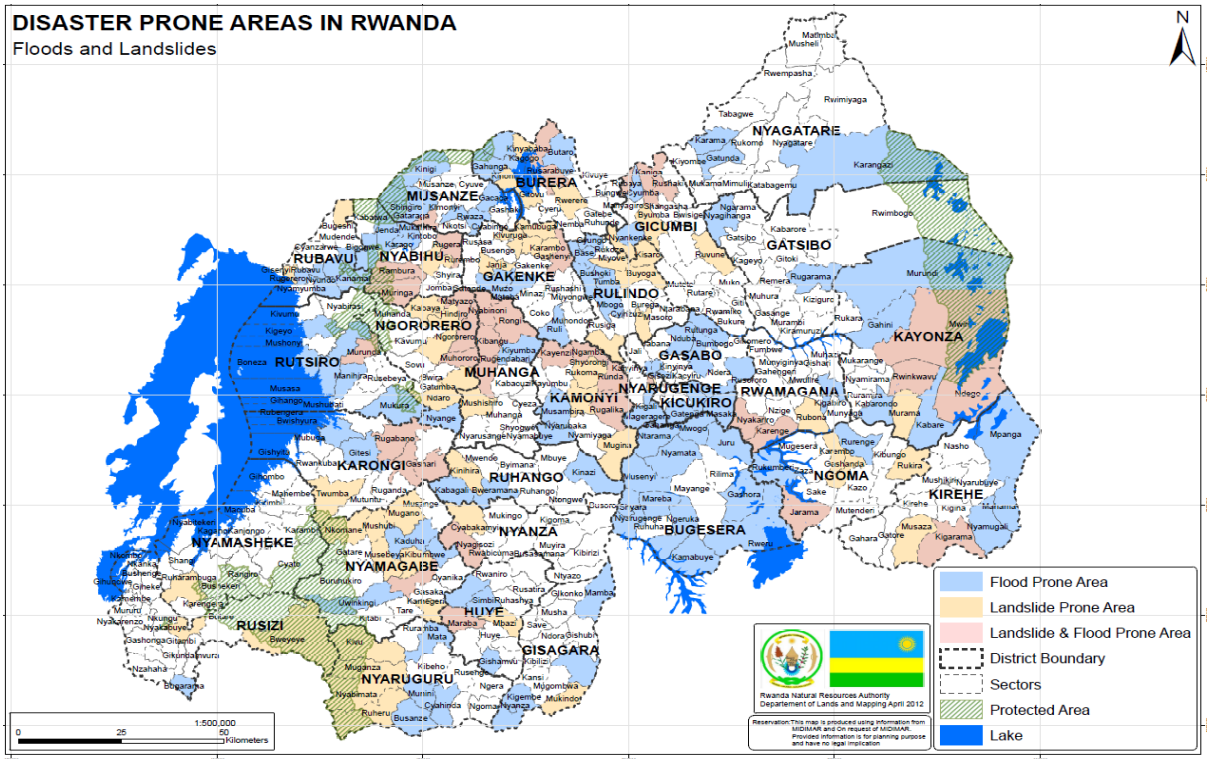


Figure 6. Sectors prone to floods and landslides in Rwanda (MIDIMAR, 2012). According to this map, Ndego and Muhororo sectors are both prone to floods and landslides. Mareba and Kageyo sectors are vulnerable to floods.

[36] Harding, B. 2009. Ecosystems chapter, Rwanda. Review of the economic impacts of climate change in Kenya, Rwanda and Burundi. Hardin B., Devisscher, T. & African Conservation Center. October 2009. 28 p.

[37] http://www.midimar.gov.rw/index.php/news/46-disaster-vulnerability-and-risk-assessment-field-mission-report. Accessed 7 August 2013.

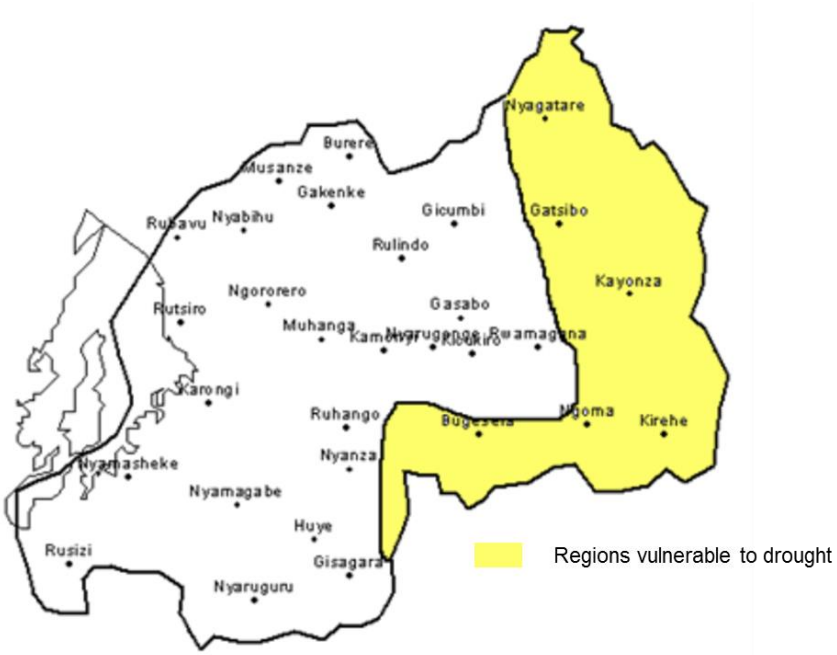


Figure 7. Most vulnerable regions to prolonged drought in Rwanda[38]. Two of the intervention districts of the proposed project are within the region vulnerable to droughts: Kayonza and Bugesera.

Predicted effects of climate change

48. Climate change will have a negative effect on the main socio-economic sectors of Rwanda. The problems that are likely to be encountered by each sector under anticipated climate change conditions are discussed below.

49. Climate change is anticipated to affect the **agricultural sector** by causing: i) further reductions in the amount of arable land as a result of frequent soil erosion from floods and landslides; ii) reduced soil moisture content because of increased evaporation; iii) crop losses owing to increased temperature and prolonged droughts; and iv) damage to crops and agriculture infrastructure through the effects of climate change. In 2011, for example, an assessment indicated that floods in the districts of Nyabihu and Rwamagana destroyed 277 hectares of crops[39]. Furthermore, under conditions of atmospheric carbon enrichment, the growth of certain agricultural crops such as cassava (*Manihot esculenta*) is compromised or reduced[40]. Such conditions also promote the concentrations of harmful cyanogenic glucosides in cassava[41].

50. In the **energy sector**, prolonged droughts and frequent flood events will compromise the generation of hydroelectric power. Drought will result in drier wetlands and reduce river base flows. In addition, increased sediment load in rivers from soil erosion will further reduce base flows. It will also: i) result in the siltation of dams; and ii) degrade turbines and other hydroelectric infrastructure. Similarly, floods will also damage infrastructure. Therefore, both floods and droughts will reduce the capacity for power generation, increasing local communities' dependence on woodfuel. In turn, the increased usage of woodfuel will exacerbate the rate of deforestation.

[38] Rwanda-NAPA 2006.
[39]DREF operation, 2011. Rwanda: Heavy rainstorms and floods. 24 May 2011. International Federation of Red Cross and Red Crescent Society. DREF operation n° MDRRW007.
[40]Gleadow, R.M., Evans, J.R., McCaffery, S. & Cavagnaro, T.R. 2009. Growth and nutritive value of cassava (*Manihot esculenta* Cranz.) are reduced when grown in elevated CO_2. Plant Biology 11: 76–82.
[41] Gleadow, R.M., Evans, J.R., McCaffery, S. & Cavagnaro, T.R. 2009. Growth and nutritive value of cassava (*Manihot esculenta* Cranz.) are reduced when grown in elevated CO_2. Plant Biology 11: 76–82.

51. The **forestry sector** will be affected by changing rainfall regimes and higher temperatures because of a number of factors. Firstly, climate change conditions could favour the growth of alien plant species[42]. A recent study indicated that alien plants adapt more easily to climate change than indigenous species[43]. As a result, the invasion success of alien plants will promote homogenised ecosystems, and could lead to localised extinctions of indigenous species[44]. Secondly, extinctions are also likely to occur because of the increased dependence of rural communities on depleted ecosystem services. Thirdly, the decrease in water availability in the eastern and south-eastern regions of Rwanda is likely to lead to reduced tree cover. Additional factors that will lead to deforestation include: i) increased use of woodfuel (discussed in the paragraph above); and ii) declining agricultural productivity, which will require more land to be cleared by subsistence farmers.

52. The **water sector** is particularly vulnerable to the effects of climate change because prolonged droughts will decrease the quantity and quality of water available. The consequences of reduced water availability will be felt immediately, particularly in the agricultural sector. This is because agriculture is mainly rain-fed and uses 68% of the country's annual water resources[45]. Consequently, any decrease in water availability will reduce both agricultural productivity and food security. In addition, increased incidence of floods and droughts will reduce water quality because of erosion and siltation. Furthermore, reduced base flows will affect downstream irrigation projects, and both flood and drought events are likely to damage infrastructure for water supply.

53. The effects of climate change will affect the **health sector.** For example, floods will: i) increase the spread of waterborne diseases such as cholera, typhoid and diarrhoea; ii) promote the incidence of malaria; and iii) increase the number injuries associated with extreme events. Additional effects of climate change include malnutrition because of decreased food security. Furthermore, damage to transport infrastructure (see below) will result in reduced accessibility of hospitals and emergency services.

54. Flood events will affect the **transport sector** because Rwanda has few all-weather roads. Floods increase the frequency of landslides and consequently damage road infrastructure. The Rwandan economy will be affected by the financial cost required to repair transport infrastructure and by the current reliance of the economy on a functioning road network.

55. In the **environmental sector**, climate change will lead to ecosystem degradation and loss of biodiversity. For example, increased temperatures, droughts and floods will cause animals to migrate as they search for environments that are more suitable. In addition, the effects of climate change will increase mortality rates of animals that are sedentary or that cannot find suitable environments. It is also anticipated that local communities will exploit forest resources because of declining agricultural yields and increased vulnerability of livelihoods.

56. Finally, the **tourism sector** will be affected by the loss of biodiversity described in the paragraph above. This sector relies primarily on the aesthetic value and unique wildlife found in the remaining natural areas. For example, mountain gorilla (*Gorilla beringei beringei*) populations are a particular asset to the industry. The tourism sector will also be affected by:

[42] Dukes, J.S., Mooney, H.A. 1999. Does global change increase the success of biological invaders? Trends in Ecology and Evolution 4: 135–139.
[43] Willis, C.G., Ruhfel, B.R., Primack, R.B., Miller-Rushing, A.J., Losos, J.B., et al. 2010. Favourable climate change response explains non-native species' success in Thoreau's Woods. PLoS ONE 5: e8878.
[44] Winter, M., Schweigera, O., Klotza, S., Nentwigc, W., Andriopoulosd, P., et al. 2009. Plant extinctions and introductions lead to phylogenetic and taxonomic homogenization of the European flora. Proceedings of National Academy of Sciences U S A 106: 21721–21725.
[45] National Institute of Statistics Rwanda. 2011. $EICV_3$ Thematic Report Environment and Natural Resources. Kigali.

i) the loss of plant diversity as a result of deforestation, which is predicted to intensify; ii) the loss of suitable habitats for charismatic wildlife, which result in the loss of animal populations and biodiversity; and iii) reduced water availability and climate-related natural hazards, which damage both infrastructure and the reputation of the country as an accessible tourist destination. Any decrease in tourism will have economic consequences for Rwanda; tourism contributed US $207 million of Rwanda's GDP in 2010. In addition, tourism employs a large number of community members in areas adjacent to nature reserves. Therefore, any negative effects on the sector will result in economic losses to – and increased vulnerability of – local communities.

National climate change adaptation capacity

57. Adaptation to climate change requires a multi-sectoral approach to planning (see Section 3 for details). The GoR has established a number of initiatives to promote cross-sectoral dialogue. These include REMA's Climate Change and International Obligations Unit (CCIOU) and the Rwandan Environmental and Climate Change Fund (FONERWA). However, there is limited dialogue between line ministries. This dialogue is further compromised by limited technical capacity within REMA[46] itself to cover the broad range of disciplines required for EbA to be implemented cohesively. As a result, adaptation interventions that focus on management and restoration of ecosystems are often undertaken on an *ad hoc* basis. In addition, they are conducted in isolation within the specific focal areas of individual organisations.

The problems to be addressed by the project

58. The principal problem that will be addressed by the proposed project is that most rural communities and economic sectors are vulnerable to the current and predicted effects of climate change. This vulnerability is exacerbated by the following factors: i) the agricultural sector's dependence on rain-fed agriculture; ii) widespread poverty; iii) widespread ecosystem degradation; iv) limited capacity of local and national institutions to address the effects of climate change; and v) Rwanda's rapid population growth rate.

2.2. Global significance of the project

59. The proposed project focuses on three different types of ecosystems within Rwanda: wetlands, savannas and forests (see Section 3.3). The management and restoration of these ecosystems is of international significance, as explained below.

60. The wetland restoration interventions of the proposed project will be regionally important. By restoring Rwanda's wetlands, the project will: i) contribute to the regulation of the river flow of Rwanda's hydrological system and that of neighbouring countries (e.g. restoration activities in Bugesera will be beneficial to the hydrological system in north-eastern Burundi); and ii) increase the availability of aquatic resources – including fish, which will increase food security across country borders.

61. Ecosystem restoration in Rwanda will contribute toward global mitigation of climate change. In particular, more than 500,000 trees will be planted in wetlands, savannas and forests to promote carbon sequestration.

62. The activities undertaken by the proposed project will promote conservation of Rwanda's biodiversity. Restoration interventions will take place in a number of priority ecosystems that are notably biologically diverse or contain threatened species. These include, *inter alia*: i) the Eastern Afromontane Biodiversity Hotspot in the Western Province

[46] http://www.ccdare.org/Outputs/Rwanda/tabid/6972/Default.aspx, [accessed 07 October 2013].

(i.e. the Albertine Rift forms part of this hotspot and is considered to have the greatest species richness in Africa); ii) savanna ecosystems that include threatened orchids (*Impantiens irvingii* and *Eulophia guineensis*), the siala tree (*Markhamia lutea*) and the Mubende witch tree (*Pterygota mildbraedii*); and iii) wetlands in Rwanda that contain more than 104 flowering plants. Additionally, two floral species that are endemic to the Albertine Rift are found in Sanza natural forest (hereafter referred to as Sanza), namely *Satyrium trinerve* and *Impatiens burtonii*.

63. Once the project is upscaled, it is anticipated that improved ecosystem management will increase the protection of globally important species. For example, Gishwati and Mukura native forests provide an important corridor between Volcanoes and Nyungwe National Parks for the movement of species such as chimpanzees (*Pan Troglodytes*) and the Grauer's Swamp-warbler (*Bradypterus graueri*). The project will also promote conservation of other mammal species such as Servaline genet (*Genetta servalina*) and Gambian rats (*Cricetomys gambianus*) that are found in Sanza. In addition, the conservation of forest ecosystems will protect the following primate populations: i) owl-faced monkey (*Cercopithecus hamlyni*); and ii) mountain monkey (*Cercopithecus hoesti*) in Nyungwe Forest National Park.

2.3. Threats, root causes and barrier analysis

64. The baseline context underpinning the problems induced by climate change in Rwanda is described in Section 2.1 together with the causes and threats related to climate change. The principal threats that are not related to climate change in the country are described below.

Non-climate change related threats

Unsustainable resource usage

65. Natural ecosystems in Rwanda are under increasing anthropogenic pressure. In the past three decades, increases in population density have escalated rates of deforestation through the conversion of natural habitats to agricultural land[47] and the heightened demand for biomass. At present, 86% of the energy use in Rwanda is from biomass[48]. This biomass is sourced mainly from on-farm trees and eucalyptus plantations. Furthermore, the civil war that took place during 1990–1994 exacerbated ecosystem degradation in Rwanda, because of: i) the deforestation that took place during this time; ii) the loss of environmental professionals and advocates; and iii) the resettlement of displaced communities in protected areas after 1994. The result of this anthropogenic pressure on natural ecosystems is the reduction of vegetation cover in the country. Consequently, there is: i) increased soil erosion; ii) a reduction in the availability of food; and iii) reduced water infiltration leading to increased flooding.

i) Threats causing erosion

66. The chain of causal events that link deforestation and degradation to erosion is detailed below.

- The cover of trees, grasses and shrubs is reduced by unsustainable harvesting, grazing and clearing for agriculture under the growing population pressure. As the resource availability decreases, these processes become increasingly unsustainable. A negative cycle of degradation is consequently established.

[47] USAID. 2008. Rwanda Environmental Threats and Opportunities Assessments Update.
[48] Rwanda-NAPA.

- Woodfuel is the main energy source in Rwanda. Increasing population size causes a growing demand for wood and fuel deforestation. For example, the demand for woodfuel is one of major causes of the deforestation of savanna woodlands in Bugesera[49].
- Degradation is pronounced around water sources. The removal of trees for woodfuel, agriculture or settlements destabilises the riverbanks. Unstable riverbanks undergo erosion, which causes sedimentation and deposition of pollutants in freshwater systems.
- The loss of vegetation cover exposes soils to raindrop impact.
- This results in clay dispersion and mineral crusting, which in turn increases surface runoff and further erosion.
- Deforestation decreases the infiltrability of the soil. This is concomitant with an increase of water flow during rainfall that further escalates the erosion of riverbanks.

ii) Threats causing a reduction in food availability

67. The links relating deforestation and degradation to a reduction in food supplies is detailed below.

- Agricultural productivity is reduced because degraded and eroded soils reduce the availability of water for agriculture. Less water infiltrates into the topsoil, and it evaporates faster because of exposure to wind and sun.
- Similarly, bare soil has reduced infiltrability, because of loss of soil carbon and greater soil dispersion, which reduces water availability for crops. This increases the agriculture sector's vulnerability to droughts.
- Dams are under construction in several sites to develop agriculture irrigation systems. However, the sedimentation induced by deforestation threatens the sustainability of these dams. Consequently, the potential of these projects to increase water availability for irrigation is reduced.

iii) Threats causing a reduction in water infiltration and therefore water availability

68. The chain of causal events that link deforestation and degradation to reduced water infiltration increased flooding and reduced water availability is detailed below.

- Reductions in vegetative cover and increased soil crusting reduce the capacity of the soil to absorb water, which limits the replenishment of aquifers.
- Soils retain less water during extreme rainfall events, causing an increase in overland flow.
- Reduced infiltration of water into soil profiles reduces the "sponge effect" of entire landscapes, i.e. less water is stored in soils and aquifers. This results in reduced amounts of water in rivers during the dry season, particularly during prolonged periods of drought.
- This reduction in water availability for agriculture causes the expansion of agricultural lands into wetland areas such as marshlands and riverbanks. This in turn reduces riverine vegetation and further increases vulnerability to floods.

iv) Additional threats

<u>Poverty</u>

69. Rwanda has a large prevalence of poverty. In terms of human development, it is ranked 167th out of 186 countries, with an HDI of 0.434. The incidence of poverty is estimated to be 44.9% in 2011[50]. The situation is worse in the country's rural areas with ubiquitous poverty and chronic food insecurity. Such impoverishment increases the

[49] REMA, 2011. Atlas of Rwanda's changing environment: Implications for climate change resilience. Kigali, Rwanda.
[50] http://hdrstats.undp.org/en/countries/profiles/RWA.html, [Accessed 1st October 2013].

vulnerability of local communities to climate change. This is because the majority of the rural population depend on agriculture, livestock and the use of natural resources for their livelihoods. Floods, landslides and drought cause damage or destruction to the sources of livelihood – particularly food – for these local communities.

Vulnerable agriculture techniques

70. In dry areas such as the Eastern Province of Rwanda, agricultural activities are mostly rain-fed. This is because of both a limited knowledge of water management techniques and minimal infrastructure for irrigation. Rain-fed agriculture is affected disproportionately by water shortages associated with droughts and therefore contributes to the vulnerability of local communities to the effects of climate change.

71. In flood-prone areas such as the Western Province of Rwanda, agriculture occurs mainly on slopes. Given the limited knowledge of appropriate water management practices, intense rainfall events damage crops, increase soil erosion, and consequently reduce agricultural productivity.

Rapid population growth

72. The growth rate of Rwanda's human population is 2.6%[51]. Human population density is estimated to be 416 people km^{-2}. This makes Rwanda the most densely populated country in East Africa[52]. As a result, there is intense anthropogenic pressure on natural resources[53] as described earlier in this Section.

Preferred solution:

73. The preferred solution to the above-mentioned problems in Section 2.3 is to **increase the resilience of local communities in Rwanda to floods, landslides and droughts**. A suite of preferred responses would be required to achieve this, as described below:

Preferred response 1. The technical capacity at national and local levels in Rwanda is sufficient to increase the resilience of local communities to climate change.

74. The preferred response would see institutional capacity in Rwanda strengthened to facilitate appropriate planning for the implementation of EbA interventions for adaptation to climate change. This would entail extensive capacity building and awareness-raising activities for national and local authorities as well as the private sector, NGOs, CBOs and local communities. In addition, it would require effective collaboration and information sharing between government departments to allow coordinated adaptation interventions and plans to be developed.

Preferred response 2. The necessary policies, strategies and plans are in place at all levels of government for effective adaptation to climate change using EbA.

75. The preferred solution would see EbA integrated into future policy, strategy and plans at national levels as well as into local level development plans to facilitate the implementation of EbA for adaptation to climate change across Rwanda. To facilitate the effective planning and implementation of EbA as contained in the revised policies, strategies, and plans, the preferred response would include training for national, sectoral and district authorities. Furthermore, to promote the sustainability of EbA interventions in Rwanda,

[51] http://www.statistics.gov.rw/publications/2012-population-and-housing-census-provisional-results, [Accessed 6th August 2013].
[52] http://www.statistics.gov.rw/publications/2012-population-and-housing-census-provisional-results, [Accessed 6th August 2013].
[53] World Bank. 2004. Education in Rwanda: Rebalancing resources to accelerate post-conflict development and poverty reduction. London, Macmillan Press.

extensive campaigns to raise local community awareness on EbA and climate change would be included in the preferred response.

Preferred response 3. Resilience to climate change of local communities in Rwanda is increased because of functioning natural ecosystems.

76. The preferred response would see the discontinuation of unsustainable activities, such as deforestation for woodfuel and agriculture expansion, in favour of sustainable and climate resilient livelihoods in the rural areas of Rwanda. This preferred solution would be achieved through the restoration of degraded ecosystems with beneficial and climate-resilient species. Ecosystem restoration would be coupled with appropriate land management practices for the sustainable use of natural resources.

Barriers to implementation of preferred solutions

77. The achievement of the full suite of preferred responses may not be feasible given the barriers to their implementation in Rwanda. However, by addressing the barriers to implementing these responses, the proposed project will contribute to the achievement of the preferred solution.

Barrier 1. Limited knowledge of the value of ecosystems and EbA interventions

78. Government authorities and local communities have a limited understanding and awareness of the role of ecosystems in reducing the negative effects of climate change. This is manifested in a number of ways. Firstly, the primary restoration activities underway in Rwanda use exotic plant species and mono-specific plantations. Consequently, there is a limited understanding in government authorities, particularly at the local level, of the role of indigenous species and species diversity in increasing climate resilience. During consultation at the Project Preparation Grant (PPG) phase, stakeholders cited this barrier multiple times during consultations. Secondly, ecosystem degradation through unsustainable resource use by local communities continues because of the limited knowledge within communities of: i) the role of functioning ecosystems in increasing their climate resilience; and ii) the potential of alternatives to the unsustainable exploitation of natural resources (e.g. agroforestry). Additionally, low levels of literacy (see Section 2.1) and an education system that has not formally integrated climate change into the curriculum contribute to limited awareness on climate change and adaptation. Therefore, local communities have limited capacity to increase their own resilience to climate change effects.

79. In addition to the limited understanding and awareness described above, mainstreaming EbA in Rwanda is hindered by limited proof of concept of EbA. The evidence base on the effectiveness of EbA to increase resilience of local communities to climate change is insufficient, as there are few on-the-ground demonstrations of EbA in Rwanda. Particularly, there are few scientific results on the sustainability and benefits to local communities when using indigenous species compared with exotic species for the restoration of ecosystems.

Barrier 2. Limited technical capacity of government authorities to implement EbA practices for adaptation to climate change

80. The technical capacity of government authorities to implement interventions for ecosystem restoration to reduce vulnerability to climate change is limited. While some restoration interventions were successfully implemented – for example, the management of the Rugezi wetland[54] – there is limited consideration of the effects of climate change on

[54] http://www.iisd.org/pdf/2011/maintenance_hydro_rwanda.pdf [Accessed on 15/6/2011].

restored ecosystems. Consequently, the sustainability of the restoration interventions is threatened.

81. Although a strong national interest in reforestation interventions exists, these interventions are not implemented to increase resilience to climate change. For example, the goal of many of the reforestation activities is to produce trees to meet the demand for national woodfuel and timber. This goal has resulted in the planting of fast-growing exotic species and most plantations are mono-specific. In contrast to EbA, such plantations tend to have a negative effect on ecosystems because relatively large uptakes of soil water are required.

82. When considering the population density in Rwanda and predicted effects of climate change, it is necessary to introduce best practices for the use of available resources. Such activities were implemented to reduce the consumption of wood. For example, the use of improved cooked stoves and biogas has increased. However, these initiatives are *ad hoc* and the lack of guidelines on the use of these methods in Rwanda hinders their mainstreaming. Similarly, there is no system in place to implement the best practices for the use of water and soil resources. These best practices are particularly necessary considering the current and predicted occurrence of droughts in some regions. The limited knowledge of national and local authorities on adaptation to climate change is a major constraint on the widespread use of practices such as rainwater harvesting and water conservation.

Barrier 3. Limited technical capacity of government authorities to integrate EbA into development planning

83. Limited institutional and technical capacity to plan appropriate interventions was identified as a barrier to effective climate change adaptation in Rwanda's NAPA. While technical and institutional capacity for adaptation to climate change at the national level has subsequently increased, local level capacity remains a significant barrier to the preferred solutions. In particular, the limited integration of climate change adaptation into local level development planning such as the District Development Plans (DDPs) is the primary barrier to the effective mainstreaming of adaptation initiatives nationally. To address this barrier, initiatives to increase adaptive capacity at the local scale were recently implemented under the first LDCF project entitled "Reducing Vulnerability to Climate Change by Establishing Early Warning and Disaster Preparedness Systems and Support for Integrated Watershed Management in flood prone areas" (hereafter referred to as LDCF 1 project). Planners and DEOs of all Districts have received training on environment and climate change. These two-days training sessions focused on: i) environmental policy, organic law and environmental conventions; ii) role and function of environmental committees; iii) climate change and the vulnerability of Rwanda; iv) environmental education for sustainable development; v) EAs and environmental degradation; vi) transfer of technologies for adaptation to climate change; and vii) guidelines to mainstream adaptation to climate change and mitigation. However, these interventions to increase institutional capacity at the national and local levels are very recent (see Section 2.6) and need to be strengthened. Additionally, these interventions were not focused on EbA. Therefore, national and local capacity to implement EbA interventions remains very limited.

Barrier 4. Limited technical capacity of local communities to implement climate resilient practices including EbA

84. Local communities in Rwanda are rarely provided with training on restoration and/or EbA. For example, restoration projects are often not local community based (e.g. the Project d'Appui a la Reforestation au Rwanda (PAREF) and The Land Husbandry, Water Harvesting and Hillside Irrigation Project (LWH)). Instead, the corresponding government authorities implement these projects. Consequently, there is limited technical capacity of local

communities to implement ecosystem restoration initiatives using an EbA approach. Providing technical training to local communities on the implementation and maintenance of EbA interventions is necessary for interventions for climate change adaptation to be sustainable.

Barrier 5. Limited funding available to implement EbA

85. The majority of the environmental projects implemented in Rwanda are funded by external organisations, e.g. World Bank, the Global Environmental Facility (GEF), and African Adaptation Fund (AAF). These projects also have short timeframes, e.g. The Landscape Approach to Forest Restoration and Conservation (LAFREC) and Lake Victoria Environmental Management Project (LVEMP). Additionally, FONERWA does not currently fund EbA projects per se. They do fund ecosystem restoration projects but not specifically for adaptation to climate change. This can be explained by the following limitations: i) the number of proposals submitted for EbA projects; ii) the amount of funds available; iii) knowledge of the benefits of EbA; and iv) adaptation to climate change is not a priority within the four thematic financing windows[55]. There is limited private sector involvement in environmental initiatives in the country. No formal system exists to fund environmental projects through private sector investments. As a result, the potential to finance and implement long-term projects for EbA at a large scale in Rwanda is very limited.

Overcoming barriers to implementation of preferred solutions

86. The proposed project will contribute to overcoming the identified barriers by:

- **Improving knowledge and awareness of EbA**. This will be achieved through activities under Outcomes 1 and 2. The interventions of the proposed project will: i) increase the local available knowledge on EbA; ii) facilitate the dissemination of relevant information; and iii) raise the awareness of local communities on EbA. Firstly, research projects on the effects of EbA on local communities' vulnerability to climate change in Rwanda will be implemented (see Outcome 1). Secondly, an online platform for information sharing will be developed to increase the accessibility of available information on EbA. Thirdly, awareness of local communities on EbA will be raised through a public awareness campaign as well as integrating EbA into the school curriculum.

- **Improving technical capacity of government**. Training will be provided to District Environment Officers (DEOs), District Environment Facilitators (DEFs) and committees at the district level on the use of EbA. These training sessions will strengthen the technical capacity of local authorities to integrate EbA into on-going environmental projects and development planning. Technical guidelines on EbA, agroforestry and green technologies[56] that promote sustainable resource use will also be produced and disseminated to all levels of government. This will facilitate the implementation of climate resilient practices. The proposed project will develop policy recommendations to integrate EbA into national development plans and sectoral development plans, and provide the necessary training on these policy recommendation documents. Lastly, policy recommendations will be produced to prioritise and mainstream EbA into national tools for environmental assessment to promote EbA within sector projects. Government authorities and the relevant actors from the private sector will be trained on these policy recommendations and integrating EbA into environmental assessment tools.

[55] The four thematic financing windows of FONERWA are: i) conservation and sustainable natural resources management; ii) research and development, technology transfer and implementation; iii) environment and climate change mainstreaming (i.e. Strategic Environment and Climate Assessments, sector-specifici adaptation and mitigation, support to implementation of cross-sectoral integrated planning); and iv) EIA monitoring and enforcement.
http://cdkn.org/wp-content/uploads/2012/03/1106_cidt_engagement_webready.pdf

[56] In the proposed project, green technologies will include biogas and use of organic waste as fertiliser for agricultural areas.

- **Improving technical capacity of local communities**. Through Outcome 1, training will be provided to the trainers of Farmer Field Schools (FFSs) to diffuse technical knowledge on the use of green technologies at the national scale. Furthermore, local communities living near the project intervention sites will be trained on EbA techniques and the role of ecosystems in increasing their resilience to climate change (Outcome 3). The technical training will adopt a learning-by-doing approach. Consequently, all on-the-ground interventions will be local community based. Local communities will participate in decision-making and all implementation processes. The increased technical capacity of local communities will enable them to maintain and replicate interventions. This will promote upscaling and sustainability of these interventions. Additionally, training will be provided to NGOs and CBOs to support the local communities in the implementation of EbA. This will further promote the sustainability of the interventions and facilitate a "bottom-up" approach to adaptation planning.

- **Implementing EbA techniques to restore degraded wetlands, forests and savannas on hill slopes.** The ecosystem restoration interventions to be implemented by the proposed project are detailed in Outcome 3. Pilot interventions for the restoration of natural ecosystems with climate-resilient species will be implemented in four districts within three provinces. Three types of ecosystems will be restored: wetlands, forests and savannas. Additionally, climate resilient species will be planted in agricultural land to promote agroforestry. This will be complemented by the promotion of climate-resilient livelihoods and green technologies for the sustainable use of natural resources.

- **Increasing the availability of funding for the sustainability of the project's activities and the implementation of long-term community-based EbA projects.** The available business models for private sector financing will be investigated and the most appropriate one for Rwanda will be selected as part of Component 3 to fund long-term community-based EbA projects.

2.4. Institutional, sectoral and policy context

Rwanda has ratified the following International Conventions:
- Convention on Biological Diversity (CBD) (1995)
- United Nations Framework Convention on Climatic Changes (UNFCCC) (1995)
- United Nations Convention to Combat Desertification (UNCCD) (1998)
- Vienna Convention for the Protection of the Ozone Layer (2003)
- Stockholm Convention on Persistent Organic Pollutants (2002)
- Ramsar Convention on Wetlands (2007)
- Convention on the Conservation of Migratory Species of Wild Animals (CMS) (2007)
- Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (2003)
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (2003)
- Kyoto Protocol to the United Nations Convention on Climate Change (2007)
- Cartagena Protocol on Biosafety to the Convention of Biological Biodiversity (2007)
- Montreal Protocol on Substances that Deplete the Ozone Layer (2003)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), also known as the Washington Convention (1980)
- Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA) (2013)
- Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity (2010)

Institutional context

87. The government agencies with primary responsibilities related to climate change, natural resource management, disaster management and development at a national level are described below.

88. The **Ministry of Natural Resources** (MINIRENA) is responsible for the sustainable use of natural resource in Rwanda. Included in this mandate is protecting and conserving the environment. To this ends, MINIRENA develops and disseminates national policies and strategies. MINIRENA also develops regulations and laws for the natural resource sector and related sub-sectors. There are several units within MINIRENA, namely:

- **The Lands and Mines Unit** (DILAM), which is responsible for policies, strategies and legislation pertaining to lands, mining and geology;
- **The Environment and Forestry Unit** (DEFOR), which is responsible for policies, strategies and legislation regarding the environment, water resources and hydrology, and forests; and
- **The Planning, Monitoring and Evaluation Unit** (DPME), which coordinates the activities of DILAM and DEFOR as well as the ministry's contribution to achieving: i) the goals of Vision 2020; ii) the MDGs; and iii) the objectives of the Economic Development and Poverty Reduction Strategy (EDPRS).

89. Within MINIRENA, there are two agencies. Firstly, the **Rwanda Environmental Management Authority** (REMA) has the national mandate for implementing environmental policy and legislation, including policies and programmes on climate change adaptation. REMA was created in 2006 and has been operational since 2011. It is non-sectoral and works to improve cross-sectoral coordination on environmental policy and legislation. There are six units within REMA, namely: i) Climate Change and International Obligations (CCIOU); ii) Environmental Regulation and Pollution Control; iii) Environmental Education and Mainstreaming; iv) Research, Environmental Planning and Project Development; v) Legal Affairs; and vi) Administration and Finance. The **CCIOU** is responsible for implementing the UNFCCC in the country context, negotiating in international forums and coordinating the National Climate Change Committee (NCCC). To coordinate the activities of these units, the Single Project Implementation Unit (SPIU) was established in 2012.

90. Secondly, **The Rwandan Natural Resource Authority** (RNRA) manages the use of natural resources. This mandate includes, *inter alia*: i) implementing national policies, laws and strategies regarding the protection of natural resources; ii) monitoring natural resource use; iii) providing technical advice on natural resource use; and iv) rehabilitating and conserving natural resources in Rwanda.

91. **The Ministry of Agriculture and Animal Resources'** (MINAGRI) objective is to transform and modernise agriculture and livestock production in Rwanda. This ministry is working to change agriculture and livestock production from subsistence to market-orientated production. This will reduce poverty and increase food security because surplus production will be available for market. MINAGRI's particular strategies for achieving this objective include, *inter alia*: i) diversification and intensification of plant, animal and fish production; ii) diversification of rural livelihoods; and iii) sustainable management of natural resources such as water and soil.

92. The **Ministry of Disaster Management and Refugee Affairs** (MIDIMAR) has two main objectives. Firstly, it focuses on developing mechanisms for disaster risk prevention (DRR), management and response. This includes mechanisms for climate-related disasters such as floods, landslides and droughts. Secondly, it focuses on developing a proactive refugee policy. Regarding DRR, this ministry's objectives include: i) developing and implementing sound DRR policies to address the vulnerabilities of Rwandan communities; ii) strengthening institutional capacities and coordination between various stakeholders on

DRR; and iii) enhancing disaster preparedness through local Disaster Management Plans. MIDIMAR houses a Unit of Research and Public Awareness, which produces disaster vulnerability maps for Rwanda. This ministry is also introducing an Early Warning System (EWS) and is currently developing EWSs in four districts in the Western Province with financial assistance from the LDCF 1 project. At present, these EWSs are at the stage of developing the transmission system to communicate the warning messages to the local communities.

93. The **National Fund for Environment and Climate Change** (FONERWA) was established to provide sustainable, innovative and flexible financing mechanisms to achieve the development objectives of environmental sustainability, climate resilience and green economic growth. The fund is focused on public and private initiatives for: i) conservation and sustainable natural resource management; and ii) research and development, and technology transfer and implementation.

94. The **Joint Action Development Forum** (JADF) is a mechanism established to promote cooperation between the private sector, civil society and local government. In particular, the JADF addresses service delivery and economic development at the local level. It is focused on the water and sanitation, education, health, agriculture and finance sectors.

Cross-sectoral strategies, policies and programmes

95. Cross-sectoral strategies, policies and programmes that relate to climate change, natural resource management, disaster management and development include:

- Vision 2020 (published in 2000 and revised in 2010);
- The National Strategy for Community Development and Local Economic Development (2013–2018);
- Economic Development and Poverty Reduction Strategy (EDPRS) 2013–2018;
- Green growth and Climate Resilience Strategy: National Strategy for Climate Change and Low Carbon Development (2011);
- The National Decentralisation Policy (2012); and
- The Water, Climate and Development Program (WACDEP).

For further details on these strategies, policies and programmes – and how they are aligned with the proposed project – see Section 3.6.

Sectoral Policies, Strategies and Plans

96. The Rwandan **Environmental Policy** promotes the protection and sustainable management of natural resources in Rwanda while recognising the need for economic growth and social development. Its objectives include, *inter alia*: i) sustainable socio-economic development; ii) the integration of environmental management into development policies and plans; iii) the conservation and restoration of ecosystems to promote ecosystem functioning; iv) sustainable resource use; v) public awareness; and vi) women and youth participation in environmental activities. With regard to water resources, the policy includes the protection of watersheds and wetlands to prevent erosion, siltation, and pollution by colluvial deposits and deforestation. Similarly, the policy promotes the rehabilitation of degraded forest ecosystems, particularly on deforested hills.

97. The **National Forestry Policy** envisions the forestry sector as a major economic contributor in Rwanda as well as a contributor to Vision 2020 goals. The objectives of the policy include: i) encouraging private sector investment in forestry; ii) promoting sustainable natural resource management; iii) encouraging community participation; iv) promoting the

production of timber and non-timer forest products (NTFPs); and v) promoting research and education on forestry.

98. The **Rwanda Biodiversity Policy** recognises the contribution of biodiversity to local livelihoods, food security, health, the environment, cultural diversity and the economy. The goal of the policy is "to conserve biodiversity in Rwanda, to sustain the integrity, health and productivity of its ecosystems and ecological processes whilst providing lasting development benefits to the nation through the ecologically sustainable, socially equitable, and economically efficient use of biological resources". Furthermore, the policy recognises natural disasters, land-use changes and loss of ecosystem services as some of the threats to biodiversity in Rwanda.

99. The **National Land Policy** is focused on land tenure security for all Rwandans. It guides land reforms and promotes the "good management and rational use of national land resources". The policy requires that the National Land Use and Development Master Plan be put in place to guide spatial development in Rwanda. It also provides guidelines for land use and management and details the guidelines to develop District Land Use Plans.

100. The **National Water Resource Management Policy** is aligned with the principles of Integrated Water Resource Management. Related to the policy, the **Water Resources Management Sub-Sector Strategic Plan** (2011–2015) has identified strategic outcomes that relate to: i) governance; ii) monitoring and evaluation; iii) water catchment restoration; iv) equitable utilisation; v) water-related disaster management; vi) capacity development for water resource management; vii) knowledge management and viii) transboundary water management.

101. Further policies regarding water include the **Sectoral Policy on Water and Sanitation**. This recognises the role of water and sanitation management in poverty reduction. It promotes the achievement of the Millennium Development Goals (MDGs) objectives and the 2020 Vision. In relation to the proposed project, the policy promotes the sustainable management of water resources, increased access to water for agriculture and livestock, and environmental protection.

Legislative Framework

102. The laws pertaining to natural resource management include the following:

103. **N° 04/2005 of 08/04/2005 Organic Law determining the modalities of protection, conservation and promotion of environment in Rwanda**. This law is focused on environmental conservation and discouraging activities that are environmentally destructive. It also promotes social equality and sustainable development and establishes strategies for ecosystem restoration and environmental protection. To this end, the law addresses the protection of soil, water resources, air and biodiversity. The law also defines the roles of the state, private sector and civil society in environmental protection. Through these definitions, authority to implement the law is granted to REMA.

104. **N° 08/2005 of 14/07/2005 Determining the Use and Management of Land in Rwanda** provides the legislative framework for the National Land Policy. It determines the role of the state, the rights and duties of landowners, the categories of land, and the institutions for land management.

105. **N° 007/2008 of 15/08/2008 Ministerial Order establishing the list of protected animal and plant species** establishes the list of protected plants, mammals, birds and reptiles in Rwanda. These species should not be hunted, uprooted or cut – except when there is prior authorisation from competent authorities.

106. **N° 62/2008 of 10/09/2008 Regulating the Use, Conservation, Protection and Management of Water Resources** is the primary law regarding water resources. It determines the following: i) provisions for the public water domain; ii) the institutions responsible for water resources; iii) plans in the water domain; iv) the regime of water use; v) sanitation of water used; vi) particular provisions for domestic and livestock purposes; vii) easement; viii) public works related to water and sanitation; and ix) international cooperation on shared waters as well as penal provisions.

107. **N° 24/2012 of 15/06/2012 Relating to the Planning of Land use and Development in Rwanda** guides and regulates sustainable and equitable land use and development. It provides the legal framework for the National Land Use and Development Plan. Consequently, the law establishes the fundamental principles to ensure that land-use planning and development maintain and protect natural resources and biodiversity. At the same time, the law promotes: i) equal access to land for socio-economic development; and ii) gender considerations in land use and development.

2.5. Stakeholder mapping and analysis

108. The activities of the proposed project have been: i) developed through extensive consultation with national and multilateral stakeholders; and ii) designed to address the priority adaptation needs identified by stakeholders. Consultations with stakeholders included, *inter alia*: i) the inception workshop, held in February 2014; ii) the validation workshop, to be held in July 2014; and iii) multiple meetings with individual stakeholders, which took place between 27 January 2014 and 7 February 2014. The purpose of the stakeholder consultations was to identify: i) appropriate interventions and intervention sites based on the vulnerabilities and requirements of Rwandan local communities; ii) ongoing projects relevant to the activities of the project; and iii) national and local government authorities relevant to the activities of the project (see Appendix 8A and 19). As a result, the project will be aligned with national policies and will be feasible in the local context. Local stakeholders were consulted during the PPG phase and will be involved throughout the project implementation phase. Their participation in decision making and implementation will promote local ownership and support for project activities in the implementation phase and after the project has been completed.

109. Key stakeholders include:

- MINIRENA including REMA and RNRA;
- MINAGRI;
- MIDIMAR;
- Ministry of Education (MINEDUC);
- Ministry of Gender and Family Promotion (MIGEPROF);
- Ministry of Finance and Economic Planning (MINECOFIN);
- Ministry of Youth and Information and Communication Technology (MYICT);
- National Women Council (NWC);
- Rwanda Agriculture Board (RAB);
- Rwanda Development Board (RDB);
- National University of Rwanda (NUR);
- Kigali Institute of Science and Technology (KIST);
- Institute of Scientific and Technological Research (IRST);
- Rwanda Agriculture Research Institute (ISAR);
- Local authorities at province, district, sector and cell levels;
- Environment committees at province, district, sector and cell levels;
- Industrial and business private companies;
- NGOs (e.g. ARECO, ARCOS, WCS, Forest of Hope, ACNR);

- CBOs (e.g. Cooperative of Security and Environment of Ngororero, Tubegere); and
- approximately 700 households (~2 800 people) who will directly benefit from the on-the-ground activities implemented under Component 3 in the four intervention sites.

110. Three national consultants conducted field missions and consultations with representatives of local communities – including farmers – in areas adjacent to the intervention sites of the proposed project (see Appendix 22). The purpose of these meetings and missions was to: i) refine the project activities; ii) identify and decide on specific intervention sites; and iii) identify the beneficiaries of the project. During these field missions, national consultants also undertook assessments of the current livelihoods of local community members and their access to water and energy sources. As a result, the activities of the proposed project are well aligned with requirements identified by stakeholders and project beneficiaries.

2.6. Baseline analysis and gaps

Baseline situation

111. *Institutional capacity*: In the past five years, the institutional capacity of Rwanda to address climate change has increased at both national and local scales. A primary intervention at the national scale was the reorganisation within and rearrangement of various ministries to increase the synergies between those departments related to environment management. This included creating the CCIOU in REMA. Additionally, to increase the coordination of environmental projects within REMA, the SPIU was created in 2012. Similar capacity development has taken place within Rwanda's local authorities. Consequently, at the local scale, there has been some progress on the integration of climate change into local planning and development. For example, environment committees were created at four levels: province, district, sector and cell. Their main roles are to: i) ensure the implementation of the laws, policies, programmes and plans relating to the protection, conservation and promotion of the environment in Rwanda; and ii) monitor problems relating to awareness raising of the population on environment protection and appropriate land use. Subsequently, they will facilitate effective environmental planning at the local level. Furthermore, a DEO and a DEF were hired in each district. However, the increase in institutional capacity at the local level is recent and there is still a need to build on and enhance this capacity.

112. *Technical capacity*: While institutional capacity is robust, technical capacity to plan and implement projects for climate change adaptation – and EbA in particular – is limited in Rwanda. National authorities within REMA have a working knowledge of the role of ecological infrastructure in increasing climate resilience and the necessity to restore and protect ecosystems. Although this is not labelled EbA within national strategies, several national initiatives comparable to EbA are being implemented. For example, PAREF, which undertakes to reforest areas to increase infiltration, decrease landslides and reduce pressure on native forest for woodfuel. However, the knowledge of local authorities, NGOs, CBOs and local communities on ecological infrastructure, climate resilience and EbA is limited. This hinders the effective implementation and mainstreaming of EbA practices. Furthermore, on-going reforestation projects including the identified baseline projects largely use exotic species – such as *Pinus*, *Eucalyptus* and *Leucaena* – for their activities. Consequently, there is a concern that knowledge on planting and maintaining indigenous species that may be more resilient to the effects of climate change is decreasing.

113. *Information availability*: In Rwanda, there is limited information on the level of ecosystem degradation. This is coupled with limited information on the role of ecological infrastructure in increasing climate resilience within specific geographical areas in the

country. Together, these information gaps hinder the prioritisation and coordination of EbA interventions. Similarly, the absence of a national vulnerability index prevents interventions from targeting the most vulnerable areas to maximise the benefits to local communities. A climate change portal[57] was created to collate and disseminate data on on-going projects for climate change adaptation. However, the use of this portal is not optimal as there is limited information available particularly on EbA.

114. *Green technologies*[57]: Promoting the use of green technologies is included in national development strategies such Vision 2020. Currently, these technologies are not commonly used across Rwanda. Some *ad hoc* systems exists for the use of organic compost but it is limited to the collection of cow dung by farmers for transfer to a pit. Similarly, while the use of biogas is increasing through the initiative of partner projects such as the Poverty and Environment Initiative (PEI), this remains limited. For example, the main sources of energy in Ndego sector in Kayonza District are woodfuel, off-grid solar panels and electricity from the national grid.

115. *Proof of concept*: To promote the use of EbA nationally, it is necessary to present demonstrable proof that EbA increases local communities' resilience to climate change and decreases the cost of climate change induced degradations. Such proof of concept relies on working examples of EbA and scientific research into its effects. In Rwanda, there is currently no scientific research underway on the effects of EbA on the climate resilience of local communities or the cost-effectiveness of EbA.

116. *Private sector involvement*: There is little involvement of the private sector into adaptation to climate change in Rwanda. The availability of funds to implement adaptation projects is limited and projects funded by international entities usually last for a couple of years.

117. *Community awareness*: Local communities have very limited awareness on practices that would increase their resilience to climate change. For example, the primary techniques for water management on agricultural land include cut-off drains, ditches and bunds. This infrastructure is degraded and the knowledge on how and where to replace it is decreasing. Similarly, the local community's knowledge on the benefits of indigenous plant species as well as planting and maintenance techniques is decreasing as the number of exotic species being planted increases.

118. *Development planning*: Despite the increasing awareness of Rwandan national authorities on climate change adaptation, several gaps remain in local development planning, which prevent the systematic implementation of EbA in all districts. While national strategies include restoration and adaptation to climate change, there is little integration of restoration and adaptation to climate change into Districts Development Plans (DDPs). Similarly, EbA is absent from environment assessment tools that regulate the environmental impact of projects across various economic sectors in Rwanda. Without integrating EbA into both DDPs and environment assessment tools, ecosystem degradation is expected to continue.

119. *State of ecosystems*: Population density and rural poverty in Rwanda threaten natural ecosystems. The primary catalysts of degradation are: i) the demand for food that fuels the extension of agricultural land; ii) the construction of settlements; and iii) the reliance of local communities on natural resources for subsistence and income. For example, the

[57] The climate change portal, Climate Ark, is currently hosted by REMA but it will soon be a separate website. http://www.climateark.org/shared/reader/welcome.aspx?linkid=175983

GoR[58] has acknowledged the role of wetlands in improving water availability. However, several wetlands were transformed into settlements (e.g. Province of Kigali City) or agricultural land[59] (e.g. in Bugesera district) thereby reducing the potential to deliver important ecosystem services needed for the wellbeing of local communities such as soil stabilisation and water infiltration. Similarly, mining activities, stock grazing and tree cutting for woodfuel are degrading forests, including Sanza. This degradation of wetlands, forests and savannas increases the vulnerability of local communities to floods and droughts as well as the health problems associated with water scarcity and floods[60]. In addition to anthropogenic pressures, invasive plant species negatively affect ecosystem functioning. For example, water hyacinth (*Eichhornia crassipes*) – one of the most invasive waterweeds – is found in major wetlands in Rwanda such as Lake Victoria and smaller wetlands including Cyohoha north and Murago. Water hyacinth is a threat to the ecosystem services delivered by functioning wetlands in Rwanda[61].

120. *Agriculture*: The majority of the farmers practise mono-cropping in Rwanda and make use of chemical fertilisers to maintain the productivity of their land. Chemical pesticides are also widely used. The excessive application of chemical fertilisers and pesticides on many fields is leading to environmental degradation such as water pollution. Furthermore, crop diversity is decreasing, as there is a decline of traditional crop species including *Sorghum bicolor* and an increase of exotic crops such as rice and wheat[62]. Decreased crop diversity increases the vulnerability of crops to drought, floods, landslides and pests.

121. *Alternative livelihoods:* Rural poverty in Rwanda is closely linked to the limited livelihood options available beyond agriculture. Recently, some alternative livelihoods to agriculture were introduced but these remain limited. Firstly, beekeeping is being developed in several areas in Rwanda. For example, in Nyabihu, five cooperatives were created with 150 beekeepers (i.e. 50 women, 50 men and 50 youth). The LDCF 1 project plans to build a honey-processing center to complement the establishment of these cooperatives. Secondly, handcrafting is a source of revenue for multiple rural households in the country. Handcrafting activities include basket weaving using papyrus, water hyacinth or banana leaves and the production of traditional medicinal products. Basket weaving is the most common handcrafting activity in Rwanda as baskets are popular among locals and tourists. Thirdly, aquaculture is under development in several lakes, such as in Lake Kivu through LVEMP. Lastly, tourism can create employment for local rural communities. However, most tourism projects are not community-based. Introducing and developing alternative livelihoods is not always sustainable because of the use of inappropriate practices. For example, beekeeping is considered a potential threat to the preservation of Mukura native forest[63].

Baseline Projects

122. The proposed project will build on the ongoing activities of selected baseline projects described below (Appendix 22).

123. **Project d'Appui à la Reforestation au Rwanda** (PAREF Phase 2) (Co-financing US $2,305,000) is focused on supporting the Forestry Sector and the National Forestry Policy in Rwanda to contribute to poverty alleviation, economic growth and conservation. The Belgian Development Agency (BTC), the Netherlands government and RNRA are implementing both the PAREF-Be (Belgium) and PAREF-Ne (Netherlands). The PAREF-Be began in 2008 and

[58] REMA, 2009. Rwanda State of Environment and Outlook. Kigali, Rwanda.
[59] In 2008, 53% of marshland were under cropping.
[60] Floods lead to the increased spread of water-borne diseases, such as cholera, as well as injury and death in extreme events.
[61] Water hyacinth has caused lakes in Akagera National Park to dry up.
[62] Seburanga. 2013. "Decline of Indigenous Crop Diversity in Colonial and Postcolonial Rwanda," International Journal of Biodiversity, vol. 2013, Article ID 401938, 10 pages. doi:10.1155/2013/401938
[63] UNEP, 2009. Rwanda: Post-conflict to environmentally sustainable development. Nairobi, Kenya.

has been extended to December 2016. It is implemented in the Northern (three districts) and Eastern Provinces (3 districts). In 2009, the PAREF-Ne was initiated and has been extended until December 2016. It is implemented in the Western Province (7 districts) and Northern Province (two districts). The PAREF's specific objective is to control both quantitative and qualitative degradation of forest resources and to contribute to meeting Rwanda's forestry needs (e.g. 30% forest cover by 2016). The PAREF covers all the districts of the Eastern, Western and Northern Provinces. The Rwandan Sustainable Woodland Management and Natural Forest Management (PGReF) is an additional complementary project to the PAREF. The PGReF (2012–2015) has similar interventions underway in eight districts of the Southern Province. The budget for PGReF is US $5,527,600. The PAREF-Ne has interventions in progress in the Western Provinces, including Mukura natural forest which as close proximity to Sanza. Interventions for the PAREF-Be are being implemented in the Eastern Province, including Kayonza district. Together, both PAREF projects were selected as a baseline project for the proposed project.

124. The PAREF projects have two primary objectives: i) building capacity within the forestry sector; and ii) operational objectives, which include improved forest management, increased afforestation and development of agroforestry. Project interventions include:

- training national authorities on afforestation and forest resource management;
- training local authorities on afforestation and forest resource management;
- training private sector operators on afforestation and forest resource management;
- developing legislation, decision-making and communication tools;
- applying above tools at local level;
- strengthening operational capacities at national level;
- strengthening operational capacities at local level;
- forest management;
- afforestation; and
- agroforestry.

125. The proposed project will build on the interventions of PAREF and increase the climate resilience of these interventions. The activities under Output 1.2 will build on the training provided by PAREF. Local authorities and private sector operators will be trained on afforestation and forest resource management through the interventions of PAREF. The proposed project will build on this technical capacity by providing further training for local authorities (Activities 1.2.1 and 1.2.2), communities (Component 3) and the private sector (Activity 1.2.3) on afforestation methods and forest resource management to increase climate resilience.

126. Through PAREF, a list of suitable species for each intervention area was developed. Planting interventions of PAREF have predominantly used exotic species, as it is more cost effective than indigenous species. However, some native species have been used and acknowledged by the RNRA for their medicinal products and role in conserving biodiversity. The interventions of PAREF will inform the proposed project in two ways. Firstly, the implementation of the proposed project will increase the climate resilience of PAREF afforestation and agroforestry interventions in Ngororero and complement PAREF activities in nearby districts including Rutsiro and Nyabihu. The interventions of the proposed project will restore degraded forests and implement agroforestry in Ngororero using predominantly indigenous species that are climate resilient (Activities 3.2.5 and 3.2.6). This will increase the forest cover in Ngororero and increase the climate-resilience of the forest ecosystem and agroforestry interventions. The benefits of using indigenous species for afforestation and agroforestry will be shared with PAREF and local communities (Activities 1.3.2 and 1.4.1). Secondly, the relevant planting protocols of PAREF will be used to inform the plant species and techniques for agroforestry (Activity 3.2.2).

127. **The Land Husbandry, Water Harvesting and Hillside Irrigation Project** (LWH) (Co-financing US $6,543,000) (2010 – 2017) focuses on increasing the productivity and commercialisation of hillside agriculture. To do this, the project is introducing sustainable land husbandry at selected sites and developing hillside irrigation areas within selected sites. This project is funded by the World Bank and implemented by MINAGRI. The three components of LWH are as follows:

- Component A: capacity development and institutional strengthening for hillside intensification;
- Component B: infrastructure for hillside intensification; and
- Component C: implementation through the ministerial sector-wide approach (SWAp) structure of the MINAGRI.

128. Sub-components under Component A include: i) strengthening farmer organisations; ii) providing extension services; iii) marketing and finance; and iv) capacity development and institutional strengthening. Bolstered farmer organisations will support the training interventions of the proposed project in Ngororero and Kayonza (Activities 3.2.4, 3.2.7, 3.3.4, 3.3.7, 3.3.8 and 3.3.9) by strengthening the institutional platform through which training can take place. The proposed project's interventions will also build on sub-component 4 as it will develop technical capacities of provincial, district, sector and cell authorities. This will be done through developing and disseminating technical guidelines on EbA, agroforestry, green technologies and techniques to prevent evaporation. In addition, LWH focuses on skills development for sustainable land management and integrated watershed management. The interventions of the proposed project will further develop the skills of local community members through providing training on EbA, agroforestry, green technologies and techniques to prevent evaporation (Activities 3.2.4, 3.2.7, 3.3.4, 3.3.7, 3.3.8 and 3.3.9).

129. The interventions of the proposed project will also build on and increase the climate resilience of Component B of LWH. Component B's interventions include: i) land husbandry infrastructure to support the development of participatory and comprehensive land husbandry practices; ii) water harvesting infrastructure; and iii) hillside irrigation infrastructure, including the development of the water conveyance structures for hillside irrigation. The proposed project will support land husbandry infrastructure through ecosystem restoration in forests and savannas. This will promote soil conservation and soil stability in two districts where LWH interventions are implemented: Ngororero and Kayonza (Activities 3.2.5 and 3.3.5). Land husbandry interventions will also be supported through promoting terracing at intervention sites (Activity 3.1.8). Planting on the risers of the terraces to reduce evaporation will increase the climate resilience of the terraces and the local communities.

130. The proposed project will also build on the irrigation interventions of Component B of LWH. LWH will invest in large-scale infrastructure for water harvesting and irrigation. The proposed project will support these investments through improving the quality and quantity of water supplies for household and agricultural use in Ngororero and Kayonza. The improvement in the quality and quantity of water supplies will be achieved by: i) ecosystem restoration in forests and savannas to reduce soil erosion and siltation of water supplies as well as the impact of drought (Activities 3.1.5 to 3.1.7, 3.2.5 and 3.3.5); and ii) providing training to local communities on rainwater management, rainwater harvesting and techniques to reduce evaporation (Activities 3.1.9, 3.3.7 and 3.3.8). Furthermore, EbA interventions will reduce the impact of landslides, floods and drought, thereby increasing the climate resilience of the hard infrastructure interventions implemented by LWH.

131. **The Rural Sector Support Project, Phase 3** (RSSP 3) (Co-financing US $396,000) (2012 – 2018) has the following two objectives: i) increase the agricultural productivity of organised farmers in the marshlands and hillsides of sub-watersheds for development in an

environmentally sustainable manner; and ii) strengthen the participation of women and men beneficiaries in market-based value chains. Similarly to LWH, RSSP3 is funded by the World Bank and implemented by MINAGRI. The components for the RSSP 3 project are as follows: i) infrastructure for marshland, hillside and commodity chain development; ii) capacity for marshland, hillside and commodity chain Development; and iii) Project Coordination and Support. The RSSP 3 and the proposed project both have intervention sites in Kayonza.

132. Component 1 of the RSSP 3 will rehabilitate and develop irrigation schemes in marshlands to promote agricultural production. This includes assessing the potential for groundwater exploitation. The proposed project will support these interventions through savanna restoration in Kayonza and wetland restoration in Bugesera (Activities 3.1.5, 3.1.6, 3.1.7 and 3.3.5). This will contribute increasing the availability of water for irrigation and decreasing erosion and siltation, thereby reducing long-term maintenance requirements for irrigation infrastructure. Additionally, training will be provided to local communities in Kayonza on techniques for rainwater harvesting and improved water retention, including contour earthen bunds and bio-retention techniques (Activity 3.1.9). This will increase groundwater recharge. Component 1 of the RSSP 3 will also focus on sustainable land management on hillsides. This will use successful approaches developed by the LWH project and previous RSSP 3 phases. The proposed project will implement similar techniques for sustainable land management in Ngororero. The RSSP 3 and the proposed project do not correspond geographically for this intervention. However, lessons learned from RSSP 3 will be used to inform the interventions for Output 3.1 of the proposed project. The final sub-component of Component 1 is investment in commercial infrastructure to support the economic activities handled by cooperatives and small farmer groups in rural areas. The proposed project will increase the climate-resilience of this infrastructure. In particular, wetland restoration in Bugesera will reduce the vulnerability of adjacent infrastructure to floods.

133. Component 2 of the RSSP 3 will increase capacity for marshland, hillside and commodity chain development. Firstly, the project will build capacity for farmer organisations and cooperatives through establishing and promoting existing organisations and cooperatives. In particular, this capacity building focuses on Water User Associations (WUAs). Secondly, the RSSP 3 will build capacity for improved production technologies. This includes upscaling of FFSs to promote the use of improved and economically viable practices for the sustainable management of soil, water and pests. The corresponding activities include: i) upscaling the FFS to all RSSP 3 intervention sites; ii) promoting the certification of agricultural products; and iii) increasing hillside production through providing fruit trees. Thirdly, the capacity of farmers for agribusiness will be increased. This includes providing training on budgeting and business planning. Additionally, agribusiness centers will be built in at least three of RSSP 3 intervention sites. Ndego sector is at close proximity to two of the RSSP 3 intervention sites in Kayonza District. The proposed project will: i) provide knowledge and guidelines on best practices for soil and water management including rainwater harvesting and agroforestry (Activities 1.3.2 to 1.3.4, 3.1.8, 3.1.9, 3.1.13, 3.2.6, and 3.3.6 to 3.3.8); and ii) increase technical capacity of the government authorities of the Eastern Province and Kayonza District to implement climate-resilient practices. This increased capacity will promote the sustainability of RSSP 3 interventions in these areas (Activities 1.2.1 and 1.2.2). Additionally, the proposed project will benefit from the following RSSP 3 interventions: i) increased capacity of organisations and cooperatives; ii) the upscaling of FFSs; and iii) lesson learned on building farmers' capacity.

134. Component 3 of RSSP 3 is focused on merging the implementation teams of RSSP 3 and LWH Project into one structure. The activities of this component focus on applying this merged structure.

135. A tabular analysis of the baseline for each project component is presented in Section 3.7.

2.7. Linkages with other GEF and non-GEF interventions

136. There are several projects underway in Rwanda that present opportunities for synergies and knowledge exchange with the proposed project. Meetings have been organised with the management team of each of these projects during the PPG phase. The goals of these meetings were to: i) avoid duplication of interventions; and ii) identify opportunities to maximise the synergy between the projects' interventions. These projects are described below.

137. **UNDP-UNEP LDCF project – Reducing Vulnerability to Climate Change by Establishing Early Warning and Disaster Preparedness Systems and Support for Integrated Watershed Management in flood prone areas** is implemented by REMA with technical assistance provided by UNDP and UNEP. It is due to end in December 2014. The objective of the LDCF 1 project is to reduce the vulnerability of local communities, in Gishwati and the Congo-Nile watershed area, to climate change effects. In particular, the project will: i) prepare an early warning and disaster management plan for the project area; ii) produce a land use master plan for climate resilience; and iii) upscale sustainable practices of land management from pilot areas to the rest of the country. The LDCF 1 project also includes ecosystem restoration to increase resilience. Therefore, there is an opportunity for the proposed project to capitalise on the activities of this project.

138. The LDCF 1 project is presently underway in the districts of Nyabihu, Rubavu, Rutsiro and Ngororero. Both the LDCF 1 project and the proposed project have interventions in Ngororero. District-level interventions of the LDCF 1 project will be used as a platform for further interventions in Ngororero, and to inform the proposed project's interventions in other districts. The LDCF 1 project interventions include, firstly, hosting training sessions for district authorities on climate change adaptation in the intervention districts. In Ngororero, the proposed project will build upon this by providing further training for these district authorities (Activity 2.4.5). Additionally, the training material and lessons learned from the LDCF 1 project will be reviewed when designing and implementing district-level training for the proposed project. Secondly, the LDCF 1 project has introduced climate change into the DDP of Ngororero. The proposed project's interventions will further develop this in Ngororero and use the lessons learned from the DDP revisions for developing the policy recommendations in Activity 2.4.1. Thirdly, beekeeping projects were introduced to Rutsiro through the LDCF 1 project. The lessons learned and technical protocols developed from these beekeeping projects will inform Activity 3.4.2 of the proposed project. Fourthly, the lessons learned from forest restoration and agroforestry activities of the LDCF 1 project will inform the development of planting protocols and species selection for Activity 3.2.2. An example of such a lesson in Gishwati is that planned restoration activities could not be implemented because the selected species required a growing period of six months in the nursery, which stalled project progress. Finally, the LDCF 1 project includes a public awareness-raising campaign on climate change in Ngororero. The proposed project will capitalise on this awareness when promoting EbA in Activity 1.4.1, agroforestry in Activity 3.2.6 and eco-tourism projects in Activity 3.4.5.

139. **Lake Victoria Environmental Management Project** (LVEMP) (2011–2017) is funded by the World Bank. The LVEMP has four components, including: i) strengthening institutional capacity for management of shared water and fisheries resources; ii) point source pollution control and prevention; iii) watershed management; and iv) project coordination and management. The LVEMP interventions will take place in 12 districts of Rwanda, including Bugesera. Interventions will include terracing and wetland restoration for improved watershed management. For Activity 3.1.7 and 3.1.8, the proposed project will

coordinate with the LVEMP, to maximise the benefits and synergy of each project. Furthermore, the LVEMP will develop a National Strategic Plan for Wetland Conservation, which will be included in the review of policy, strategy and legislation in Activity 2.4.3.

140. **The Decentralisation and Environmental Management Project Phase III** (DEMP) (UNDP) (2013-2018) has a focus on ecosystem restoration and the development of sustainable livelihoods for rural communities. Previous phases of the project have successfully developed alternative livelihoods using a participative approach. Specifically, DEMP introduced fish farming to Lake Kivu in Phase II. The lessons learned from this will be used by the proposed project for Activity 3.4.3. Furthermore, DEMPs guidelines and lessons learned from restoration activities using a community-based approach will be used to inform restoration and ecosystem management activities for Output 3.1–3.3. The DEMP guidelines and lessons learned will also be used to inform engagement with district-authorities. For this, the proposed project will use the memorandums of understating (MoUs) developed by DEMP to form partnerships with district authorities.

141. **The Rwanda Forest Landscape Restoration Initiative** (RFLRI) (GEF) was declared in February 2011. The objectives of the RFLRI are to: i) promote sustainable management of natural resources throughout Rwanda; ii) increase the rate of reforestation on public land; and iii) promote tree planting and agroforestry on private land. Identified partners for the project include the International Union for the Conservation of Nature (IUCN). The RFLRI aligns with the following national priorities in the EDPRS and Vision 2020: i) intensification of sustainable production systems; ii) strengthening of newly established central and decentralised institutions; iii) enhancing the role of local governments in implementing national sectoral strategies; iv) enhancing cross-sectoral communication. The RFLRI will be an essential partner for the proposed project, particularly for exchanging knowledge and lessons learned on reforestation activities and landscape-scale restoration projects as well as for capacity development at the local level.

142. **UNEP-IEMP: China-Rwanda International Research partnership on long-term ecosystem monitoring, integrated management and capacity building for the source of River Nile in Rwanda** is a partnership between Rwanda Environment Management Authority (REMA) and the Institute of Geographical Sciences and Natural Resources Research (IGSNRR). It is facilitated by the United Nations Environment Programme International Ecosystem Management Partnership (UNEP-IEMP). The objective of this partnership is to: i) enhance the technical capacity through research and training on the management of major ecosystem services such as water, soil, food production, wetlands, and carbon sequestration; and ii) provide policy support and integrated management techniques on best practices through ecological monitoring and on-site demonstration. The initial 5 years project focused on: i) establishing ecosystem monitoring and demonstration sites at the source of the Nile; ii) assessing ecosystem service and protected areas management; and iii) establishing regional ecosystem monitoring networks and database development for climate change adaptation. It comprises three components: i) Ecosystem Monitoring in the Source of the Nile in Rwanda; ii) Ecosystem Service Assessment and Protected Areas; and iii) Ecosystem Monitoring Network and Spatial Analyses. The field investigations, quantitative assessments and socioeconomic surveys that will be conducted on management effectiveness, stakeholder engagement and on the link between livelihoods and ecosystem services will provide valuable information for the implementation of the proposed project. Additionally, this information will facilitate the mainstreaming of EbA in Rwanda through increasing the availability of evidence-based knowledge on the effects of EbA. One of the projects implemented under UNEP-IEMP partnership entitled *Study on the mechanism of water and soil loss and demonstration of slopes-based rain-fed agriculture in Rwanda* is funded by the NSFC and has a budget of 3 million RMB for 2015-2019. As part of this project, soil erosion control mechanisms and relationship between soil and water conservation will be studied in the hill slope farmland upper Nile in East Africa. The main

purpose of these studies is eco-environmental protection and increase in agricultural sustainable and efficiency. Knowledge sharing between this UNEP-IEMP project and the proposed LDCF project on soil management, water conservation and agriculture practices in this area will benefit both projects.

143. **The UNEP-UNDP Poverty Environment Initiative** (PEI) (2014-2018) is being implemented in Rwanda to enhance the contribution of environmental management to poverty reduction, sustainable economic growth and achieving MDGs. The PEI has the objective to mainstream environmental management and climate change considerations into development planning in Rwanda. To achieve this objective, activities take place on three levels. Firstly, the capacity of national government to integrate the environment and climate change into policies, plans and budgets is increased. Secondly, national capacities for gender sensitive poverty-environment planning and management at district level and for green villages/cities are strengthened. Thirdly, training and awareness-raising activities take place at a local community level. The PEI is developing one pilot green village in the following two districts: i) Gicumbi in the Northern Province; and ii) Muhanga in the Southern Province. Consistent with the National Strategy for Climate Change and Low Carbon Development, the green village project is implemented at the district level. The green village project develops villages that use low-carbon and climate resilience technologies, such as biogas and rainwater harvesting. The proposed project will build on the PEI experience to develop the best technologies in the intervention sites. Limited capacity is stated as a barrier to effective implementation of the green village project.

144. Funding for the PEI is secured until 2018. The proposed project has identified the PEI as a partner for project activities. The project will build on the local and national capacity already built by the PEI. Additionally, the PEI and the proposed project will work together closely to support their respective interventions and strengthen the synergy of project activities.

145. **World Bank Project – The Landscape Approach to Forest Restoration and Conservation (LAFREC)** (2015-2018) will restore and maintain degraded landscapes to enhance and diversify ecosystem services in Rwanda. This objective will be met through the following interventions: i) forest-friendly and climate-resilient restoration of Gishwati-Mukura landscape, with a focus on Gishwati forest and the corridor between the Gishwati and Mukura; ii) nation-wide multi-sectoral landscape restoration planning and institutional development; and ii) research, monitoring and management. During the PPG phase, several meetings were held with the project management team to discuss project activities and intervention sites. The proposed project will capitalise on LAFREC's agroforestry, forest restoration and animal husbandry activities. In particular, Activity 3.2.2 of the proposed project includes capturing the lessons learned from LAFREC's on-the-ground interventions. Furthermore, lessons learned from LAFREC on local community training and resilient livelihoods will be used to inform activities for Output 1.4 and Output 3.4 of the proposed project, respectively.

146. LAFREC will also support the research and knowledge management activities of the proposed project. LAFREC will undertake activities for impact monitoring which include mapping ecosystem degradation in Rwanda. The proposed project will build on this LAFREC activity by mapping priority ecosystems for EbA interventions considering: i) the vulnerability of the ecosystem; ii) the vulnerability of local communities; iii) the current and expected effects of climate change in the area; and iv) the potential for EbA to increase resilience to climate change (Activity 1.3.6). Furthermore, the LAFREC activities – directed at generating scientific knowledge on restoration and producing technical guidelines for restoration – will support Output 1.3 and Output 1.5 of the proposed project respectively. To promote this

lesson sharing, the proposed project management team will work closely with and coordinate with LAFREC management team.

147. **FONERWA project – Rehabilitation of Cyohoha Lake (RCL)** (2014-2016) is focussed on improving water resources management in the Lake Cyohoha north watershed through the development of Integrated Water Resource Management and conservation activities. Four main outputs are expected from this project: i) removing water hyacinth from 100 Ha of lake surface and its zone of influence; ii) protecting the lake and its directly affiliated wetlands through the restoration of a 50 meters buffer around the lake; iii) strengthening the capacities of community and local authorities to maintain the achieved results; and iv) promoting and facilitating productive and market-linked off-farm livelihoods including fishing in Lake Cyohoha north. These activities will be implemented using a community-based approach. The proposed project will complement these activities by restoring the Murago wetland considered as an extension of the Lake Cyohoha north. The RCL project will provide lessons learned on wetland restoration and water hyacinth management that will help to design successful activities under the proposed project. Additionally, several activities of the proposed project will increase the sustainability of the RCL project activities including: i) the development of sustainable livelihoods; ii) training on the management of water hyacinth; iii) awareness raising on the role of the wetland; iii) training on wetland restoration techniques; and iv) promoting the use of organic pesticides and fertilizers.

148. **African Model Forest Network (AMFN)** is a member of the International Model Forest Network. It encompasses eight model forests in Cameroon, Democratic Republic of Congo, Rwanda and Central African Republic. The AMFN supports the creation of a model forest in Gishwati. The objective of this initiative is to reduce the sedimentation problem in Karago Lake. The implementation of AMFN activities follow a participatory approach and include: i) the promotion of local management and leadership for adaptation to climate change; ii) the restoration of riverbanks; and iii) the development of agroforestry species. Team members from the AMFN and the proposed project have engaged during the PPG phase and agreed to collaborate through continuous information sharing throughout the implementation phase of the proposed project.

149. **UNEP LDCF project: Catalysing ecosystem restoration for climate resilient natural capital and rural livelihoods in degraded forests and rangelands of Nepal (2015-2019)**: this project will share lessons learned on i.a. EbA implementation and its integration into policies and plans.

150. **UNEP SCCF Enhancing capacity, knowledge and technology support to build climate resilience of vulnerable developing countries (2013-2017):** the project will link to the EbA platform developed under this project in order to increase learning through the South-South Cooperation

SECTION 3: INTERVENTION STRATEGY (ALTERNATIVE)

3.1. Project rationale and policy conformity

Project rationale

151. The proposed project will increase the resilience of rural communities in Rwanda to both the observed and anticipated effects of climate change (see Section 2.1 for more detailed information on climate change predictions). In particular, the proposed project will: i) strengthen the technical capacity of local and national institutions to plan and implement EbA interventions; ii) restore degraded ecosystems using an EbA approach; and iii) promote climate-resilient livelihoods based on the restored ecosystems.

152. There are a number of barriers to the success of the proposed project in meeting its objective. The components of the project are designed to address these barriers. The interventions proposed in each component are detailed in Section 3.3.

153. The restoration of degraded wetlands, savannas and forests using an EbA approach will have multiple social and economic benefits for local communities. The effects of the ecosystem restoration will include: i) decreased sedimentation in wetlands; ii) increased quantity and quality of water supply; iii) reduced desertification in savannas; iv) mitigation of the effect of floods and landslides; v) decreased erosion; vi) provision of marketable NTFPs; and vii) provision of fodder for livestock. These effects will consequently benefit multiple sectors. For example, agricultural productivity will increase because of improved water supply and the mitigation of climate-induced natural hazards such as floods.

154. The proposed project will generate sustainable benefits after the implementation period. For example, the lessons learned during the project will be collated, synthesised and disseminated (Activity 1.3.5). As a result, the national capacity to plan, implement and upscale EbA to other areas across Rwanda will be increased. Since the pilot interventions are located within the main ecosystems of Rwanda, there will be many opportunities for upscaling the activities.

Policy conformity

155. The proposed project is aligned with GEF Focal Area/LDCF/SCCF strategies. This conformity is taken into account in the design of the project's components. Therefore, the components complement and build on the achievements of the existing UNDP-UNEP LDCF project currently being implemented in Rwanda. Particularly, the following "Focal Area Objectives" are addressed in the proposed project:

- *CCA-1, Outcome 1.2: Reduced vulnerability to climate change in development sectors* – EbA interventions within Component 3 will: i) contribute to increasing water availability through improving the stability of water catchment and reducing erosion; and ii) improve the resilience of agriculture to droughts and floods. Providing training on climate-resilient agricultural techniques such as agroforestry will also increase food security (see Section 3.3 Components 1 and 3).
- *CCA-1, Outcome 1.3: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas* – The project will promote alternative livelihoods for rural communities (see Section 3.3 Component 3).
- *CCA-2, Outcome 2.2: Strengthened adaptive capacity to reduce risks to climate-induced economic losses* – The project will provide guidelines and training on the use of EbA techniques and other adaptation techniques such as the use of organic compost for fertilisation and biogas as a source of energy. These climate-resilient techniques will increase soil stability, reduce erosion, increase infiltration and increase agriculture productivity (see Section 3.3 Components 1 and 2).

- *CCA-3, Outcome 3.2: Enhanced enabling environment to support adaptation-related technology transfer* – The project will pilot EbA interventions in targeted ecosystems. To promote the sustainability and upscaling of the adaptation interventions, the project will communicate the lessons learned, promote academic research on interventions, and train local and national authorities to develop and implement EbA programmes (see Section 3.3 Component 1, 2 and 3).

156. The proposed project is aligned with Rwanda's policies and strategies on development and environmental management. These are communicated in the following documents, *inter alia*: i) Vision 2020; ii) Second National Communication (SNC) to the UNFCCC (2010); iii) Environmental and Climate Change Sub-Sector Strategic Plan 2013/14–2017/18; iv) the National Strategy for Community Development and Local Economic Development (2013–2018); v) the EDPRS (2007); vi) the Green Growth and Climate Resilience: National Strategy on Climate Change and Low Carbon Development (2011); vii) the National Decentralisation Policy (2012); viii) Water Resources Management Sub-sector Strategy (2011 - 2015); and ix) WACDEP.

LDCF conformity

157. This project conforms to the LDCF's eligibility criteria, namely: i) undertaking a country-driven, participatory approach; ii) implementing the NAPA priorities; iii) supporting a learning-by-doing approach; iv) undertaking a multi-disciplinary approach; v) promoting gender equality; and vi) undertaking a complementary approach.

158. Participatory approach: From 6-14 June 2011, four Rwandan government and five non-government institutions were consulted for the development of the Project Identification Form (PIF). The PIF was then presented at a stakeholder consultation workshop before it was finalised. The feedback received on the PIF was incorporated into this project document. In addition, during the PPG phase, activities to be undertaken by the project were selected through numerous stakeholder consultations such as the inception meeting, the validation meeting, field visits and email exchanges (Appendix 19). The design of the project interventions also builds on the lessons learned in the LDCF 1 project (see Section 2.7). During the PPG phase, stakeholder collaboration was sought from academics, non-governmental organisations (NGOs), and local and national government.

159. Implementing NAPA Priorities: As a priority, the proposed project supports the implementation of the NAPAs, which are country-driven strategies that identify the urgent and immediate needs of LDCs to adapt to climate change. The project is therefore in line with priority activities outlined in Rwanda's NAPA submitted to the UNFCCC in 2006. The proposed project addresses the following NAPA priorities:

- *Priority 1: Integrated water resources management* – The project will promote this priority by: i) implementing EbA interventions in wetlands, forests and savannas that will increase water quality and quantity; and ii) implementing water management techniques (e.g. terraces, mulching, stone rows).
- *Priority 3: Promotion of income-generating activities* – The project will promote climate-resilient income-generating activities through Outcome 3. Specifically, the project will promote alternative livelihoods for rural communities that include, *inter alia*: i) bee-keeping; ii) fish farming; iii) handcrafting; iv) NTFPs; and iv) community-based ecotourism.
- *Priority 4: Promotion of intensive agriculture and animal husbandry* – The project will promote this priority by promoting climate-resilient agricultural practices.
- *Priority 5: Introduction of varieties resistant to changing environmental conditions* – The project will support this priority through selecting species for restoration activities according to their resilience to current and expected climate conditions.

160. Learning-by-doing approach: The proposed project will pilot innovative techniques to build local communities' resilience to climate change. The lessons learned in this pilot phase will be documented and disseminated to inform national and sub-national development plans in Rwanda. The approach will also provide future projects with all the lessons learned from the project interventions. Furthermore, the project is designed to complement other on-going and planned projects and programmes without duplicating them (see Section 2.7).

161. Multi-disciplinary approach: The interventions of the proposed project require expertise from multiple sectors including water, agriculture and disaster risk management. Consequently, the development of appropriate interventions in demonstration sites will be undertaken under the guidance of technical expertise from all of these sectors. In addition, interventions include ecosystem restoration, agricultural methods, capacity strengthening and community awareness.

162. Gender equity: In least developed countries, women tend to have lower incomes and fewer opportunities than men do, and their capacity to adapt to the effects of climate change is therefore constrained[64]. Despite their capability to innovate and lead, women have historically been marginalised from local and national decision-making processes. The Rwandan government is focused on developing female leaders. In 2010, female representation in Rwanda's decision-making structures was 30%, with a goal of raising this percentage to 40% by 2020. It is therefore important to identify gender-sensitive strategies to ensure that gender equity is included in measures designed to improve their resilience and capacity to adapt to climate change[65].

163. The proposed project therefore identifies gender mainstreaming as a priority, and will increase both men and women's: i) access to water; ii) food security; iii) access to climate-resilient livelihoods; and iv) resilience to climate-related natural hazards such as floods and landslides through ecosystem restoration.

164. Targets for gender equity will be fully integrated into each of the proposed project's activities by ensuring 50% male and 50% female representation at training workshops, demonstration activities and management committees. Each training and awareness-raising session will be held only if at least 45% of the participants are women. Additionally, the same number of men and women will benefit from the training and materials for the development of climate-resilient livelihoods as part of Component 3. Access to climate-resilient livelihoods will be given to both male- and female-headed households. The number of households headed by women in Sanza, for example, is 189, representing 21.7% of the households.

165. Training on general topics will be delivered with gender sensitivity to ensure that: i) both male and female participants are empowered to participate meaningfully in the trainings; and ii) all participants are made aware of their responsibility to respect the views of all of their colleagues during training sessions. Trainers will be required to have the skills and experience necessary to plan and facilitate gender-sensitive training.

166. The equal participation of men and women is in line with the principles underlying UNDP's gender equality strategy as well as the GEF's own guidance and standards (Mainstreaming Gender at the GEF, 2008). Gender disaggregated indicators will be developed and used to monitor project progress. The Project Management Unit (PMU) will be responsible for monitoring and reviewing gender sensitivity in the training activities and the application of gender-disaggregated indicators. In addition to gender, the project will

[64] Lambrou, Y., & Piana, G. (2006). *Gender: the missing component of the response to climate change*. Food and Agriculture Organisation, Gender and Population Division.
[65] Denton, F. (2002). Climate change vulnerability, impacts, and adaptation: Why does gender matter? *Gender & Development*, *10*(2), 10–20. doi:10.1080/13552070215903

promote the requirements of other disadvantaged and more vulnerable groups including the elderly, children and the differently abled.

167. Complementary approach: All work undertaken by the proposed project will be in collaboration with all current adaptation projects in Rwanda. This includes relevant projects operating in the environmental and forestry sectors, namely: i) LDCF 1 project; ii) Poverty and Environment Initiative; iii) Lake Victoria Environment Project; iv) Landscape Approach to Forest Restoration and Conservation project; and v) Decentralisation and Environment Management Project (see Section 2.7 for more detail).

Overall GEF conformity

168. The proposed project meets overall GEF requirements in terms of implementation and design.

- Sustainability: Staff training and capacity strengthening within national and local institutions are priorities of the proposed project. In addition, local communities including women, children and students will also be trained to develop capacity. Strengthened capacity at all levels will promote sustainability.
- Replicability: The proposed project will systematically document the activities, decisions, strategies, results, lessons learned and guidelines for the design and implementation of future projects. This documentation will enable the development of a robust planning framework in conjunction with stakeholder participation.
- Monitoring and Evaluation (M&E): The project design includes an M&E framework. This framework will be used to measure the indicators of the proposed design. Lessons learned will be documented and disseminated.
- Stakeholder Involvement: The project design was developed through extensive stakeholder consultation. The stakeholders' involvement in the project will be clearly defined and signed off by each stakeholder group during the initial phases of project implementation.

3.2. Project goal and objective

The overarching goal of the proposed project is to increase the capacity for adaptation to climate change in Rwanda. The objective of the project is to increase the capacity of Rwandan authorities and local communities to adapt to climate change by implementing EbA interventions in wetlands, forests and savannas[66]. The project will focus on vulnerable communities living adjacent to these ecosystems.

3.3. Project components and expected results

Component 1: National and local institutional capacity development for the use of an EbA approach.

Adaptation Alternative

169. This component will strengthen the institutional and technical capacity of national and local institutions and participating local communities to plan and implement EbA in Rwanda. To achieve this, Component 1 will: i) increase the technical capacity of the members of the National Steering Committee (NSC) for the Rio conventions to develop large-scale EbA programmes; ii) increase the technical capacity of environmental committees, local authorities, relevant private sector actors and user groups on EbA planning and implementation; iii) update and increase the availability of technical knowledge on EbA best-practices and complementary green technologies; iv) increase awareness and knowledge of

[66] For more information on the process through which the proposed project will meet its objective, please see the Theory of Change in Appendix 18.

local communities, and school and university students on EbA and climate change; and v) increase the scientific knowledge base on EbA through the support of research projects.

170. Various groups of people will be trained in EbA techniques to develop national and local capacity to plan and implement EbA. Firstly, the proposed project will support the GoR to establish a NSC to apply the following Rio Conventions: CBD, UNFCCC and UNCCD. Secondly, the project will train the members of the NSC on EbA techniques to increase the resilience of local communities to climate change. The increased technical capacity of the NSC will promote the funding and implementation of large-scale EbA interventions.

171. Training sessions at the local level will primarily be directed at: i) DEOs[67] and DEFs; ii) environmental committees[68]; and iii) private sector actors, NGOs and CBOs. These training activities will be implemented in the districts selected by the project, which include Bugesera, Ngororero, Gasabo and Kayonza[69]. As a result, the proposed project's interventions will increase the technical capacity of the participants to prioritise, conceptualise, plan and implement EbA. In particular the training sessions will focus on the following technical aspects of EbA: i) selection of plant species that are resilient to droughts (i.e. Eastern Province) or floods (Western Province and Kigali City); ii) selection of plant species that have stabilising effects on soil; and iii) planning of restoration activities to increase resilience of local communities to climate change in the ecosystems relevant to each district.

172. Technical guidelines produced by the project on the use of indigenous species in restoration activities will be used to prepare the training sessions. Additionally, technical guidelines will be produced for the application of green technologies that promote the sustainability of the restoration activities (e.g. biogas) and promote the use of climate resilient techniques in agriculture (e.g. organic composting and water conservation techniques). Lastly, developing a map of priority ecosystems will facilitate the prioritisation of EbA interventions nationally.

173. Component 1 includes a campaign to raise public awareness. This campaign will target the local communities living near the project intervention sites to increase local awareness of the benefits of EbA and promote local ownership of the project's activities. The awareness-raising campaign will also target university and school students to increase the knowledge and awareness of youth groups on the benefits of restored ecosystems for increasing climate resilience. The increased public awareness of the predicted effects of climate change and the benefits of EbA will support the national upscaling of project activities and increase human capacity to plan and implement EbA at a national level.

174. This component will increase the knowledge base on the planning and implementation of EbA and will include a focus on the generation of scientifically credible information through the implementation of research projects. Therefore, short-term thematic research projects will be funded to investigate the impact of the interventions on the local communities and the environment. The results of these research projects will inform the selection of appropriate techniques for EbA interventions in Rwanda. Potential topics to be investigated include: i) the economic and social costs, and benefits of using exotic species versus native species in EbA interventions; ii) the efficiency of promoting the use of biogas to sustain ecosystem restoration activities; iii) the efficiency of the new livelihoods in reducing pressure on natural ecosystems; and iv) the economic and social costs, and benefits of

[67] The training of the DEOs will build on the training provided as part of the LDCF 1 project.
[68] Environmental committees exist at the provincial, district, sectoral and cell level to promote environmental protection. The function of these committees differs at each level and is determined by the Prime Ministerial Order No126/03 of 25/10/2010 Determining the Organization, Functioning and Responsibilities of Committees in Charge of the Environment Conservation and Protection.
[69] The Republic of Rwanda is divided into provinces, districts, sectors, cells and villages.

using chemical fertilisers or compost in croplands to stabilise agricultural yields under climate change. All knowledge generated and updated in Component 1 will be shared on the climate change portal and on a research forum.

Outcome 1: National and local authorities have increased capacity to plan and implement EbA interventions.

Output 1.1 A National Steering Committee (NSC) mobilised as a platform to promote large-scale EbA programmes in Rwanda.

175. During the last steering committee meetings of the UNFCCC, CBD and UNCCD in Rwanda it was decided to establish one NSC for these conventions. Establishing the NSC is expected to reduce costs and increase the synergy of interventions under the Rio Conventions in Rwanda. The Terms of Reference (ToRs) have consequently been developed to define: i) the role and responsibility of the NSC; ii) the institutional arrangement and composition of the NSC; and iii) the role and responsibility of the different members of the NSC including ten ministries (e.g. MINIRENA, MIDIMAR, MINISANTE), other national institutions (e.g. RAB, RRA, RCAA), and NGOs (e.g. ARCOS, WCS, ACNR). However, the NSC meetings have not yet been initiated. Consequently, activities of the proposed project include establishing the NSC and organising the first two meetings of NSC. As the Rio conventions address interdependent problems, overlapping and duplication of interventions under these conventions is likely. EbA is a suitable intervention for all three of these conventions because it addresses climate change, biodiversity and desertification. Therefore, the NSC will serve as a platform to promote large-scale EbA interventions in Rwanda. To catalyse this, NSC members will be trained on: i) using EbA to increase the resilience of local communities to climate change; and ii) planning large-scale EbA interventions including project selection and funding. The pilot activities implemented by the project under Component 3 will be included as case studies in the training content.

Activities under Output 1.1 include:

1.1.1 Establish the NSC using the ToRs developed by REMA to define the institutional framework and role of the members of the steering committee.
1.1.2 Provide training to the NSC members on the role of EbA in increasing the resilience of local communities to climate change and on planning large-scale EbA projects.
1.1.3 Hold the first two NSC meetings and promote EbA during the meetings (e.g. workshop sessions on the upscaling of EbA).

Output 1.2. Training events organized for local authorities, environmental committees and other target groups – with an emphasis on women and youth – to plan, budget and implement EbA interventions.

176. Recently, Rwanda implemented a number of national strategies, policies and plans for ecosystem restoration. For example, the Environmental and Climate Change Sub-Sector Strategic Plan (2013/2014-2017/2018) and the Water Resource Management Sub-Sector Strategic Plan (2011-2015) both include ecosystem restoration in their strategic outcomes. To promote the implementation of these strategies, policies and plans, local authorities need to be trained on the implementation of ecosystem restoration activities particularly under climate change. Therefore, the proposed project will train DEOs, DEFs and other environmental specialists such as district forest officers and agronomists. DEOs are in charge of overseeing environmental and natural resource problems in their district. DEFs are responsible for the integration of environment and climate change concerns into the DDPs. The training sessions will focus on the technicalities of EbA including planning, budgeting and implementing EbA activities. Wherever possible, all training activities in Output 1 will use a learning-by-doing approach.

177. Environmental committees were created at provincial, district, sector and cell levels in Rwanda. These committees are responsible for overseeing the implementation of strategies, policies and plans for environmental protection and management. Additionally, the committees are expected to report environmental problems occurring in their areas and propose solutions to national level institutions such as REMA. To maximise their impact and capitalise on their roles, committee members will be trained on the implementation of EbA using a community-based approach[70]. Private sector actors will undergo similar training. The private sector actors invited to these workshops will be companies hired by the GoR to implement adaptation activities such as building terraces or dams. After training, the selected companies will be able to use EbA principles to increase the climate resilience of their interventions. This will build on training activities that have been organised by REMA for the private sector on mainstreaming environmental and climate change concerns. Lastly, NGOs, agricultural cooperatives and local communities' representatives will be trained to implement EbA using a community-based approach.

178. National and international consultants will develop the contents of all training material. The selection of these consultants will be based on proven EbA experiences in wet and dry areas in sub-Saharan Africa. These consultants will include an agroforestry specialist, a socio-economist, a climate change specialist and an EbA expert. Additionally, REMA, RNRA and MINAGRI will contribute to devising the content and preparing training material. During the training sessions, emphasis will be on: i) the role of EbA; ii) EbA techniques to restore climate-resilient and beneficial ecosystems in Rwanda; iii) development of alternative livelihoods based on restored ecosystems; and iv) identification of cost-effective interventions.

Activities under Output 1.2 include:

1.2.1 Provide training to the DEO and DEF of each district as well as other environmental specialists where the project interventions will be implemented in planning, budgeting and implementing EbA interventions.
1.2.2 Provide training to environmental committees at provincial (three provinces), district (four districts), sector[71] (seven sectors) and cell (eight cells) levels on the use of EbA[72] interventions.
1.2.3 Raise awareness of the private sector – including private environmental service providers – on the use of EbA for adaptation to climate change and provide training on how to implement EbA.
1.2.4 Provide training to local communities' representatives – with an emphasis on women and youth, NGOs and CBOs[73] – on the use of EbA.

<u>Output 1.3 Technical EbA guidelines developed and distributed to environmental committees and local authorities.</u>

[70] Within this approach, community members are included in both the planning and implementation of EbA, and complementary interventions. Community members will be extensively engaged with – in a gender-sensitive manner – to determine the protocols and species selection for EbA interventions and any complementary interventions. Community members will also contribute to implementation by providing waged labour. Finally, extensive training on EbA and administration will be provided through a learning-by-doing approach so that the local community will take collective responsibility for the continued management of the restored ecosystem following the end of the project. Any costs incurred or benefits accrued from EbA and complementary interventions will be shared among the local community members according to a structure predetermined and agreed upon by the community in a gender-sensitive process.
[71] Rwanda is divided into provinces, districts, sectors, cells and villages. This division is referred to as "sector" hereafter. When referring to economic sectors such as water, transport and energy they will be designated as "economic sectors".
[72] The environmental committees have already been created at all three levels. The objective of this activity is to increase their capacity to implement EbA activities.
[73] In this document, CBOs designate cooperatives and associations.

179. This output will start with conducting EIAs for the required activities. Environment Assessments included in Rwandan law are: i) Strategic Environmental Assessments (SEAs); ii) Environmental Security Assessment (ESAs); and iii) Environmental Impact Assessment (EIAs). SEAs and ESAs apply to Policies, Plans/Strategies and Programmes[74]. They do not apply to the proposed project. However, EIAs applies to projects. According to the Ministerial Order N°003/2008 of 15/08/2008, an EIA is "a systematic way of identifying environmental, social and economic impacts of a project before a decision of its acceptance is made". The Ministerial Order N°004/2008 of 15/08/2008 establishes the list of works, activities and projects that have to undertake an EIA. Within this list, the following activities likely apply to the proposed project: i) "construction of public dams for water conservation, rain water harvesting for agricultural activities and artificial lakes"; and ii) "water distribution activities and sanitation". Consequently, the water harvesting and conservation activities will be assessed.

180. Considering the wide use of exotic species in restoration activities and the decreasing knowledge availability on native species, Activity 1.3.2 under this output will focus on promoting the use of the climate-resilient indigenous species for restoration and agroforestry activities. Firstly, climate-resilient indigenous species for the restoration and agroforestry interventions of the project will be identified. Secondly, lessons learned from past and present restoration projects in Rwanda will be reviewed to develop planting protocols. Indigenous knowledge on the climate resilience, use, planting and maintenance of native species will also inform the planting protocols. Thirdly, the corresponding guidelines on best practices for restoration and agroforestry with climate-resilient indigenous species will be produced and distributed to the relevant government authorities.

181. The proposed project will introduce climate-resilient technologies that recycle or increase the efficiency of use of natural resources such as organic waste in the intervention sites. It is anticipated that climate change will have negative effects on agricultural productivity in Rwanda, including: i) decreased soil fertility as a result of increased soil erosion; and ii) decreased soil water infiltration and retention as a result of desertification and soil degradation. The use of organic waste in agriculture is consequently considered a "critical" adaptation strategy in Rwanda[75] because these practices promote food security under changing climatic conditions. For example, the use of compost to fertilise croplands will increase both soil fertility and water retention. The project will also introduce biogas digesters to households to demonstrate the potential of biogas as an alternative source of energy to woodfuel. This will increase the sustainability of the ecosystem restoration activities in Outcomes 3.1, 3.2 and 3.3. Consequently, green technologies additional to water management techniques will contribute to climate change adaptation through: i) increasing climate-resilience of agriculture practices; and ii) promoting the sustainability of ecosystem restoration interventions (e.g. reduced demand for woodfuel). To support the introduction of the above-mentioned green technologies, the project will undertake a review of current use of organic waste and biogas technologies in Rwanda (including the experience from the PEI project) and neighbouring countries. The results of this review will be used to develop guidelines to support farmers to adopt these green technologies. Training on the use of the guidelines will be provided to participating farmers through the existing system of FFSs[76].

182. This component will increase the availability of knowledge and information on EbA by establishing an online portal to disseminate information, best practices and case studies on

[74] REMA, 2011. General Guidelines and Procedures for Strategic Environmental Assessment (SEA), Kigali, June 2011. 48 pp.
[75] Republic of Rwanda. 2011. Green Growth and Climate Resilience – National Strategy for Climate Change and Low Carbon, Kigali, October 2011. 83 pp.
[76] The principle is to train six or seven selected farmers out of a group of 60 farmers. The selected farmers become facilitators. Therefore, in exchange for the training they receive, they have the responsibility to train the other farmers of their group. This approach will be used to maximise the number of people reached by the project. http://www.btcctb.org/en/news/innovative-and-successful-farmer-field-schools-experiences-rwanda

EbA. This online portal for EbA information will be hosted on the existing portal for climate change adaptation created by REMA. The online EbA portal will include information such as the achieved, current and planned activities for ongoing adaptation projects, as well as location maps of these projects' intervention sites. The portal's webpage will include information on lessons learned, successes and failures for each project, and the use of best practices. In addition to increasing the availability of EbA and climate change information through the online portal, the project will develop a national map of ecosystems, which should be prioritised for the implementation of EbA in collaboration with LAFREC. A priority index will be developed which will rank ecosystems according to their need for restoration interventions. This index will be based on the criteria used to select the intervention sites of the proposed project (see Appendix 8) after review with the relevant stakeholders. The information used to create the map will include: i) the latest published environmental reports, such as national reports published by REMA and MIDIMAR and international reports published by the Food and Agricultural Organisation (FAO); ii) field experience of the management teams of all relevant environment projects; and iii) field experience at the district, sector and cell level of the ecosystems preselected as potential priorities. The map of priority ecosystems and the priority index will support the site selection process for future EbA projects. Furthermore, the information generated by the online portal and map will increase synergies and reduce duplication of efforts between ongoing and future projects, thereby increasing the benefits of future projects to the local communities.

Activities under Output 1.3 include:

1.3.1 Undertake Environment Impact Assessments (EIAs) for each of the proposed project activities that require an EIA as defined by the Ministerial Order N°004/2008 of 15/08/2008.

1.3.2 Develop and distribute/promote guidelines for climate-resilient restoration activities and agroforestry. Sub-activities include:

- identify suitable climate-resilient indigenous species for restoration and agroforestry in Rwanda;
- review past and current restoration activities which use indigenous species including the protocols to restore ecosystems and develop agroforestry used in Rwanda as well as indigenous knowledge on climate resilience, use, planting, maintenance of indigenous species;
- produce guidelines for planting and maintaining beneficial indigenous plant species for wetland, savanna and forest restoration as well as for agroforestry development;
- provide training to trainers from FFSs on the benefits of planting climate-resilient indigenous species, and on the use of the guidelines; and
- disseminate the guidelines to the management team of partners and baseline projects, and to the relevant government authorities within MINIRENA and MINAGRI.

1.3.3 Develop and distribute guidelines for the use of organic waste compost in small and large agricultural plots. Sub-activities include:

- review the current use of organic composts system and composting practices in place in Bugesera, Ngororero, Gasabo and Kayonza;
- produce guidelines to enable the farmers to develop and use organic compost using experience learned from other sites in Rwanda and neighbouring countries;
- provide training to trainers from farmer field schools on the benefits of using organic compost to increase agricultural productivity and resilience to drought, and on the use of the guidelines; and
- disseminate the guidelines to relevant local government authorities including environmental committees at different geographic scales (i.e. provinces, districts, sectors and cells) [77].

[77] Republic of Rwanda. 2011. Green Growth and Climate Resilience – National Strategy for Climate Change and Low Carbon, Kigali, October 2011. Programme 1, Action 2.

1.3.4 Develop and distribute guidelines for the use of biogas as a source of energy in villages. The same sub-activities as Activities 1.3.3 will be implemented to promote the use of biogas as a source of energy.
1.3.5 Review project documents, progress reports, lessons learned and other relevant documents on adaptation projects being implemented in the country to collate the best adaptation practices and promote them on the climate change adaptation portal[78].
1.3.6 Compile GIS data, aerial images, maps and local reports on the state of ecosystems to create a national map of priority ecosystems where EbA interventions can be implemented.

Output 1.4 Educational resources on EbA developed for communities living near project sites and school and university students.

183. Output 1.4 will design and implement a campaign to raise the awareness of local communities on EbA and the role of natural ecosystems in climate change adaptation. The lessons learned during the execution of activities in Output 1.3, the scientific knowledge generated in Output 1.5 and the lessons learned under the implementation of Component 3 will be integrated into the awareness campaign. The lessons and knowledge will be used to increase awareness of local communities –adjacent to the four project intervention sites – on the role of natural ecosystems in building resilience to climate change. The awareness campaign will focus on the benefits of restored wetlands, forests and savannas in particular. The benefits of using indigenous species for restoration activities will also be highlighted by the awareness campaign. The campaign will include one-day long events at a minimum of 12 villages located near to the proposed project's intervention sites[79]. These events will present the benefits of restored ecosystems in enhancing climate resilience of local communities and best practices for EbA interventions specific to the ecosystem adjacent to each village.

184. The awareness-raising campaign will prioritise the use of the vernacular *Kinyarwanda*[80] for communication. Such an approach will promote inclusivity by communicating information to both the literate and illiterate. This will require the service of a national education specialist who will work closely with the technical staff of REMA. To promote inclusivity further, all inhabitants of the village with a particular focus on women and youth will receive written and verbal invitations to the workshops. Additionally, NGOs, agriculture cooperatives, environment committees, community representatives and school environmental clubs in each village will be invited to attend the events. The content of the awareness-raising activities will be site specific. For example: i) the type of climate change effects affecting local communities will determine which type of EbA activity to raise awareness on; and ii) livelihood and priority needs of local communities will determine the type of native species and restoration techniques to promote.

185. Activities 1.4.2 - 1.4.8 will increase the awareness of school and university students on the benefits of EbA. Firstly, entry points to integrate EbA into curricula will be identified from primary school level through to technical college and university levels. The integration of EbA into the Technical and Vocational Education and Training (TVET) programmes will also be investigated. Secondly, an education programme on EbA will be developed for MINEDUC[81]. This will detail the information for dissemination to the students according to

[78] The climate change portal has already been created. A webpage is currently being developed on the portal for the LDCF 1 project. The LDCF 2 project will extend the role of this website through compiling the information of the LDCF 2 as well as the other adaptation projects at the national scale.
[79] Public awareness campaigns will be organised in ~3 villages in each intervention district. This may vary depending on the size of the population in each district.
[80] This is the most spoken language in Rwanda.
[81] The integration of sustainable development and climate change into school curricula is part of the Environment and Climate Change Sub-Sector Strategic Plan for the period 2013–2018.

their level of education. For example, the knowledge generated in Outputs 1.3 and 1.5 will be used to develop a university/technical college module on “Climate Change, Communities and Ecosystem Restoration”. It will: i) encourage young scientists to further study ecosystem restoration using EbA; ii) promote long-term awareness of local community of the benefits of EbA by targeting young adults and thereby promote the sustainability of EbA interventions; and iii) build technical capacity of young scientists to plan and undertake EbA interventions. This module will be submitted to the Higher Education Council (HEC). Thirdly, the proposed project will train teachers, educators and trainers living in villages near to the project’s intervention sites. They will be trained on: i) the benefits of EbA and complementary green technologies; ii) techniques for EbA interventions and methods for complementary green technologies; and iii) teaching these benefits and techniques to students.

186. The proposed project will promote the development of three pilot school-based EbA projects, one per type of ecosystem. These small-scale restoration projects will be implemented by the school students. Field visits will be organised for teachers, educators, trainers, students and scholars to the nearest project intervention sites to provide practical examples of: i) the benefits of EbA for local communities; ii) the techniques to implement EbA and complementary green technologies; and iii) restoration projects for the development of school-based EbA projects. Furthermore, a performance index will be developed for school environmental clubs[82] to create incentives for scholars to implement climate change adaptation activities such as the pilot school-based EbA projects. The performance index will be developed with REMA and school teachers. It will be based on several criteria including originality and efficiency of the adaptation method. Additionally, an award system will be developed through consultations with the scholars and teachers in the project intervention sites for the school environmental club of the year.

Activities under Output 1.4 include:

1.4.1 Design and implement a public awareness-raising campaign for the communities living near the project intervention sites on EbA with a particular focus on the role of wetlands, forests and savannas as well as on the importance of conserving indigenous tree species.
1.4.2 Review and propose revisions to school curricula at primary and secondary levels to include adaption to climate change using EbA.
1.4.3 Review university and technical college curricula to identify entry points for the establishment of programmes on adaptation to climate change using EbA and propose a detailed education programme on EbA using the lessons learned from Output 1.5 and Component 3.
1.4.4 Develop guidelines on the implementation of the proposed revisions and education programmes on EbA produced in Activities 1.4.2 and 1.4.3, and present the proposed revisions and the guidelines to MINEDUC, universities and schools.
1.4.5 Provide training to school teachers and other educators located in the intervention sites on how to integrate EbA into school curricula according to the revisions produced in 1.4.2.
1.4.6 Develop a school-based EbA project per intervention site using a participatory approach with school students.
1.4.7 Develop a performance index and an award system for school environmental clubs to incentivise them to implement EbA school pilot projects.
1.4.8 Conduct field trips for school students to the project intervention sites to demonstrate the effects of EbA and green technologies to promote the EbA school-based pilot projects.

[82] These clubs have been created to raise environmental awareness of the students and their families. School environmental clubs organise cultural events by the students, and develop and implement environment initiatives.

Output 1.5 Scientific studies prepared and forum for dissemination of knowledge on EbA effects created.

187. The proposed project will fund short-term research projects and promote the funding of long-term research projects on EbA within Rwanda's academic institutions. These research projects will help determine i) the appropriate techniques for EbA interventions in Rwanda; and ii) the costs and benefits of different EbA approaches. The information obtained from this research will be used to inform and adjust EbA protocols in Rwanda but also in other LDCs with similar environmental conditions. This approach of adaptive management informed by research projects is required because EbA is a relatively new strategy for managing climate change. Protocols for implementing EbA will therefore inevitably change considerably over decades as new knowledge is generated. The proposed project will assist in embedding this "adaptive management approach informed by research projects" into an appropriate institutional structure within Rwanda. This adaptive management approach will start with updating the guidelines and training material produced under Outputs 1.1 to 1.4 as well as the best adaptation practices promoted on the climate change portal (Activity 1.3.5) according to: i) the results obtained through the on-going scientific studies (Output 1.5); and ii) lessons learned from the implementation of the restoration activities of the proposed project (Output 3.1 to 3.3) and other on-going projects.

188. The research projects will address the knowledge gap identified during the PPG phase and at the start of the implementation phase. For example, there is a gap in knowledge on the benefits of using indigenous species compared with using exotic species for restoration interventions in Rwanda. Currently, the majority of tree planting activities in Rwanda use exotic species such as *Pinus* spp., *Eucalyptus* spp. and *Leucaena* spp. rather than indigenous species such as "Umusave" (*Bignoniaceae* spp.) and the Nile Tulip (*Markhamia lituea*). The benefits of indigenous plants are acknowledged by national authorities such as MINIRENA. These benefits include, *inter alia*: i) the provision of medicinal products; ii) greater biodiversity that enhances pest control and pollination; and iii) reduced water requirements. Despite this, exotic species are preferred mainly because of their faster growth rates when compared with indigenous species. Therefore, suggested research topics for the research projects are: i) an assessment of the effects of the exotic species that are most commonly planted in Rwanda for ecosystem restoration – such as *Pinus* spp. and *Eucalyptus* spp. – on local communities' resilience to climate change including soil stabilisation, biodiversity and livelihood options; ii) a comparison of the effect of exotic species, indigenous species and a combination of indigenous and exotic species for increasing the resilience of local communities to climate change; and iii) a cost-benefit analysis for restoration with exotic species, indigenous species and a combination of exotic and indigenous in ecosystem restoration activities. The results of these projects will be useful to several national projects such as PAREF and RSSP 3 as they will contribute to best practices for ecosystem restoration. Furthermore, the projects' findings will enrich the training documents and education programmes produced in Outputs 1.3 and 1.4 respectively.

189. The research conducted on the proposed project activities will consist of short-term thematic projects. These research projects will be conducted by technical staff working within Rwanda Education Board (REB), World Agroforestry Centre (ICRAF) or NUR. This is a similar system to that adopted by the LAFREC project, The proposed project will fund the field trips, data collection and analysis, communication and publication of peer-reviewed papers. The selected technical staff will be responsible for involving Master and PhD students in the research activities as much as possible. The selection process for the technical staff that will undertake the research projects will be developed with the REB, RAB, ICRAF, MINEDUC and the National University of Rwanda (NUR), as they are experienced in

implementing research projects in Rwanda[83]. These institutions will also be consulted – along with REMA and external experts on EbA – to develop the topics of the research projects. These topics will be based on: i) a review of best practices for ecosystem restoration and EbA techniques in Rwanda to identify the gaps in best-practice knowledge; and ii) consultation with stakeholders to identify specific information needs in terms of restoration and EbA. The results of the research projects will be: i) presented on the webpage on the proposed project created in Activity 1.3.5; ii) presented to the project management team of the baseline projects, partner projects and other relevant governmental staff; and iii) integrated into the education programmes developed in Outputs 1.3 and 1.4 using an adaptive approach. Additionally, a research forum will be created to facilitate the sharing of the evidence base for EbA. A data storage system will also be created to promote the collecting, analysing and archiving of data for the evidence-base of EbA beyond the life span of the project. New knowledge emerging from the data analysis will be used to inform future EbA protocols in Rwanda. An awareness-raising session will be organised with students from relevant Masters programmes to raise awareness on: i) the potential of EbA intervention to improve the livelihood of local communities under a changing climate; and ii) the gaps in scientific knowledge for the mainstreaming of EbA. This will encourage students to conduct research projects on EbA that will initiate the long-term generation of scientific knowledge on EbA in Rwanda.

Activities under Output 1.5 include:

1.5.1 Identify the gaps in knowledge on EbA in Rwanda and develop the research topics accordingly.
1.5.2 Develop Memorandums of Understanding (MoUs) between REMA and the research partners – including NUR, ICRAF and/or REB. These MOUs will contain: i) a detailed description of the responsibility of each institution in the implementation of the research projects; ii) the timeframe for the implementation of the research projects; and iii) a system to monitor the performance of the research projects.
1.5.3 Publish scientific papers based on research results[84].
1.5.4 Present the results of research projects to the management teams of the baseline projects, partner projects and other relevant governmental staff (e.g. SPIU, FONERWA, policy-makers), and add them into the project webpage (generated in Activity 1.3.5).
1.5.5 Create a research forum and data storage system on EbA in Rwanda to increase the dissemination of the evidence base on the effects of EbA on the resilience of local communities to climate change.
1.5.6 Encourage young scientists to pursue research on EbA by organising an awareness-raising session for masters students on the role of EbA in increasing climate resilience of local communities and the need for scientific evidence of this.
1.5.7 Revise the training/education content produced in Outputs 1.3 and 1.4 based on the findings of the research projects using an adaptive management approach.

Component 2: Policies, strategies and plans for adaptation to climate change.

Adaptation Alternative

190. The proposed project focuses primarily on restoring ecosystems to increase the resilience of local communities to climate change. This will be achieved by integrating EbA into Rwanda's policy, strategy and plans. These revisions will be proposed at national and local levels.

[83] The selection of research fellows will be gender sensitive. In particular, half of the selected researchers will be women.
[84] The papers will be produced by the research staff. These will be part of their research contract.

191. At the national level, the technical capacity of planning experts in the relevant government agencies to integrate EbA into national ecosystem management and development policies and strategies will be increased. This will promote the integration of EbA national ecosystem management and development policies in Rwanda. To further the promotion of EbA, the interventions of the proposed project will include developing an upscaling strategy for the best EbA activities implemented in the pilot sites of the project.

192. Under Output 2.3, policy recommendations to integrate EbA into environmental policy and strategies and plans will be developed and training on the use of these policy recommendation documents will be provided. Three groups will be targeted by these training sessions including: i) the members of the five Sector Working Groups (SWGs) of MINIRENA; ii) the experts of the planning and technical departments of the relevant government authorities; and iii) the national EIA, Environment Audits (EA) and Strategic Environment Assessment (SEA) experts. These policy recommendations and training sessions will: i) increase the technical capacity of the three groups to determine in which context to propose EbA as an intervention; ii) increase the success of development plans and projects through complementing hard interventions with soft interventions such as EbA; and iii) promote the use of best EbA practices in various ecosystems.

193. At the district level, policy recommendations will be produced to help district authorities to integrate the following into DDPs: i) adaptation to climate change using an EbA approach; and ii) green technologies that promote the sustainable use of natural resources. Additionally, to promote the success and sustainability of EbA interventions, guidelines will be produced for district authorities to monitor and prevent future ecosystem degradation. Training on the implementation of recommended interventions in these guidelines will then be provided to district level officers in at least the four districts where the activities of the proposed project will be implemented (i.e. Bugesera, Ngororero, Gasabo and Kayonza). Revisions to the yearly award system for the best-performing district, NGO, CBO and individual working in the private sector will be proposed to promote the implementation of EbA interventions.

Outcome 2: Sectoral and local policies, strategies and plans strengthened to promote the restoration and management of degraded ecosystems for EbA.

Output 2.1 Revisions to national ecosystem management and development policies and strategies to promote EbA proposed and submitted for government validation.

194. National ecosystem management and development policies and strategies were published in 2012–2013. These include: i) the biodiversity policy; ii) the forestry policy; and iii) the water resources master plan. To promote the use of EbA to reduce vulnerability to climate change at the national scale, the proposed project's interventions will consequently include the review of the corresponding documents to identify how EbA can be integrated into these policies and strategies. Revisions to the selected policies will then be proposed to direct this integration. A workshop will be held to present these proposed policy revisions to the planning experts of MINIRENA and MINAGRI.

Activities under Output 2.1 include:

2.1.1 Identify the entry points for EbA in the environment, biodiversity and forestry policies as well as in the water resources master plan.
2.1.2 Propose revisions to selected national policies to integrate EbA into these documents.
2.1.3 Produce policy briefs on the proposed revisions to national policies and disseminate them to planning experts, policy- and decision-makers, and other relevant stakeholders.

2.1.4 Hold a workshop to present these policy briefs and proposed revisions to national policies to the relevant planning experts.

Output 2.2 A national upscaling strategy developed to promote EbA.

195. To extend the benefits of the proposed project beyond its intervention sites and the timeframe of the project, an upscaling strategy will be developed during the last stages of the project's interventions. Firstly, the success of the project's activities in improving local communities' livelihoods and resilience to climate change will be measured to select the most successful interventions. Secondly, suitable sites for the replication of the selected activities will be identified. Thirdly, the information on the project successes and further suitable sites will be communicated to the national authorities and local authorities in the potential replication sites. The relevant documents developed under Output 1.3, 1.5 and Component 3 as well as lessons learned from the project will be provided to the relevant authority including MINIRENA and MINAGRI. Fourthly, opportunities to fund the replication of the project's activities will be researched. This will be done in collaboration with FONERWA. This research will be extended to identify opportunities to further pursue the scientific research projects funded by the proposed project and fund additional projects. Lastly, a detailed framework for the implementation and maintenance of this upscaling strategy will be developed. This framework will detail the role of each actor involved in the upscaling strategy to facilitate its execution by REMA. This upscaling strategy will include providing training to local authorities in the identified replication sites on the selected adaptation techniques.

Activities under Output 2.2 include:

2.2.1 Identify and select successful project activities to be replicated and the suitable sites for the replication of these activities.
2.2.2 Communicate the information on the suitable replication sites to the appropriate national and local authorities.
2.2.3 Identify opportunities to fund: i) the replication and upscaling of successful project activities; ii) long-term research projects on EbA including the maintenance of the research forum and data storage systems; and iii) the school-based EbA projects.
2.2.4 Develop an upscaling strategy framework defining the role of the various government authorities in the upscaling process in collaboration with relevant stakeholders including MINIRENA (e.g. FONERWA staff), MINAGRI, MININFRA, MINECOFIN and MIDIMAR.

Output 2.3 Policy-makers and decision-makers trained to integrate and promote upscaling of EbA interventions.

196. SWGs have been created to implement EDPRS. Currently, the GoR is implementing EDPRS 2 (2013–2018). The main objectives of the SWGs are to: i) provide a forum for dialogue, ownership and accountability of the development agenda by all stakeholders at sector level; and ii) build synergies in policy formulation and implementation, and promote regular reviews of policy. The specific duties of the SWGs include: i) developing and updating the Sector Strategic Plan; ii) coordinating the activities within the sector and ensuring alignment to achieve sector outcomes; and iii) developing Sector Wide Approaches (SWAps). SWGs bring together central and local government institutions, development partners, civil society and the private sector involved in the sector or with an interest in the sector's development. The five SWGs of MINIRENA are environment and climate change, land use, water resources, forestry and ecosystem conservation, and mining. The proposed project's interventions will include the development of policy recommendations for the integration of EbA into these cross-sectoral development plans. Additionally, training will be provided to the members of the SWGs of MINIRENA to: i) use these policy

recommendations; ii) design EbA interventions; iii) determine the budget for EbA interventions; and iv) implement EbA interventions. Consequently, EbA will be integrated into the working forums.

197. To further increase national capacity to integrate EbA into development planning, training on the use of EbA will be extended to the other experts of the planning and technical department of MINIRENA. Additionally, planning and technical experts of other relevant ministries including MINECOFIN, MINEDUC, MININFRA and MINICOM will be trained on the use of EbA. The training content will be similar to that of Activity 2.3.2.

198. Under this output, policy recommendations will be produced to promote the implementation of EbA interventions within future projects of the relevant sectors. These policy recommendations will be developed for the SEA, EIA and EA expert companies to promote EbA in the process of reviewing strategies, policies and plans. This activity will be conducted in collaboration with REMA, RAB and RAD and the main SEA, EIA and EA expert companies in Rwanda. It will increase the potential for policies, strategies, plans and projects to contribute towards the increased resilience of local communities to climate change. EIA and SEA checklists for economic sectors are under development. An example of an activity that could be promoted by the EIA expert when reviewing a project proposal in the transport sector is the creation of a buffer along hard infrastructures with climate-resilient tree species that provide benefits to the local community, such as provision of NTFPs and erosion control.

199. Activity 2.3.6 will provide training to the authorised national SEA, EIA and EA experts. The participants will be identified according to the list of experts for 2013–2014 produced by the GoR. The training sessions will include: i) the principles of EbA; and ii) the use of the proposed revisions to the checklists for SEAs, EIAs and EAs.

Activities under Output 2.3 include:

2.3.1 Develop policy recommendations for the integration of EbA principles into the national development plans including EDPRS for the following SWGs of MINIRENA: environment and climate change, land use, water resource management, forestry and ecosystem conservation, and mining.
2.3.2 Provide training on EbA role, budgeting, planning, implementation, and on the use of the policy recommendations produced in Activity 2.3.1.
2.3.3 Develop policy recommendations to mainstream EbA into development plans of relevant economic sectors including budgeting, planning and implementing EbA for planning department experts and technical department experts of MINIRENA including REMA and RNRA, MINECOFIN, MINEDUC, MININFRA and MINICOM.
2.3.4 Provide training on EbA role, budgeting, planning, implementation, and on the use of the policy recommendations produced in Activity 2.3.3.
2.3.5 Develop policy recommendations for mainstreaming EbA into national assessment tools including Strategic Environment Assessments (SEAs), Environment Impact Assessments (EIAs) and Environment Audits (EAs) for the different sectors.
2.3.6 Provide training to national EIA, EA and SEA experts, DEFs and DEOs, and other relevant technical staff in the environmental sector on the use of the policy recommendations developed in Activity 2.3.5 to promote EbA when reviewing sectoral projects.

Output 2.4 District Development Plans (DDPs) of pilot sites revised to promote the use of EbA.

200. To facilitate the implementation of EbA interventions at the local scale, EbA will be integrated into the DDPs for the intervention districts of the proposed project. To do this, the

development process and implementation protocols of DDPs will be reviewed to identify the entry points for EbA. Based on the findings of this review, policy recommendations will be developed to assist Rwandan district authorities in the integration of EbA throughout the DDP's development and implementation process. To develop these policy recommendations, district authorities and community representatives in the four project intervention sites will be consulted. The four policy recommendation documents produced will be specific to each district. The policy recommendations will then be standardised for national application. As a result of this standardisation, the project will produce guidelines for integrating EbA into DDPs for all areas affected by a major climate change effect in Rwanda including: i) drought-prone areas; ii) flood-prone areas; and iii) landslide-prone areas.

201. District officers in the four intervention districts will be trained on both the policy recommendations for integrating EbA into DDPs as well as on EbA implementation itself. In addition, to incentivise the district authorities to implement EbA, revisions of the monitoring and evaluation programme for the attribution of the Best Environmental Performance Award – implemented by REMA in 2012 – will be produced to include the implementation of EbA. This award is attributed to the best performing districts, NGOs, CBOs and individuals working in the private sector. The proposed revisions will promote the use of EbA as well as climate-resilient green technologies by including a measurement of the district's performance with respect to: i) the restoration of natural ecosystems using an EbA approach; ii) the use of best practices in agriculture such as those promoted in Output 1.3; and iii) the diversification of livelihoods for climate resilience and the sustainable use of natural resources[85]. This revision of the performance index will be developed through consultations with REMA and the district authorities in the five project intervention districts.

202. The activities of Output 2.1 will increase the capacity of district and sector authorities in Bugesera, Ngororero, Gasabo and Kayonza, to monitor and protect natural ecosystems. The proposed project – in collaboration with district and sector authorities of the intervention sites – will identify the shortcomings and successes in the implementation of environmental management policies and plans. To determine these shortcomings and successes, the following will be monitored: i) the extent to which woodfuel harvesting or mining activities have encroached on protected forests or other protected ecosystems of the district; and ii) the extent to which local communities have settled into areas vulnerable to flooding, such as wetlands[86]. Based on this monitoring, a review of the implementation process[87] will take place in districts where shortcomings and successes are identified. The results of this review will be used to produce guidelines on: i) incentivising local communities to protect ecosystems; and ii) monitoring the condition of the natural ecosystems.

Activities under Output 2.4 include:

2.4.1 Identify entry points for EbA into the DDPs and develop DDP revisions specific to each intervention district to support the integration of EbA and other relevant adaptation techniques into local-level planning.
2.4.2 Develop and monitor the indicators for degradation of natural ecosystems such as forests and wetlands at district and sector levels.
2.4.3 Review implementation processes of environmental policies, strategies and plans at district level to identify shortcomings.
2.4.4 Develop technical guidelines at the district and sector levels to incentivise ecosystem protection and monitor the condition of natural ecosystems.

[85] The valuation of natural ecosystems through the development of livelihoods based on natural resources such as NTFPs, will be included into the performance index.
[86] A national strategic plan for wetland conservation forms part of LVEMP.'s activities.
[87] Implementation process here means the steps from the publication of the new policy, strategy or legislation, its application at the local scale to the long-term monitoring of the compliance to the new document.

2.4.5 Provide training to district- and sector-level officers in Bugesera, Ngororero, Gasabo and Kayonza on the use of the proposed DDP revisions and guidelines developed in Activity 2.4.1 and 2.4.4.
2.4.6 Review the yearly award system for the best-performing district, NGO, CBO and individual working in the private sector to promote the implementation of EbA interventions.

Component 3: EbA interventions that reduce vulnerability and restore natural capital.

Adaptation Alternative

203. The proposed project's interventions in Component 3 will: i) restore wetlands, forests and savannas to be climate resilient and provide additional benefits to local communities; and ii) diversify local communities' livelihoods to increase their resilience to climate change. These interventions are designed to collectively increase the resilience of local communities to prolonged drought, frequent floods and landslides.

204. The EbA interventions for wetland ecosystems will take place in three pilot sites in Rwanda, with a particular focus on the Kimicanga and Murago wetlands, and banks of the Satinsyi River (see Appendix 8B). These EbA interventions will have multiple benefits for the local communities. For example, planting trees adjacent to wetlands and on the banks of rivers/lakes will reduce the impact of flooding on local communities in low-lying areas by slowing water flow. Additionally planting on the banks of rivers/lakes will reduce siltation in water sources. The interventions will contribute to: i) improved water quality; ii) reduced costs of dam maintenance; and iii) increased potential for the production of hydroelectric power. River bank restoration will be complemented by the construction of terraces. These terraces will reduce erosion and the resulting sedimentation of the river. The use of agroforestry, biogas, organic compost and rainwater harvesting will also be promoted to increase the sustainability of the EbA interventions.

205. EbA interventions particular to forest ecosystems will be implemented in the indigenous forest of Sanza in Ngororero district. Indigenous tree species will be used for these interventions. With the development of agroforestry, this forest planting will be complemented by planting indigenous tree species in the agricultural land adjacent to Sanza. To increase the sustainability of the EbA interventions, the proposed project will reduce the dependence of local communities on timber products for their livelihood. To achieve this, sustainable harvesting of NTFPs will be introduced as an alternative livelihood option. The continued provision of NTFPs will increase the incentive for local communities to protect indigenous forests.

206. EbA interventions for savanna ecosystems will be focused in the Eastern Province of Rwanda. These restoration activities will take place in Isangano savanna (Kayonza district). To complement this savanna restoration activities, techniques for rainwater harvesting will be promoted to decrease the vulnerability of local communities to droughts. Water shortage because of drought periods is the main problem for local communities in Kayonza. Consequently, the proposed project's activities in savanna areas will include: i) restoring natural savannas; ii) promoting the development of agroforestry in adjacent agricultural land; iii) promoting water harvesting and conservation techniques; and iv) promoting the use of biogas as an alternative source of energy to woodfuel. The activities implemented in savanna ecosystems will build on the RSSP 3 and LWH interventions.

The practice of agroforestry will be promoted in agricultural land located within each of the proposed project intervention sites. This will be promoted through: i) raising farmers' awareness on the benefits of planting indigenous species on their land to increase agricultural productivity; ii) providing agroforestry trees for planting in and around agricultural

land; and iii) training the farmers on planting and maintaining these trees using a learning-by-doing approach. The benefits of agroforestry will be presented to farmers, and are as follows: i) reduction of crop vulnerability to landslides; ii) soil enrichment through nitrogen fixing and retaining of sediment; iii) reduction of crop exposure to intense rainfall; iv) delimitation of their land; v) provision of shade; vi) provision of natural pesticides; and vii) provision of NTFPs such as fodder, fruits and medicine.Woodfuel is the primary source of energy for local communities living close to all but one of the of the project intervention sites[88]. As a result, the restored ecosystems are at risk of being degraded by tree cutting for woodfuel. The proposed project will consequently promote the use of biogas in the communities living near the intervention sites.. Given the water-intensiveness of biogas production water availability will be a major criteria in the selection of the villages where biogas will be implemented. A biogas digester will be provided in the selected villages. Additionally, community members in the selected villages will be trained on the use of biogas digesters with cow-dung and human wastes. They will also be trained to reuse waste from the biogas digester as fertiliser. This intervention will be based on the biogas model developed in Rubaya, the pilot village of the PEI project. In the intervention sites where biogas is not a suitable technique, improved cook stoves will be provided to reduce household fuel consumption. As a further benefit, improved cook stoves will reduce smoke emissions and thus respiratory diseases. Promoting the use of biogas and improved cook stoves will reduce the demand on woodfuel. Consequently, the sustainability of the project's interventions will be increased. Additionally, the project will develop climate-resilient livelihoods that promote reliance on the restored ecosystem and the sustainable use of natural resources. In so doing, an incentive will be provided for local communities to maintain the restored ecosystem. Lastly, the proposed project will promote private sector financing of community-based EbA projects.

207. The above-mentioned EbA interventions will be community-based, and community participation will be promoted as follows. Consultation with local communities will commence to develop the restoration protocols, particularly the selection of the plant species. The local communities will then implement the activities. Environmental committees at the cell level will oversee the restoration activities on a day-to-day basis. The environmental committees will report the progress of the activities and any potential problems met during their implementation to the project focal point and the project management team.

208. All the training activities in Component 3 will be developed in collaboration with FFSs. This collaboration will include: i) involving the FFSs in the development of the training sessions; ii) inviting the FFSs to assist in the training sessions in the intervention sites; and iii) sharing successes and failures of the proposed project's activities with the FFSs. Collaborating with the FFSs will facilitate the upscaling of the project activities to other sites in Rwanda.

209. Vulnerability Impact Assessments (VIAs) will be conducted as the first activity of each output of Component 3. The VIAs conducted as part of the baseline study of the AAP and LDCF 1 project will be built on to develop a vulnerability index for the intervention sites of the proposed project[89]. These VIAs will be used to identify the most vulnerable communities within the selected interventions sites.

Outcome 3: EbA implemented by local communities to restore degraded ecosystems in forest, wetland and savanna ecosystems and establish climate-resilient livelihoods.

[88] except Kimicanga where electricity is provided.
[89] Gbetiboua and Mills, 2012. Baseline information and indicators for the Rwanda AAP and LDCF projects. C4 EcoSolutions. Mars 2012. 143 p.

Output 3.1 EbA implemented to restore wetland ecosystems in Kimicanga to increase resilience of local communities to floods and droughts.

210. In the Province of Kigali City, the GoR assessed the vulnerability of settlements in Kigali city and the adjacent areas. The results of this assessment indicated that several settlements were located in areas that are very vulnerable to floods and landslides (e.g. Gatsata and Kimicanga). Consequently, the GoR has relocated these settlements. In most of the sites where settlements were removed, restoration interventions have yet to be implemented. Therefore, the proposed project's interventions will include the restoration of Kimicanga wetland. These restoration interventions will increase the resilience of the local communities to floods. In particular, it will reduce the flooding events in three neighbouring schools identified by stakeholders as vulnerable to floods.

211. The first activity of Output 3.1 will be to develop the wetland restoration protocols. The practical tools[90] for wetland restoration produced by REMA in 2010 will be used to guide the development of technical protocols. Regarding species, the protocols will reflect the prioritisation of climate-resilient species for restoration activities. Such species will include: i) riparian species that are resilient to periodic droughts (e.g. *Salix gooddingii*); ii) hydrophilic plants that are adapted to anaerobic conditions (e.g. *Aeschynomene indica*); and iii) stream bank species resilient to water logging (e.g. *Cocos nucifera*). Riparian species that produce fodder offer additional benefits for local communities and will be prioritised for wetland restoration. These species include *Pennisetum purpureum, Tamarindus indicus* and *Vernonia amygdalina*. The communities living adjacent to the restoration areas will be engaged with to develop these protocols[91]. Community preferences for species will be prioritised. The information generated through Outputs 1.2 and 1.5, as well as lessons learned from the implementation of restoration activities of this project and other environment projects, will be used to continuously improve the restoration protocols used under the proposed project following an adaptive management approach. By developing these protocols, wetland restoration will improve water quality, assist in regulating flow regime, decrease erosion and provide alternative livelihoods.

212. The proposed project's interventions will include the construction of nurseries to support restoration activities. Nursery management systems will be established through local community engagement. Additionally, local community members will be trained on wetland restoration by taking part in planting activities. In addition to the planting activities, the project will contribute to the management of an invasive species, namely water hyacinth (*Eichhornia crassipes)*. This species has multiple negative effects on wetlands including the reduction of: i) water flow; ii) water quality; and iii) biodiversity. Consequently, local communities adjacent to Murago wetland – and the other wetland restoration sites of the project where water hyacinth is found – will be trained to identify and efficiently remove water hyacinth in 10 ha of invaded wetland. The proposed project will research the viability of using removed water hyacinth for handcrafting, fodder and as an input for organic fertiliser.

213. To maintain the health of the restored wetland ecosystems, campaigns to raise public awareness will be organised in the agricultural lands adjacent to the restoration sites. This will include both awareness-raising activities and training sessions that will focus on: i) the different effects of chemical and organic pesticides on wetlands; and ii) the different effects of organic compost and fertilisers on wetlands. Additional direct training will be provided to the farmers neighbouring the wetland restoration sites. This will complement the training sessions on the use of organic compost organised through FFSs in Activity 1.3.3.

[90] REMA, 2010. Practical tools on restoration and conservation of protected wetlands. Tools and guidelines 3. Kigali, Rwanda. 66 p.

[91] In Murago, the protocols to build the nurseries and prepare the restoration sites will include protection measures against hippopotamuses that are known to cause damage to croplands in this area.

214. Several complementary activities to the wetland restoration will be implemented. Firstly, radical terraces will be built on the hillsides of Satinsyi to reduce erosion that causes sedimentation and pollution in the river. Secondly, agroforestry will be promoted in the agricultural land adjacent to the restoration sites. Agroforestry has previously been promoted in Satinsyi with seedlings having been distributed through the Vision Umurenge Programme. However, the use of agroforestry techniques remains very limited and erosion remains the primary threat to the productivity of the agricultural land. Similarly, in Murago, the use of agroforestry techniques is limited[92]. Thirdly, the use of biogas and/or improved cook stoves will be promoted in the villages adjacent to Murago and Satinsyi. Lastly, organic composting techniques will be developed in the wetland restoration areas to increase agriculture productivity and decrease wetland pollution[93]. The guidelines produced within Activity 1.3.3 will be used when introducing organic composting techniques. Local farmers will be trained on the construction, maintenance and use of these systems.

215. The district of Bugesera is vulnerable to both floods and droughts. During drought periods, water shortage is a primary threat to the livelihoods of local communities adjacent to Murago wetland in Bugesera. Restoring this wetland will increase water retention in the wetland. This will contribute to mitigate floodwaters during intense rainfall events and increase water availability in the long term during drought periods. The restoration interventions in this wetland will be complemented by the provision of water tanks to the local community to harvest rainwater. Currently, only five households have water tanks in Bugesera. Additionally, the local community will be trained on traditional, non-labour intensive techniques to harvest rainwater such as contour earthen bunds.

Activities under Output 3.1 include:

3.1.1 Identify the communities that are the most vulnerable to climate change within the project intervention sites in wetland areas through undertaking VIAs.
3.1.2 Identify plant species for wetland restoration under conditions of climate change and develop technical protocols for restoring degraded wetlands with indigenous species using the knowledge generated in Output 1.3 and Output 1.5.
3.1.3 Establish nurseries for wetland restoration and agroforestry, and develop nursery management systems within local communities.
3.1.4 Provide training to local communities in wetland restoration activities and develop monitoring systems for these restoration interventions within local communities.
3.1.5 Restore 50 hectares of wetland in Kimicanga (Kimihurura and Kacyiru sectors, Gasabo district).
3.1.6 Restore at least 10 km of riverbank (i.e. 5 km per riverbank) along the Satinsyi River[94] (Ngororero district) to decrease sedimentation and decrease the vulnerability of the local communities downstream to flooding and sedimentation.
3.1.7 Restore at least 100 hectares of wetland ecosystem in Murago marshland (Mareba Sector, Bugesera District) to decrease the vulnerability of the local communities to floods and droughts.
3.1.8 Construct 100 hectares of progressive terraces and promote the development of agroforestry using indigenous species (using the information produced in Activity 1.3.2) on these terraces adjacent to the wetland restoration sites in Murago by providing trees from nurseries (established in Activity 3.1.3) and raising awareness of the benefits of indigenous species.
3.1.9 Provide water tanks and training on rainwater harvesting techniques including the construction of contour earthen bunds and bio-retention systems in Murago wetlands.

[92] In Murago and Satinsyi, the main crops are cassava, banana, maize and beans. In Satinsyi, local communities also cultivate rice.
[93] Currently, Diammonium Phosphate and Urea are the most commonly used fertilisers.
[94] During consultations with the stakeholders at the PPG phase, it was suggested several times to use bamboo to restore river banks. Additionally, the use of bamboo is included into the ECCSSP 2013–2018.

3.1.10 Provide training to local communities on identifying, managing, removing and using alien invasive plants including water hyacinth in the wetland restoration areas.
3.1.11 Design and implement a public awareness campaign in the areas adjacent to the wetland restoration sites focusing on the benefits of using organic instead of – or balanced with – chemical pesticides and fertilisers in wetlands.
3.1.12 Establish pilot sites and provide training on the use of biogas in the areas around the wetland restoration sites (using the information collected and guidelines produced in Activity 1.3.4) or provide improved cook stoves (e.g. ceramic cook stoves) – where biogas systems cannot be implemented – to reduce reliance on woodfuel.
3.1.13 Establish pilot sites and provide training on the use of organic compost as fertiliser for agriculture in the agricultural land around the wetland restoration sites (using the information collected and guidelines produced in Activity 1.3.4).

Output 3.2 EbA implemented to restore forest ecosystems in Sanza to increase resilience of local communities to floods and landslides.

216. The EbA interventions include forest restoration with climate-resilient tree species to increase local communities' resilience to intense rainfall events and landslides. Forest restoration with climate-resilient species will: i) increase soil stability; ii) decrease sedimentation in watersheds downstream; iii) increase water infiltration; and iv) increase the diversity of local communities' livelihoods. These interventions will take place in and around Sanza, one of the few natural minor remnant forests in Rwanda (see Appendices 8B and 22). At least 20 hectares of this degraded forest will be restored. Agroforestry using indigenous trees will be introduced in 200 hectares of adjacent agricultural land. Furthermore, forest restoration in Sanza will complement the restoration activities planned by LAFREC in Gishwati natural forest and the corridor between Gishwati and Mukura natural forests.

217. To promote ecosystems that offer multiple benefits, tree species for forest restoration will be selected through Activity 3.2.2, according to the following characteristics: i) climate-resilience; ii) provision of ecosystem services; and iii) production of beneficial NTFPs including fodder. For example, potential species to be planted for forest restoration include *Polyscias fluva* and *Markhamia lutea.* In addition to being fast growing, these species offer multiple benefits including: i) stabilisation of soils; ii) provision of habitats for bees; and iii) provision of medicinal products. Furthermore, *Bridelia micrantha* is a potential species to be used as it: i) limits erosion; ii) improves soil quality; and iii) provides fruits, fodder and medicinal products. The local communities adjacent to the restoration areas will be engaged in the selection process of plant species that provide preferred NTFPs for forest restoration and agroforestry. Technical planting protocols for forest restoration will also be designed through Activity 3.2.2. This will be done in collaboration with the management teams of LAFREC and the African Model Forest Network[95] (RAFM)[96]. Following the development of restoration protocols, nurseries will be constructed within local communities. Management structures for the nurseries will also be established based on the participatory forest management approach[97]. Using the established protocols, Activity 3.2.5 is to plant identified tree species in degraded areas within Sanza. This will be adjacent to the intact indigenous areas of Sanza.

[95] The RAFM develops model forests in Cameroon, Central African Republic, DRC and Rwanda. The principles of these model forests are: i) collaboration between all stakeholders; ii) landscape diversity; iii) management sustainability; iv) ownership by local communities; and v) increased capacity.
[96] Both teams have participated in the inception workshop.
[97] In a participatory forest management system, the local communities (i.e. forest users and managers) and government authorities work together to define rights of forest resource use, identify and develop forest management responsibilities, and agree on how forest benefits will be shared. The roles for sustainable forest management are distributed between local community members. (FARM-Africa & SOS Sahel Ethiopia, 2007. The key steps in establishing participatory forest management. Addis Ababa, Ethiopia. 29 p.)

218. Activity 3.2.6 will promote the use of agroforestry around Sanza. Currently, the primary crops cultivated include Irish potatoes, tea and some fruits such as tree tomatoes and passion fruits. Agroforestry techniques are used in an *ad hoc* manner in Sanza. Some *Calliandra* spp., *Alnus* spp. and *Grevillea* spp. are planted on agricultural land. To promote the use of the best agroforestry techniques in Sanza, the proposed project will work closely with LAFREC that is implementing similar activities in Gishwati natural forest. Farmers in agricultural land adjacent to Sanza are vulnerable to intense rains that damage the crops and cause soil erosion thereby reducing agricultural productivity. Therefore, the development of agroforestry will be promoted on radical terraces. As part of the interventions, training will be provided to maintain terraces and maximise agriculture productivity on terraces.

219. There is a great demand for woodfuel in Sanza. In the communities adjacent to Sanza, the proposed project will promote biogas in these local communities. This will reduce the anthropogenic pressure on the forest and promote the sustainability of the restoration activities. Reduced demand for woodfuel in these villages will also increase the potential for national projects such as PAREF to introduce indigenous species in their restoration activities.

Activities under Output 3.2 include:

3.2.1 Identify the communities that are the most vulnerable to climate change within the project intervention sites in forest areas through undertaking VIAs.
3.2.2 Identify plant species for forest restoration and agroforestry under conditions of climate change and develop technical protocols for restoring degraded forests with indigenous species and implementing agroforestry using the knowledge generated in Output 1.3 and 1.5.
3.2.3 Establish nurseries for forest restoration and agroforestry, and develop nursery management systems within local communities.
3.2.4 Provide training to local communities in forest restoration activities particularly in planting and maintaining indigenous species, and develop monitoring systems for these restoration interventions within local communities.
3.2.5 Restore at least 20 hectares of degraded forest patches in Sanza using a participatory forest management approach.
3.2.6 Build radical terraces and promote the development of agroforestry on terraces on 200 hectares in Sanza area using indigenous species by providing trees from nurseries (established in Activity 3.2.3) and raising awareness on the benefits of indigenous species.
3.2.7 Establish pilot sites and provide training on the use of biogas around the forest restoration sites (using the information collected and guidelines produced in Activity 1.3.4) or provide improved cook stoves (e.g. ceramic cook stoves), where biogas system cannot be implemented, to reduce reliance on woodfuel[98,99].

<u>Output 3.3 EbA implemented to restore savanna ecosystems in Kayonza District to increase resilience of local communities to droughts.</u>

220. The activities of Output 3.3 will complement the activities of the RSSP 3 and LWH projects. These two projects have intervention sites in Kayonza[100] District. The proposed project will implement EbA interventions in Isangano savanna. For the purposes of savanna restoration and agroforestry, priority species to be planted will be indigenous and drought-

[98] Developing the use of biogas is one of the priority development activities of the country. (Priority Area 4, Thematic Outcome 4.3, Interventions 2 and 3 of Economic Development and Poverty Reduction Strategy 2013–2018 (EDPRS 2). 2013. International Monetary Fund. Washington, D.C.)
[99] In the vision 2020 published in 2000, one of the objectives is to reduce the percentage of household using wood as a source of energy from 94% in 2000 to 50% in 2020 (the estimation in 2010 was 86.3%).
[100] Two RSSP 3 project intervention sites and one LWH project intervention site.

resilient, and include: i) fodder species (e.g. *Ricinus spp.*); ii) erosion- and wind-protecting species (e.g. *Euphorbia tirucalli*); and iii) soil-binding species with deep roots (e.g. *Bridelia micrantha*) to access ground water. Additionally, local communities' preferences for species will be prioritised. The protocols and lessons learned from projects with similar activities such as LWH, PAREF and RSSP 3 will also be used to develop the restoration and agroforestry protocols for the proposed project. To facilitate savanna restoration and agroforestry, a community nursery will be established. Using a participatory approach, this nursery will be managed by local community members and local government.

221. Agroforestry will be developed in the proposed project intervention sites through: i) raising awareness of farmers on the benefits of planting indigenous species on their land to increase agricultural productivity; ii) providing tree species for agroforestry for terraces and other types of agricultural land; and iii) training the farmers in planting and maintaining these trees using a learning-by-doing approach. Additionally, intercropping techniques will be promoted. Terracing[101] and intercropping techniques will increase agricultural productivity and reduce farmers' vulnerability to climate change.

222. Activity 3.3.6 will increase agricultural productivity on 200 hectares if crop land through planting indigenous species that: i) increase the infiltration and retention of rainwater; ii) reduce the rate of soil erosion; and iii) increase the efficiency of irrigation. Additionally, climate-resilient trees will i) increase agricultural productivity through enhancing soil fertility[102]; ii) provide NTFPs; and iii) provide wind protection and shade.

223. The EbA and agroforestry interventions detailed above will be complemented by the introduction of rainwater harvesting techniques to further increase the local communities' resilience to drought. LWH has already provided water-harvesting tanks. Additionally, the African Adaptation Fund has provided water ponds. These activities will be built on by providing training on the implementation of simple water harvesting techniques. Lessons learned from several dry African countries such as Niger and Senegal will be used to select the best techniques. For example, these include stone rows, grass strip and contour earthen bunds to increase the availability of water for irrigation. Additionally, farmers will be trained on the use of techniques to limit evaporation, such as mulching.

224. Currently, there is no use of biogas in the area adjacent to Isangano restoration site. A single biogas digester is used in Ndego sector – at the health centre. One of the main causes of deforestation in the Eastern Province is the use of woodfuel. Increasing the use of biogas is necessary in Isangano to reduce pressure on existing and restored ecosystems. The proposed project will consequently promote this in Isangano.

225. Four schools are located adjacent to the Isangano restoration site[103]. Each school has an environmental club but these are not operational. Consequently, the proposed project intervention will include the revival of the four clubs by: i) reviewing the gap in the club organisation; ii) proposing appropriate changes to this framework; and iii) promoting the award system to create incentives to achieving adaptation projects.

Activities to be implemented under Output 3.3 include:

[101] Studies conducted in Gakenke District have shown a 20.8% increase in maize yields after the introduction of radical terracing as a result of increased soil nutrients. Bizimana, J. 2011. Economic Impact Analysis of Radical Terracing Project. Higher Institute of Agriculture and Animal Husbandry. Faculty of Agricultural Engineering and Environmental Sciences. Department of Soil and Water Management.

[102] Soil fertility will be increased by litter deposits and nitrogen-fixing.

[103] These four schools include: i) two primary schools (Ndega 1 and Amahoro); ii) one secondary school (Ndego 2); and iii) one twelve year Basic Education school.

3.3.1 Identify the communities that are the most vulnerable to climate change within the project intervention sites in savanna areas through undertaking VIAs.
3.3.2 Identify plant species for savanna restoration under conditions of climate change and develop technical protocols for restoring degraded savannas with indigenous species using the knowledge generated in Output 1.3 and Output 1.5.
3.3.3 Establish nurseries for savanna restoration and agroforestry, and develop nursery management systems within local communities.
3.3.4 Provide training to local communities in savanna restoration and agroforestry activities, and develop monitoring systems for these restoration interventions within the local communities.
3.3.5 Restore at least 300 hectares of degraded savannas with indigenous species in Isangano savanna (Ndego sector, Kayonza district) using a participatory, forest management approach.
3.3.6 Promote the development of agroforestry using indigenous species on 200 hectares around Isangano by providing trees from nurseries (established in Activity 3.3.3) and raising awareness on the benefits of indigenous species.
3.3.7 Provide material and training to local communities on rainwater harvesting techniques including contour earthen bunds, water tanks and boreholes.
3.3.8 Provide training to local communities on techniques to reduce evaporation from agricultural land.
3.3.9 Establish pilot sites and provide training on the use of biogas in the project intervention sites in Isangano (using the information collected and guidelines produced in Activity 1.3.4) or provide improved cook stoves (e.g. ceramic cook stoves), where biogas system cannot be implemented, to reduce reliance on woodfuel.
3.3.10 Review the framework of the environmental clubs of the four schools neighbouring the savanna restoration site, and develop and implement a system to make them operational.

Output 3.4 Training events, equipment and technical support for the establishment of climate-resilient livelihoods in wetlands, forests and savannas to enhance local communities' resilience to the effects of climate change.

226. Output 3.4 will enhance the climate resilience of the livelihoods of local communities. The interventions of the proposed project will: i) promote alternative livelihoods that are climate resilient; ii) increase the climate resilience of existing livelihoods; and iii) promote alternative income streams for local communities. These interventions will promote the sustainability of the interventions of Output 3.1, 3.2 and 3.3.

227. Activity 3.4.1 is to develop the payment system for the labour that will be hired to implement the activities of Outputs 3.1, 3.2 and 3.3. The payment system implemented by the PEI project will be used as an example for this. The PEI payment system uses bank accounts of local community members that are opened within a Saving Cooperative (SACO). The system includes a mechanism to save a proportion of the salary of the local community member. This payment system will be presented to local community members at the intervention sites. Local community members will be engaged with to determine if the system is favoured or not. If not, an alternative payment system will be developed in collaboration with community members.

228. The proposed project will introduce a number of alternative livelihoods that complement the restoration activities of Outputs 3.1, 3.2 and 3.3. The first of these livelihoods is beekeeping, which will be introduced into the forest and savanna restoration sites. There are currently two apiculture cooperatives in Rutsiro, which neighbours Ngororero, namely: Kangano and Kagieyo. Comparable apiculture interventions will be implemented in Isangano savanna. In this area, beekeeping is already practiced at

Rwakibare Lake. Similarly, in the area of Murago wetland, one household practices beekeeping. In Satyinski intervention sites, there is one beekeeper cooperative in Gashubi named Cotidu. The proposed project will capitalise on and support these cooperatives by: i) planting tree species that attract bees in the restoration activities; ii) providing hives; and iii) training villagers on honey collection and production. Apiculture protocols – including the choice of material – will be developed using lessons learned from other beekeeping initiatives in Rwanda. For example, beekeeping is being developed by MINIRENA in Nyabihu district and by the Kirehe community-based Watershed Management Project (KWAMP) in Kirehe. In addition, apiculture interventions will include the construction of a honey collection center[104] and awareness-raising of farmers adjacent to the beekeeping sites on the negative effects of pesticides on bees.

229. The second livelihood that will be developed in Rwanda is fishing. This will capitalise on the improved ecosystem services of the restored wetlands. This activity will be implemented in at least two intervention sites: Murago and Isangano. In Murago, there is a fishing cooperative named Insano. However, fishing is uncontrolled and unsustainable. In Isangano, fishing is the third main economic activity after agriculture and livestock. In both intervention sites, best fishing practices will be promoted and a management system will be developed to maintain the sustainability of this economic activity. The fishing industry will also provide incentives for the local communities to maintain a functioning wetland ecosystem and prevent the extension of cropping into the restored wetland and other wetlands. Fishing activities were developed by the RSSP 3 and LWH projects in the dams that these projects have built. Furthermore, DEMP is developing fish farming using floating cages in Lake Kivu. Lessons learned from these three projects will be used to develop the protocols to implement fishing activities in the wetland to be restored by the proposed project.

230. Activity 3.4.4 is to promote handcrafting using the NTFPs from forest and savanna restoration. Handcrafting interventions will take place in savanna restoration sites. This intervention will increase the economic value of the species planted through restoration and agroforestry development activities. Activity 3.4.4 will develop handcrafting with the largest markets in Rwanda, namely: basketry and mat weaving. These will be developed by: i) providing raw material through planting the appropriate tree species; and ii) training local communities – with an emphasis on women – in basketry and mat weaving with indigenous species. Examples of native species that can be used for handcrafting include *Cyperus papyrus*.

231. The final alternative livelihood to be developed is community-based ecotourism in the Gishwati-Sanza landscape. LAFREC includes an assessment of the potential for ecotourism in Gishwati. To complement this, the proposed project will undertake a similar assessment in Sanza. Considering the proximity of Sanza to large and attractive national parks such as Nyungwe and the limited occurrence of charismatic animal species such as primates, the potential for large-scale ecotourism in Sanza is limited. However, there is potential for day trips that focus on bird watching, guided nature walks (with a local guide) and other natural attractions to be organised for tourists staying near Lake Kivu. As part of the interventions of the proposed project, two ecotourism projects with significant potential will be identified. Proposals for these ecotourism projects will be written. Following this, a workshop for local community members will be organised and information presented on: i) the results of the assessment; ii) the proposals; and iii) the initial activities of each ecotourism project to catalyse implementation. To raise awareness beyond the workshop attendees, a public awareness campaign will also be designed and implemented to present the identified projects to the local community. Implementing and monitoring the eco-tourism projects will be the responsibility of the local government communities.

[104] Lessons learned by the LDCF 1 project will be used to design this intervention.

232. The private sector is recognised as a major actor for the implementation of the National Green Growth and Climate Resilience Strategy. The strategy has several adaptation programmes of action including: i) the sustainable intensification of agriculture; ii) agricultural diversity in local and export markets; iii) ecotourism, conservation and payments for ecosystem services; and iv) sustainable forestry. However, there are currently limited private sector investments in environmental projects in Rwanda. The proposed project will consequently research the business models that could be applied to fund adaptation projects in Rwanda. If commercially viable business models can be developed, they will enable the implementation of long-term EbA projects that are community-based. This research will be done in collaboration with the Albertine Rift Conservation Society (ARCOS) and Wildlife Conservation Society (WCS). These NGOs work on the development of Payment for Ecosystem Services model in Rwanda (e.g. in Gishwati-Mukura landscape). The activities implemented by ARCOS include investigating: i) the services provided by forest ecosystems[105]; ii) the beneficiaries and providers of these services; and iii) the potential buyers of these services[106]. An example of a model that will be studied is the Plan Vivo framework that was adopted in the neighbouring country of Uganda. The benefits of Plan Vivo projects for local communities in rural areas in Uganda include: i) increased food security; ii) increase capacity; and iii) increased income.

233. Knowledge sharing will also be promoted between communities who have adopted the same livelihoods in different areas. Workshops will consequently be organised for each of the climate-resilient livelihoods introduced/developed by the project. During these workshops, the community members of the project will share their experiences, knowledge, successes, failures and lessons learned. This activity will take place during the latter stages of the project implementation phase. It will enable local communities to further improve the resilience and productivity of their livelihood activities.

Activities under Output 3.4 include:

3.4.1 Design and implement the payment system for the community members hired for the restoration and building activities[107].
3.4.2 Provide local communities in Murago, Sanza and Isangano with equipment and training to practice apiculture. This activity will include providing (or facilitating the purchase of) the required equipment and infrastructures, as well as providing training on beekeeping and honey production.
3.4.3 Provide local communities at Murago and Isangano restoration sites with training and equipment to develop sustainable fishing activities.
3.4.4 Provide local communities adjacent to the Murago restoration site with training and equipment for handcrafting including weaving using NTFPs[108].
3.4.5 Design community-based ecotourism projects in suitable project intervention sites to increase the direct benefits of ecosystem restoration and preservation to local communities.
3.4.6 Undertake a feasibility assessment to identify appropriate models for private sector financing of community-based EbA projects.
3.4.7 Design two community-based EbA projects suitable to the models for private sector financing identified under Activity 3.4.6 and submit them for funding.

[105] Those services include water infiltration, carbon sequestration, NTFPs and sediment retention.
[106] Sanza natural forest in surrounded by tea factories. They are therefore potential buyers for ecosystem services.
[107] Following the example of the PEI project, this payment will be made on the bank account of the community member opened within a Saving Cooperative (SACO). The potential for setting aside a systematic proportion of the salary to create savings for the community member will be investigated.
[108] Seburanga. 2013. Decline of indigenous crop diversity in colonial and postcolonial Rwanda. International of Biodiversity. Vol. 2013.

3.4.8 Promote knowledge sharing between the targeted local communities on the climate-resilient livelihoods introduced through developing and implementing workshops for local communities who adopted the same climate-resilient livelihoods in different intervention sites of the proposed project.

3.4. Intervention logic and key assumptions

234. The interventions designed in the proposed project will: i) increase the technical and institutional capacity of local and national-level government to plan and implement EbA interventions for adaptation to climate change; ii) strengthen the policy and strategy framework to promote EbA interventions that are coordinated and sustained; and iii) increase the capacity of local communities to adapt to climate change.

235. Three mechanisms will be used to build the resilience of local communities to the effects of climate change. Firstly, the project will pilot restoration interventions in wetland, forest and savanna ecosystems. These interventions will promote the sustainable management of natural resources that are climate-resilient in these ecosystems. Secondly, the project will train communities on complementary green technologies that will i) reduce the anthropogenic pressure on restored ecosystems, namely biogas; and ii) increase the climate resilience of agricultural practices, namely: the use of organic compost. Lastly, the proposed project will generate climate-resilient livelihood alternatives for rural communities. For example, the project interventions will include the promotion of bee-keeping, fishing and community-based ecotourism in the targeted ecosystems. These interventions are aligned with the priorities identified in Rwanda's NAPA and on consultations with national, provincial and district authorities during the PPG inception workshop (see Appendix 19).

236. The activities to be implemented by the proposed project are considered "low regret" or "no regret" options. This is because these activities will provide benefits at the national and local levels even if the effects of climate change are not as severe as currently predicted. For example, activities in Outcome 3 that focus on ecosystem restoration will benefit biodiversity and generate ecosystem goods and services. Furthermore, activities in Outcome 1 that focus on strengthening the technical and institutional capacity of government will improve the planning and management of natural resources.

237. The proposed project will make use of the learning-by-doing approach. It will also capitalise on lessons learned from the LDCF 1 project, other partner projects and baseline projects. Similarly, lessons learned and new knowledge generated by the proposed project will be shared through workshops, briefing papers, guidelines and online portals. Consequently, the institutional capacity for predicting and planning EbA interventions at national, provincial and district levels will be improved. This will lead to project benefits that are sustainable in the long term.

238. The assumptions underlying the project design of the proposed project are listed below.

- Project activities are unlikely to be undermined by extreme climate events during project implementation.
- Local communities accept the proposed interventions during the implementation of the project.
- The GoR fully supports the project throughout its duration.
- Institutional capacity is sufficient and relationships between line ministries are adequate to provide solutions to climate problems that are complex and multi-sectoral.
- There is sufficient technical capacity to conduct the preliminary studies and to design the implementation of activities.

- The priority interventions implemented are cost effective.
- Baseline project activities will be implemented as planned.
- Priorities for adaptation to climate change are unlikely to be undermined by national emergencies or civil unrest.
- Large-scale infrastructural developments that would disrupt project activities will not take place within the project areas during project implementation.
- The social and economic value of restored ecosystems prevents future degradation from the sprawl of human settlements into restoration sites.

3.5. Risk analysis and risk management measures

239. The risks and countermeasures are summarised in Table 2.

Table 2. Summary of the risks to project objectives of the proposed project and suggested risk management measures.

	Description of risk	Potential consequences	Risk rating	Mitigation measures/proposed interventions	Risk category	Probability & Impact (1–5)
1	Current climate and seasonal variability and/or hazard events prevent implementation of planned activities.	Economic loss or physical damage to infrastructure is a challenge to the timely implementation of project activities.	Medium	• Consider current climatic variability during the restoration process. • Focus on climate-resilient species and techniques to: i) assist plant growth particularly in the seedling/sapling phase; and ii) reduce risk of damage from hazard events. • Take meteorological predictions and seasonal variability into account to reduce the risk of damage to plants.	Economic	P=3 I=4
2	Communities do not support interventions and do not adopt ecosystem management activities for adaptation during or after the term of the proposed project because of limited immediate benefits of EbA.	Unsustainable use of natural resources continues, leading to further degradation of ecosystems. Water management and agriculture techniques are not implemented in the long term. Consequently, the community continues to be vulnerable to climate-induced natural hazards.	Medium	• Institutionalise the pilot programmes within MINIRENA/MINAGRI to promote sustainable, long-term delivery. • Implement alternative livelihoods that have been deemed financially, technically and socially viable/feasible to reduce reliance on intensive land use. • Engage with community stakeholders during the PPG phase to strengthen their buy-in into the proposed project. • Actively involve local communities in project implementation. • Raise public awareness on the capacity of the restored ecosystems to increase community resilience to climate change. • Foster a bottom-up, grassroots approach throughout the project's development and implementation phases. • Improve capacity building and training of the communities to improve their understanding of the adaptation benefits of the EbA activities.	Social, environmental	P=1 I=4

				• Implement activities that have direct benefits to local communities.		
3	Loss of government support may result in poor prioritisation of proposed project activities.	Project activities are delayed.	Low	• Engage with the government to maintain its commitment to the proposed project. • Integrate the objectives of national development policy in decision making throughout the project to maintain government commitment.	Institutional	P=1 I=3
4	Institutional capacity and relationships between line ministries are not sufficient to provide effective solutions to climate problems that are complex and multi-sectoral.	Multi-sectoral adaptation interventions are compromised and interventions are confined to those sectors willing to engage in cross-sectoral dialogue. The vulnerability of certain sectors and Rwanda as a whole is not fully addressed.	Medium	• Promote the development of institutional capacity throughout the project design. This will ultimately lead to the development of an appropriate institutional framework for analysing climate change impacts, amending policy and implementing EbA interventions for climate change adaptation.	Institutional	P=2 I=3
5	Limited technical capacity to conduct preliminary studies and design the implementation of activities.	Preliminary studies do not take place resulting in delayed implementation of project activities. Adaptation interventions are not designed appropriately.	Medium	• Identify and develop human resource capacity as required. • Include funds in the project budget for preliminary studies to hire international consultants to complement the research team. • Engage field officers to work closely with the project manager of the proposed project to ensure timely delivery of project outputs.	Technical	P=2 I=2
6	Priority interventions implemented are not found to be cost-effective.	Project interventions are not upscaled for large-scale EbA programmes	Low	• Use cost-effectiveness as a core principle in the implementation of adaptation measures. • Record detailed information on cost-effectiveness. Such information will be widely disseminated to allow future projects to use them.	Economic	P=2 I=4
7	Baseline project activities not	The proposed project activities are	Low	• Design activities that build on baseline projects but do not depend on the baseline projects. The	Economic	P=2 I=2

	achieved as planned.	compromised because of a lack of existing interventions upon which to build.		activities are designed to be beneficial to the local communities even if they are implemented alone.		
8	Climate change adaptation priorities undermined by national emergencies or civil unrest.	Project activities are interrupted. Natural and financial capital is lost.	Low	• The project manager and CTA will keep abreast of national events and politics to plan contingency activities when/if necessary.	Social, environmental	P=1 I=3
9	Large-scale infrastructure development takes place within project areas.	Project activities are disrupted or delayed.	Low	• The project manager and CTA will work with appropriate governmental agencies to ensure prioritisation of the proposed project in the project areas.	Institutional	P=1 I=2
10	Uncontrolled settlements into the natural ecosystems.	The restoration activities are unsustainable.	Medium	• Raise awareness of the national and local government on this potential risk. • Raise communities' awareness on the benefits of restored natural ecosystems for their livelihoods. • Maximise the economic benefits from sustainable natural resource management. • Increase the capacity of district authorities to enforce policies for natural resource protection.	Social, environmental	P=2 I=4

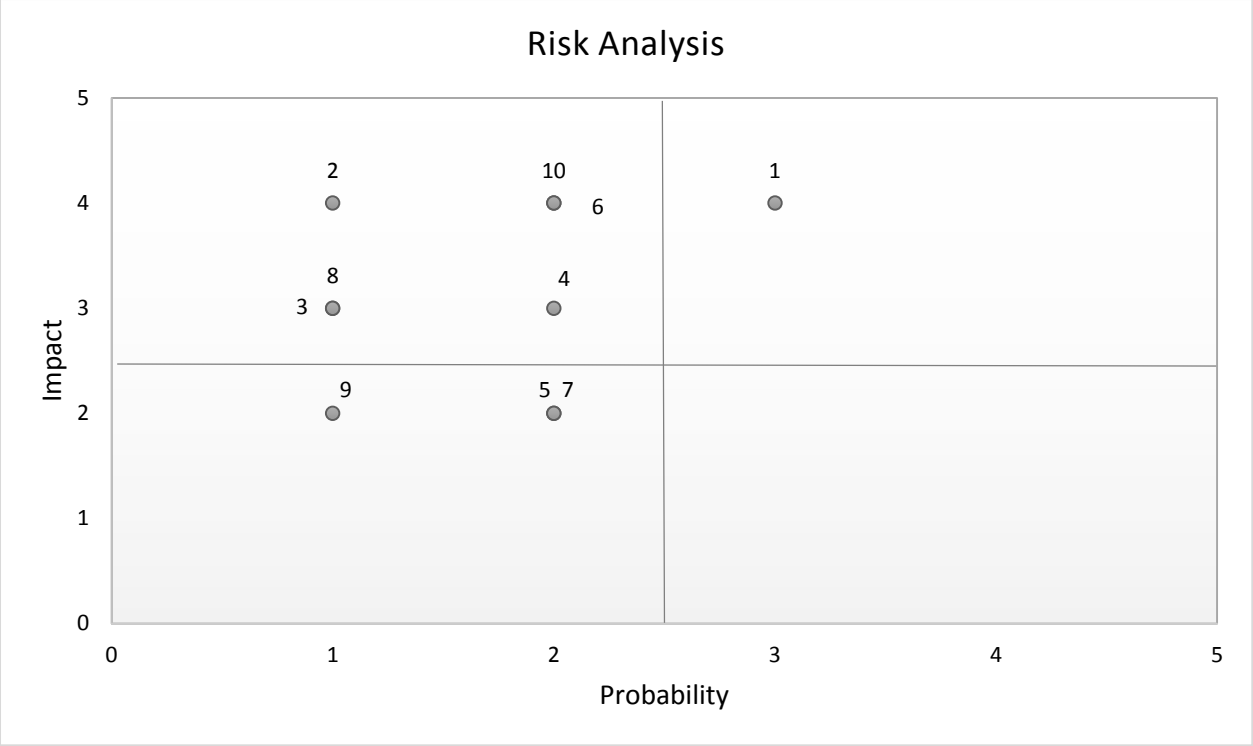


Figure 8. Probability and impacts of risks to the proposed project**.**

3.6. Consistency with national priorities or plans

240. Rwanda's primary development programme is known as **Vision 2020**. Of the six development pillars identified within Vision 2020, the proposed project is aligned with Pillar 4: Infrastructure development and Pillar 5: Productive and market oriented agriculture. Pillar 4 includes land-use management and rainwater harvesting as priorities for infrastructure development. Pillar 5 promotes livestock management, soil management and agroforestry. Vision 2020 also identifies three cross-cutting areas. The proposed project is aligned with the second cross-cutting area: Protection of environment and sustainable natural resource management.

241. The proposed project is aligned with Rwanda's **SNC** regarding both mitigation and adaptation to climate change. The SNC proposes mitigation of GHG emissions by enhancing natural carbon sinks within the agricultural and land-use sectors. This is supported by the project by: i) restoration and protection of degraded forests; and ii) intensification of agroforestry. Regarding adaptation to climate change, the SNC identifies the vulnerability of water resources as a priority. Within the SNC, the "Action Plan for the Implementation of Adaptation Measures in the Sector of Water Resources" details areas of intervention aligned with the project. These include watershed restoration, rainwater harvesting and community awareness-raising activities.

242. The proposed project is consistent with the **EDPRS 2** (2013–2018). Using lessons learnt from the EDPRS 1 (2008-2012), the strategy addresses Rwanda's medium and long-term development challenges. Thematic areas of the EDPRS 2 include: i) economic transformation; ii) rural development; iii) productivity and youth employment; and iv) accountable governance. The project is consistent with the rural development priorities of the EDPRS 2. These include increased agricultural productivity, promotion of investments in rural poverty and decreased rural poverty.

243. The **Environmental and Climate Change Sub-Sector Strategic Plan** (2013/14-2017/18) recognises environmental degradation and climate change as major barriers to socio-economic development in Rwanda. The objectives of this strategic plan include: i) mainstreamed environmental sustainability and climate change into all national development policies, programmes, plans and budgets; ii) mitigation and adaption to the effects of climate change; iii) pollution management; iv) promotion of research and improved planning for environmental management; and v) improved environmental governance and decentralised service delivery.

244. The combined planned activities of the EDPRS 2 and the Environmental and Climate Change Sub-Sector Strategic Plan that pertain to the proposed project activities include:

- rehabilitate wetlands (identified areas include Gitega, Kimisagara, Gtsata, Nyandungu and Gikondo);
- produce policy recommendations to mainstream environment and climate change concerns into sector policies;
- implement EbA best practices at the site level;
- train environmental officers on EbA;
- mainstream EbA into the education system;
- train environmental committees on EbA at provincial, district and sector levels;
- integrate EbA and climate change adaptation into SEAs;
- develop the capacity of public, private and CSOs' partnerships for EbA implementation;
- develop a map detailing ecosystem degradation in Rwanda;
- provide training on interpretation of EWS data to complement LDCF 1 project;
- harmonise environmental regulations and standards at a regional level for effective management of trans-boundary environmental resources;

- collate information on climate change adaptation in Rwanda and present this on the Climate Change Adaptation Portal; and
- train women and youth to develop adaptation projects and investigate funding opportunities for these projects.

245. The activities listed above are expected to be completed by 2018. The interventions of the proposed project will facilitate their execution. These listed activities were identified as priorities for climate change adaptation in Rwanda. The project is also aligned with the objectives of Environmental and Climate Change Sub-Sector Strategic and the EDPRS 2 as the project will: i) suggest relevant policy, strategy and legislation revisions; ii) increase the resilience of local communities to climate change; iii) promote scientific research and generate lessons learned on EbA; and iv) strengthen the capacity of local government to plan and implement EbA.

246. The **National Strategy for Community Development and Local Economic Development** (2013–2018) was formulated for the effective implementation of Vision 2020 at the local level. The proposed project is consistent with the first and second objectives of this strategy. Objective 1 is to "enhance community empowerment and citizen participation" and Objective 2 is to "improve local capacity for sustainable economic growth through the growth of micro and small enterprises, and job creation". The project promotes these objectives through: i) involving local communities at each stage of the project's development, decision-making processes and implementation; ii) training community members on EbA; iii) creating community awareness; iv) enhancing the capacity of community committees; and v) promoting alternative livelihoods.

247. In 2011, Rwanda released the **Green Growth and Climate Resilience Strategy: National Strategy on Climate Change and Low Carbon Development**. Among the three objectives of the strategy, the proposed project is consistent with the second of the strategy's three objectives. That is "to achieve sustainable land use and water resource management that results in food security, appropriate urban development and preservation of biodiversity and ecosystem services". These three main objectives are divided into "Big wins" and "Quick wins" that define long- and short-term objectives to be met respectively. Fourteen programmes of action are proposed to meet these objectives. Particular programmes of action on which the project and this strategy are consistent include the development of: i) rainwater harvesting; ii) agroforestry; and iii) ecotourism. Through the restoration of degraded wetland, forest and savanna ecosystems, the project will improve ecosystem services and water resource management. This, along with additional biophysical interventions – such as terracing – will also improve the climate resilience of the adjacent small-scale agriculture. As a result, food security will be enhanced.

248. The revised **National Decentralisation Policy** (2012) enhances community participation and local government systems to promote equitable local development. The proposed project supports this by including institutional and technical capacity building for local communities and government. Additionally, stakeholders were consulted during the design of the project and their consultation will be included in project implementation. Lastly, all on-the-ground interventions will use a local community-based approach.

249. The **Water Resources Management Sub-Sector Strategic Plan** (2011-2015) has identified a primary challenge of the water sector to be increasing water demands and decreasing quality and quantity. To address this challenge, the plan has identified six strategic outcomes. The proposed project is aligned with these outcomes. In particular, the project promotes the Outcome: "Critical watersheds and catchments are rehabilitated and basic ecological functions restored". Additionally, the Outcome: "Basic capacities installed and effective framework for sustained WRM capacity development and knowledge management developed'' is supported by the project.

250. The **Water, Climate and Development Program** (WACDEP) supports the integration of water security and climate change into national and sectoral planning, and decision making processes. The programme was introduced in 2013 and is being implemented by RNRA at both national and catchment levels. The proposed project supports the cross-sectoral focus of the programme. Additionally, on-the-ground EbA interventions will increase the climate resilience of water resources.

251. The **National Land Use and Development Master Plan** (NLUDMP) provides a framework for land-use planning in Rwanda. The proposed project is aligned with this plan as it will implement interventions according to the designated use of the land. For example, agroforestry will be introduced on land identified for agricultural use.

252. The **Strategic Plan for the Transformation of Agriculture in Rwanda** Phase III (2013 – 2017) includes two programmes that are relevant to the proposed project. These are: i) Programme 1 – Agriculture and Animal Resource Intensification; and ii) Programme 4 – Institutional Development and Agricultural Cross-cutting Issues. The project supports these programmes through: i) promoting soil conservation through various techniques including terracing and agroforestry; ii) undertaking scientific research on species selection for agroforestry; iii) promoting watershed management; and v) training farmers on techniques to promote adaptation to climate change.

3.7. Incremental cost reasoning

253. The current and predicted effects of climate change will continue to have multiple negative effects on local community's livelihoods, economic development and ecosystems in Rwanda. In particular, the increasing frequency and intensity of floods, landslides and droughts is negatively affecting rural communities in Rwanda. The proposed project will increase the resilience of these local communities. Additionally, the project's interventions will increase the climate resilience of activities implemented by ongoing baseline projects.

Component 1: National and local institutional capacity development for the use of an EbA approach.

254. This component has a single outcome, namely: national and local authorities have increased capacity to plan and implement EbA interventions. To achieve this outcome, an amount of US $879,496 will be allocated to: i) promote cross-sectoral dialogue on EbA at a national level; ii) train local level authorities, NGOs and CBOs on EbA implementation and green technologies; iii) increase local community awareness on EbA; and iv) generate and improve the availability of scientific knowledge related to EbA.

255. Without the interventions of the proposed project, the technical capacity of national and local level institutions in Rwanda will remain insufficient for the effective planning and implementation of EbA interventions. In particular, both the awareness of local authorities of EbA and their technical capacity to plan and implement EbA interventions are limited. If not addressed, the national upscaling of EbA beyond the intervention districts of the project will be hindered. Furthermore, the institutional arrangements do not promote a national approach to EbA in Rwanda. In the absence of the project, budget allocations and staff commitments to ecosystem management will remain insufficient for implementing adaptation activities. A further hindrance to the effective planning and implementation of EbA nationally is the limited availability of scientific knowledge to support and guide EbA interventions in Rwanda. Without the interventions of the project, the scientific knowledge base will remain as is: limited, *ad hoc* and incomplete. Community awareness on EbA techniques and the role of ecosystems in increasing resilience to climate change is limited. If this awareness is not increased, the unsustainable use of natural resources and consequent degradation of

ecosystems will continue. In conclusion, Component 1 will provide a platform for catalysing large-scale EbA initiatives across Rwanda by establishing institutional frameworks and building technical capacity.

Component 2: Policies, strategies and plans for adaptation to climate change.

256. To promote the upscaling of EbA, Component 2 will propose revisions to policies, plans and environment for development and ecosystem management at national and local levels. The outcome of the component is: national and district policies, strategies and plans developed to promote the restoration and management of degraded ecosystems to increase the resilience of local communities to climate change. To this end, US $587,684 will be allocated to: i) guide future revisions of national ecosystem management and development plans; ii) develop a national upscaling strategy; iii) guide the integration of EbA into sectoral plans; and iv) promote the integration of EbA into local development planning.

257. In the past decade, the GoR has developed a number of national strategies and polices that articulate development objectives and the need to adapt to climate change. However, these have been ineffective because policy- and decision-makers do not currently have an adequate understanding of EbA and the role of ecosystems in improving resilience to the effects of climate change. This understanding is further limited at the local level. There are several gaps in development planning at the local level regarding adaptation to climate change and ecosystem restoration. Consequently, policies, plans and strategies in Rwanda do not include EbA. Consequently, EbA in Rwanda is undertaken in an *ad hoc* manner. In the absence of the proposed project's activities, it is unlikely that a systematic and national approach to EbA will be developed. For example, activities designed by the GoR to increase the climate-resilience of local communities and economic sectors are likely to continue in isolation. National budgets will not generally be allocated to such activities, and the role of ecosystems in adaptation to climate change will not be the focus of these activities. Ecosystem restoration activities that focus exclusively on enhancing biodiversity rather than increasing climate-resilience will not maximise the ecosystem services and long-term adaptation benefits that arise from restoration.

Component 3: EbA interventions that reduce vulnerability and restore natural capital.

258. US $3,491,640 will be invested into achieving the following outcome: Improved resilience and reduced vulnerability of local communities to climate change impacts, including increased mean temperature, increased frequency of drought, and increased frequency of high-intensity rainfall events, through strategic restoration of degraded ecosystems.

259. Within Component 3, techniques will be developed for maximising the adaptation benefits for local communities through the restoration of degraded ecosystems. A learning-by-doing approach will be employed to increase the technical capacity of local communities. Lessons learned from the restoration interventions will be included in the technical training and awareness-raising activities in Component 1 as well as inform the national upscaling strategy developed in Component 2. Focal areas within Component 3 will include:

- establishing climate-resilient and multi-use ecosystems in degraded landscapes;
- reducing erosion, regulating water flow and increasing water availability despite erratic rainfall, floods and droughts;
- reducing the climate vulnerability of local communities living near the intervention sites;
- promoting the use of complementary green technologies which improve the efficiency of resource use in local communities and/or improve the climate-resilience of the livelihoods of communities; and
- promoting alternative livelihoods based on the restored ecosystems.

260. Currently, population density and rural poverty are causing ecosystem degradation. As a result, the livelihoods of local communities are increasingly vulnerable to the effects of climate change. Current restoration activities undertaken by the GoR are *ad hoc* and do not focus on maximising the climate-resilience of the ecosystems and local communities. For example, although indigenous species are more climate resilient and offer increased ecosystem services, many restoration activities use exotic species. Consequently, despite these restoration activities, the ecosystems and the local communities living around them remain vulnerable to the effects of climate change.

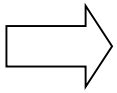
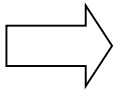
261. With the proposed project, EbA interventions that are tailored incisively will be undertaken. The interventions will result in the establishment of climate-resilient and multi-use ecosystems in: i) Isangano savanna (Kayonza District); ii) Sanza forest (Ngororero District); and iii) Murago wetland (Bugesera District) and Kimicanga wetland (Gasoba District). These vulnerable ecosystems were identified through stakeholder engagement in Rwanda during the PPG phase[109]. The specific climate hazards to be addressed within each ecosystem are detailed in Section 2.3. Furthermore, the project will introduce climate-resilient livelihoods based on the goods/services delivered by the restored ecosystems as well as green technologies that increase the resilience of local agriculture and the sustainability of the restoration interventions.

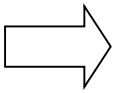
262. The proposed project will demonstrate to both policy- and decision-makers as well as local communities the benefits of ecosystem restoration in increasing the climate resilience of local communities and their livelihoods. This demonstration will include a focus on the additional benefits and climate-resilience of indigenous species. In summary, in the absence of the project, restoration interventions in Rwanda will continue to be implemented without: i) taking into account the effects of climate change; ii) focusing on the adaptation needs of rural communities; and iii) taking advantage of the full range of benefits that restored ecosystems can provide.

Table 3 below depicts the baseline/business-as-usual situation versus the adaptation scenario for Rwanda.

[109] The three priority areas were identified as follows: wetland areas were prioritised as the principal source of water for large areas of the country; dryland savanna areas were prioritised due to their vulnerability to droughts and the frequency of hunger in these areas; and degraded forest slopes were prioritised because they are home to the largest proportion of Rwanda's vulnerable rural population.

Table 3. Comparison of the business-as-usual situation and alternative adaptation scenarios.

	Business-As-Usual		**Adaptation alternative scenario**
Problem Description	Currently, widespread and severe degradation of natural ecosystems in Rwanda is jeopardizing the livelihoods of local communities, and ultimately the economy as a whole. This is because the degradation of ecosystems has negative effects on a wide range of sectors, including water, agriculture, energy, transport, tourism and conservation. Given the expected and existing effects related to climate change, it is evident that local communities as well as most economic sectors are vulnerable to floods, landslides and droughts. This vulnerability is exacerbated by factors such as widespread poverty, a strong dependence on rain-fed agriculture, widespread ecosystem degradation and limited technical capacity of local authorities to address the effects of climate change.		The proposed project will restore 3 principle ecosystems to be climate resilient to: i) reduce the vulnerability of local communities to the effects of climate change; and ii) deliver additional socio-economic benefits to these communities. This will be achieved through EbA interventions. These interventions will use climate-resilient plant species that offer multiple additional benefits to establish multiple-use ecosystems. This will maximise the provision of ecosystem goods/services and sources of alternative livelihoods. The restored ecosystems will also be botanically diverse with local indigenous species. Consequently, the resilience of the natural infrastructure to climate change will be increased, and thereby maximise the adaptation benefits for local communities.
Project Outcomes	**Outcome 1:** • Limited cross-sectoral dialogue between sectors such as water, agriculture, energy, tourism and conservation. • Limited technical capacity of local authorities, committees and user groups for developing the full potential suite of adaptation benefits that can arise from restoring degraded ecosystems. • Limited availability of technical guidelines to apply EbA at the local level. • Limited technical capacity for accessing international funds constituting a bottleneck for upscaling EbA in the future. • Limited awareness of the general public, policy- and decision-makers of the adaptation benefits of EbA interventions to local communities. • Resultant low priority of EbA interventions for adaptation. • Small budget allocations and staff commitment to an ecosystem management approach to climate		The proposed project will promote cross-sectoral dialogue, develop technical capacity and increase public awareness on climate change adaptation and the role of restored ecosystems. The interventions in this outcome will form a platform for catalysing large-scale adaptation initiatives in Rwanda by restoring ecosystems through: • Establishing a NSC for the application of the Rio Conventions by taking strategic national decisions on climate change adaptation, desertification and biodiversity. • Building the technical capacity of a wide range of stakeholders, with a particular focus on women and youth, to plan and implement ecosystems restoration interventions that will address the vulnerabilities of local communities to climate change. • Providing technical guidelines to be used by local level authorities to promote a national and systematic approach to climate change. • Raising awareness of the adaptation benefits of restoring natural capital among local communities and policy- and decision-makers.

	change. • Limited scientific knowledge of how best to restore degraded ecosystems to maximise adaptation benefits for local communities. • Limited involvement of women and youth in the development and implementation of adaptation interventions. • Indigenous knowledge on appropriate ecosystem management is not utilised by adaptation projects. • Restoration is not tailored to maximise adaptation benefits for local communities. • Appropriate methodologies for maximising adaptation benefits have either not been systematically documented or are not known. • The appropriate plant species to use for developing climate-resilient and multi-use ecosystems have not been systematically documented or researched. • Opportunities for developing alternative livelihoods using principles of EbA have not been specifically studied.		• Promoting scientific research within Rwandan institutions to determine appropriate restoration techniques that will help maximise the adaptation benefits for local communities affected by various climate change effects. • Assessing the cost effectiveness of different methodologies through community monitoring and scientific analysis. • Developing scientifically rigorous protocols for planting that include indigenous knowledge. **Cost: LDCF US $879,496**
	Outcome 2: • Policy- and decision-makers in Rwanda are largely unaware of the considerable benefits of investing in natural infrastructure. Consequently, policies, plans and strategies in Rwanda do not provide an environment conducive to addressing the effects of climate change through ecosystem restoration and complementary interventions. • National approach to ecosystems management and adaptation is *ad hoc*, with various ecosystem management activities taking place in isolation in different sectors. • Restoration initiatives undertaken by government, the private sector or NGOs do not focus on restoration that maximises ecosystem services and adaptation benefits for local communities. • Adapting local communities to climate change using ecosystems management is not a strategic		The proposed project will promote the development of a policy, planning and legislative environment within Rwanda to build the resilience of local communities to the impacts of climate change through: • Identifying appropriate points for the integration of EbA into the current national ecosystem management and development policies and strategies as well as guiding this integration. • Developing a national strategy to promote the upscaling of EbA including the replication of successful interventions identified in the EbA interventions of Component 3. • Providing policy- and decision-makers as well as environmental assessment experts with the necessary tools and knowledge to integrate EbA into relevant policies, strategies and budgets. This will result in an enabling environment for the implementation of EbA interventions to reduce the vulnerability of Rwandan communities to climate change. • Providing local level government authorities with training and guidance to integrate EbA into local level development planning

	priority on the development agenda of Rwanda. • There is no upscaling strategy to apply EbA systematically across Rwanda. • Local level development plans do not include EbA and therefore prevent the national application of EbA in Rwanda. • EbA is not included in the legislation that guides the effects of projects and plans of various economic sectors on the environment.		to promote the application of EbA across Rwanda. **Cost: LDCF US $587,684**
	Outcome 3: • Restoration of degraded ecosystems is undertaken in an *ad hoc* manner by a range of stakeholders, including government, NGOs, CBOs and the private sector and does not focus on increasing climate resilience of ecosystems and local communities. • Local communities and their livelihoods remain vulnerable to the effects of climate change. • Local communities employ techniques for agriculture and other resource use that increase the degradation of ecosystems and strengthen their resilience to climate change. • Restoration initiatives in Rwanda will continue to be implemented without: i) taking into account the effects of climate change; ii) focusing specifically on the adaptation needs of local communities; and iii) taking full advantage of the adaptation benefits that restored natural infrastructure, if appropriately designed, can provide.		The proposed project will demonstrate EbA activities and therefore increase the climate-resilience of local communities living near intervention sites. This will result in evidence-based restoration protocols for different degraded ecosystems. Specific climate change risks to be addressed will include: i) increased frequency and severity of drought and reduced rainfall; ii) landslides; and iii) increased frequency of extreme rainfall events. This will be achieved through: • Establishing climate-resilient and multi-use ecosystems in degraded landscapes to address the effects of climate change identified in the three priority ecosystems. These restored ecosystems will reduce soil erosion and improve water infiltration and water quality. • Providing technical training to local communities on establishing, managing and monitoring the interventions. This will promote community support of the interventions and increase the sustainability of the interventions beyond the lifespan of the project. • Introducing green technologies that complement ecosystem restoration through: i) decreasing resource use; or ii) increasing climate resilience of existing agricultural livelihoods. • Identifying alternative livelihoods in all intervention sites to supplement the incomes of rural communities and further establish the benefits of ecosystem restoration. • Developing lessons learned to be included in: i) activities to increase the technical capacity of stakeholders under Outcome 1; and ii) revisions to policy and strategy revisions under Outcome 2. **Cost: LDCF US $3,491,640**

Cost	Business-As-Usual Development Cost		Additional Adaptation Cost
Financed by:	Government of Rwanda, Word Bank, Netherlands government and Belgian Development Agency		LDCF

3.8. Sustainability

263. To promote the sustainability of the proposed project, the interventions will include: i) involving all stakeholders in project design and implementation to gain support for the activities; ii) increasing institutional capacity in Rwanda for the implementation of EbA; iii) strengthening national expertise on EbA; iv) promoting long-term academic research on EbA; and v) facilitating upscaling of interventions by aligning project activities with Rwanda's national priorities. Each of these strategies is described in more detail below.

264. The project was developed in consultation with the stakeholders – including local communities – listed in Appendices 19. This approach results in buy-in from stakeholders. Consequently, it increases their support of the project and promotes the sustainability of the project activities. Stakeholder consultation will also be used during the implementation process to maintain and strengthen stakeholder support.

265. Institutional capacity will be strengthened by training relevant line ministries, district authorities and local communities on EbA. This training will enable the GoR to plan and implement EbA interventions in the future. The project's coordinators will work closely with Rwanda's governmental agencies and bodies at national and local (i.e. provinces, geographic sectors, districts and cells) levels. In addition, local communities in the selected intervention sites will be engaged and trained to promote their ownership of the project. Local communities will also be able to initiate their own small-scale interventions, such as ecosystem restoration and development of alternative livelihoods. Sources of potential finance to sustain these interventions will be explored.

266. The proposed project will strengthen national expertise on EbA by prioritising the appointment of national consultants. International consultants will be appointed only where local expertise is limited. In such cases, national and international consultants will work together. Furthermore, this collaboration with international consultants when there is limited national capacity on a particular subject will increase the capacity of Rwanda's national consultants and promote national ownership of the project outcomes. This will contribute to the sustainability of the project's benefits.

267. The project includes short-term research projects as it will select and fund 10 research projects (Activities 1.5.1 and 1.5.2). This research will promote the sustainability of the project and future interventions by contributing to the evidence base for EbA.

268. The project design is aligned with the national strategies, plans and proposed activities for the period 2013 to 2018 (see Section 3.6). This increases the likelihood of the project interventions being upscaled to other areas. In addition, the cost effectiveness of the proposed interventions as well as the support of local communities will encourage the government to include EbA in national development planning.

3.9. Replication

269. The following factors will promote the replicability of the project:

- Rwanda is a small country in terms of surface. A meeting in the capital can therefore easily gather national and local authorities. Similarly, training session using a learning-by-doing approach at the local scale can gather local communities as well as government authorities.
- The project interventions includes pilot activities in the three ecosystems that are both the most dominant and most vulnerable to climate change. The project activities will

systematically be accompanied by training of the corresponding district authorities on the implementation of the techniques for adaptation to climate change.

- The project sites are located in three of the five provinces in Rwanda namely the Eastern Province, the Western Province and Kigali City. Several training activities will be implemented at the province level to facilitate the replication of the pilot activities in these three provinces.

270. To facilitate project replicability further, the lessons learned during the project implementation will be collated and disseminated through: i) training sessions for national and sub-national government; and ii) through the climate change portal. Furthermore, sub-national stakeholders will be involved in project implementation and will be provided with training on EbA. Consequently, they will be able to replicate those activities to provide tangible benefits at additional sites.

271. A national upscaling strategy for EbA will be developed. This strategy will be linked to the development of proposed revision to the existing policies and plans. In addition, the climate change portal will be expended to increase the sharing of information between adaptation projects. This online platform will disseminate information and lessons learned on EbA. Lastly, the upscaling of project activities will be promoted by the project's legacy of enhanced institutional and technical capacity of government authorities.

3.10. Public awareness, communications and mainstreaming strategy

272. The climate-resilience of the local communities of Rwanda is limited primarily as a result of their insufficient knowledge on adaptation to climate change. For example, settlements are often built in low-lying areas, resulting in increased vulnerability to floods and landslides. To address the limited knowledge of local communities, the proposed project will increase public awareness of techniques for adaptation to climate change. To this end, the project will conduct several campaigns of public awareness. These campaigns will focus on the following topics: i) current and future climate change effects; ii) the role of ecosystems in reducing vulnerability; iii) the principles of EbA with an emphasis on planting indigenous species; and iv) climate-resilient livelihoods with an emphasis on the sustainable use of natural resources. The public awareness campaigns will include radio, articles in national and local newspapers, and pamphlets that will be distributed to communities in the project areas.

273. To further build the capacity of local communities to adapt to the effects of climate change, the public awareness campaigns will also target school and university students. For example, as indicated in Activities 1.4.2–1.4.8, teachers and scholars of the intervention sites will be involved in the project.

274. The training provided by the project to national and local authorities including policy makers will also raise the resilience of local communities to climate change. For example, the integration of EbA into development plans will lead to increased resilience of current and future settlements. In addition to reaching a large audience within government institutions, this training will be mainstreamed through disseminating the training material during meetings and workshops, and made available on the climate change portal.

3.11. Environmental and social safeguards

275. The UNEP checklist for Environment and Social Safeguards (Appendix 11) reflects the positive environmental and social impacts of the project. The Project Manager, Chief Technical Advisor and UNEP Task Manager will be responsible for overseeing adherence to these guidelines throughout the implementation of the project.

276. The proposed project will comply with Rwandan legislation 'N° 004/2008 of 15/08/2008: Ministerial Order establishing the list of works, activities and projects that have to undertake an Environment Impact Assessment' (EIA).

277. In hilly regions, the proposed interventions include implementing flow management techniques on slopes, such as construction of terraces, check dams and retention ponds as well as tree planting (Activity 3.1.8 and 3.2.6). The objective is to contribute to increase water availability and reduce erosion. EIAs will be conducted by one of the authorised EIA experts selected by the GoR – before construction commences – to minimise any negative environmental effects.

278. In the proposed project, gender equity will also be promoted in each activity. Gender equity is defined here as the equal participation of men and women in project activities. The proportion of women involved in the project activities will be monitored during project implementation (see Appendix 3). Stakeholder decisions relating to project activities will only be made with a sufficient representation of women in attendance[110].

110 A minimum of 50% of women will be necessary.

SECTION 4: INSTITUTIONAL FRAMEWORK AND IMPLEMENTATION ARRANGEMENTS

279. The proposed project will be implemented over a period of four years according to the workplan (see Appendix 4). Following the CEO endorsement, the project will begin with the process of hiring project staff shortly after internalisation. Implementation will be informed by lessons learned from the LDCF 1 project. During the inception phase of the implementation period, the following activities will be conducted: i) the inception workshop (which ensures that all existing and new stakeholders are briefed on the project and that a detailed workplan is developed in a participatory manner) will be held; ii) the EIA and the SEA will be conducted according to national legislation to ensure that none of the activities proposed in the project will have detrimental effects on the environment; iii) the baseline study will take place to measure the baseline of the indicators selected for project outputs and AMAT[111]; and v) additional project stakeholders will be identified and engaged with.

280. UNEP will be the Implementing Agency (IA) for the proposed project and will oversee the project, and provide the technical assistance required to meet the project goal (see details of UNEP's comparative advantage in Appendix 12). Therefore, UNEP will be responsible for project supervision to ensure consistency with GEF and UNEP policies and procedures. This supervision will be the responsibility of the Task Manager (TM), which will be appointed by UNEP. The UNEP TM will formally participate in the following: i) Project Steering Committee (PSC) meetings (at least once a year); ii) the mid-term and final evaluations; iii) the clearance of half-yearly and annual reports; and iv) the technical review of project outputs.

Management Structure

281. The management structure of the proposed project is presented in Figure 9. This will comprise: i) Project Steering Committee (PSC); ii) Project Manager; iii) Monitoring and Evaluation (M&E) specialist; iv) Field Officers; v) Project Officer; vi) Procurement Specialist; vii) Accountant; and viii) Technical Unit (e.g. national and international consultants). The roles of each component of the management structure are detailed in Appendix 13.

282. The mandate of the PSC will include: i) overseeing project implementation; and ii) reviewing annual workplans and project reports. All decisions taken by the PSC will be communicated to the PMU. The PSC will include representatives from REMA, RNRA, MINIRENA, MINAGRI, MINECOFIN, MIDIMAR, and district and provincial authorities. The representative of REMA will chair the PSC, which will meet twice a year, with *ad hoc* meetings held when necessary to discuss project main performance indicators and provide future guidance. At the discretion of the PSC, members of relevant implementing NGOs, as well as community leaders, will be invited to participate to the PSC to ensure local ownership and guidance for the project.

283. REMA with be the National Executing Agency (NEA). A full-time Project Manager (PM) will be hired by REMA to lead the PMU and execute the day-to-day management of the project. He/she will operate in a transparent and effective manner in line with all budgets and workplans. In addition, the PM will provide regular updates on a monthly basis (at the minimum) to the UNEP Task Manager (TM) and the Chief Technical Advisor (CTA) on the progress and challenges encountered on the ground during the execution of activities. In particular, the PM will: i) lead the planning and implementation of the project; ii) provide on-the-ground information for UNEP progress reports; iii) engage with stakeholders; iv) organise the PSC meetings; v) provide technical support to the project, including measures to address

[111] The baseline study conducted for the AAP and LDCF 1 projects will be used to design the baseline study of the proposed projects (Gbetiboua and Mills, 2012. Baseline information and indicators for the Rwanda AAP and LDCF projects. C4 Ecosolutions. Mars 2012. 143 p.).

challenges to project implementation; vi) manage the project budget and resource allocation; and vii) participate in training activities, report writing and facilitation of consultant activities that are relevant to his/her area of expertise. The PM will be supported in the project implementation by an M&E specialist whose duties will include: i) establishing and managing a performance monitoring framework; and ii) supervising the field officers in each of the three main intervention areas. As part of his/her responsibilities, the M&E specialist will oversee and monitor the application of gender-disaggregated indicators. The role of the field officers will include: i) the timely execution of activities and achievement of expected deliverables; ii) dialogue between stakeholders particularly at a local level; and iii) participation of local communities in project activities. To achieve this, the field officers will be required to visit the intervention sites regularly. The field officers will also work in close collaboration with the PM (see Appendix 13). The PMU members will be responsible for monitoring and reviewing gender sensitivity in the training activities.

284. SPIU is in charge of supporting the coordination of all projects implemented by REMA. This unit was created in 2012 for the GoR to: i) coordinate the implementation of all projects within REMA; ii) provide administrative and institutional support to REMA and the technical advisor; and iii) reduce administrative costs. Additionally, the roles of SPIU regarding the proposed project will include creating and organising meetings of a coordination working group with the management team of: i) the proposed project; ii) the baseline projects described under Section 2.6; and iii) the partner projects described under Section 2.7. The coordination working group will meet at least twice a year.

285. Following the standard structure for project management under REMA that was developed by SPIU, a project officer, a procurement specialist, an accountant and an internal auditor will form a project management unit and be responsible for the logistical and administrative part of the project. The project officer will help the project staff with technical, logistical and administrative matters. The procurement specialist will be responsible for the development of the required procurement plans to implement the project activities. The accountant will handle the accounts of the project. The internal auditor will conduct regular inspections of the project accounts and expenditures. An accountant specialist has already been hired by LVEMP and procurement specialist has been hired by LAFREC. These two specialists will be responsible for LVEMP, LAFREC and the proposed project as agreed with SPIU. A salary for these two positions has therefore not been budgeted. However, the internal auditor will be hired by the proposed project and be responsible for auditing the proposed project as well as LVEMP and LAFREC.

286. The project will contribute some funds to the SPIU, which is a government structure approved by the Cabinet meeting held on 11.2.2011. SPIU is a special mechanism for project/programme delivery in the public institutions in Rwanda in order to eliminate duplications of efforts and rationalise donor activities in the sense of making them as cost-effective as possible. Its services cover institutional support to REMA, awareness raising, financial tracking, capacity building. In addition SPIU funds will contribute to core staff including SPIU coordinator, procurement specialist, internal auditor and resource mobilizer. It will also contribute to capacity building of SPIU staff. As per government mandate each external project must contribute to the SPIU, including the UNEP-UNDP LDCF1 project where it has been viewed to have positive impacts on coordination side. Due to the requirement for all projects to contribute a portion of their funds to SPIU, the PMC cost for the project stands at 5.9%.

287. Consultants will be hired for specific tasks that cannot be carried out by government staff. International technical assistance will be sourced for specialised tasks only when national capacity is insufficient. However, to increase technical capacity in Rwanda, national consultants will benefit from the support of an international expert when deemed necessary. International consultants will be selected with the assistance of UNEP structures and in

conjunction with the PM. Consultant description are included in the budget notes (see Appendix 1). ToRs for project staff are presented in Appendix 13. REMA will contribute office space in the selected intervention areas of the proposed project.

288. Budget disbursement will be managed by UNEP to facilitate timely expenditure, disbursement and transparency. Financial reports will be prepared quarterly based on the UNEP's Integrated Management Information System (IMIS), and will be made available to REMA and other members of the PSC for review.

289. The proposed project manager will meet the baseline project managers twice a year or more frequently if necessary. These meetings will include the project coordinators of all baseline projects. The focus will be on sharing lessons learned. Such meetings will also help avoid duplication of activities.

290. The project management team will use the GoR transport framework to go to the field. The project will also hire drivers to assist with transport, as well as an administrative assistant to provide support to the entire management. Procurement of services, goods and works of the proposed project will follow the national procurement regulations.

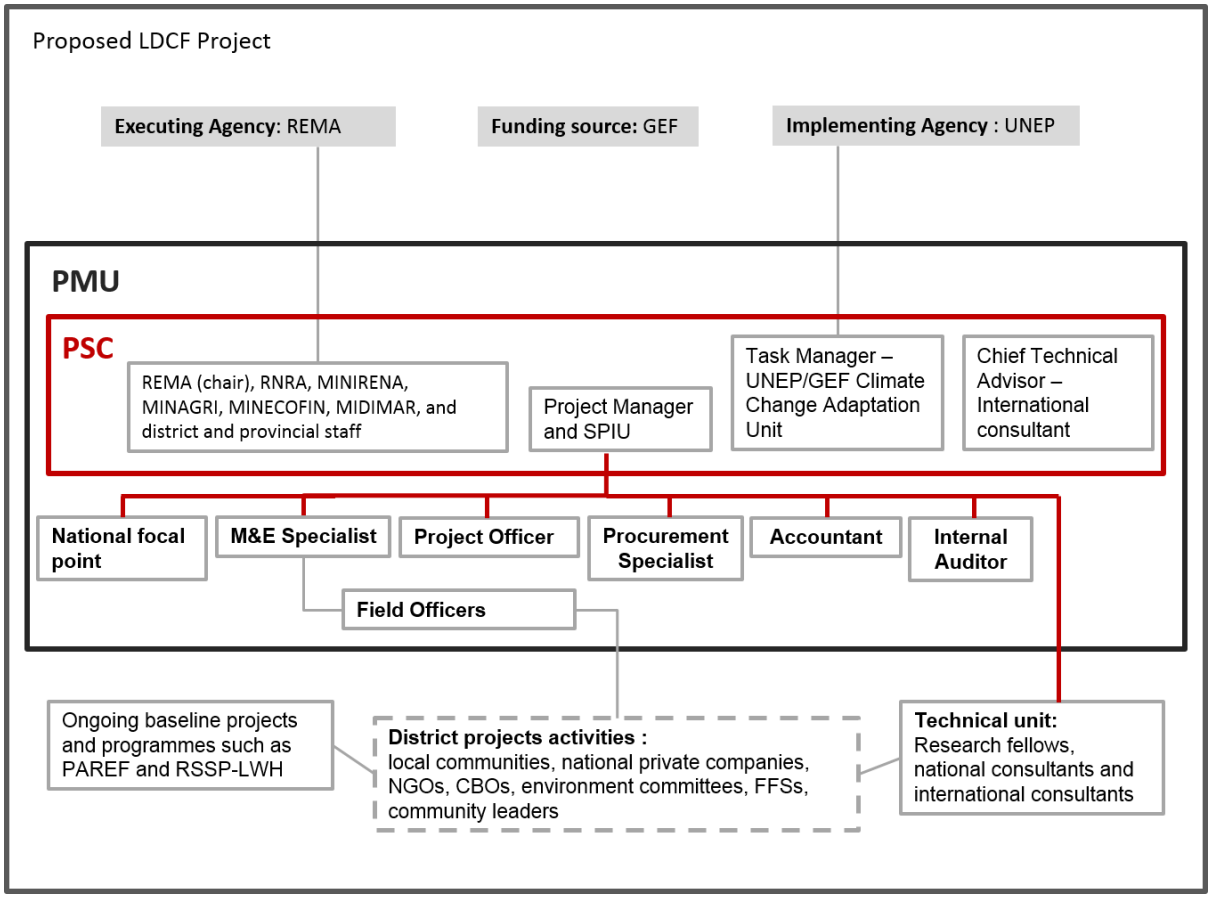


Figure 9. Organogram of the project management structure.

SECTION 5: STAKEHOLDER PARTICIPATION

291. The implementation strategy for the proposed project includes extensive stakeholder participation. Details of the stakeholder participation during the PPG phase are provided in Appendix 19. The role of stakeholders in site selection is detailed in Appendix 8. A stakeholder engagement plan to be used during the implementation phase will be developed during the project inception workshop. Stakeholders will be consulted throughout the implementation phase to: i) promote community understanding of the project's outcomes; ii) promote local community ownership of the project through engaging in planning, implementing and monitoring of the interventions; iii) communicate to the public in a consistent, supportive and effective manner; and iv) maximise complementation with other on-going projects.

292. The mechanisms for stakeholders consultations will include: i) initial meetings with local government (i.e. provincial, district and sector authorities) and national government ministries (i.e. MINIRENA, MINAGRI, MIDIMAR) during the inception workshop (see Section 2.5); ii) consultation meetings with the coordinators of the baseline projects and co-financing institutions (see Section 2.6); iii) consultation meetings with the partner projects; iv) consultation meetings with local NGOs and CBOs (e.g. WCS, ARCOS) and community leaders; and v) consultation meetings in local communities with the beneficiaries of the proposed project.

293. Local communities' were engaged with during the development of this Project Document so that the proposed project addresses their priority needs. This engagement also promotes local community ownership of the project. Furthermore, local communities will be involved in the implementation of the project activities and in decision-making processes for project interventions. For example, the preferences of local communities with inform the selection of species for all restoration and agroforestry interventions. Community members will also receive training – through a learning-by-doing approach – on restoration, agroforestry and green technology techniques. Additionally, community leaders and CBOs from the intervention sites will be invited to PSC meetings.

294. During project implementation, stakeholder consultations will be divided into three phases. Firstly, the 'mobilisation phase' will take place during the first year of the project. This phase includes the following: i) developing time specific details of the activities and local management structures for implementation; ii) forging partnerships for action; and iii) developing and agreeing to the extent of stakeholder engagement in each activity. Secondly, the 'consultative implementation' phase will run during the main implementation phase of the proposed project. This phase involves applying the stakeholder involvement plan to each of the activities defined during the first phase. Thirdly, the 'completion and upscaling' phase will start during the last year of project implementation. This phase will support the sustainability of the project by transferring responsibility for management of the proposed project's investments to the stakeholders.

295. The specific stakeholders to be engaged at each stage of project implementation are presented in Table 6. MoUs will be signed between the different government institutions participating in the implementation of the proposed project. The corresponding budget for the activity will then be transferred to the partnering government institutions in charge. As REMA is responsible for the implementation of the majority of interventions, this system will only be followed for the implementation of the technical activities which REMA will not implement.

Table 4. Relevant partners and stakeholders identified for engagement by project outcome.

Project outcome	Activities	Federal sector	REMA (MINIRENA)	RNRA (MINIRENA)	MINAGRI	MIDIMAR	MINEDUC	MIGEPROF	MINECOFIN	MYICT	NWC[112]	RDB	RAB	REB	Universities and schools (NUR, KIST)	Research institutes (IRST)	Local government	Province authorities	District authorities	Sector and cell authorities	Environment committees	CSOs	NGOs (ARCOS, ARECO, WCS[113])	CBOs	Private companies
Outcome 1 Output 1.1	Mobilisation of the NSC of the Rio conventions and training of members on EbA (Activities 1.1.1 to 1.1.3)		X	X	X	X	X	X	X	X	X	X	X	X	X	X									
Outcome 1 Output 1.2	Training of local authorities, NGOs and private companies on EbA (Activities 1.2.1 to 1.2.4)		X					X		X	X								X	X			X		X
Outcome1 Output 1.3	Promotion of the use of indigenous species (Activity 1.3.2)		X	X	X			X		X	X		X			X								X	
	Promotion of green technologies (Activities 1.3.3 and 1.3.4)		X		X			X		X	X		X			X		X	X	X			X	X	
	Development of tools to mainstream EbA (Activities 1.3.5 to 1.3.6)		X		X	X												X	X	X	X		X		
Outcome 1 Output 1.4	Local communities' training on EbA (Activity 1.4.1)		X					X		X	X							X	X	X	X		X	X	
	EbA in education (Activities 1.4.2 to 1.4.8)		X				X	X		X	X			X	X			X	X	X	X		X	X	
Outcome 1 Output 1.5	Development of research project (Activities 1.5.1 to 1.5.7)		X	X	X		X						X	X	X	X									
Component 2 Output 2.1	EbA into national policies (Activities 2.1.1 to 2.1.4)		X	X	X	X	X	X	X			X	X												
Component 2 Output 2.2	Development of a national upscaling strategy (Activities 2.2.1 to 2.2.4)		X	X	X	X			X																
Component 2 Output 2.3	EbA into national development plans (Activities 2.3.1 and 2.3.2)		X	X	X	X	X	X	X			X	X												
	EbA into development plans of economic sectors (Activities 2.3.3 and 2.3.4)		X	X	X	X	X	X	X			X	X												
	EbA into sectoral EIAs and SEAs (Activities 2.3.5 to 2.3.6)		X		X	X		X		X	X	X	X										X		
Component 2 Output 2.4	EbA into DDPs (Activities 2.4.1 and 2.4.6)		X					X		X	X	X						X	X	X				X	

[112] National Women Council

[113] WCS has considerable experience in Rwanda with regard to PES. For example, it assessed the potential for implementing PES in areas adjacent to Nyungwe forest, using a water flow model designed by the US Forestry Service. It also developed strong collaboration with tea farmers, national parks and adjacent communities.

Component 3 Output 3.1 to 3.3	Wetland restoration (Activities 3.1.1 to 3.1.7, 3.1.10 to 3.1.11)		X		X	X		X		X	X							X	X	X	X			X	
	Forest restoration (Activities 3.2.1 to 3.2.5)		X	X				X		X	X							X	X	X	X			X	
	Savanna restoration (Activities 3.3.1 to 3.3.5, 3.1.10)		X	X	X			X		X	X		X					X	X	X	X		X	X	
	Promotion of agroforestry (Activities 3.1.8, 3.2.6 and 3.3.6)		X	X	X			X		X	X	X	X					X	X	X	X		X	X	X
	Training in rainwater management (Activities 3.1.9, 3.3.7 and 3.3.8)		X		X			X		X	X		X					X	X	X	X			X	
	Promotion of biogas (Activities 3.1.12, 3.2.7 and 3.3.9)		X	X	X			X		X	X	X						X	X	X	X		X	X	X
	Increase use of organic compost (Activity 3.1.13)		X		X			X		X	X	X	X					X	X	X	X		X	X	
Component 3 Output 3.4	Develop and promote climate-resilient livelihoods (Activities 3.4.1 to 3.4.4, 3.4.8)		X	X	X			X	X	X	X	X						X	X	X	X		X	X	
	Promote community-based ecotourism (Activity 3.4.5)		X	X				X	X	X	X	X						X	X	X	X		X	X	X
	Development business models and pilot projects for private investment in EbA interventions (Activities 3.4.6 and 3.4.7)		X	X	X				X			X	X	X									X	X	X

SECTION 6: MONITORING AND EVALUATION PLAN

296. The proposed project will follow UNEP standards for monitoring, reporting and evaluation of processes and procedures. Additionally, substantive and financial project reporting requirements are summarised in Appendix 7. Reporting requirements and templates are an integral part of the UNEP legal instrument to be signed by the executing agency and UNEP.

297. The project's M&E plan is consistent with the GEF Monitoring and Evaluation Policy. Furthermore, the Project Results Framework presented in Appendix 3 includes SMART indicators for each expected outcome as well as mid-term and end-of-project targets. These indicators will be the main tools for assessing project implementation progress and whether project results are being achieved. The deliverables and benchmarks included in Appendix 5 will complement the indicators. Furthermore, the means of verification and the costs associated with obtaining the information to track the indicators are summarised in Appendix 7. Other M&E related costs are also presented in the Appendix 6 and are fully integrated in the overall project budget.

298. The M&E plan will be reviewed during the project inception workshop. This process will enable project stakeholders to understand their roles and responsibilities in terms of M&E. Indicators and their methods of verification will also be adjusted at the inception workshop if necessary. In addition, day-to-day project monitoring is the responsibility of the project management team. Project partners will have be responsible for collection of specific information to track the indicators. It is the responsibility of the PM to inform UNEP of any delays or difficulties faced during implementation. This communication allows the appropriate support or corrective measures to be implemented with minimal delay.

299. The project Steering Committee will receive periodic reports on progress and will make recommendations to UNEP concerning the need to revise any aspects of the Results Framework or the M&E plan. The UNEP TM in UNEP-GEF is responsible for confirming that the project meets UNEP and GEF policies and procedures. The UNEP TM will also review the quality of draft project outputs, provide feedback to the project partners, and establish peer review procedures to enhance the quality of scientific and technical outputs and publications.

300. Project supervision will take an adaptive management approach. Accordingly, the TM will develop a project supervision plan at the inception of the project. This plan will be communicated to the project partners during the inception workshop. The emphasis of the Task Manager supervision will be on outcome monitoring. However, he/she will also be responsible for project financial management and implementation monitoring. Additionally, progress on delivering the agreed project global environmental benefits will be assessed with the Steering Committee at agreed intervals. Project risks and assumptions will be regularly monitored both by project partners and by UNEP. Furthermore, risk assessment and rating is an integral part of the PIR. The quality of project monitoring and evaluation will be reviewed and rated as part of the PIR. The main financial parameters will be monitored quarterly to promote cost-effectiveness.

301. The project will be reviewed or evaluated at mid-term (tentatively in January 2017 as indicated in the project milestones). The purpose of the Mid-Term Review (MTR) or Mid-Term Evaluation (MTE) is: i) to provide an independent assessment of project performance at mid-term; ii) to analyse whether the project is on track, what problems and challenges the project is encountering; iii) and which corrective actions are required so that the project can achieve its intended outcomes by project completion in the most efficient and sustainable way. In addition, it will verify information gathered through the GEF tracking tools. The Project Steering Committee will participate in the MTR or MTE and develop a management

response to the evaluation recommendations along with an implementation plan. It is the responsibility of the UNEP TM to monitor whether the agreed recommendations are being implemented. The MTR will be managed by the UNEP Task Manager at DEPI. The MTE will be managed by the Evaluation Office of UNEP. The Evaluation Office will determine whether a MTE is required or whether an MTR is sufficient.

302. An independent terminal evaluation (TE) will take place at the end of project implementation. The Evaluation Office of UNEP will be responsible for the TE and liaise with the UNEP Task Manager at DEPI throughout the process. The TE will provide an independent assessment of project performance (in terms of relevance, effectiveness and efficiency), and determine the likelihood of impact and sustainability. It will have two primary purposes: (i) to provide evidence of results to meet accountability requirements, and (ii) to promote learning, feedback, and knowledge sharing through results and lessons learned among UNEP and executing partners (the REMA in particular). The direct costs of the evaluation will be charged against the project evaluation budget. The TE report will be sent to project stakeholders for comments. Formal comments on the report will be shared by the Evaluation Office in an open and transparent manner. The project performance will be assessed against standard evaluation criteria using a six-point rating scheme. The final determination of project ratings will be made by the Evaluation Office when the report is finalised. The evaluation report will be publically disclosed and will be followed by a recommendation compliance process.

303. The GEF tracking tools are attached as Appendix 17. These will be updated at mid-term and at the end of the project. In addition, the tracking tools will be made available to the GEF Secretariat along with the project PIR report. As mentioned above the mid-term and terminal evaluation will verify the information of the tracking tool.

SECTION 7: PROJECT FINANCING AND BUDGET

7.1. Overall project budget

Table 5. A breakdown of total project financing.

	LDCF Funds	Co-Financing	Total Costs
Total project cost (US$)	5,500,000	9,244,000	14,744,000

7.2. Project co-financing

Table 6. Breakdown of project financing by funder.

	US$	%
LDCF Funds	5,500,000	**37**
Co-financing		
Multi-Lateral Development Bank	6,939,000	**47**
Bilateral Agency and foreign government	2,305,000	**16**
Total	**14,744,000**	**100**

7.3 Project Cost-effectiveness

304. The adaptation interventions to be implemented through the proposed project will restore natural ecosystems and increase agricultural productivity in the project target areas. This will reduce the vulnerability of communities living near project intervention sites.

305. The adaptation interventions are no-regret[114] and low cost with tangible benefits. As part of the development of the SNC and NAPA, multi-criteria analyses were undertaken to prioritize adaptation interventions according to their potential for positive effects on economic development, social capital and environmental management. Cost-effectiveness was a criterion used to prioritize the allocation of resources. The actions proposed by the NAPA are therefore not only the most urgent and most pressing, but have also been assessed to be cost-effective. The adaptation interventions to be implemented through the proposed project are prioritised in the NAPA as well as several other national strategies, policies and plans – see Section 3.1. Consequently, the GoR already identifies the interventions as cost-effective.

306. The most noteworthy feature of the project with respect to cost-effectiveness is the emphasis on an EbA approach. A growing body of scientific research demonstrates that past initiatives which included EbA measures resulted in a greater ratio of benefit/cost compared to the use of hard infrastructural measures. For example, an economic analysis of the restoration and rehabilitation of grasslands and woodlands estimated internal rates of return of 20–60% and benefit/cost ratios of up to 35:1[115] for grasslands. A frequently cited example of the cost-effectiveness of EbA is an economic analysis undertaken in Lami, Fiji[116]. This study included assessments of the costs and benefits of three approaches to watershed management: i) solely EbA measures; ii) "hard" engineering options and a hybrid approach; and iii) combining both hard engineering and EbA interventions. The analysis demonstrated that EbA watershed management options are at least twice as cost-effective as hard engineering options – e.g. a benefit/cost ratio of US$19.50 for EbA compared with US$9 for

[114] No-regret options are those that are justified by current climate conditions and further justified when climate change is considered, e.g. pollution reduction in water supplies will be beneficial if water supplies decrease because of climate change. Lim. B, and E. Spanger-Siegfried. 2004. Adaptation policy frameworks for climate change: developing strategies, policies and measures. Cambridge University Press, Cambridge, UK pp 253.

[115] De Groot et al. 2013. Benefits of investing in ecosystem restoration. *Conservation Biology* 27: 1286-1293.

[116] Rao et al. 2013. *An economic analysis of ecosystem-based adaptation and engineering options for climate change adaptation in Lami Town, Republic of the Fiji Islands*. A technical report by the Secretariat of the Pacific Regional Environment Programme. Apia, Samoa.

hard engineering[117]. This analysis also showed hybrid approaches to climate change adaptation, which included complementary EbA and engineering measures was likely the most cost-effective approach for adaptation to climate change.

307. Accurate benefit:cost analyses require accurate environmental and economic data to estimate the direct and indirect economic value of ecosystem services. The availability of these datasets is very limited. The research projects implemented through the proposed project in Rwanda will contribute to fill in this gap.

308. The effectiveness of the interventions in increasing resilience to climate change will be tested and measured during the course of the project (Output 1.5). Through this Output, cost-benefit analyses of the EbA interventions of the project will be undertaken. The results of these analyses will be made available nationally and will be used to inform the upscaling of the most successful EbA interventions in Rwanda.

309. The proposed project includes technical and administrative training for community member on EbA interventions through a learning-by-doing approach. This will enhance community ownership of the project interventions. This reduces the overhead for monitoring and maintenance of the activities as well as promotes the sustainability of the project interventions beyond the lifespan of the project.

310. The proposed project will build on existing initiatives in Rwanda, which will reduce the costs of the project. For example, planting protocols for agroforestry, and restoration in savannas have been developed by PAREF, and RSSP 3 and LWH respectively. Where appropriate, these will be used by the proposed project for Output 3.3. Similarly, the project will use the protocols for forest restoration developed by LAFREC.

[117] A combination of EbA and hard engineering options is the most effective option to decrease vulnerability to floods according to this study. However, EbA interventions are prioritised in the proposed project as it focuses mainly on reducing the negative effects of droughts and bushfires.

SECTION 8: APPENDICES

Appendix 1: Budget by project components and UNEP budget lines in US $

Project number:				5194											Notes
Project executing partner				Rwandan Environmental Management Authority (REMA) in partnership with Ministry of Natural Resources (MINIRENA) and Ministry of Agriculture and Animal Resources (MINAGRI)											
Project implementation period				Expenditure by project component/activity						Expenditure by calendar year					
From:				Outcome 1	Outcome 2	Outcome 3	PM	M&E	Total	Year 1	Year 2	Year 3	Year 4	Total	
To:															
UNEP Budget Line															
10	PERSONNEL COMPONENT														
	1100		Project personnel												
		1101	National project manager (48 months @ $2237/month)	17,896	17,896	17,896	53,688		107,376	26,844	26,844	26,844	26,844	107,376	
		1102	Support to SPIU/REMA				165,000		165,000	41,250	41,250	41,250	41,250	165,000	
		1199	Sub-total	17,896	17,896	17,896	218,688	0	272,376	68,094	68,094	68,094	68,094	272,376	
	1200		Consultants												
		1201	International specialist in EbA (37 days @ $500/day; 2 flights @ $2500/flight; 30 days in-country @ $166/day)	28,500					28,500	8,000	15,000	5,500	0	28,500	1
		1202	National specialist in EbA (91 days @ $200/days)	18,200					18,200	8,200	10,000	0	0	18,200	2
		1203	National specialist in indigenous species in Rwanda (38 days @ $200/day)	7,600					7,600	7,600	0	0	0	7,600	3
		1204	National specialist in green technologies (65 days @ $200/day)	13,000					13,000	7,000	6,000	0	0	13,000	4
		1205	National specialist in Information Technologies (35 days @ $200/day)	7,000					7,000	0	4,000	3,000	0	7,000	5
		1206	National specialist in Ecosystem health (30 days @ $200/days)	6,000					6,000	0	6,000	0	0	6,000	6
		1207	National specialist in education to environment (215 days @ $200/days)	43,000					43,000	10,000	23,000	10,000	0	43,000	7
		1208	International specialist in EbA (49 days @ $500/day; 2 flights @ $2500/flight; 42 days in-country @		36,500				36,500	10,000	26,500	0	0	36,500	8

			$166/day)											
		1209	International expert in environmental economics and adaptation (25 days @ $500/day; 2 flights @ $2500/flight; 20 days in-country @ $166/day)		21,000			21,000	0	21,000	0	0	21,000	9
		1210	International Chief Technical Advisor (253 days @ $500/day; 8 flights @ $2500/flight; 80 days in-country @ $166/day)		160,000			160,000	46,000	38,000	38,000	38,000	160,000	
		1211	National EbA expert (170 days @ $200/day)		34,000			34,000	0	10,000	12,000	12,000	34,000	10
		1212	National expert in environmental economics and adaptation (54 days @ $200/day)		10,800			10,800	0	10,800	0	0	10,800	11
		1213	National expert in environmental assessments (40 days @ $200/day)		8,000			8,000	0	5,000	3,000	0	8,000	12
		1214	National expert in natural resources' management (46 days @ $200/day)		9,200			9,200	4,000	5,200	0	0	9,200	13
		1215	Field officers at Bugesera, Ngororero and Kayonza (3 x 48 months @ $462/month)		66,528			66,528	16,632	16,632	16,632	16,632	66,528	
		1216	International specialist in EbA (30 days @ $500/day; 2 flights @ $2500/flight; 26 days in-country @ $166/day)			27,500		27,500	10,000	12,500	5,000	0	27,500	14
		1217	International specialist in agroforestry (20 days @ $500/day; 1 flights @ $2500/flight; 14 days in-country @ $166/day)			15,000		15,000	0	10,000	5,000	0	15,000	15
		1218	International specialist in green technologies (27 days @ $500/day; 2 flights @ $2500/flight; 23 days in-country @ $166/day)			22,500		22,500	0	12,500	10,000	0	22,500	16
		1219	International specialist in environmental economics and private sector (66 days @ $500/day; 3 flights @			49,500		49,500	0	0	29,500	20,000	49,500	17

			$2500/flight; 54 days in-country @ $166/day)												
		1220	National specialist in vulnerability assessments (60 days @ $200/day)			12,000			12,000	12,000	0	0	0	12,000	
		1221	National specialist in wetland ecosystems (75 days @ $200/day)			15,000			15,000	10,000	5,000	0	0	15,000	18
		1222	National specialist in agroforestry (73 days @ $200/day)			14,600			14,600	10,000	4,600	0	0	14,600	19
		1223	National specialist in agriculture (80 days @ $200/day)			16,000			16,000	4,000	8,000	4,000	0	16,000	20
		1224	National specialist in green technologies (86 days @ $200/day)			17,200			17,200	4,000	5,200	5,000	3,000	17,200	21
		1225	National specialist in forest ecosystems (41 days @ $200/day)			6,800			6,800	6,800	0	0	0	6,800	22
		1226	National specialist in savanna ecosystems (55 days @ $200/day)			11,000			11,000	6,000	5,000	0	0	11,000	23
		1227	National specialist in community-based projects (35 days @ $200/day)			11,000			11,000	5,000	2,000	4,000	0	11,000	24
		1228	National apicultural specialist (200 days @ $200/day)			40,000			40,000	5,000	10,000	15,000	10,000	40,000	25
		1229	National fisheries' specialist (36 days @ $200/day)			7,200			7,200	0	3,000	3,000	1,200	7,200	26
		1230	National specialist in handcrafting (82 days @ $200/day)			16,400			16,400	0	6,000	6,000	4,400	16,400	27
		1231	National specialist in ecotourism (43 days @ $200/day)			8,600			8,600	0	3,600	5,000	0	8,600	28
		1232	International M&E expert (91 days @ $500/day; 2 flights @ $2500/flight; 28 days in-country @ $166/day)					53,400	53,400	17,000	17,000	0	19,400	53,400	
		1233	M&E Specialist (48 months @ $1622/month)					77,856	77,856	19,464	19,464	19,464	19,464	77,856	
		1299	**Sub-total**	123,300	346,028	290,300	0	131,256	890,884	226,696	320,996	199,096	144,096	890,884	
	1300		**Administrative Support**												
		1301	Project Officer (48 months				17,808		17,808	4,452	4,452	4,452	4,452	17,808	

			@ $371/month)												
		1302	Internal Auditor (48 months @ $511/month)				24,528		24,528	6,132	6,132	6,132	6,132	24,528	
		1399	**Sub-total**	0	0	0	42,336	0	42,336	10,584	10,584	10,584	10,584	42,336	
	1600		**Travel on official business**												
		1699	**Sub-total**	0	0	0	0	0	0	0	0	0	0	0	
1999		**Component total**		141,196	363,924	308,196	261,024	131,256	1,205,596	305,374	399,674	277,774	222,774	1,205,596	
20	**SUB-CONTRACT COMPONENT**														
	2100		**Sub-contracts (MOUs/LOAs for supporting organisations)**												
		2101	Sub-contract for EIAs	100,000					100,000	100,000	0	0	0	100,000	29
		2102	Baseline study		40,000				40,000	40,000	0	0	0	40,000	
		2103	Progressive terraces on 100 ha in Murago wetland area			39,200			39,200	15,000	19,200	5,000	0	39,200	30
		2104	Radical terraces on 100 ha in Sanza/Satyinski area			248,000			248,000	80,000	100,000	68,000	0	248,000	
		2105	Construction of a honey collection center			80,000			80,000	0	40,000	40,000	0	80,000	
		2106	External financial audit					20,000	20,000	5,000	5,000	5,000	5,000	20,000	
		2199	**Sub-total**	100,000	40,000	367,200	0	20,000	527,200	240,000	164,200	118,000	5,000	527,200	
	2200		**Sub-contracts (for commercial purposes)**												
		2201	10 short-term research projects	300,000					300,000	60,000	92,800	92,800	54,400	300,000	31
		2202	Awareness campaign on the effects of chemical fertilizers and pesticides on wetlands			12,000			12,000	0	12,000	0	0	12,000	32
		2299	**Sub-total**	300,000	0	12,000	0	0	312,000	60,000	104,800	92,800	54,400	312,000	
2999		**Component total**		400,000	40,000	379,200	0	20,000	839,200	300,000	269,000	210,800	59,400	839,200	
30	**TRAINING COMPONENT**														
	3200		**Group training**												
		3201	Training of members of the NSC for the Rio conventions of EbA	5,500					5,500	0	5,500	0	0	5,500	33
		3202	Two-days training of the DEOs and DEFs in Kigali	8,500					8,500	0	8,500	0	0	8,500	34
		3203	Three-days training of environmental committees	16,500					16,500	4,500	12,000	0	0	16,500	35

			in the province												
		3204	One-day training of the private sector companies on EbA in Kigali	7,000					7,000	0	7,000	0	0	7,000	36
		3205	Four-days to train community representatives, NGOs and agriculture cooperative on EbA in the capital of each district of the project	20,000					20,000	6,000	14,000	0	0	20,000	37
		3206	Training of trainers in farmer field schools on the use of organic waste as fertilizer and biogas as a source of energy in 4 districts	36,000					36,000	16,000	20,000	0	0	36,000	38
		3207	One day to present the proposed revisions and the guidelines to MINEDUC, universities and schools.	3,000					3,000	0	0	3,000	0	3,000	
		3208	Two-day training on EbA to teachers/educators/trainers in eight schools	12,800					12,800	0	12,800	0	0	12,800	39
		3209	Six-day training in each of the four selected schools to set up school-based EbA project	20,000					20,000	0	20,000	0	0	20,000	40
		3210	Two-day field visits for eight schools	32,000					32,000	0	16,000	16,000	0	32,000	41
		3211	Training of the planning expert of national ecosystem management policies		5,000				5,000	0	5,000	0	0	5,000	42
		3212	Workshop with REMA to develop the upscaling strategy		6,000				6,000	0	0	0	6,000	6,000	43
		3213	Training of MINIRENA WG members on EbA		6,000				6,000	0	6,000	0	0	6,000	44
		3214	Training of experts in planning and technical departments of relevant government authorities on EbA		8,000				8,000	0	8,000	0	0	8,000	45
		3215	Training of EIA, SEA and EA experts on EbA		12,000				12,000	0	8,000	4,000	0	12,000	46
		3216	Training of district authority to integrate EbA into DDPs and improve policy		12,000				12,000	0	12,000	0	0	12,000	47

			implementation process											
		3217	One-day workshop with local communities to develop the nurseries management system in wetlands			9,000			9,000	9,000	0	0	0	9,000	48
		3218	Training on wetland restoration techniques			18,000			18,000	12,000	6,000	0	0	18,000	49
		3219	Training on construction of climate-resilient terraces			6,000			6,000	0	6,000	0	0	6,000	50
		3220	Training on the use of agroforestry techniques			24,000			24,000	0	15,000	9,000	0	24,000	
		3221	Training on water harvesting techniques in Murago			12,000			12,000	0	8,000	4,000	0	12,000	51
		3222	Training on invasive species management			12,000			12,000	2,000	6,000	4,000	0	12,000	52
		3223	Training on the use of organic compost			18,000			18,000	0	12,000	6,000	0	18,000	53
		3224	Training on the use of the biogas digesters			24,000			24,000	0	24,000	0	0	24,000	54
		3225	One-day workshop with local communities to develop the nurseries management system in forests			3,000			3,000	3,000	0	0	0	3,000	
		3226	Training on forest restoration techniques			6,000			6,000	3,000	3,000	0	0	6,000	
		3227	Training of rainwater management in Sanza			8,000			8,000	0	4,000	4,000	0	8,000	
		3228	One-day workshop with local communities to develop the nurseries management system in savannas			3,000			3,000	3,000	0	0	0	3,000	
		3229	Training on savanna restoration techniques			6,000			6,000	3,000	3,000	0	0	6,000	
		3230	Training on water harvesting techniques in Isangano			8,000			8,000	0	4,000	4,000	0	8,000	
		3231	Training on techniques to reduce evaporation			8,000			8,000	0	3,000	5,000	0	8,000	
		3232	One-day workshop with district authorities on the environmental clubs			3,000			3,000	0	0	3,000	0	3,000	
		3233	Training on bee-keeping			24,000			24,000	0	12,000	8,000	4,000	24,000	
		3234	Training on fishing activities			24,000			24,000	0	10,000	8,000	6,000	24,000	

		3235	Training on handcrafting activities			48,000			48,000	0	20,000	20,000	8,000	48,000	
		3236	One-day workshop on handcrafting with district authorities and community representatives			9,000			9,000	0	0	4,000	5,000	9,000	
		3237	Two-day workshop on ecotourism projects with district authorities and community representatives			6,000			6,000	0	4,000	2,000	0	6,000	
		3299	**Sub-total**	161,300	49,000	279,000	0	0	489,300	61,500	294,800	104,000	29,000	489,300	
	3300		**Meeting/Conferences**												
		3301	One-day workshop on the NSC of the Rio conventions	8,500					8,500	0	0	0	8,500	8,500	55
		3302	Two one-day NSC meetings for the Rio conventions	17,000					17,000	0	8,500	8,500	0	17,000	56
		3303	Three days of awareness raising of local communities on EbA in four districts	36,000					36,000	0	36,000	0	0	36,000	57
		3304	One-day workshop to set up the research projects	500					500	500	0	0	0	500	58
		3305	Two days of conference on the results of the research projects	8,000					8,000	0	0	0	8,000	8,000	59
		3306	One-day awareness-raising campaign on EbA research for Master students	5,000					5,000	0	5,000	0	0	5,000	60
		3307	Inception workshop					9,100	9,100	9,100	0	0	0	9,100	
		3399	**Sub-total**	75,000	0	0	0	9,100	84,100	9,600	49,500	8,500	16,500	84,100	
3999		**Component total**		236,300	49,000	279,000	0	9,100	573,400	71,100	344,300	112,500	45,500	573,400	
40	**EQUIPMENT AND PREMISES COMPONENT**														
	4100		**Expendible equipment**												
		4101	Office supplies	26,000					26,000	8,000	10,000	8,000	0	26,000	
		4102	Computer equipment	20,800					20,800	14,800	2,000	2,000	2,000	20,800	
		4199	**Sub-total**	46,800	0	0	0	0	46,800	22,800	12,000	10,000	2,000	46,800	
	4200		**Non-expendable Equipment**												
		4201	Budget for school-based EbA project	96,000					96,000	0	32,000	32,000	32,000	96,000	61
		4202	Renting vehicles		72,000				72,000	18,000	18,000	18,000	18,000	72,000	62

		4203	Seedlings and nurseries for wetland restoration and agroforestry in Murago			110,200			110,200	80,000	14,200	10,000	6,000	110,200	63
		4204	Restoration of 50 ha of wetland in Kimicanga			67,250			67,250	20,000	25,000	15,000	7,250	67,250	64
		4205	Restoration of 20 km of riverbank or 40 ha in Satyinski			109,100			109,100	20,000	40,000	29,100	20,000	109,100	65
		4206	Restoration of 100 ha of wetland in Murago			195,100			195,100	20,600	100,000	54,500	20,000	195,100	66
		4207	Agroforestry on 100 ha in Murago wetland area			75,000			75,000	10,000	30,000	30,000	5,000	75,000	67
		4208	Purchase 100 water tanks for Isangano and 100 for Murago			88,400			88,400	0	48,400	40,000	0	88,400	68
		4209	Removal of water hyacinth on 10 ha in Murago wetland			70,600			70,600	20,000	30,000	10,600	10,000	70,600	69
		4210	Construct and install 120 biogas systems including two cows			174,000			174,000	0	174,000	0	0	174,000	70
		4211	Building of composting basins			144,000			144,000	0	100,000	44,000	0	144,000	71
		4212	Nursery establishment for forest restoration and agroforestry in Sanza and Satinsyi respectively			72,000			72,000	50,000	12,000	10,000	0	72,000	72
		4213	Restoration of 20 ha of forests			24,000			24,000	0	14,000	10,000	0	24,000	73
		4214	Agroforestry on 200 ha in forest restoration areas			200,000			200,000	20,000	100,000	60,000	20,000	200,000	74
		4215	Nursery establishment for savanna restoration and agroforestry in Isangano			150,000			150,000	30,000	65,000	45,000	10,000	150,000	75
		4216	Restoration of 300 ha of savannas			375,000			375,000	50,000	120,000	120,000	85,000	375,000	76
		4217	Agroforestry on 200 ha in savanna restoration areas			200,000			200,000	20,000	100,000	72,000	8,000	200,000	77
		4218	Apiculture equipment			120,000			120,000	0	60,000	35,000	25,000	120,000	78
		4219	Fishing equipment in Murago and Isangano			300,000			300,000	10,000	160,000	100,000	30,000	300,000	79
		4220	Handcrafting equipment in Murago			50,594			50,594	0	30,000	20,594	0	50,594	80
		4299	**Sub-total**	96,000	72,000	2,525,244	0	0	2,693,244	368,600	1,272,600	755,794	296,250	2,693,244	
	4300		**Office rental**												
		4301													
		4399	**Sub-total**	0	0	0	0	0	0	0	0	0	0	0	

4999		**Component total**		142,800	72,000	2,525,244	0	0	2,740,044	391,400	1,284,600	765,794	298,250	2,740,044	
50	**MISCELLANEOUS COMPONENT**														
	5100		**Operation and maintenance of equipment**												
		5101													
		5199	**Sub-total**	0	0	0	0	0	0	0	0	0	0	0	
	5200		**Reporting costs**												
		5201	Inception workshop report					3,000	3,000	3,000	0	0	0	3,000	
		5202	Reporting costs		40,000				40,000	10,000	10,000	10,000	10,000	40,000	
		5299	**Sub-total**	0	40,000	0	0	3,000	43,000	13,000	10,000	10,000	10,000	43,000	
	5300		**Sundry**												
		5301	Publication	6,000					6,000	0	0	0	6,000	6,000	81
		5302	Communication for PM and M&E		22,760				22,760	5,690	5,690	5,690	5,690	22,760	
		5399	**Sub-total**	6,000	22,760	0	0	0	28,760	5,690	5,690	5,690	11,690	28,760	
	5500		**Evaluation**												
		5501	Mid-term evaluation					35,000	35,000		35,000			35,000	
		5502	Final evaluation					35,000	35,000				35,000	35,000	
		5599	**Sub-total**	0	0	0	0	70,000	70,000	0	35,000	0	35,000	70,000	
5999		**Component total**		6,000	62,760	0	0	73,000	141,760	18,690	50,690	15,690	56,690	141,760	
99	**GRAND TOTAL**			926,296	587,684	3,491,640	261,024	233,356	5,500,000	1,086,564	2,348,264	1,382,558	682,614	5,500,000	

Budget notes:

Number	Budget note
1	The international consultant will work with REMA, RAB, REB, NUR and MINEDUC to: i) identify the gaps in EbA knowledge for Rwanda (five days in country and three days at home for literature review); ii) develop 10 short-term research projects to be conducted within three years (five days in country and eight days at home); iii) encourage young scientists to work on EbA (four days in country including one day for the awareness-raising campaign); iv) provide support to select the best candidates; and v) develop the research forum (two days in country). Additionally, he/she will collaborate with the national consultant in the ecosystem health assessment to identify the ecosystems with the highest need for EbA interventions (10 days in country).
2	The national consultant will be hired to implement six activities. 1) A one-day long workshop will be organised with the actors of the NSC to validate their role in the NSC and to discuss the organisation of the first NSC meeting (Activity 1.1.1). Four days are allocated to the organisation of the meeting and one day to hold it. 2) Five days are allocated to the preparation of the training session, one day for training session itself and two days to prepare the report for this activity. Consequently, eight days are allocated to Activity 1.1.2. 3) Eight days will be necessary to prepare the training session for Activity 1.2.1 and two days for the actual training session. Five days are allocated to prepare the report. 15 days are therefore allocated to Activity 1.2.1. 4) 15 days are allocated for the preparation of the training sessions for Activity 1.2.2, including a two-day visit to each district. The training content in each province will be specific to the districts where the project are implemented. The training sessions will last for three days, with an additional three days required for travelling. Six days are allocated to the writing of the report. Therefore, a total of 29 days are allocated for Activity 1.2.2. 5) Activity 1.2.3 will start with a meeting of 10 private sector companies selected as the most likely to implement EbA technics. 10 days are allocated to the meetings. Five days will be necessary to prepare the training content. The training session will be one day long and four days will be spent on writing the meeting and training report. In total, 20 days are

	allocated for Activity 1.2.3. 6) Activity 1.2.4 will consist of four days of training on EbA (one per district) to local communities' representatives, NGOs and agriculture cooperatives. The training will be district-specific. The training content from Activity 1.2.2 will be adapted to the audience of this activity. Therefore, four days are allocated to the preparation of the training content. Two days will be added to the district visit of Activity 1.2.2 to meet with major NGOs, community representatives and agriculture cooperatives. Six days are allocated to the writing of the report. Therefore, 22 days are allocated to the national consultant for Activity 1.2.4.
3	4 days are allocated to the consultant to identify indigenous species suitable for the agroforestry and restoration activities of the project. He/she will then review past and current Rwandan restoration project that focus on planting these indigenous species (16 days). 18 days are allocated to producing the guidelines to plant and maintain the selected indigenous species for restoration and agroforestry in wetland, forest and savanna ecosystems respectively (6 days each).
4	1) Six days will be spent in each of the four districts to assess the use of: i) organic waste as fertilizer (3 days); and ii) biogas as a source of energy (3 days). Therefore, a total of 24 days will be spent in the field. 2) 20 days will be spent on the production of guiding documents for farmers on green technologies, containing site-specific guidelines for each district. 3) The preparation of the training sessions on each technologies will take nine days and the training sessions in the farmer field schools will take 12 days. Therefore, a total of 21 days are allocated for the training. 4) The distribution of the documents will be done by REMA.
5	8 days will be spent on a meeting with the project management team of each adaptation projects in Rwanda in Kigali, collection of all the necessary documents and identification of the best adaptation practices to promote on the website. 12 days are allocated to the improvement of the climate change portal. 15 days are allocated to development of the research forum (Activity 1.5.5).
6	30 days are allocated to collect the required information and produce the priority map in collaboration with the international consultant in EbA.
7	The same national consultant will be hired for Activities 1.4.1 to 1.4.8. 1) Three days of awareness-raising will be organised in each of the four districts where the project activities will be implemented (as part of Activity 1.4.1). Four days were added to the budget to allow for travelling time. 12 days are allocated to the preparation of the awareness raising days. This includes one day in each district to determine, in collaboration with the district, sector and cell environmental committee members, the content of the awareness-raising day in each district. 2) Primary school curricula will be reviewed and revisions will be proposed (Activity 1.4.2) to include EbA (20 days). The same will be done for secondary school curricula (20 days). 3) The programme of universities and technical colleges will be reviewed to identify entry points for any EbA module. 25 days are allocated to this review. The module on EbA will then be developed. It will be approximately a 15-hour teaching module. 30 days are allocated to the development of this module. This includes a meeting with at least 10 pre-selected universities to develop the content of the module (Activity 1.4.3). 4) Guidelines will be produced to enable the integration of EbA into the curricula of schools nationally. The proposed revisions and guidelines will then be officially presented to MINEDUC and relevant universities and schools (Activity 1.4.4). 5) Activity 1.4.5 will focus on schools near the project intervention sites. The proposed revisions to the school curricula prepared in Activity 1.4.2 will be used to train teachers, educators and trainers on EbA in at least eight schools. Approximately 12 people will be trained at each school. Five days are allocated to the preparation of the training sessions. Two-day training sessions will be organised at each school. Eight days are allocated to cover travelling time. In total, 29 days are allocated to Activity 1.4.5. 6) Activity 1.4.6 requires two days to select three schools for the implementation of the pilot school-based EbA projects. Additionally, six days are allocated in each school to develop the projects and help teachers and students to set up the project. In total 26 days are allocated to Activity 1.4.6. 7) Activity 1.4.7 will be conducted with the teachers/educators/trainers. Two days in the field will therefore be allocated in each district to develop a performance index and an award system. Five days are allocated to writing the corresponding report. 8) Activity 1.4.8 will consist of two field trips (one at the beginning of the project and one at mid-term to assess progress), one-day field trips will be organised for each school (one field trip per type of ecosystem). Therefore, two days are allocated to the consultant for each school.
8	First, the international EbA consultant will assist the national EbA consultant in identifying the entry points for EbA in Activity 2.1.1 (4 days). Second, the international consultant will assist the national EbA consultant in producing the policy recommendations to integrate EbA into environmental assessment process (Activity 2.3.5, three days). Third, the international consultant will assist the national EbA consultant in implementing Activities 2.4.1, 2.4.5 and 2.4.6 through: i) developing the policy recommendations to introduce EbA into DDPs (Activity 2.4.1, five days); ii) preparing training documents (Activity 2.4.5, five days); and iii) proposing revisions to the criteria for the award system of districts, NGOs, CBOs and individuals working in the private sector (Activity 2.4.6, five days). Five days are allocated to the writing of the mission report.
9	The International consultant will assist the national consultant in the implementation of Activities 2.3.1 to 2.3.4. He/she will support the development of the

	policy recommendations and training documents to integrate EbA in Rwanda development planning. 20 days are allocated to the international consultant.
10	The national consultant will work on 10 activities. 1) Four days are allocated to the review of each document (Activity 2.1.1). 2) Eight days are allocated to the production of the policy recommendations and policy briefs (Activity 2.1.2 and 2.1.3). 3) Four days are allocated to the preparation of the workshop and one day to hold the workshop (Activity 2.1.4). Three days are allocated to writing the mission report. 4) 10 days are allocated to the identification of successful activities. To do so, the national consultant will consult the project management team and review progress reports such as the mid-term review (Activity 2.2.1). 25 days are allocated to the identification of suitable replication sites. This identification includes field visits to the potential sites. 5) 18 days are allocated to the meetings with the relevant national authorities and on-site with local authorities (Activity 2.2.2). 6) 10 days are allocated to the investigation of financing options (Activity 2.2.3). 7) 18 days are allocated to the development of the upscaling strategy framework (Activity 2.2.4) in collaboration with FONERWA and REMA. 8) Eight days are allocated to review the DDPs in the district of intervention of the project as part of Activity 2.4.1. 20 days are allocated to the development of district-specific recommendations to integrate EbA into DDPs. These 20 days include a three-day field visit to each of the four districts. 9) Eight days will be spent on the preparation of the training material for Activity 2.4.5 and one-day training will be organised in each of the four districts. Six days will be added to the contract to cover travelling time between districts. 10) The proposed revisions to the award system (Activity 2.4.6) will be developed after consultation with the district authorities. One day will be added to the field mission organised as part of Activity 2.4.5 in each district. Eight days are allocated to the revision of the award system and to the writing of the report.
11	The national consultant will implement four activities in collaboration with an international consultant. 1) Eight days are allocated to the review of national development plans and eight days to the production of policy recommendations to integrate EbA in these documents (Activity 2.3.1). 2) Six days are allocated to the preparation of the training section and two days to holding the training session. Four days are allocated to the writing of the mission report (Activity 2.3.2). 3) Eight days are allocated to the review of sectoral development plans and eight days to the production of recommendations to integrate EbA in these documents (Activity 2.3.3). 4) Four days are allocated to the preparation of the training section and two days to holding the training session (Activity 2.3.4). Four days are allocated to the writing of the mission report.
12	The national consultant will work on Activities 2.3.5 in collaboration with the international EbA consultant. He/she will develop policy recommendations for the national SEA, EIA and EA experts to promote EbA in the assessment process. 20 days are allocated to the review of the SEA and EIA documents and production of these policy recommendations. These 20 days of work will include meetings with government authorities of corresponding sectors. One training day will be organised for the authorised EIA experts, one-day training for the SEA experts and one-day training for the EA experts (Activity 2.3.6). Three days are allocated to the organisation of each training session. Eight days are allocated to write the report.
13	The national consultant will be in charge of three activities (Activities 2.4.2 to 2.4.4). 1) He/she will have eight days to review the documents available on the state of ecosystems in the four districts and develop indicators for the state wetlands and forests in these districts. Four days will then be spent in the field at each district to develop and measure indicators of the state of wetlands and forests, and to identify the main threats to these ecosystems (Activity 2.4.2). 2) 12 days will be spent identifying problems in the implementation of policies, plans and legislations in the four districts (3 days per district, Activity 2.4.3). 3) Seven days are allocated to the production of the guidelines containing the district-specific solutions to address the shortcomings in the implementation (Activity 2.4.4). Three days are allocated to the preparation of the training documents and one day is allocated to training. Four days are allocated to write the report containing the monitoring indicators and results as well as implementation improvement (Activity 2.4.5).
14	An International EbA consultant will support the national consultants in wetland, forest and savanna restoration to prepare the restoration protocols and training material. 10 days are allocated for each type of ecosystem. These 30 days will be split into two missions.
15	An international consultant in agroforestry will provide support in the following: i) the selection of the most appropriate species to be planted at the intervention sites (10 days); ii) the development of the planting protocols (2 days); and iii) the preparation of training materials (4 days). Four days are allocated to the writing of the report.
16	An international consultant in green technologies and a national consultant will work for 15 days to select the most appropriate sites for the pilot projects and on the design of these projects. Additionally, he/she will provide support the development of the awareness campaign (2 days) and the preparation of training material (6 days). Four days are allocated to the writing of the report.
17	25 days are allocated to the identification of the best model to get funding from the private sector to fund long-term EbA projects in Rwanda. 20 days will then be spent on the development of a detailed protocol for the implementation of this model. Additionally, 15 days are allocated to the development of two community-based EbA projects suitable for private funding. Six days are allocated to the writing of the PD.

18	The national consultant will have 20 days to identify the best plant species for wetland restoration and 10 days to produce the protocols to plant them. Particular focus will be given to indigenous species. Four days are allocated to the writing of the report (Activity 3.1.2). This consultant will also be responsible for the training of local communities in restoration activities (Activity 3.1.3 and 3.1.4). 12 training days will be organised. Four days are allocated for travel and transportation. Six days are allocated to the preparation of training sessions. Last, the national consultant will organise awareness raising on the effects of water hyacinth and other damaging invasive species in wetlands. 10 days are allocated to this activity including a one-day field visit to identify the invasive species at each wetland restoration site. He/she will then train local communities on the best techniques to remove them. Three days are allocated to the organisation of training sessions and six days to hold them at each wetland restoration area (Activity 3.1.10).
19	The national consultant will work for 12 days on the identification of the best agroforestry species in each of the four intervention sites. Six days are allocated to the writing of the report (Activities 3.1.2, 3.2.2 and 3.3.2). Additionally, he/she will organise one training session (3 days) in each of the four intervention sites on agroforestry techniques. Three days are allocated to travelling between sites. Four days are allocated to the preparation of the training documents (Activities 3.1.8, 3.2.6 and 3.3.6).
20	The national consultant will work on four activities. 1) First, he/she will design the terraces. 15 days are allocated for the review of techniques and design. He/she will then organise three days of training of local communities on maintaining and planting on the terraces on both terraces and risers (Activity 3.1.8). Seven days are allocated to the preparation of the training material. 2) The consultant will organise six days of training on water harvesting techniques. 10 days are allocated to the preparation of the training documents and training days (Activity 3.1.9). 3) 10 days are allocated to the selection of the best rainwater management techniques for Activity 3.3.7 (this includes a field visit). Five days is allocated to the preparation of the training material and four days to the actual training. 4) 10 days are allocated to the selection of the appropriate pilot sites in Murago and Sanza, and best methods to reduce evaporation in Murago and Isangano. Five days will be spent on developing the training material. Five days of training will be provided to small groups of farmers (Activity 3.3.8).
21	The national consultant will be supported by an international specialist to implement six activities. The national consultant will also collaborate with the national consultant hired under Component 1 to conduct the Activities 1.3.2 to 1.3.4. 1) two days of awareness raising will be organised in each of the three sites for wetland restoration. Six days are allocated to the preparation of the awareness-raising material (Activity 3.1.11). 2) 20 days are allocated to the design of the pilot activities including site visits (e.g. selection of the sites and material). 16 days of training will be provided on the use of biogas digesters. Six days are allocated to the preparation of the training material (Activities 3.1.12, 3.2.7 and 3.3.9). 3) 10 days are allocated for the design of the pilot activities (e.g. selection of the sites and material). 10 days of training will be organised on the use of organic compost. Six days are allocated to the preparation of the training material. Six days are allocated to travelling (Activity 3.1.13).
22	The national consultant will have 20 days to identify the best plant species for forest restoration and 10 days to produce the protocols to plant them. Particular focus will be given to indigenous species. Four days are allocated to the writing of the report (Activity 3.2.2). This consultant will also be responsible for the training of local communities in restoration activities (Activity 3.2.3 and 3.2.4). Three days of training will be organised. One day is allocated to travelling. Three days are allocated to the preparation of the training sessions.
23	The national consultant will have 20 days to identify the best plant species for savanna restoration and 10 days to produce the protocols to plant them. Particular focus will be given to indigenous species. Four days are allocated to the writing of the report (Activity 3.3.2). This consultant will also be responsible for the training of local communities in restoration activities (Activity 3.3.3 and 3.3.4). Three days of training will be organised. One day are allocated for travel time. Three days are allocated to the preparation of the training sessions. Last, the consultant will have five days to review the institutional framework of the environment clubs with the local authorities, five days to propose an improve system and one day to hold a workshop to present the new system to the local authorities.
24	The national consultant will review other projects such as PEI to develop the best payment system to implement the activities under Component 3. Eight days are allocated to the review and meetings with other projects. Two days will be spent in each of the four sites to meet with local authorities. A one-day workshop with the local communities will also be held. Four days are allocated to travel. 15 days will be spent on the development of the selected system with relevant financial institutions. Additionally, 25 days are allocated to the development of a knowledge-sharing system between the local communities in the intervention sites.
25	The national consultant will investigate the occurrence of apiculture activities in Sanza, Isangano and Murago, and techniques that are used. Part of this investigation will be identifying the effects of bee-keeping in these areas. 20 days are allocated to this activity. He/she will then select the pilot sites and

	equipment needed (10 days). 10 training days will be organised at each intervention site. Five days are allocated to write the report. This training will focus on the following: i) best apiculture practices; and ii) the use of the new material.
26	The national consultant will investigate the occurrence of fishing activities in Murago wetland and Isangano area, and techniques that are used. Additionally, the effects of these fishing techniques on the wetland will be investigated. 10 days are allocated to this activity. He/she will then select the pilot sites and the equipment needed (10 days). 12 training days on the best fishing practices and use of the new material will be organised. Four days are allocated to the writing of the report.
27	The national consultant will investigate handcrafting activities in Isangano and Murago, and the techniques that are used. He/she will then identify the best species for handcrafting and collaborate with the relevant national consultants to include them into the restoration protocols. 20 days are allocated to this activity. He/she will then select the necessary equipment for the sustainable exploitation of these species (10 days). Six days of training at each intervention site on the best handcrafting practices and use of the new material will be organised. Eight days will be allocated to the production of a detailed plan to market these products for each of the three sites. This will be presented during a workshop with the district authorities and community representatives in the districts. Four days are allocated to the writing of the report.
28	The national consultant will have 20 days to select the most appropriate ecotourism project. 15 days will then be spent on developing a detailed project document to develop a community-based project in Sanza. Two days of workshop will then be organised with the district authorities and community representatives to present the project. Four days are allocated to the preparation of the workshop. Four days are allocated to writing the report of the mission.
29	EIAs will be conducted for the activities when necessary, it will therefore take place in the four districts were the activities will be conducted. The budget allocated is US $25,000 per district.
30	MoU will be signed with a private company to build the terraces. US $392 are allocated per hectare for progressive terraces and US $2,480 for radical terraces. At least 200 hectares of terraces will be built by the project to increase agriculture productivity and reduce erosion.
31	At least 10 short-term research projects will be conducted. Similarly to the framework used by the LAFREC project, the technical staff selected to conduct these studies will receive a US $30,000 funding per one-year study. Part of the duties of the technical staff will be to: i) present their results to the relevant stakeholders (Activity 1.5.4); ii) participate to the creation of the research forum (Activity 1.5.5); iii) contribute to the development of the awareness-raising campaign for young scientists (Activity 1.5.6); and iv) propose revisions of the training/education content of Outputs 1.3 and 1.4 according to their research outcomes (Activity 1.5.7).
32	Two-day awareness raising will be organised in each wetland restoration site.
33	A one-day long training session will be organised to present the effects of EbA on resilience to climate change and discuss the cross-cutting nature of EbA to address the main issues of the three Rio conventions. 60 participants are expected for this meeting. US $5,500 are allocated to the workshop for the meals, the venue, the transportation and accommodation.
34	2 days of training will be organised in Kigali with the DEO, DFO and DEF, and other relevant stakeholders of each district. Approximately 60 participants are expected. Transportation will be necessary for all participants. The budget is US $8,500 for this event.
35	The districts where the project activities will be implemented are close to the capital cities of the province namely Rwamagana, Kigali and Kibuye. Therefore, one-day training sessions will be organised in the capital cities of the three provinces. The members of the environmental committees at the province (7 members), district (9 members), sector (8 members) and cell level (8 members) will be invited to the meeting. Representatives from three province committees, four district committees, at least five sector committees and at least six cell committees are expected. All committee members will be invited, but approximately half of them are expected. With four members from each committee, 72 participants are expected. A budget of US $5,500 is allocated for the transport of all participants, the venue and the meal for each training day.
36	The main private companies that are contracted by the government to implement environment projects will be trained. 70 participants are expected in each sector. US $7,000 are allocated to this activity.
37	A one-day training will be organised in each district. Approximately 80 participants will be expected in each district. The training session will be implemented in the capital of the districts. A budget of US $5,000 is allocated for the following: i) transport of all participants, ii) venue; and iii) meals for each training day.
38	Three days of training will be held in each of the four districts. Approximately 30 participants are expected in each district. US $3,000 are allocated per day of

	training for transport, food and one trainer in addition to the national consultant. For 12 days, the budget is US $36,000. 25 participants are expected for each district.
39	US $800 are allocated to each training day to cover for food and transport. 25 participants are expected for each district.
40	US $5000 are allocated for the organisation of the six days of training to cover material and potential transport costs. 25 participants are expected for each district.
41	US $2000 are allocated to each field trip to cover for transport and food.
42	60 participants are expected each day. US $5,000 are allocated to each training day for the following: i) meals; ii) venue; and iii) transportation.
43	Two-day workshops will be organised to develop the upscaling strategy (Activity 2.2.4). US $3,000 are allocated to each workshop.
44	40 participants are expected to this training session. US $3,000 are allocated to organise the training day for the meals, the venue and the transportation.
45	50 participants are expected for this training session. US $4,000 are allocated to organise each training day for the following: i) meals; ii) venue; and iii) transportation.
46	1 training-day will be organised in Kigali for the authorised EIA, SEA and EA experts respectively. 60 participants are expected for each day. US $4,000 are allocated to each training day for the following: i) meals; ii) venue and; iii) transportation.
47	1 training day will be organised in each district. Approximately 25 participants are expected to attend the workshop. The budget allocated for each day of training is US $3,000.
48	A workshop will be organised with local communities to set up a community-based management system with local communities (3 workshops for the wetland restoration nurseries).
49	Three training days will be organised in each of the three wetland restoration sites including one day to establish each nursery and two days to explain the restoration techniques through planting first generation of trees. 80 people are expected for each training day. US $2,000 are allocated to each training day.
50	US $6,000 is allocated to the training session.
51	Six days of training will be organised in Murago with small groups of farmers on water harvesting techniques.
52	Six days will be organised with local communities to train them on how to recognize, remove and use water hyacinth.
53	Three days of training on the use of organic compost will be provided in each wetland restoration sites.
54	One training day on the use of biogas digesters will be organise per group of 10 users.
55	60 participants are expected for this meeting. US $8,500 is allocated to the workshop for the following: i) meals; ii) venue; iii) accommodation; and iv) transportation.
56	The two first NSC meetings will be organised. They will both be day-long meetings. 60 participants are expected for this meeting. US $8,500 is allocated to each meeting for the following: i) meals; ii) venue; iii) accommodation and; iv) transportation.
57	3 days of awareness-raising will be organised in each of the four districts where the project activities will be implemented. Approximately 90 people are expected for each day. US $3,000 have been allocated for the organisation of each awareness-raising day.
58	US $500 has been allocated for the organisation of a one-day workshop to develop the system to host the research projects.
59	As part of their contract, the technical staff conducting the research projects will present their findings at a conference with the management team of the baseline, partner projects and other relevant staff of MINIRENA. These conferences –where approximately 70 participants are expected – have an allocated budget of US $4,000.
60	US $5,000 has been allocated to the organisation of the awareness-raising campaign in Kigali for Master students for venue rental and meals.
61	A budget of US $8,000 is allocated per project/per year for three years. This includes the budget to purchase tools (e.g. spades, wheelbarrow) and material (e.g. fencing, educative signs, and pamphlets).
62	The preference of the executing agency is to rent vehicles to avoid having to maintain them. Renting a vehicle all included (e.g. driver and insurance) costs between US $85 and US $103. This price will vary according to the model of the vehicle. Therefore, a total of US $18,000 is allocated per year for motor vehicle rental.
63	An average of US $380 per hectare have been allocated to the purchase of seedling and building of nurseries for wetland restoration and agroforestry development.

64	US $1,345 have been allocated per hectare for the restoration of Kimicanga wetland.
65	US $5,455 have been allocated per hectare for the restoration of Satinsyi riverbanks.
66	US $1,951 have been allocated per hectare for the restoration of Murago wetland.
67	US $750 per hectares are allocated per hectare for the development of agroforestry on progressive terraces in Murago.
68	3,000-litre tanks will be provided to 200 households. The cost per unit is US $442.
69	The actual costs of hyacinth removal is US $3,530 per hectares according to the partner project “Rehabilitation of Cyohoha lake”.
70	5-cubic meter biogas digesters have a cost per unit of US $880. 40 biogas digester will be provided in Sanza, 40 in Isangano and 40 in Murago. The households will participate 20% of this cost. Therefore, US $706 are allocated per biodigester. Additionally, two cows will be provided with each biodigester. US$ 370 are allocated for each cow. When biogas cannot be used, this budget will be allocated to the purchasing of improved cook stoves.
71	40 composting basins will be built in Murago and 40 in Satinsyi. US $1,800 are allocated to building one unit.
72	1,500 trees will be planted per hectare of forest. A mortality rate of 40% is accounted for. Therefore, 2,200 seedlings will be planted in nurseries for each hectare of restored forest. An average of US $600 per hectare are allocated to purchase the seeds and build the nurseries for forest restoration and agroforestry in Sanza area.
73	US $1,200 per hectare are allocated for forest restoration in Sanza.
74	US $1,000 are allocated to the development of agroforestry in forest restoration area.
75	An average of US $300 per hectare are allocated to purchase the seeds and build the nurseries for savanna restoration and agroforestry in Isanagano savanna.
76	US $1,250 per hectare are allocated for forest restoration in Sanza.
77	US $1000 are allocated to the development of agroforestry in forest restoration area.
78	US $40,000 are allocated to the development of bee-keeping in pilot sites in Sanza, Isangano and Murago respectively. This price includes the following: i) hives; ii) protection clothes; and iii) extracting tools.
79	US $150,000 are allocated to the development of fishing activities in pilot sites in Isangano and Murago. This price includes fishing material (e.g. fish cages) and storage infrastructures.
80	This cost of US $50,594will support the development of handcrafting associations including purchasing tools, treatment products and storage infrastructure.
81	The budget allocated for the publication of scientific papers is US $6,000 to cover the costs for editing and journal fees.

Appendix 2: Co-financing by source and UNEP budget lines

Project number:				5194				
Project executing partner				Rwandan Environmental Management Authority (REMA) in partnership with Ministry of Natural Resources (MINIRENA) and Ministry of Agriculture and Animal Resources (MINAGRI)				
Project implementation period				Expenditure by project component/activity	Expenditure by calendar year			
From:				GEF	Multi-Lateral Development Bank (PAREF)	Multi-Lateral Development Bank (LWH and RSSP)	Total	
To:				Grant	In-kind	In-kind	Grant	In kind
UNEP Budget Line								
10	PERSONNEL COMPONENT							
	1100		Project personnel					
		1101	National project manager (48 months @ $2237/month)	107,376	-	-	107,376	-
		1102	Support to SPIU/REMA	165,000	-	-	165,000	-
		1199	Sub-total	272,376	0	0	272,376	0
	1200		Consultants	0			0	
		1201	International specialist in EbA (37 days @ $500/day; 2 flights @ $2500/flight; 30 days in-country @ $166/day)	28,500	-	-	28,500	-
		1202	National specialist in EbA (91 days @ $200/days)	18,200	-	-	18,200	-
		1203	National specialist in indigenous species in Rwanda (38 days @ $200/day)	7,600	-	-	7,600	-
		1204	National specialist in green technologies (65 days @ $200/day)	13,000	-	-	13,000	-
		1205	National specialist in Information Technologies (35 days @ $200/day)	7,000	-	-	7,000	-
		1206	National specialist in Ecosystem health (30 days @ $200/days)	6,000	-	-	6,000	-
		1207	National specialist in education to environment (215 days @ $200/days)	43,000	-	-	43,000	-
		1208	International specialist in EbA (49 days @ $500/day; 2 flights @ $2500/flight; 42 days in-country @ $166/day)	36,500	-	-	36,500	-
		1209	International expert in environmental economics and adaptation (25 days @ $500/day; 2 flights @ $2500/flight; 20 days in-country @ $166/day)	21,000	-	-	21,000	-
		1210	International Chief Technical Advisor (253 days @ $500/day; 8 flights @ $2500/flight; 80 days in-country @ $166/day)	160,000	-	-	160,000	-
		1211	National EbA expert (170 days @ $200/day)	34,000	-	-	34,000	-
		1212	National expert in environmental economics and	10,800	-	-	10,800	-

			adaptation (54 days @ $200/day)					
		1213	National expert in environmental assessments (40 days @ $200/day)	8,000	-	-	8,000	-
		1214	National expert in natural resources' management (46 days @ $200/day)	9,200	-	-	9,200	-
		1215	Field officers at Bugesera, Ngororero and Kayonza (3 x 48 months @ $462/month)	66,528	-	-	66,528	-
		1216	International specialist in EbA (30 days @ $500/day; 2 flights @ $2500/flight; 26 days in-country @ $166/day)	27,500	-	-	27,500	-
		1217	International specialist in agroforestry (20 days @ $500/day; 1 flights @ $2500/flight; 14 days in-country @ $166/day)	15,000	-	-	15,000	-
		1218	International specialist in green technologies (27 days @ $500/day; 2 flights @ $2500/flight; 23 days in-country @ $166/day)	22,500	-	-	22,500	-
		1219	International specialist in environmental economics and private sector (66 days @ $500/day; 3 flights @ $2500/flight; 54 days in-country @ $166/day)	49,500	-	-	49,500	-
		1220	National specialist in vulnerability assessments (60 days @ $200/day)	12,000	-	-	12,000	-
		1221	National specialist in wetland ecosystems (75 days @ $200/day)	15,000	-	-	15,000	-
		1222	National specialist in agroforestry (73 days @ $200/day)	14,600	-	-	14,600	-
		1223	National specialist in agriculture (80 days @ $200/day)	16,000	-	-	16,000	-
		1224	National specialist in green technologies (86 days @ $200/day)	17,200	-	-	17,200	-
		1225	National specialist in forest ecosystems (41 days @ $200/day)	6,800	-	-	6,800	-
		1226	National specialist in savanna ecosystems (55 days @ $200/day)	11,000	-	-	11,000	-
		1227	National specialist in community-based projects (35 days @ $200/day)	11,000	-	-	11,000	-
		1228	National apicultural specialist (200 days @ $200/day)	40,000	-	-	40,000	-
		1229	National fisheries' specialist (36 days @ $200/day)	7,200	-	-	7,200	-
		1230	National specialist in handcrafting (82 days @ $200/day)	16,400	-	-	16,400	-
		1231	National specialist in ecotourism (43 days @ $200/day)	8,600	-	-	8,600	-
		1232	International M&E expert (91 days @ $500/day; 2 flights @ $2500/flight; 28 days in-country @ $166/day)	53,400	-	-	53,400	-

		1233	M&E Specialist (48 months @ $1622/month)	77,856	-	-	77,856	-
		1299	**Sub-total**	890,884	0	0	890,884	0
	1300		**Administrative Support**					
		1301	Project Officer (48 months @ $371/month)	17,808	-	-	17,808	-
		1302	Internal Auditor (48 months @ $511/month)	24,528	-	-	24,528	-
		1399	**Sub-total**	42,336	0	0	42,336	0
	1600		**Travel on official business**	0			0	
		1699	**Sub-total**	0	0	0	0	0
1999		**Component total**		1,205,596	0	0	1,205,596	0
20	**SUB-CONTRACT COMPONENT**							
	2100		**Sub-contracts (MOUs/LOAs for supporting organisations)**					
		2101	Sub-contract for EIAs	100,000	-	-	100,000	-
		2102	Baseline study	40,000	-	-	40,000	-
		2103	Progressive terraces on 100 ha in Murago wetland area	39,200	1,000,000	-	39,200	1,000,000
		2104	Radical terraces on 100 ha in Sanza/Satyinski area	248,000	-	1,000,000	248,000	1,000,000
		2105	Construction of a honey collection center	80,000	-	-	80,000	-
		2106	External financial audit	20,000	-	-	20,000	-
		2199	**Sub-total**	527,200	1,000,000	1,000,000	527,200	2,000,000
	2200		**Sub-contracts (for commercial purposes)**					
		2201	10 short-term research projects	300,000	-	-	300,000	-
		2202	Awareness campaign on the effects of chemical fertilizers and pesticides on wetlands	12,000	-	-	12,000	-
		2299	**Sub-total**	312,000	0	0	312,000	0
2999		**Component total**		839,200	1,000,000	1,000,000	839,200	2,000,000
30	**TRAINING COMPONENT**							
	3200		**Group training**					
		3201	Training of members of the NSC for the Rio conventions of EbA	5,500	-	-	5,500	-
		3202	Two-days training of the DEOs and DEFs in Kigali	8,500	-	-	8,500	-
		3203	Three-days training of environmental committees in the province	16,500	-	-	16,500	-
		3204	One-day training of the private sector companies on EbA in Kigali	7,000	-	-	7,000	-
		3205	Four-days to train community representatives, NGOs and agriculture cooperative on EbA in the capital of each district of the project	20,000	-	-	20,000	-
		3206	Training of trainers in farmer field schools on the use of organic waste as fertilizer and biogas as a source of energy in 4 districts	36,000	200,000	-	36,000	200,000

		3207	One day to present the proposed revisions and the guidelines to MINEDUC, universities and schools.	3,000	-	-	3,000	-
		3208	Two-day training on EbA to teachers/educators/trainers in eight schools	12,800	-	-	12,800	-
		3209	Six-day training in each of the four selected schools to set up school-based EbA project	20,000	-	-	20,000	-
		3210	Two-day field visits for eight schools	32,000	-	-	32,000	-
		3211	Training of the planning expert of national ecosystem management policies	5,000	-	-	5,000	-
		3212	Workshop with REMA to develop the upscaling strategy	6,000	-	-	6,000	-
		3213	Training of MINIRENA WG members on EbA	6,000	-	-	6,000	-
		3214	Training of experts in planning and technical departments of relevant government authorities on EbA	8,000	-	-	8,000	-
		3215	Training of EIA, SEA and EA experts on EbA	12,000	-	-	12,000	-
		3216	Training of district authority to integrate EbA into DDPs and improve policy implementation process	12,000	-	-	12,000	-
		3217	One-day workshop with local communities to develop the nurseries management system in wetlands	9,000	100,000	-	9,000	100,000
		3218	Training on wetland restoration techniques	18,000	200,000	-	18,000	200,000
		3219	Training on construction of climate-resilient terraces	6,000	300,000	-	6,000	300,000
		3220	Training on the use of agroforestry techniques	24,000	500,000	-	24,000	500,000
		3221	Training on water harvesting techniques in Murago	12,000	300,000	-	12,000	300,000
		3222	Training on invasive species management	12,000	-	-	12,000	-
		3223	Training on the use of organic compost	18,000	-	-	18,000	-
		3224	Training on the use of the biogas digesters	24,000	-	500,000	24,000	500,000
		3225	One-day workshop with local communities to develop the nurseries management system in forests	3,000	-	-	3,000	-
		3226	Training on forest restoration techniques	6,000	-	200,000	6,000	200,000
		3227	Training of rainwater management in Sanza	8,000	-	100,000	8,000	100,000
		3228	One-day workshop with local communities to develop the nurseries management system in savannas	3,000	100,000	-	3,000	100,000
		3229	Training on savanna restoration techniques	6,000	100,000	-	6,000	100,000
		3230	Training on water harvesting techniques in Isangano	8,000	200,000	-	8,000	200,000
		3231	Training on techniques to reduce evaporation	8,000	-	-	8,000	-
		3232	One-day workshop with district authorities on the environmental clubs	3,000	-	-	3,000	-
		3233	Training on bee-keeping	24,000	500,000	-	24,000	500,000

		3234	Training on fishing activities	24,000	100,000	-	24,000	100,000
		3235	Training on handcrafting activities	48,000	100,000	-	48,000	100,000
		3236	One-day workshop on handcrafting with district authorities and community representatives	9,000	-	-	9,000	-
		3237	Two-day workshop on ecotourism projects with district authorities and community representatives	6,000	-	-	6,000	-
		3299	**Sub-total**	489,300	2,700,000	800,000	489,300	3,500,000
	3300		**Meeting/Conferences**					
		3301	One-day workshop on the NSC of the Rio conventions	8,500	-	-	8,500	-
		3302	Two one-day NSC meetings for the Rio conventions	17,000	-	-	17,000	-
		3303	Three days of awareness raising of local communities on EbA in four districts	36,000	-	-	36,000	-
		3304	One-day workshop to set up the research projects	500	-	-	500	-
		3305	Two days of conference on the results of the research projects	8,000	-	-	8,000	-
		3306	One-day awareness-raising campaign on EbA research for Master students	5,000	-	-	5,000	-
		3307	Inception workshop	9,100	-	-	9,100	-
		3399	**Sub-total**	84,100	0	0	84,100	0
3999		**Component total**		573,400	2,700,000	800,000	573,400	3,500,000
40	**EQUIPMENT AND PREMISES COMPONENT**							
	4100		**Expendible equipment**					
		4101	Office supplies	26,000	-	-	26,000	-
		4102	Computer equipment	20,800	-	-	20,800	-
		4199	**Sub-total**	46800	0	0	46800	0
	4200		**Non-expendable Equipment**					
		4201	Budget for school-based EbA project	96,000	-	-	96,000	-
		4202	Renting vehicles	72,000	-	-	72,000	-
		4203	Seedlings and nurseries for wetland restoration and agroforestry in Murago	110,200	200,000	-	110,200	200,000
		4204	Restoration of 50 ha of wetland in Kimicanga	67,250	100,000	-	67,250	100,000
		4205	Restoration of 20 km of riverbank or 40 ha in Satyinski	109,100	50,000	-	109,100	50,000
		4206	Restoration of 100 ha of wetland in Murago	195,100	50,000	-	195,100	50,000
		4207	Agroforestry on 100 ha in Murago wetland area	75,000	200,000	-	75,000	200,000
		4208	Purchase 100 water tanks for Isangano and 100 for Murago	88,400	1,000,000	-	88,400	1,000,000
		4209	Removal of water hyacinth on 10 ha in Murago wetland	70,600	200,000	-	70,600	200,000
		4210	Construct and install 120 biogas systems including two cows	174,000	400,000	100,000	174,000	500,000

		4211	Building of composting basins	144,000	-	-	144,000	-
		4212	Nursery establishment for forest restoration and agroforestry in Sanza and Satinsyi respectively	72,000	195,000	105,000	72,000	300,000
		4213	Restoration of 20 ha of forests	24,000	-	100,000	24,000	100,000
		4214	Agroforestry on 200 ha in forest restoration areas	200,000	-	200,000	200,000	200,000
		4215	Nursery establishment for savanna restoration and agroforestry in Isangano	150,000	300,000	-	150,000	300,000
		4216	Restoration of 300 ha of savannas	375,000	100,000	-	375,000	100,000
		4217	Agroforestry on 200 ha in savanna restoration areas	200,000	100,000	-	200,000	100,000
		4218	Apiculture equipment	120,000	200,000	-	120,000	200,000
		4219	Fishing equipment in Murago and Isangano	300,000	100,000	-	300,000	100,000
		4220	Handcrafting equipment in Murago	50,594	44,000	-	50,594	44,000
		4299	**Sub-total**	2,693,244	3,239,000	505,000	2,693,244	3,744,000
4999		**Component total**		2,740,044	3,239,000	505,000	2,740,044	3,744,000
50	**MISCELLANEOUS COMPONENT**							
	5200		**Reporting costs**					
		5201	Inception workshop report	3,000	-	-	3,000	-
		5202	Reporting costs	40,000	-	-	40,000	-
		5299	**Sub-total**	43,000	0	0	43,000	0
	5300		**Sundry**					
		5301	Publication	6,000	-	-	6,000	-
		5302	Communication for PM and M&E	22,760	-	-	22,760	-
		5399	**Sub-total**	28,760	0	0	28,760	0
	5500		**Evaluation**					
		5581	Mid-term evaluation	35,000	-	-	35,000	-
		8852	Final evaluation	35,000	-	-	35,000	-
		5599	**Sub-total**	70,000	0	0	70,000	0
5999		**Component total**		141,760	0	0	141,760	0
99	**GRAND TOTAL**			5,500,000	6,939,000	2,305,000	5,500,000	9,244,000

Appendix 3: Results Framework

Project objective	**Objective indicator**	**Baseline**	**Target**	**MoV**
Increased capacity of Rwandan authorities and local communities to adapt to climate change by implementing Ecosystem-based Adaptation (EbA) interventions in forests, savannas and wetlands	1. Degree to which capacity of targeted government institutions is strengthened at national and sub-national levels to identify, prioritize, implement, monitor and assess effectiveness of EbA interventions.	1. Current estimated level of capacity to identify, prioritize, implement, monitor and assess effectiveness of EbA interventions is 3. Institutions have increasing capacity to monitor and identify climate risks. They are also able to design, budget and implement restoration interventions but not EbA interventions. Ecosystem restoration is prioritised by national institutions but not EbA. Therefore, EbA interventions are not currently implemented. Baseline study to be conducted at the project inception stage. Quantitative assessment of the baseline for this indicator will be conducted at inception stage.	1. Increase of at least 4 points in the capacity score of each institution. (Max 10, Min 0)	1. Verified through scoring methodologies developed by the TAMD and PPCR and adapted from the GEFSec - AMAT (2014)[118]. *The indicator is based on five step criteria of capacity assessment framework (expressed as questions):* *1. Are the institutions in the process of identifying the future effects of climate change and appropriate EbA interventions?* *2. Are the institutions prioritising restoration activities with climate-resilient, indigenous, beneficial species through the EbA approach?* *3. Have the institutions defined clear roles and responsibilities for the design, coordination and implementation of EbA interventions?* *4. Is there evidence of effective implementation of EbA interventions by the institutions?* *5. Is there evidence of adequate institutional capacities for the continuous monitoring of and learning from adaptation initiatives?* Each question is answered with an assessment and score for the extent to which the associated criterion has been met: not at all (= 0), partially (= 1) or to a large extent/completely (= 2). An overall score is calculated, with a maximum score of 10 given five criteria. These five criteria will be reviewed and validated at inception phase of the project.
	2. Number of individuals benefitting directly from project interventions disaggregated by gender.	2. Zero	2. At least 2,800 (to be validated at inception) including 40% of women.	2. Household surveys and reports
Outcome 1 **National and local authorities have increased capacity to**	**Outcome indicators** 1. A National Steering Committee (NSC) mobilised	1. TOR for the National Steering Committee (NSC)	1. NSC is mobilised under REMA and has held at least	1. Meeting minutes, reports and list of participants in NSC meetings.

[118] Adapted from TAMD (2013) and PPCR (2014) scorecard indicators.

plan and implement EbA interventions.	as a platform to promote large-scale EbA programmes in Rwanda and capacitated to plan large-scale EbA interventions (disaggregated by gender).	has been developed but no meetings of NSC have been held.	2 meetings. At least 50% of members (of which at least 40% women) have been trained on EbA.	
	2. Number of local government officials, environmental committee members and local community representatives with capacity to plan, budget and implement EbA interventions (disaggregated by gender).	2. Rwanda has recently implemented a number of national strategies, policies and plans for ecosystem restoration but no local government officials, environmental committee members or local community representatives have the capacity yet to plan, budget and implement EbA interventions. A more quantitative assessment of this indicator will be made at inception phase.	2. By project end point, at least: i) 80 local government officials; ii) 110 environmental committee members including 15 members at the provincial level, 25 members at the district level, 30 members at the sectoral level and 40 members at the cell level; and iii) 80 local community representatives have capacity to plan, budget and implement EbA interventions (of which 50% of women).	2. Attendance registers from training sessions and training reports. A scoring scale methodology will be used to measure the capacity of trained officers. To measure people's capacity to identify, prioritize, implement, monitor and evaluate adaptation strategies and measures; the tracking tool recommends the following scoring scale: 1 = Very limited or no evidence of capacity 2 = Partially developed capacity 3 = Fully developed, demonstrated capacity Depending on the nature and scope of the training provided, the tracking tool may provide an average score based on an assessment of capacity along the following criteria: (a) understanding what is EbA and its role in adapting to climate change; (b) identifying EbA adaptation options and their use to restore ecosystems in Rwanda; (c) developing alternative livelihoods based on restored and resilient ecosystems; (d) identifying cost-effective adaptation interventions; (e) Planning, budgeting and implementing EbA measures.
	3. Number of documents and technical EbA guidelines developed and disseminated to environmental committees and local authorities through the climate change adaptation portal.	3. CC portal has already been created. A webpage is currently being developed on the portal for the LDCF1 project. This project will extend the role of this website through compiling the information of the project as well as other adaptation projects on a national scale.	3. By project mid-point, at least 2 technical EbA guidelines developed; by project end-point, at least 3 technical EbA guidelines developed.	3. The documents are produced and available on the climate change adaptation portal.
	4. Number of educational resources on EbA developed by the project for communities	4. Zero	4. By end point at least 3 proposed revisions to school and university curricula to	4. Proposed revisions to primary, secondary and tertiary school curricula; report of the awareness-raising events and list of participants; surveys of proposed project intervention

	living near project sites to increase awareness on EbA and integrate EbA in national curricula at primary, secondary and university level and submitted to to MINEDUC and other relevant educational institutions for validation.		integrate EbA, 4 awareness campaigns on EbA targeting local communities, and 3 school-based EbA projects have been developed and submitted to to MINEDUC and other relevant educational institutions for validation..	sites (i.e. bio-physical surveys), minutes of the workshop with MINEDUC and other relevant educational institutions. .
	5. Number of tools (research forum and data storage system) developed to disseminate scientific results and other knowledge on EbA and to promote long-term production of evidence base on EbA.	5. No research forum and data storage system currently exist.	5. By end-point, at least 1 research forum and 1 data storage system developed for the dissemination of scientific results and other knowledge on EbA.	5. Research forum; data storage system; databases.
<u>Outcome 2</u> **Sectoral and local policies, strategies and plans strengthened to promote the restoration and management of degraded ecosystems for EbA.**	**<u>Outcome indicator</u>** 1. Number of policy revisions proposed for cross-sectoral, sectoral and local policies, strategies and plans to incorporate EbA, and submitted to government for validation.	1. The majority of cross-sectoral, sectoral and local policies, strategies and plans promote ecosystem restoration. However, they do not promote EbA.	1. At least 9 policy revisions proposed for cross-sectoral[119], sectoral[120] and local[121] policies, strategies or plans to incorporate EbA.	1. Proposed policy revisions; policy briefs; minutes of government meetings. Proposed policy revisions; policy briefs.
	2. Number of upscaling strategies developed to promote EbA based on project interventions.	2. No upscaling strategy for best adaptation practices in Rwanda developed to date.	2. 1 national upscaling strategy developed.	2. Finalized upscaling strategy document; workshop reports and consultant reports.
<u>Outcome 3</u> **EbA implemented by local communities to restore degraded ecosystems in forest, wetland and savannah**	**<u>Outcome indicator</u>** 1. Number of individuals implementing climate-resilient agriculture practices including agroforestry in the project	1. Zero	1. At least 500 individuals implementing climate-resilient agriculture practices including	1. Surveys of proposed project intervention sites (i.e. bio-physical surveys).

[119] For example, revisions could be proposed for national ecosystem management or development policies or strategies.
[120] For example, revisions could be proposed for the national forestry policy and the water resources master plan.
[121] For example, revisions could be proposed for the DDPs of Bugesera, Kayonza and Ngororero.

ecosystems and establish climate resilient livelihoods.	intervention sites.		agroforestry in the project intervention sites.	
	2. Number of hectares of wetlands restored with climate-resilient species in Bugesera, Gasabo and Ngororero.	2. Zero	2. At least 190 ha of rangelands restored with climate-resilient species.	2. Surveys of proposed project intervention sites (i.e. bio-physical surveys).
	3. Number of hectares of forest restored with climate-resilient species in Sanza	3. Zero	3. 20 hectares restored with climate-resilient species.	3. Surveys of proposed project intervention sites (i.e. bio-physical surveys).
	4. Number of hectares of savanna restored with indigenous, climate-resilient species in Isangano.	4. Zero	4. 300 hectares restored using primarily indigenous, climate-resilient species.	4. Surveys of proposed project intervention sites (i.e. bio-physical surveys).
	5. Number of individuals receiving training, equipment and technical support to adopt climate-resilient livelihoods in the project intervention sites.	5. Zero	5. At least 120 individuals, of which at least 40% women, have received training, equipment and technical support to adopt climate-resilient livelihoods in the project intervention sites.	5. 5. Surveys of proposed project intervention sites (i.e. questionnaires given to households); list of equipment purchased; reports on the training sessions and lists of participants.

Appendix 4: Workplan and timetable

Output	Activity	Annual breakdown				Quarterly breakdown															
						Year 1				Year 2				Year 3				Year 4			
		Year 1	Year 2	Year 3	Year 4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Outcome 1:																					
Output 1.1	1.1.1																				
	1.1.2																				
	1.1.3																				
Output 1.2	1.2.1																				
	1.2.2																				
	1.2.3																				
	1.2.4																				
Output 1.3	1.3.1																				
	1.3.2																				
	1.3.3																				
	1.3.4																				
	1.3.5																				
	1.3.6																				
Output 1.4	1.4.1																				
	1.4.2																				
	1.4.3																				
	1.4.4																				
	1.4.5																				
	1.4.6																				
	1.4.7																				
	1.4.8																				
Output 1.5	1.5.1																				
	1.5.2																				
	1.5.3																				
	1.5.4																				
	1.5.5																				

Output	Activity	Annual breakdown				Quarterly breakdown															
	1.5.6																				
	1.5.7																				
Outcome 2:																					
Output 2.1	2.1.1																				
	2.1.2																				
	2.1.3																				
	2.1.4																				
Output 2.2	2.2.1																				
	2.2.2																				
	2.2.3																				
	2.2.4																				
Output 2.3	2.3.1																				
	2.3.2																				
	2.3.3																				
	2.3.4																				
	2.3.5																				
	2.3.6																				
Output 2.4	2.4.1																				
	2.4.2																				
	2.4.3																				
	2.4.4																				
	2.4.5																				
	2.4.6																				
Outcome 3:																					
Output 3.1	3.1.1																				
	3.1.2																				
	3.1.3																				
	3.1.4																				
	3.1.5																				
	3.1.6																				

Output	Activity	Annual breakdown				Quarterly breakdown															
	3.1.7																				
	3.1.8																				
	3.1.9																				
	3.1.10																				
	3.1.11																				
	3.1.12																				
	3.1.13																				
Output 3.2	3.2.1																				
	3.2.2																				
	3.2.3																				
	3.2.4																				
	3.2.5																				
	3.2.6																				
	3.2.7																				
Output 3.3	3.3.1																				
	3.3.2																				
	3.3.3																				
	3.3.4																				
	3.3.5																				
	3.3.6																				
	3.3.7																				
	3.3.8																				
	3.3.9																				
	3.3.10																				
Output 3.4	3.4.1																				
	3.4.2																				
	3.4.3																				
	3.4.4																				
	3.4.5																				
	3.4.6																				

Output	Activity	Annual breakdown				Quarterly breakdown															
	3.4.7																				
	3.4.8																				

Appendix 5: Key deliverables and benchmarks

See Appendix 3: Results Framework and Appendix 6: Costed M&E.

Appendix 6: Costed M&E Plan

Type of M&E activity	Responsible Parties	Budget US $(Excluding project team staff time)	Time frame
Inception workshop and report	• PM • M&E Specialist • UNEP TM	Indicative cost: US $12,100	Within first two months of project start up
Measurement of means of verification of project results	• UNEP TM • M&E Specialist • PM will oversee	To be finalised at Inception Phase and Workshop. This includes hiring of specific experts and institutions, and delegate responsibilities to relevant team members.	Start, mid and end of project (during evaluation cycle) and annually when required.
Measurement of means of verification for project progress on output and implementation	• UNEP TM • PM • M&E Specialist • CTA	To be determined as part of the AWP's preparation.	Annually prior to PIR and to the definition of annual work plans
PIR	• PM • M&E Specialist • UNEP TM • UNEP FMO (Fund Management Officer)	None. Financial audit records to be provided from IMIS for PSC review	Annually
Periodic status/ progress reports	• PM • M&E Specialist • UNEP TM	None	Quarterly
MTR/MTE	• UNEP TM/UNEP Evaluation Office	Indicative cost: US $35,000	At the mid-point of project implementation.
Terminal evaluation	• UNEP Evaluation Office	Indicative cost: US $35,000	At least three months before the end of project implementation
Project terminal report	• PM • M&E Specialist • UNEP FMO • UNEP TM	None	On completion of the terminal evaluation.
Visits to demonstration sites	• UNEP TM • M&E Specialist • PM • PSC representatives	For GEF supported projects, paid from IA fees and operational budget	Yearly
Consultants	• International M&E Expert	International M&E Expert: US $53,400	During baseline assessment in inception phase, at the mid-point of project implementation and at least three months

Type of M&E activity	Responsible Parties	Budget US $(Excluding project team staff time)	Time frame
			before the end of project implementation
	• M&E Specialist	National M&E Specialist: US $77,856	Throughout the implementation phase.
TOTAL indicative COST Excluding project team staff time and UNEP staff and travel expenses			Estimated to cost US $233,356

Appendix 7: Summary of reporting requirements and responsibilities

Reporting requirements	Due date	Responsibility
Inception Workshop Report	1 month after Project Inception Workshop.	• PM • M&E Specialist • UNEP TM • CTA
Expenditure report accompanied by explanatory notes		• PM • Accountant
Cash Advance request and details of anticipated disbursements		• NPC • Accountant
Supervision Plan	Before the end of the proposed project's inception phase.	• UNEP
Progress reporting	Quarterly	• PM • CTA • M&E Specialist
Audited report for expenditures for year ending 31 December	Yearly on or before 30 June.	• Executing partners
Inventory of non-expendable equipment	Yearly on or before 31 January.	• PM • Accountant
Co-financing report	Yearly on or before 31 July.	• PM
PIR	Yearly	• PM • M&E Specialist • CTA • UNEP TM
Minutes of PSC meetings	Quarterly (or as relevant).	• PM
Completion report	Within 6 months of project completion date.	• PM • IA
Final inventory of non-expendable equipment		• PM
Equipment transfer letter		• PM
Final expenditure statement	Within 3 months of project completion date.	• PM • UNEP
Mid-term evaluation	Midway through project lifetime.	• PM • UNEP TM • External Consultant
Final evaluation	At least 3 months prior to the project end date.	• PM • NTAs • CTA • UNEP TM • External Consultant
Final audited report for expenditures of project	Within 6 months prior to project completion date.	• EA
Independent terminal evaluation report	Within 3 months prior to project completion date.	• PM • NTAs • CTA • UNEP TM

Appendix 8: Site selection process for the project activities

Appendix 8A: Site selection process

The first step of the site selection process was to meet the management teams of environmental projects being implemented by REMA. These projects include PEI, LDCF 1, LVEMP, LAFREC, DEMP as well as projects that recently finished such as AAP and NYEP. As part of the consultations, the members of the management team were asked to comment on the intervention sites that should be selected as a priority for wetland, forest and savanna restoration.

Additionally to meetings with the management team of partner projects, consultations with the management team of the selected baseline projects were organised. These projects are PAREF, LWH and RSSP 3. The objectives of these consultations were to: i) identify the precise location of their intervention sites; ii) type of interventions implemented in these sites; iii) collect their knowledge on the state of the natural ecosystems adjacent to their intervention sites; and iv) maximise the alignment between their activities and the proposed project activities.

The consultation of project management team in MINIRENA and MINAGRI were complemented by a literature review. Several reports have been produced in Rwanda to identify the priority needs for climate change adaptation and ecosystem management between 2009 and 2013 including reports on the state of environment in Rwanda and the action plans of development strategies in the environment sector. These documents were reviewed to identify priority sites for interventions. The reports that have been used for the project site selection include: i) Rwanda State of Environment and Outlook published in 2009; ii) Environment and Climate Change Sub-Sector Strategic Plan published in 2013; iii) National Strategy for Climate Change and Low Carbon Development (2011); iv) Atlas of Rwanda's Changing Environment published in 2011; v) Disaster High Risk Zones on Floods and Landslides the Post-conflict published 2012; and vi) From Post-Conflict to Environmentally Sustainable Development report published in 2011.

Through the consultations and literature review, several potential intervention districts were identified. This pre-selection of sites was then presented to the 27 participants of the inception workshop hold in February 2014. The decision-making matrix for site selection was presented to stakeholders at the inception workers (Table 1). After the presentation, two working groups were organised to discuss the intervention sites and activities (See Appendix 19). The conclusions of the groups were then discussed to come out with a short list of intervention sites.

Site visit have then been organised in each of the selected sites to: i) ensure that the selection criteria including poverty level and local communities' willingness to take ownership of the project where met; and ii) collect the required baseline information. To do so, the REMA counterpart in charge of consulting the local authorities filled in a table of information with district, sector and cell representatives. These field visits assisted in the final selection of project intervention sites. Final selection of the intervention sites was made according to the available budget and follows the focus of the EA to have a smaller number of intervention site and implement an extensive suite of interventions at each site.

Appendix 8B: Presentation of selected sites for the project activities

The proposed project will implement activities in four districts of Rwanda. The four districts are: i) Bugesera (Mareba sector, Rugarama and Bushenyi cells); ii) Ngororero (Muhororo and Kageyo sectors, Sanza and Kirwa cells respectively); iii) Kayonza (Ndego

sector, Isangano cell); and iv) Gasabo (Kimihurura and Kacyiru sectors, Kimicanga wetland). The rationale for the selection of these intervention sites is described below:

Bugesera and Kayonza are particularly vulnerable to i) increased incidence and severity of drought; and ii) reduced rainfall[122][123]. Drought and reduced rainfall in Bugesera and Kayonza decrease: i) agricultural production; ii) water levels in lakes and rivers; iii) the availability of pastures for livestock; and iv) soil health and vegetation cover. Consequently, local communities in these districts in are vulnerable to: i) food insecurity and famine; ii) a decrease in hydro-electrical production; iii) a decrease in fish stocks and other aquatic life; iv) loss of livestock; and iv) an increase in desertification[124].

Erratic rainfall in **Bugesera** results in both river flooding and droughts. Firstly, Bugesera is classified as the most vulnerable district to river flooding in Rwanda[125]. During intense rainfall, the majority of the sectors within Bugesera are exposed to are vulnerable to flooding through the rise of the Nyabarongo River. In addition, inefficient drainage systems in these sectors compound the problem. Secondly, Bugesera has experienced prolonged droughts in recent years, for example in 2000, 2006 and 2008. Furthermore, the combined effect of overgrazing, unsustainable agricultural practices and drought has cause pastures and arable land to deteriorate, land which further reduces food security.

The frequency of droughts and flooding in Bugesera is expected to increase as a result of climate change. Bugesera – which is identified as a hotspot for climate change[126] – is already considered to be close to the thresholds of water scarcity, increased temperatures[127] and food insecurity[128]. Local communities are already experiencing drought-related consequences of climate change. For example, low soil moisture has resulted in reduced production of: i) cassava, the main food and income-generating crop; and ii) beans. Little effort has been made to mitigate the problems of rainfall unpredictability[129]. Additionally, sectors of Bugesera were cited three times by stakeholders as priority areas for restoration efforts during the PSC of the DEMP project[130]. Several recommendations[131] were made to address the vulnerability to droughts and flooding. These recommendations include promoting agroforestry in Bugesera and reducing fuel consumption to increase resilience to climate change.

The wetlands in Bugesera – including marshlands and lakes – support rare and diverse flora and fauna[132]. Additionally, these ecosystems are periodically visited by migratory birds and are considered to be internationally important ecosystems under the Ramsar Convention[133]. The destruction of such ecosystems results in the reduction or loss of biodiversity.

Within Bugesera, interventions of the proposed project will be implemented in Mareba sector – in the region of Lake Cyohoha North. In particular, restoration activities will be implemented in Murago wetland. The local communities living around Murago wetlands are vulnerable to droughts that reduce the productivity of agriculture and fisheries, creating

[122] REMA, 2009. Rwanda state of environment and outlook. Kigali, Rwanda.
[123] NAPA 2006.
[124] NAPA 2006.
[125] REMA, 2011. Atlas of Rwanda's changing environment: Implication for climate change resilience. Kigali, Rwanda.
[126] REMA, 2011. Atlas of Rwanda's changing environment: Implication for climate change resilience. Kigali, Rwanda.
[127] Bugesera's average temperature typically ranges between 23 ˚C to 29 ˚C making it one of the warmer districts of the country.
[128] REMA, 2011. Atlas of Rwanda's changing environment: Implication for climate change resilience. Kigali, Rwanda.
[129] REMA, 2009. Rwanda state of environment and outlook. Kigali, Rwanda.
[130] This PSC was held in 23 January 2014.
[131] REMA, 2011. Atlas of Rwanda's changing environment: Implication for climate change resilience. Kigali, Rwanda.
[132] Some of these species are recognised by law as endemic and it is illegal to hunt them without a scientific or administrative license for hunting issued by authorised services.
[133] REMA, 2009. Rwanda state of environment and outlook. Kigali, Rwanda.

food insecurity. Malnutrition resulting from food insecurity and poverty is the primary vulnerability of these communities. Mareba sector is the poorest sector of the district. Consequently, the vulnerability of Murago communities is further increased by limited institutional capacity and the limited opportunities to adopt climate-resilient livelihoods. For example, there are no cooperatives to strengthen community organisations to develop climate-resilient livelihoods or agricultural techniques.

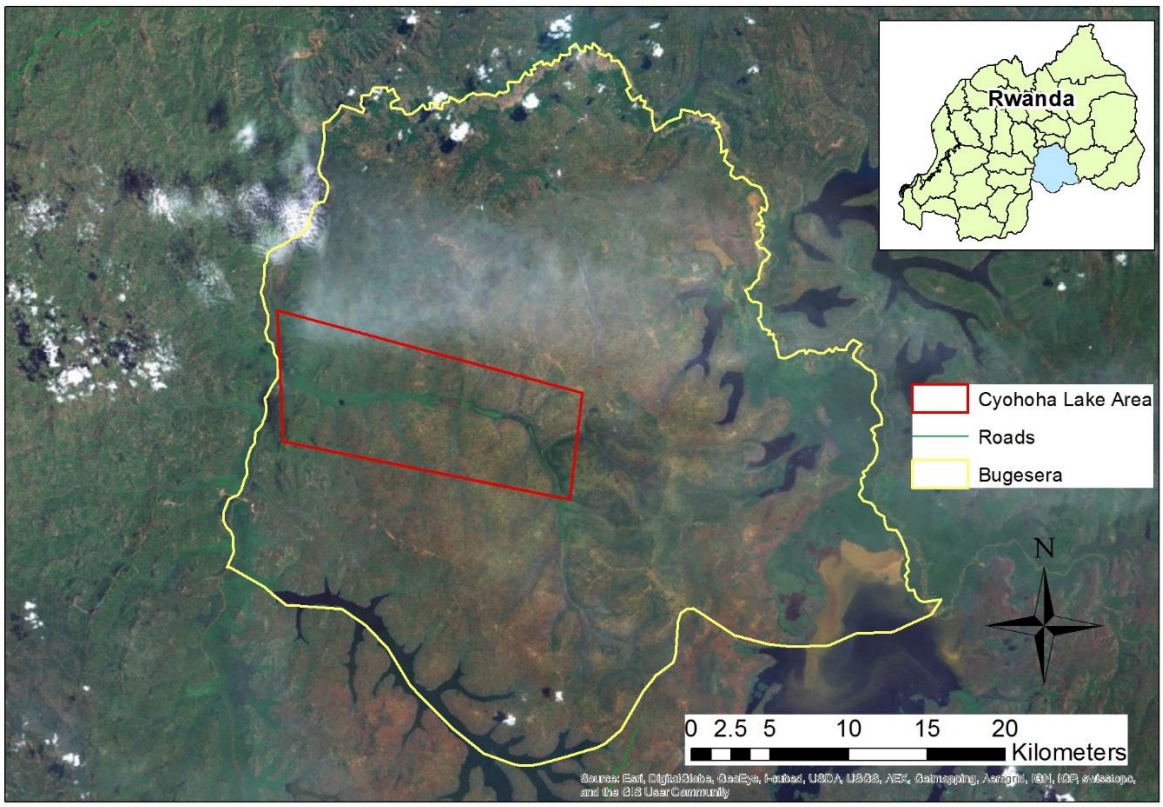


Figure 10. Location of Murago wetland and Lake Cyohoha north, Mareba sector, Bugesera district.

Within **Kayonza**, the proposed project's interventions will be implemented in Isangano cell in the Ndego sector. The restoration of this savanna ecosystem is part of the DDP of Ndego. Local communities in this sector are vulnerable to droughts that reduce agricultural productivity and create food insecurity. To address this vulnerability, the LWH project has contributed to increased water availability by improving water harvesting and irrigation systems, see Section 2.6. The proposed project will complement these activities by developing climate-resilient agricultural techniques and alternative climate-resilient livelihoods in this sector.

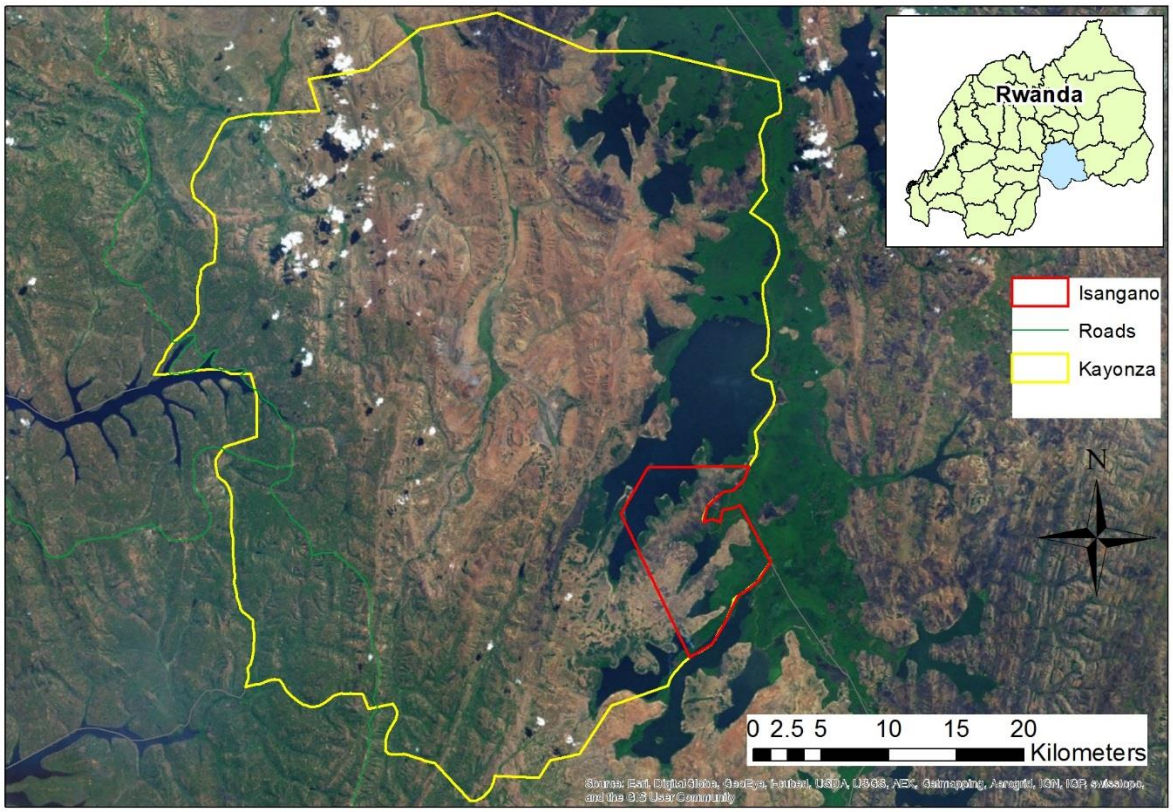


Figure 11. Location of Isangano wetland, Isangano cell, Ndego sector, Kayonza district.

Ngororero District is identified as vulnerable to flash flooding, river flooding, soil erosion and landslides[134,135]. Five sectors within Ngororero are vulnerable to flooding and two sectors are vulnerable to landslides[136]. Within Ngororero district and Muhuroro sector, Sanza natural forest was selected the restoration interventions of the proposed project. Local communities living around Sanza rely on agriculture and livestock for their livelihoods. However population density, land scarcity, steep slopes and poor farming practices increase the vulnerability of the local community to climate change. The total surface area of the forest is 40 hectares, of which 20 hectares have been identified as degraded. The primary causes of degradation are: i) clearing for agricultural; ii) overgrazing; iii) tree-cutting for woodfuel; iv) harvesting of plant materials for handcrafts; and v) mining activities. Sanza also supports a diverse range of species. 135 different plant species have been recorded in the forest, including species endemic to the Albertine Rift (*Satyrium trinerve* and *Impatiens burtonii*) and medicinal plants (*Plantago palmata).*

The proposed project will restore the 20 hectares of Sanza which have been identified as degraded as well as implement agroforestry interventions in the 60 hectares adjacent to Sanza. Similar restoration activities are being implemented in the nearby Mukura native forest by LAFREC and Gishwati Forest by PAREF. Forest restoration on the hilly slopes will be complemented by wetland restoration activities in Satyinski River also in the Ngororero District. Satinsyi River was identified as vulnerable to soil erosion, which reduces water quality from sedimentation. This soil erosion reduces water availability to local communities and increases community vulnerability to floods.

[134] NAPA 2006.
[135] Nsengiyumva, J.P. 2012. Disaster high risk zones on floods and landslides in Rwanda. Unit of Research and Public Awareness, MIDIMAR. Kigali, Rwanda. Mars 2012. 33 p.
[136] Nsengiyumva, J.P. 2012. Disaster high risk zones on floods and landslides in Rwanda. Unit of Research and Public Awareness, MIDIMAR. Kigali, Rwanda. Mars 2012. 33 p

The approach used for the selection of sites for the proposed project was to: i) choose a small number of intervention sites and ii) implement multiple complementary activities in these few sites. This approach was proposed by the executing agency to maximise the success of the project. For example,, the activities implemented in Sanza will include: i) restoration of forest; ii) restoration of wetland in the Satyinski River; iii) improvement of rainwater management; iv) promotion of the use of biogas and improved cook stoves in the two villages close to the restoration sites; v) construction of terraces; vi) development of agroforestry (see Section 3.3); vii) development of PES; and viii) development of alternative livelihoods. Similarly a complete set of complementary activities will also be implemented in the three other intervention sites.

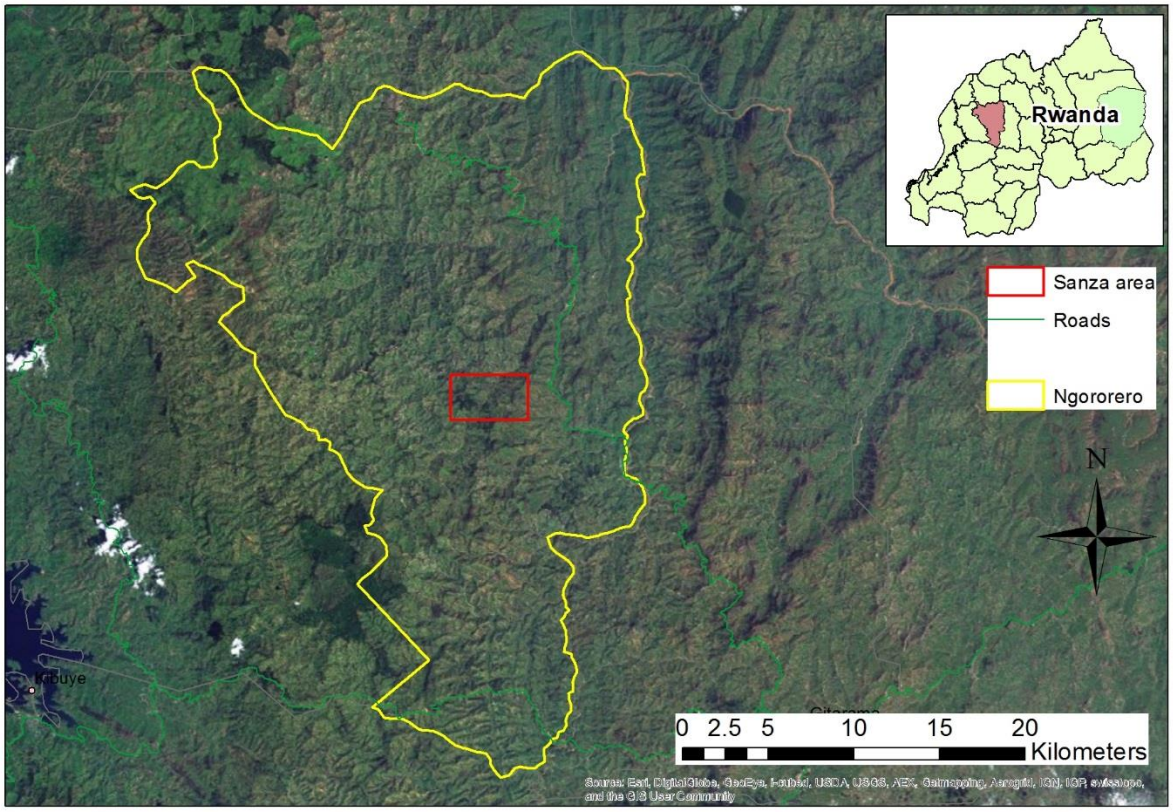


Figure 12. Location of Sanza natural forest, Sanza cell, Muhuroro sector, Ngororero district.

Gasabo district was selected as an intervention site for the proposed project because local communities – particularly local schools – were identified to be vulnerable to floods. The restoration activities will take place in Kimicanga wetland to increase the resilience of local communities to floods. This wetland is located on the border of two sectors, namely Kimihurura and Kacyiru. It is also close to Kigali City center and is easily accessible by a large portion of the population. Because of this, the restored wetland will be used as a demonstration site for awareness-raising campaigns directed at the population of Kigali City. These campaigns will teach local communities – including school and university students -about the role of wetland ecosystems in climate-resilience and the benefits of EbA.

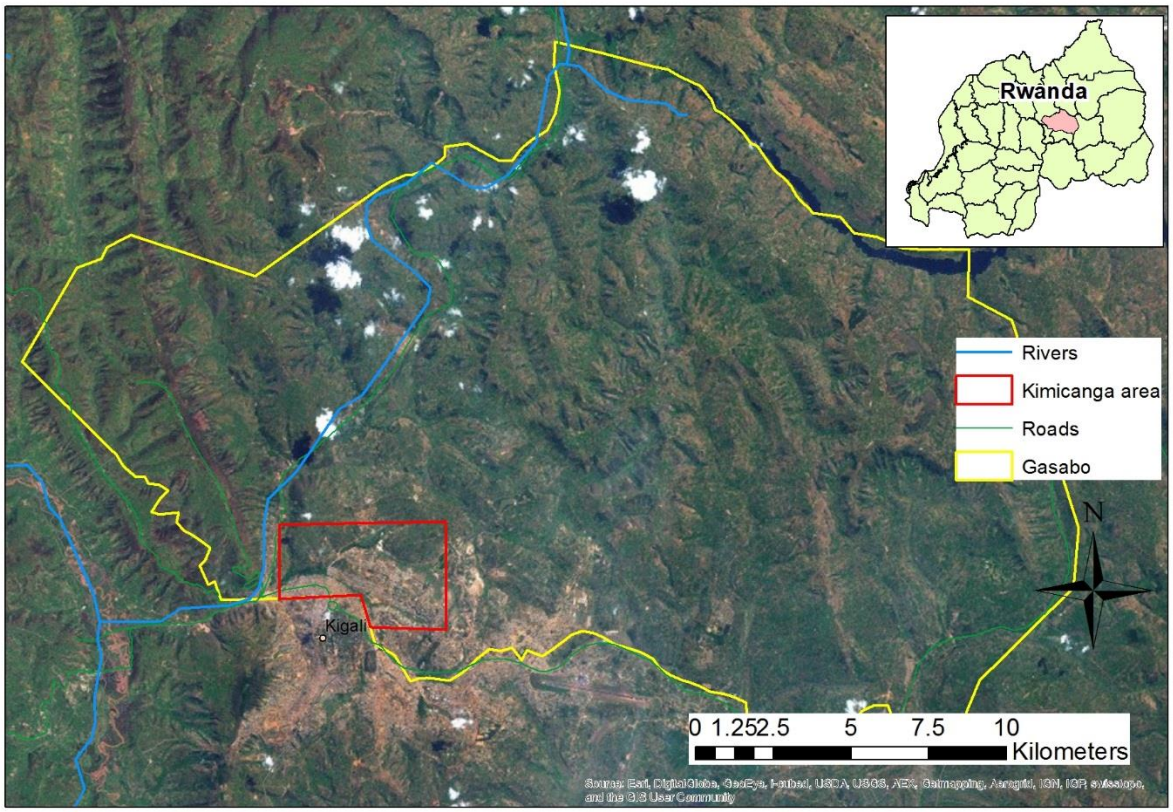


Figure 13. Kimicanga wetland, Kamukina and Kamatamu cells, Kimihurura and Kacyiru sectors, Gasabo district.

Table 7. Selection of the sites based on various criteria

Intervention site	Criteria											
	Availability of baseline information /projects	Vulnerability of local communities	Vulnerability of ecosystems	Degradation of ecosystems	Remarkable biodiversity	Potential of restoration to improve the livelihoods of local communities	Presence of other project activities	Local communities ' willingness to take ownership of interventions	Poverty	Food insecurity (Low 1 to high 6)[137]	Risk of erosion (1 to 5)	Gender inequity
Bugesera District, Mareba sector	X (RSSP 2)	X	X	X	X	X	X	X	X	6	High (4)	Good, 50% of people involved in income generating activities are women. 42% of the students of the school of Mareba are girls.
Gasabo District, Kimicanga wetland	X	X	X	X		X	X	X		*	Average (3)	*
Ngororero District, Muhororo sector, Sanza cell	X (LWH, PAREF)	X	X	X	X	X	X	X	X	6	Major and global (5)	Good. Women and men are equally involved in economic activities, boys and girls have equal access to education.
Kayonza District, Ndego sector	X (RSSP 3, LWH)	X	X	X		X	X	X	X	2-4	Low/Average (2–3)	Good. 54% of people involved in income generating activities are women.

[137] REMA, 2009. Rwanda state of environment and outlook. Kigali, Rwanda.

Appendix 9: Standard Terminal Evaluation TOR

Below are the standard Terminal Evaluation TORs of UNEP.

Objective and Scope of the Evaluation

The objective of the terminal evaluation is to: i) examine the extent and magnitude of any project impacts to date; and ii) determine the likelihood of future impacts. The evaluation will also assess project performance and the implementation of planned project activities and planned outputs against actual results.

Methods

This terminal evaluation will be conducted as an in-depth evaluation using a participatory approach whereby the UNEP Task Manager, key representatives of the executing agencies and other relevant staff are kept informed and consulted throughout the evaluation. The consultant will liaise with the UNEP and the UNEP Task Manager on any logistic and/or methodological issues that can compromise an independent review. The draft report will be circulated to UNEP Task Manager, main representatives of the executing agencies and the UNEP. Any comments or responses to the draft report will be sent to UNEP for collation and the consultant will be advised of any necessary or suggested revisions.

Key Evaluation principles

In attempting to evaluate any outcomes and impacts of the project, evaluators must remember that the project's performance should be assessed by considering the difference between the answers to two simple questions ***"what happened?***" and ***"what would have happened anyway?"***. These questions imply that there should be consideration of the baseline conditions and trends in relation to the intended project outcomes and impacts. In addition, it implies that there should be plausible evidence to **attribute** such outcomes and impacts **to the actions of the project**.

Sometimes, adequate information on baseline conditions and trends is lacking. In such cases, this should be clearly highlighted by the evaluator, along with any simplifying assumptions that were taken to enable the evaluator to make informed judgments about project performance.

Appendix 10: Decision-making flowchart and organogram

See Section 4: Institutional Framework and Implementation Arrangements and Figure 9.

Appendix 11: Checklist for Environmental and Social Safeguards

Note that as part of the GEFs evolving Fiduciary Standards, Implementing Agencies are required to address "Environmental and Social Safeguards".

To address this requirement, UNEP-DGEF has developed a checklist and has supplied the following guidance:

1. The checklist must be filled in initially during concept development to help guide the identification of possible risks and activities that will need to be included in the project design.
2. A completed checklist must accompany the PIF.
3. The checklist must be reviewed during the PPG phase and updated as required.
4. The final checklist must be submitted with the Project Package and must clearly show which activities are being undertaken to address the issues identified

Project Title:	***Building resilience of communities living in degraded wetlands, forests and savannas of Rwanda through an ecosystem-based adaptation approach.***		
GEF project ID and UNEP ID/IMIS Number:	**GEF Agency Project ID: UNEP ID: 00970**	***Version of checklist:***	**One**
Project status (preparation, implementation, MTE/MTR, TE):	***Preparation***	***Date of this version:***	***April 2015***
Checklist prepared by (Name, Title, and Institution):	*Nina Raasakka, Task Manager, GEF Climate Change Unit, DEPI, UNEP*		

In completing the checklist, both short- and long-term impacts shall be considered.

Section A: Project location:

If a negative impact is identified or anticipated, the Comment/explanation field needs to include: i) the stage of the proposed project in which the problem will be addressed; ii) who is responsible for addressing the issue; iii) budget implications of addressing the problem; and iv) other comments.

	Yes/No/N.A.	*Comment/explanation*
- Is the project area in or close to -		
- densely populated area	Yes	Rwanda is the most densely populated country in Africa. Despite that most of the project interventions will be undertaken in rural areas, they are still considered as taking place in a densely populated area. Furthermore, some interventions will occur close to Kigali City. No negative environmental or social impacts associated with working in densely populated areas are anticipated during project implementation. Monitoring and evaluation will be undertaken during the standard M&E periods. However, the specific focus of the activities is to improve the resilience of local communities to climate change. Additionally, on-the-ground activities will implemented for and by the communities.
- cultural heritage site	No	
- protected area	Yes	Forest restoration interventions will be conducted in Sanza during the implementation phase. The forest

		is located 22 km from Mukura native forest that is protected. The project interventions will increase the habitat that birds and mammals may migrate to from nearby protected areas.
- wetland	Yes	The proposed project will build resilience of local communities living in wetlands using an EbA approach during the implementation phase. Consequently, no negative effects on wetland areas are expected.
- mangrove	No	
- estuarine	No	
- buffer zone of protected area	Yes	(see above comment for protected area)s
- special area for protection of biodiversity	No	
- Will project require temporary or permanent support facilities?	No	
If the project is anticipated to impact any of the above areas, an Environmental Survey will be needed to determine if the project is in conflict with the protection of the area or if it will cause significant disturbance to the area.		

Section B: Environmental impacts

If a negative impact is identified or anticipated, the Comment/explanation field needs to include: i) the stage of the proposed project in which the problem will be addressed; ii) who is responsible for addressing the issue; iii) budget implications of addressing the problem; and iv) other comments.

	Yes/No/N.A.	*Comment/explanation*
- Are ecosystems related to project fragile or degraded?	Yes	The proposed project will restore – and build the resilience of – degraded ecosystems using an EbA approach during the implementation phase. Note that the degradation of the wetland and forest ecosystems where the project activities will be implemented is human induced.
- Will project cause any loss of precious ecology, ecological, and economic functions due to construction of infrastructure?	No	No infrastructure construction is planned.
- Will project cause impairment of ecological opportunities?	No	Ecological opportunities will be increased.
- Will project cause increase in peak and flood flows? (including from temporary or permanent waste waters)	No	The resilience of local communities to floods will be increased.
- Will project cause air, soil or water pollution?	No	No pollution will be generated by the project activities.
- Will project cause soil erosion and siltation?	No	Soil stability and water infiltration will be enhanced by planting trees in the project areas, thereby reducing erosion and sedimentation.
- Will project cause increased waste production?	No	No increase in waste production will result.

- Will project cause hazardous waste production?	No	No hazardous waste will be generated.
- Will project cause threat to local ecosystems due to invasive species?	No	The project will focus on the control of invasive species. It will promote: i) removing water hyacinth in wetlands; and ii) planting indigenous tree species instead of exotic tree species.
- Will project cause greenhouse gas emissions?	No	Project activities are likely to reduce the atmospheric concentration of greenhouse gases at project sites. This will be achieved by replanting both forests and multiple other tree species (e.g. by implementing agroforestry techniques). Consequently, carbon will be sequestered in soils and plant biomass.
- Other environmental issues, e.g. noise and traffic	No	
Only if it can be carefully justified that any negative impact from the project can be avoided or mitigated satisfactorily, both in the short and long-term, can the project go ahead.		

Section C: Social impacts

If a negative impact is identified or anticipated, the Comment/explanation field needs to include: i) the stage of the proposed project in which the problem will be addressed; ii) who is responsible for addressing the issue; iii) budget implications of addressing the problem; and iv) other comments.

	Yes/No/N.A.	*Comment/explanation*
- Does the project respect internationally proclaimed human rights including dignity, cultural property and uniqueness and rights of indigenous people?	Yes	All project interventions were developed in accordance with internationally proclaimed human rights and UN guidelines. In addition, all activities were developed in consultation with stakeholders. Consequently, no rights or laws will be infringed upon by the proposed activities.
- Are property rights on resources such as land tenure recognised by the existing laws in affected countries?	Yes	Land tenure arrangements are clear because both traditional and state-based rights are recognised.
- Will the project cause social problems and conflicts related to land tenure and access to resources?	No	Consultations with community members occurred at the PPG phase and will be continued throughout the project implementation phase to avoid any problems or conflicts. In addition, local community members will use a participatory approach to agree on regulating access to natural resources.
- Does the project incorporate measures to allow affected stakeholders' information and consultation?	Yes	The proposed project will reduce the vulnerability of stakeholders by providing information on climate risks and opportunities and ensuring feedback on the application of such information. Additionally, all on-the-ground activities will be community based.
- Will the project affect the state of the	Yes	The proposed project will strengthen

targeted country's institutional context?		institutional capacity in Rwanda to adapt to climate change using EbA. National and local (i.e. province, district, sector and cell) authorities will be trained in the implementation of EbA. Additionally, knowledge sharing will be promoted through meetings, creation of partnership, training of committee members and improvement of a national online portal.
- Will the project cause change to beneficial uses of land or resources? (incl. loss of downstream beneficial uses (water supply or fisheries))?	No	The proposed project is designed to enhance ecosystem services and access to resources. This includes reduced flooding and sedimentation at intervention sites as a result of the project activities.
- Will the project cause technology or land use modification that may change present social and economic activities?	Yes	The proposed project will increase the efficiency of current land use systems to enhance the social and economic benefits of these systems.
- Will the project cause dislocation or involuntary resettlement of people?	No	The proposed project will restore degraded ecosystems in sites from which people have already been relocated from by the GoR. It will not cause any population dislocation or involuntary settlements.
- Will the project cause uncontrolled in-migration (short- and long-term) with opening of roads to areas and possible overloading of social infrastructure?	No	No infrastructure works are planned.
- Will the project cause increased local or regional unemployment?	No	No long-term change in formal employment as a result of project activities is anticipated. Local community members will be employed preferentially to implement the project activities. Livelihoods will be developed at project sites to improve the local communities' resilience to the effects of climate change.
- Does the project include measures to avoid forced or child labour?	Yes	The proposed project conforms to all national and international guidelines and laws regarding forced labour. Extensive community engagement will prevent the use of forced labour. In addition, all required labour – which will consist only of short-term employment for meeting specific objectives – will be provided through community engagement and will be remunerated in accordance with national law.
- Does the project include measures to ensure a safe and healthy working environment for workers employed as part of the project?	Yes	All workers will be employed in accordance with all national and international guidelines and laws regarding health and safety in the work environment. In addition, local communities will be trained on health and safety regulations.
- Will the project cause impairment of recreational opportunities?	No	Areas currently used for recreation are not included in the project intervention sites.

- Will the project cause impairment of indigenous people's livelihoods or belief systems?	No	The proposed project was developed through consultation with local communities and in accordance with local belief systems. Additionally, all on-the-ground activities will be community based. The project will improve local communities' livelihoods by increasing the number of livelihood options available that are climate-resilient. Consequently, the climate risk for local communities will be reduced.
- Will the project cause disproportionate impact to women or other disadvantaged or vulnerable groups?	No	The proposed project will help reduce the exposure of climate-vulnerable groups including women, children and farmers.
- Will the project involve and or be complicit in the alteration, damage or removal of any critical cultural heritage?	No	No cultural heritage will be damaged by project operations.
- Does the project include measures to avoid corruption?	Yes	As per UNEP norms and standards, all project disbursements will be monitored by UNEP administrative structures. Regular reporting by the project management team will promote financial and administrative transparency throughout the project's lifetime.
Only if it can be carefully justified that any negative impact from the project can be avoided or mitigated satisfactorily, both in the short and long-term, can the project go ahead.		

Section D: Other considerations

If a negative impact is identified or anticipated, the Comment/explanation field needs to include: i) the stage of the proposed project in which the problem will be addressed; ii) who is responsible for addressing the issue; iii) budget implications of addressing the problem; and iv) other comments.

	Yes/No/N.A.	*Comment/explanation*
- Does national regulation in affected country require EIA and/or ESIA for this type of activity?	Yes	EIAs and SEAs will be conducted at the start of the project implementation phase.
- Is there national capacity to ensure a sound implementation of EIA and/or SIA requirements present in affected country?	Yes	EIA and SIA responsibility and capacity is located under the executing agency partner (REMA). Authorised experts in EIAs and SIAs are designated every year by the GoR. To assess the impact of the project activities, national experts will be selected from this list.
- Is the project addressing issues, which are already addressed by other alternative approaches and projects?	No	The project management teams of other adaptation projects were consulted during the PPG phase to: i) prevent replication of the activities; and ii) maximise the complementarity of the activities. This collaboration will be maintained throughout the project implementation phase.
- Will the project components generate or contribute to cumulative or long-term environmental or social impacts?	No	The proposed project will enhance climate resilience of ecosystems and local communities. No negative impacts are anticipated and positive impacts will accrue.
- Is it possible to isolate the impact from this project to monitor E&S impact?	Yes	Indicators were developed during the PPG phase to monitor the E&S effects of the project. Additional indicators will be developed during the project implementation phase to support the monitoring of relevant

		aspects of the project.

Appendix 12: UNEP comparative advantage

UNEP has experience in implementing approximately 80 projects on adaptation at global, regional and national levels. These projects develop innovative solutions for national governments and local communities to adapt to the predicted effects of climate change in an environmentally sound manner. This is achieved by: i) providing methods and tools to support decision making; ii) addressing barriers to implementation; iii) testing and demonstrating proposed solutions; and iv) enhancing climate resilience by restoring valuable ecosystems that are vulnerable to climate change. UNEP has accumulated an impressive body of knowledge and experience from its implementation of previous and ongoing projects. The agency will draw upon this experience during the implementation of the proposed project. Furthermore, UNEP has been known for its strong technical and scientific background in the field of climate change. Finally, UNEP's experience in community-based projects and natural resource management is well recognised worldwide. Consequently, it is an appropriate agency for providing implementation support and capacity development for enhancing climate resilience within Rwanda.

UNEP's Flagship Programme, Ecosystem-based Adaptation (EbA), represents a ground-breaking shift in focus in the realm of climate change adaptation. In 2011, this programme was commended at the 17th meeting of the Conference of the Parties to the UNFCCC (CoP17). It has also been endorsed by IUCN, the EC and GEF through the Operational Guidelines on "Ecosystem-Based Approaches to Adaptation" GEF/LDCF.SCCF.13/Inf.06 October 16, 2012. The EbA approach is multidisciplinary in nature. It involves managing ecosystems to enhance their resilience. In addition, it uses ecosystem services to promote climate change adaptation and disaster risk management. Furthermore, it provides a platform for engaging a broad range of stakeholders and sectors in the adaptation process. The adaptation interventions of the proposed project are well within the scope of UNEP's current work on climate change.

The GEF Council paper (C.31/15) outlines the comparative advantages of UNEP. These include providing GEF with the best available science and knowledge upon which to base investments, provision of expertise on environmental and climate change matters. UNEP also has considerable experience in the piloting of successful innovative approaches and the implementation of adaptive learning. The proposed project builds upon this comparative advantage. In addition, GEF Council paper (C.28/18) mentions UNEP's comparative advantage of "developing and using climate information to effect changes in relevant sectoral policies based on climate science" which is an area that is addressed by the proposed project.

UNEP has undertaken many projects where innovative solutions and methodologies are demonstrated at inter-regional, national and local levels. All such projects comply with the mandate from the UNEP Governing Council, as detailed in the Bali Strategic Plan for Technology Support and Capacity-building.

The proposed project is consistent with UNEP's other work in the water sector. This work is mandated by the UNEP Governing Council and is based on the UNEP Water Policy and Strategy. It also builds on the achievements of the Environmentally-sound Management of Inland Waters Programme (EMINWA) and other programmes falling under the scope of Integrated Water Resources Management (IWRM). The proposed project will also build on UNEP Division of Environmental Policy Implementation's (DEPI) emerging Drylands Strategy. Furthermore, the majority of the infrastructure and restoration interventions will be linked to and benefit from the Green Economy paradigm led by UNEP. The project will also benefit from ongoing work within UNEP towards analysing and documenting the ecological foundation of food security.

In addition, UNEP has facilitated regional partnerships that greatly improve the delivery of high quality project outputs in a cost-effective manner. This is a result of utilising the capacities built and experiences gained thus far. While not benefitting from in-country presence, UNEP works using a "direct" implementation modality through its Nairobi office. Additionally, expert technical

advisors are delegated to a specific country or project. UNEP also has a regional coordination office for Africa, with a sub-office in Addis Ababa, which can provide assistance.

Collaboration with the UN Country Team in Rwanda is desirable during the implementation of the proposed project. UNEP's expertise and support will promote the inclusion of the natural environment in the UN Country Team's work. This will increase the long-term benefits of the proposed project to the environment.

UNEP has worked in Rwanda since 1994 and has developed strong relationships with local partners. In particular, these include on-going relationships with the Ministry of Natural Resources (MINIRENA), the Ministry of Agriculture and Animal Resources (MINAGRI), the Ministry of Infrastructure (MININFRA) and the Rwanda Development Board Tourism and Conservation Department (RDB T&C). Partnerships also include international organisations such as the Institute for Sustainability Studies (IISD), United Kingdom Department for International Development (DFID), and the World Wildlife Fund (WWF). UNEP has contributed to many studies and policies within the country, including the EDPRS (2007), Vision 2020, the Post-Conflict Environment Assessment (2006), the NAPA (2006), the Economic Analysis of Natural Resource Management (2007), the State of the Environment Report (2009) as well as the Review of the and the Information Networking in Rwanda Study (2010). On-going UNEP projects in Rwanda and relevant partners are listed in the table below. Finally, UNEP has a long history of working with the Government of Rwanda on addressing the effects of climate change. This includes the national communications to the UNFCCC, development of the NAPA, implementation of the LDCF 1 project and implementation of the UNEP-IEMP partnership (please see Section 2.7 for more information on UNEP-IEMP).

Appendix 13: Terms of Reference for key project groups, staff and sub-contractors

A 13.1 Terms of Reference for Project Steering Committee (PSC)

Background

The PSC will be responsible for undertaking management-related and technical decisions for the project in accordance with these ToRs and providing guidance and direction for the project on a regular basis.

The PSC will review and approve the Annual Work Plans (AWPs) and reports as well as the six-monthly workplans and reports. Additionally, it is required to authorise any substantive deviation from the agreed AWP and budget lines. The PSC will ensure as well that necessary resources are committed, and will arbitrate on any conflicts within the project or negotiate a solution to any problems between the project and external bodies. Last, the PSC will approve the responsibilities of the PM.

The PSC will comprise the following members:

- director generals from key ministries and agencies including MINIRENA, MINAGRI, MINECOFIN, MIDIMAR, MINEDUC; and
- district and provincial staff.

In addition, the PSC will include, as support staff, the PM and the CTA. REMA will chair the PSC. The PSC will meet at least every six months or as required by the chair of the PSC.

Scope of Work

Specific responsibilities of the PSC are as follows:

- Ensure that project objectives are fulfilled in an effective and efficient manner.
- Approve work plans and budgets, and other reports that may be required.
- Ensure effective quality assurance and financial reporting requirements.
- Ensure institutional coordination and facilitate an effective communication and decision-making process between government, implementation partners, civil society and other key actors.
- Monitor and evaluate project implementation to ensure consistency with the approved work plans and results framework of the project.
- Review, revise and approve ToRs for staff, consultants and contractors required to assist in project implementation, as proposed by the PM.
- Propose policy revisions that would facilitate the mainstreaming of the project activities.
- Facilitate interactions between the PM/project team and the relevant ministries or government agencies, in order to optimise project interactions.

A 13.2 Terms of Reference for Project Manager (PM)

Scope of Work

The PM will lead the project team and provide overall operational management for the successful execution and implementation of the project. This includes the daily responsibility to manage, coordinate, and supervise the implementation of the project and the delivery of results in accordance with the project document and agreed work plans. Furthermore, the PM will be responsible for financial management and disbursements, with accountability to the government and UNEP. The PM will report to the CTA and the PSC.

Further responsibilities of the PM are to:

- Oversee and manage project implementation, monitor work progress, and ensure timely delivery of outputs.
- Report to the CTA and the PSC regarding project progress.
- Develop and facilitate implementation of a comprehensive monitoring and reporting system.

- Ensure timely preparation of detailed AWPs and budgets for approval by PSC.
- Write ToRs with the Chief Technical Advisor.
- Assist in the identification, selection and recruitment of staff, consultants and other experts as required.
- Supervise, coordinate and facilitate the work of the project officer, field officers, M&E specialist, procurement specialist, national focal point and technical unit (including national and international consultants).
- Control expenditures and assure adequate management of resources.
- Provide a quarterly update of the expenses of the previous three months and the expenses expected for the next three months.
- Establish linkages and networks with the on-going activities of other government and non-government agencies.
- Provide input to management and technical reports and other documents as described in the M&E plan for the overall project. Reports should contain detailed assessments of progress in implementing activities, including reasons for delays, if any, and recommendations on necessary improvements.
- Inform the PSC, without delay, of any issue or risk which might jeopardise the success of the project.
- Liaise and coordinate with UNEP Task Manager (TM) on a regular basis.

Qualifications

- Master's degree in environment, natural resources management, agriculture or a closely related field.
- A minimum of 10 years relevant work experience including at least 6 years' experience as a lead project manager in relevant sectors.
- Demonstrated solid knowledge of adaptation to climate change, ecological restoration and sustainable exploitation of natural resources.
- Experience in the public participation development process associated with environment and sustainable development is an asset.
- Experience in working and collaborating within governments is an asset as well as experience in GEF projects.
- Fluent in English including writing and communication skills.

Reporting

During the project implementation phase, the PM will be a staff member of REMA and will report to the PSC. The PM will work closely with the PSC, CTA and TM to ensure the availability of information on progress and performance regarding the implementation of the project.

A 13.3 Terms of Reference for the Chief Technical Adviser (CTA)

Scope of Work

The CTA will provide technical guidance on the implementation of the project to the PM. The position of CTA is likely to be filled by an international consultant, because there is currently no one available in Rwanda with the required technical expertise.

Responsibilities

i) Provide quality assurance and technical review of project outputs.
ii) Undertake technical review of project outputs (e.g. studies and assessments).
iii) Write ToRs for technical consultancies with the PM (including policy revisions when necessary).
iv) Supervise the work of national and international consultants.
v) Assist in monitoring the technical quality of project M&E systems (including AWPs, indicators and targets).
vi) Conduct the financial administrative reporting and the PIR.

vii) Provide advice on best suitable approaches and methodologies for achieving project targets and objectives.
viii) Provide a technical supervisory function to the work carried out by NTAs, and national and international consultants hired by the project.
ix) Assist in knowledge management, communications and awareness-raising.
x) Facilitate the development of strategic regional and international partnerships for the exchange of skills and information related to climate change adaptation.

Qualifications

- At least an advanced post-graduate at or above M.Sc. level in climate change adaptation or a related discipline such as disaster risk reduction, environmental management, natural resources management, agriculture and water resources management.
- A minimum of 5 years' experience in a senior technical lead position with planning and management of environmental and/or natural resources management programmes in developing countries.
- A minimum of 5 years in a senior technical position involved in institutional strengthening and capacity building.
- Previous similar experiences in provision of technical support to complex projects.
- Experience from West African region would be an advantage.
- Good communication and computer skills.
- Fluent in English including writing and communication skills.

Reporting

The CTA will report to the chair of the PSC. The CTA will cooperate with the PM to ensure the availability of information on progress and performance in the implementation of the project. In the performance of his/her duties, the CTA will work in close collaboration with TM, and update him/her on the project's progress. Additionally, in consultation with the UNEP TM, the CTA will take responsibility for decision-making and implementation of the project.

A 13.4 Terms of Reference of the Project Officer

A project officer will report to the PM.

Responsibilities

- Prepare status reports and progress reports.
- Assist in the submission of terminal reports, transfer and disposal of equipment, processing of semi-final revisions, and support professional staff in preparing the terminal assessment reports.
- Assist in the timely issuance of contracts and assurance of other eligible entitlements of the project personnel, experts, and consultants by preparing annual recruitment plans.

A 13.5 Terms of Reference of the Accountant

An accountant will report to the PM.

Responsibilities

- Standardise the finance and accounting systems of the project while maintaining compatibility with the government and UNEP financial accounting procedures.
- Prepare revisions of the budget and assist in the preparation of the AWPs.
- Comply and verify budget and accounting data by researching files, calculating costs and estimating anticipated expenditures from readily available information sources.
- Prepare financial reports.
- Process all types of payment requests for settlement purposes including quarterly advances to the partners upon joint review.

- Prepare periodic accounting records by recording receipts, disbursements (ledgers, cash books, vouchers, etc) and reconciling data for recurring or financial reports and assist in preparation of annual procurement plans.
- Undertake project financial closure formalities including requirements for submission of terminal reports, transfer and disposal of equipment, processing of semi-final revisions, and support professional staff in preparing the terminal assessment reports.

A 13.6 Terms of Reference for the Procurement Specialist

The procurement specialist will report to the PM and will manage the various procurement activities. The inclusion of a procurement specialist forms part of the project management framework for projects executed by REMA.

A 13.7 Terms of Reference for M&E Specialist

The M&E specialist will report to the PM. Key responsibilities include: i) establishing and managing a performance monitoring framework; ii) train the PMU on effective M&E processes; iii) plan and supervise the activities of field officers; and iv) regular monitoring of the project indicators to detect delays, technical problems or discrepancies (e.g. with gender equity indicators) early on. The inclusion of an M&E specialist forms part of the project management framework for projects executed by REMA.

A 13.8 Terms of Reference for the Field Officers

Under the supervision of the M&E specialist, field officers will be hired to coordinate and monitor implementation of activities at district level. The field officers will be responsible for the coordination of activities within the project intervention sites. The field officers will work closely with the M&E Specialist to manage the project effectively at local level. One field officer will be hired to coordinate the activities in Bugesera, Kayonza and Ngororero districts respectively.

Responsibilities

- Act as a liaison with district authorities and institutions.
- Oversee and manage project implementation, monitor work progress, and ensure timely delivery of outputs in provinces.
- Report to the M&E Specialist regarding project progress. Reports should contain assessments of the progress of implementing activities, including reasons for delays, if any, and recommendations on necessary improvements.
- Support the M&E Specialist in developing and facilitating implementation of a comprehensive monitoring and reporting system.
- Support in the preparation of detailed annual work plans and budgets for approval by M&E specialists and PM.
- Supervise, coordinate and facilitate the work of the technical staff in the districts.
- Provide input to management and technical reports, and other documents as described in the M&E plan for the overall project.
- Participate in the PSC meetings and coordinate project site visits.

Qualifications

- Bachelor degree in environment, natural resources management, agriculture or a closely related field.
- A minimum of 5 years relevant work experience.
- Demonstrated solid knowledge of environment and ecological restoration.
- Experience in the public participation development process associated with environment and sustainable development an asset.
- Experience in working and collaborating with local authorities an asset.

- Fluent in English and at least one of the major local languages including writing and communication skills.

A 13.9 General Terms of Reference for International Consultants

The types of international consultants to be hired by the project are included in Appendix 14 These international consultants will collaborate with national consultants specialised in the same field. In this way, national capacity will be increased. These consultants will be hired to perform the following tasks:

- Collect data.
- Provide advice relevant to their field.
- Monitor interventions.
- Collaborate with the national consultants.

Additionally, the international consultants must be experts in their field, with experience in climate change, capacity building, and research and information development. The international consultants should have good knowledge and understanding of Rwanda's climate change risks. They should have an appropriate M.Sc. degree and a minimum of 5 years' experience or an appropriate bachelor's degree and 10 years experience in their field of expertise. Fluency in English is required. Fluency in one of the major local languages will be an advantage.

A 13.10 General Terms of Reference for National Consultants

Local expertise will be sourced where possible in place of international expertise in order to strengthen in-country capacity. National consultants will be hired by the project to:

- Collect data.
- Provide advice relevant to their field.
- Monitor interventions.
- Collaborate with international consultants.

Additionally, the national consultants must be experts in their field, ideally with experience in climate change, capacity building, and research and information development. Additionally, they should have good knowledge and understanding of Rwanda's climate change risks and an appropriate M.Sc. degree and a minimum of 5 years experience or an appropriate bachelor's degree and 10 years experience in their field of expertise. National consultants need to be fluent in spoken and written English.

The hiring procedures to be followed for both international and national consultants must include a transparent and competitive process based on normal UNEP procedures.

A 13.11 General Terms of Reference for national focal points/ teams

The ToRs of the national focal points and teams in the different ministries will be drafted upon initiation of the project and endorsed by the PSC.

A 13.12 Key elements of the Terms of Reference for the national company conducting the EIAs.

Scope of Work

The national company will conduct EIAs (where required) in order to verify that none of the activities of the proposed project will have a negative impact on the environment or the local population. The impact assessment conducted will be aligned with national laws, UNEP guidelines on EIAs and International Association for Impact Assessment (IAIA) guidelines. This position will

be fulfilled by a national company specialised in EIAs in order to increase national capacity and create jobs.

Responsibilities

The national company will:

i) Prepare a checklist of environment impacts that will be assessed during the national company mission for each activity.

ii) Involve the local communities as much as possible in the EIA process by explaining to them the principles and results of EIAs, and involving them in the decision-making process resulting from the outcomes of the EIAs.

iii) Assess the impact of the activities of Component 3 (for example, construction of terraces; promotion of rainwater harvesting techniques; removal of alien species; construction of bio-retention systems; and development of alternative livelihoods) of the proposed project including their impact on:

- water flow particularly downstream;
- sedimentation of the adjacent rivers and lakes;
- water infiltration;
- soil structure;
- soil composition (e.g. the use of fertilisers and pesticides);
- erosion and desertification;
- land-use patterns;
- indigenous species (fauna and flora); and
- local communities' sustenance, health, lifestyle and income.

v) Provide guidelines to prevent the negative impact of the activities of the proposed project if any and to increase the positive impact of the project activities.

vi) Assess the appropriate alternative designs and/or locations to assist the PM and CTA in modifying the activities that could potentially be detrimental, if any, in order to prevent any negative impact on the environment or the local communities.

vii) Provide guidelines on the changes to be, if any, to the baseline study.

viii) Propose a monitoring system/mechanism to check that the EIA recommendations are followed during the implementation of the project activities.

Qualifications

- At least an advanced post-graduate at or above M.Sc. level in natural resource management or environment protection.
- A minimum of 10 years' experience in Environment Impact Assessments.
- Strong knowledge of national and international environment policies.
- Excellent knowledge of English including writing and communication skills.

Reporting

The national company will report to PM and the CTA. The hired company will work closely from the beginning of their contract with the PM and the CTA to ensure that the activities are clearly defined and understood, and share all necessary information. The deliverable is a report including an extensive evaluation (both qualitative and quantitative) of the potential environment and social impacts of each of the activities of the proposed project as well as their probability of occurrence. Additionally, clear guidelines on the problems to address and alternative non-detrimental activities/practices will be provided.

A 13.13 Key elements of the Terms of Reference of the Candidates for Research Projects

Two research candidates will be hired to: i) measure the impact of the project activities on the local communities; and ii) conduct a cost-benefit analysis of the project activities. These research

projects will be conducted concomitantly to the project implementation phase and will include the comparison of the economic costs of the proposed project to the benefits it provides in term of resilience to climate change. The data collected and the outcomes of these research projects will be used by the government for upscaling the activities and will be valuable information for further EbA projects as well as private sector investments.

Appendix 14: Draft procurement plan

The financial management of the project will be undertaken by UNEP, owing to complications with the national procurement process. Consequently, the GEF funds will be disbursed through contracts, MoUs or LoAs between UNEP and individual consultants, under guidance from the EA. The national partner institutions will contribute to the outcomes based on their respective expertise and financial capabilities.

The table below specifies the technical assistance consultancies planned for Outcomes 1, 2 and 3 (including both national and international consultants).

National consultants	US $/ person month	Estimated person months	Tasks to be performed	Budget note
National specialist in EbA (Component 1)	4,000	4.5	The national consultant (NC) with proven expertise in EbA will: i) review the ToRs and establish the Rio conference committee (Activity 1.1.1); ii) train members of the committee on EbA planning, budgeting and implementation (Activity 1.1.2); iii) train the DEO and DEF of each of the districts where the project interventions will be implemented on EbA planning, budgeting and implementation (Activity 1.2.1); iv) train the environment committees on the design and implementation of EbA interventions (Activity 1.2.2); v) raise awareness and train the private sector on the role of EbA and the implementation of EbA interventions (Activity 1.2.3); and vi) train local community representatives on the use of EbA (Activity 1.2.4).	2
National specialist in indigenous species in Rwanda	4,000	1.9	The NC with proven experience in ecosystem restoration using indigenous species will review the past and current projects implementing restoration in Rwanda through planting indigenous species. The information collected will include: i) planting protocols; and ii) assessment of the success of the corresponding restoration activities. He/she will visit the restoration sites to assess the success of these restoration interventions. Guidelines on the best planting and maintenance practices for selected indigenous species will then be produced by the NC (Activity 1.3.2).	3
National specialist in green technologies	4,000	3.7	The NC will develop guidelines specific to each intervention site for implementing the use of: i) organic compost for fertilisation (Activity 1.3.3); and ii) biogas as a source of energy (Activity 1.3.4).	4
National specialist in Information technologies	4,000	1.7	The NC will improve the climate change portal (Activity 1.3.5). This will include: i) creating a webpage for each project; ii) downloading all the project documents; and iii) promoting best practices. This consultant will also be responsible for the development of a research forum to share and discuss the results of research studies conducted on the effects of EbA interventions (Activity 1.5.5).	5
National	4,000	1.5	The NC will work closely with the management team of aligned restoration projects and local	6

specialist in ecosystem health			authorities to produce a national map indicating the priority ecosystems for future EbA interventions. He/she will use national and local reports, including reports on: i) ecosystem degradation; ii) vulnerability to climate change; and iii) community livelihoods. Additionally, aerial images and all other relevant source of information will be used (Activity 1.3.6).	
National specialist in environmental education.	4,000	10.7	The NC will: i) raise awareness of local communities in the intervention sites on the role of natural ecosystem and the use of EbA (Activity 1.4.1); ii) review the education programmes for primary, secondary and tertiary education including technical college (Activity 1.4.2 and 1.4.3); iii) develop guidelines to facilitate the integration of EbA into the education programmes, and present the revisions and guidelines to MINEDUC, universities and schools (Activity 1.4.4); iv) train school teachers on EbA (Activity 1.4.5); v) develop school-based EbA programmes (Activity 1.4.6); vi) integrate the implementation of EbA interventions into a school award system (Activity 1.4.7); and vii) take students and teachers to the LDCF intervention sites to complement the training sessions (Activity 1.4.8).	7
National specialist in EbA (Component 2)	4,000	8.5	The NC will: i) review the sectoral policies for the environment, water, forestry, biodiversity and additional relevant national policies to identify how to insert EbA into these documents (Activity 2.1.1); ii) develop policy recommendations and policy briefs to integrate EbA into these policies (Activities 2.1.2 and 2.1.3) and train the corresponding planning experts on the use of these policy recommendations and policy briefs through the organisation of a one-day-long workshop (Activity 2.1.4); iii) select the best project activities according to the benefits they provide to the local communities and identify suitable sites for the replication of these activities (Activity 2.2.1); iv) present this information to the relevant government authorities and develop, in collaboration with these authorities, a funding strategy for the replication of the LDCF activities (Activities 2.2.2 and 2.2.3); v) develop a national upscaling strategy for successful EbA interventions (Activity 2.2.4); vi) review the DDPs for the 4 districts where the project interventions will be implemented and propose revisions to these DDPs to integrate EbA interventions (Activity 2.4.1); vii) train the district authorities on the use of these documents (Activity 2.4.5); and viii) integrate EbA into the award systems developed by REMA for districts, NGOs, CBOs and the private sector (Activity 2.4.6).	10
National expert in environmental economics and adaptation	4,000	2.7	The NC will: i) review national development plans to identify entry points for EbA, produce policy recommendations to integrate EbA into these documents and train MINIRENA's working groups on the use of these policy recommendations (Activities 2.3.1 and 2.3.2); and ii) review sectoral development plans to identify entry points for EbA, produce recommendations to integrate EbA into these documents – including selecting, designing, budgeting for and implementing EbA interventions – and train planning and technical experts in the relevant ministries	11

			on the use of these policy recommendations (Activities 2.3.3 and 2.3.4).	
National expert in environmental assessments	4,000	2	The NC will: i) review national assessment tools including EIA, SIA and SEA checklists and produce policy recommendations to promote EbA into these assessment processes (Activity 2.3.5); and ii) train the authorized EIA, SIA and SEA experts on the use of these policy recommendations (Activity 2.3.6).	12
National expert in natural resources' management	4,000	2.3	The NC will collaborate with the National EbA specialist to: i) develop indicators to measure the degradation of natural ecosystems in Rwanda and measure the level of degradation of natural ecosystems in the districts where the project interventions will be implemented (Activity 2.4.2); ii) investigate the implementation process for environment policies and strategies where natural ecosystems are under on-going degradation and produce guidelines to improve the efficiency of this implementation process (Activity 2.4.3); and iii) produce guidelines to address the shortcomings in the implementation process (Activity 2.4.4) and train the district authorities on the use of these guidelines (Activity 2.4.5).	13
National specialist in vulnerability assessments	4,000	3	The NC will be in charge of conducting vulnerability assessments to identify the project's beneficiaries for the activities of Component 3 (Activities 3.1.1, 3.1.2 and 3.1.3).	
National specialist in wetland ecosystems	4,000	3.7	The NC will: i) identify the best species for the proposed project's wetland restoration interventions and develop protocols to use, plant and maintain these species (Activity 3.1.2); ii) design nurseries, and supervise both their construction and other restoration activities in wetlands (Activity 3.1.3); iii) train local communities on restoration techniques including constructing nurseries, planting seeds, transplanting trees, monitoring plantation areas and maintaining restoration sites (Activity 3.1.4); and iv) train local community on management techniques for water hyacinth (Activity 3.1.10).	18
National specialist in agroforestry	4,000	3.6	The NC will: i) identify the best species for the agroforestry development – including terraces and for handcrafting – and develop protocols to use, plant and maintain these species in agricultural land adjacent to wetland, forest and savanna restoration sites respectively (Activities 3.1.2, 3.2.2 and 3.3.2); and ii) select farmers for the development of agroforestry with the management team; distribute seeds to the farmers and train them on agroforestry techniques in wetland, forest and savanna restoration sites respectively (Activities 3.1.8, 3.2.6 and 3.3.6).	19
National specialist in agriculture	4,000	4	The NC with proven experience in agricultural development in sites vulnerable to droughts, floods and landslides and in water management will: i) collaborate with the NC in agroforestry to select agroforestry species suitable for terraces, including risers; ii) collaborate with the private company awarded the tender, to design and construct terraces and	20

			train farmers on best agricultural practices, including planting on risers (Activity 3.1.8); iii) select suitable water tanks and train local communities on the use and maintenance of these (Activity 3.1.9); and iv) train farmers located adjacent to the savanna restoration sites on best rainwater harvesting techniques to increase resilience to droughts through increased water availability for irrigation (Activities 3.3.7 and 3.3.8).	
National specialist in green technologies	4,000	4.5	The NC will be supported by an IC in green technologies to: i) raise awareness on the use of organic fertilisers and pesticides in agricultural lands located adjacent to wetland restoration sites (Activity 3.1.11); ii) select pilot sites for the development of biogas and select the material to purchase and train the beneficiaries on the use of this material (Activities 3.1.12, 3.2.7 and 3.3.9); and iii) select pilot sites for the use of organic compost as fertiliser for agriculture, design the composting basins, select the material to purchase and train the beneficiaries on the use of this material (Activity 3.1.13).	21
National specialist in forest ecosystems	4,000	1.7	The NC will: i) identify the best species for the proposed project's forest restoration interventions and develop protocols to use, plant and maintain these species (Activity 3.2.2); ii) design nurseries and supervise both their construction and other restoration activities in forests (Activity 3.2.3); and iii) train local communities on restoration techniques, including constructing nurseries, planting seeds, transplanting trees, monitoring plantation areas and maintaining restoration sites (Activity 3.2.4).	22
National specialist in savanna ecosystems	4,000	2.7	The NC will: i) identify the best species for the proposed project's savanna restoration interventions and develop protocols to use, plant and maintain these species (Activity 3.3.2); ii) design nurseries, and supervise both their construction and other restoration activities in savannas (Activity 3.3.3); and iii) train local communities on the restoration techniques including constructing nurseries, planting seeds, transplanting trees, monitoring plantation areas and maintaining restoration sites (Activity 3.3.4).	23
National specialist in community-based projects	4,000	2.7	The NC will: i) review the financial system adopted in REMA for the implementation of other community-based activities; ii) selected the best system for the proposed project activities; iii) implement this system (Activity 3.4.2); and iv) promote knowledge sharing on climate-resilient livelihoods (Activity 3.4.8).	24
National apiculture specialist	4,000	10	The NC will: i) select sites and beneficiaries for apiculture development; ii) select materials to be purchased; and iii) train beneficiaries on the use and maintenance of these materials and best apiculture practices.	25

National fisheries' specialist	4,000	2	The NC will: i) select sites and beneficiaries for fisheries' development; ii) select the materials to be purchased; and iii) train the beneficiaries on the use and maintenance of these materials, and best fisheries' practices.	26
National specialist in handcrafting	4,000	4.1	The NC will: i) collaborate with the NC in agroforestry development to select appropriate species for the development of handcrafting; i) select sites and beneficiaries for apiculture development; ii) select the materials to be purchased; and iii) train the beneficiaries on the use and maintenance of these material, and best handcrafting practices.	27
National specialist in ecotourism	4,000	2.1	The NC will: i) select the best site for the development of a community-based ecotourism project, as well as the beneficiaries; ii) develop a detailed project proposal; and iii) develop a plan to implement this project through a workshop with the local authorities and community representatives.	28
International consultants	**US $/ person week**	**Estimated person weeks**	**Tasks to be performed**	
Chief Technical Advisor (CTA)	2,500	64	The CTA will: i) provide quality assurance; ii) undertake a technical review of project outputs (e.g. studies and assessments); iii) assist in the drafting of ToRs for technical consultancies; iv) supervise the work of national and international consultants; v) assist in monitoring the technical quality of project M&E systems (including AWPs, indicators and targets); vi) conduct the financial administrative reporting and the PIR; vii) provide advice on the best approaches and methods for achieving project targets and objectives; viii) provide technical supervision for the work carried out by field officers, and national and international consultants hired by the project; ix) assist in knowledge management, communication and awareness-raising; and x) facilitate the development of strategic regional and international partnerships for the exchange of climate change adaptation skills and information.	
International specialist in EbA (Component 1)	2,500	10.8	The international consultant (IC) will work closely with REMA, RAB,REB, NUR and MINEDUC to: i) support the NC specialist in ecosystem health assessment in building the priority map for EbA interventions (Activity 1.3.6); ii) identify gaps in EbA knowledge for Rwanda and develop research projects accordingly (Activity 1.5.1);	1

			ii) collaborate with the IT specialist to develop the research forum (Activity1.5.5); and iii) raise awareness of masters students in relevant fields on the need for EbA research projects to be conducted (Activity 1.5.6).	
International specialist in EbA (Component 2)	2,500	14.6	The IC will support the NC in EbA to: i) identify entry points for EbA in national policies (Activity 2.1.1); ii) identify entry points for EbA in environment assessment processes, to increase the use of EbA (Activity 2.3.5); iii) identify entry points for EbA interventions in the DDPs for the districts where the proposed project will be implemented and provide support to develop training material for the district authorities to implement EbA (Activities 2.4.1 and 2.4.5); and iv) maximise the likelihood of the district, NGOs, CBOs and private sector to implement EbA interventions, through revising the award system (Activity 2.4.6).	8
International specialist in environment economics and adaptation	2,500	8.4	The IC will support the NC in environmental economics and adaptation to: i) identify entry points for EbA in national development plans, produce policy recommendations to integrate EbA into these documents and prepare training material for MINIRENA's working groups (Activities 2.3.1 and 2.3.2); and ii) produce policy recommendations for incorporating EbA into sectoral development plans – including selecting, designing, budgeting for, and implementing EbA interventions – and train planning and technical experts in the relevant ministries on the use of these recommendation documents (Activities 2.3.3 and 2.3.4).	9
International specialist in EbA (Component 3)	2,500	11	The IC will support the NCs specialising in wetland, forest and savanna restoration to: i) select the best species for restoration and develop the restoration protocols (Activities 3.1.2, 3.2.2 and 3.3.2); ii) design nurseries (Activities 3.1.3, 3.2.3 and 3.3.3); iii) develop training material on restoration techniques for local communities (Activities 3.1.4, 3..2.4 and 3.3.4); and iv) develop training material on the management of invasive species for local communities (Activity 3.1.10).	14
International specialist in agroforestry	2,500	6	The IC will support the NC in agroforestry to: i) identify the best species for agroforestry development – including terraces and for handcrafting – and develop protocols for the use, planting and maintenance of these species in agricultural land adjacent to wetland, forest and savanna restoration sites respectively (Activities 3.1.2, 3.2.2 and 3.3.2); and ii) develop training material on agroforestry techniques for farmers located adjacent to wetland, forest and savanna restoration sites respectively (Activities 3.1.8, 3.2.6 and 3.3.6).	15
International specialist in green technologies	2,500	9	The IC will support the NC in green technologies to: i) prepare awareness raising material on the use of organic fertilisers and pesticides in agricultural lands located adjacent to wetland restoration sites (Activity 3.1.11); ii) select pilot sites for the development of biogas, select material to purchase and prepare training material for beneficiaries on the use of this material (Activities 3.1.12, 3.2.7 and 3.3.9); and	16

			iii) select pilot sites for the use of organic compost as fertiliser for agriculture, design the composting basins, select the material to purchase and prepare the training material for the beneficiaries on the use of this material (Activity 3.1.13).	
International specialist in environmental economics and private sector	2,500	19.8	The IC will: i) review the business models of private sector investments in environmental projects in neighbouring countries; ii) select the most appropriate one for Rwanda; iii) develop a detailed protocol for the implementation of a commercially viable business model in Rwanda (Activity 3.4.6); and iv) develop two community-based EbA projects (Activity 3.4.7).	17
M&E expert	2,500	18.2	The consultant will undertake the following M&E tasks: i) baseline assessment; ii) mid-term evaluation; and iii) final evaluation.	

In terms of the procurement of non-expendable equipment, final allocations will be undertaken during the inception period. The following are estimated costs.

Items	**Approximate equipment costs**
Computer equipment	US $20,800
Office supplies	US $26,000

Appendix 15: Endorsement letters of GEF National Focal Points

Separate attachment

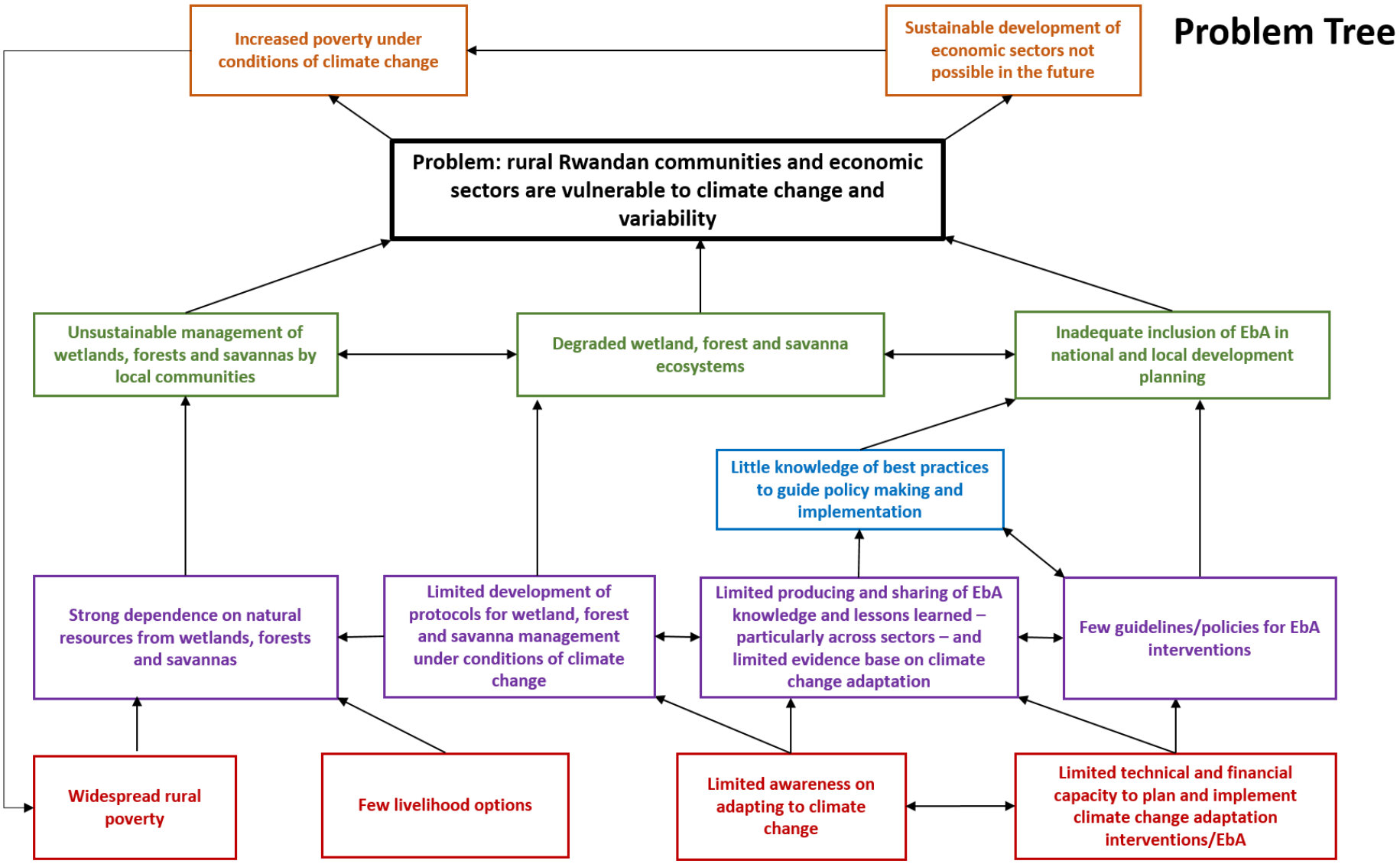
Appendix 16: Co-financing commitment letters from project partners
Separate attachment

Appendix 17: Tracking tools.

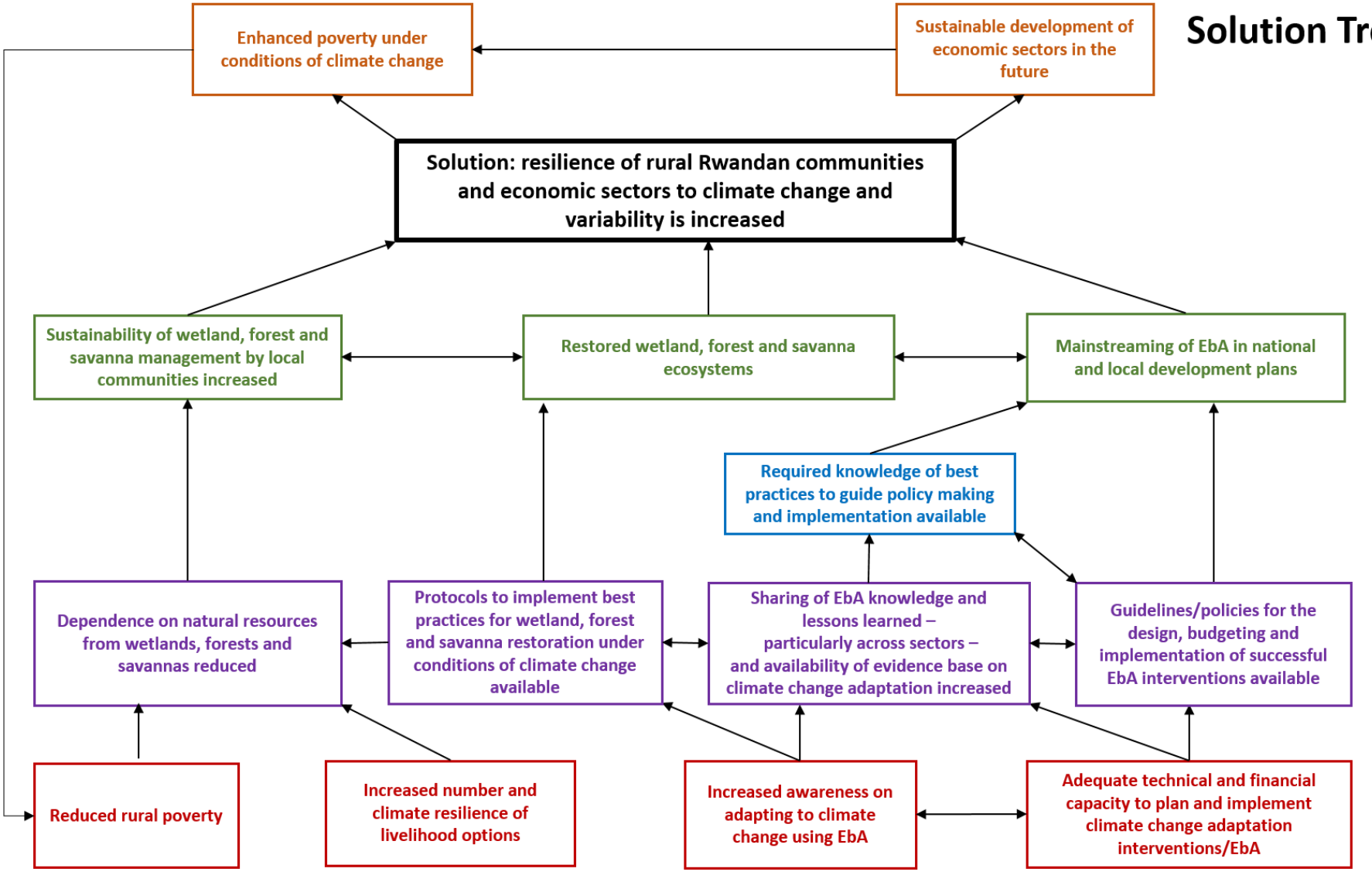
Outcome and Output Indicators	Metric	Target at CEO Endorsement	Baseline
Objective 1: Reduce vulnerability to the adverse impacts of climate change, including variability, at local, national, regional and global level			
Outcome 1.2: Reduced vulnerability in development sectors			
Indicator 1.2.10 % change in income generation in targeted area given existing and projected climate change	% change in income (US $)	25%	0% change
Output 1.2.1: Vulnerable physical, natural and social assets strengthened in response to climate change impacts, including variability			
Indicator 1.2.1.3 Climate resilient agricultural practices introduced to promote food security	Type and level:		
	Agroforestry nurseries (units)	6	0
	Terraces (ha)	400	200
Outcome 1.3: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas			
Indicator 1.3.1 Households and communities have more secure access to livelihood assets	Score - Disaggregated by gender. Score for this indicator will have to be assigned based on the results of a conducted survey. The score ranges from 1 to 5 and below are the explanations of the rankings: 1. No access to livelihood assets; 2. Poor access to livelihood assets; 3. Moderated access to livelihood resources; 4. Secure access to livelihood resources; 5. Very secure access to livelihood resources.	Female: 4 Male: 4	Female: 2 Male: 2
Output 1.3.1: Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability			
Indicator 1.3.1.1 % of targeted households that have adopted resilient livelihoods under existing and projected climate change	%	50%	0 targeted households
Objective 2: Increase adaptive capacity to respond to the impacts of climate change, including variability, at local, national, regional and global level			
Outcome 2.2: Strengthened adaptive capacity to reduce risks to climate-induced economic losses			
Indicator 2.2.1 No. and type of targeted institutions with increased adaptive capacity to reduce risks of and response to climate variability	Number and type:		
	Government institutions	5	1
	NGOs	8	0
	Community groups	12	0
Output 2.2.1: Adaptive capacity of national and regional centers and networks strengthened to rapidly respond to extreme weather events			
Indicator 2.2.1.1 No. of staff trained on technical adaptation themes (disaggregated by gender). Themes: - Monitoring/Forecasting capacity (Early Warning System (EWS), Vulnerability mapping system) - Policy reform -Capacity development Sustainable forest management - Agriculture diversification - Improved resilience of agricultural systems - Strengthening infrastructure - Supporting livelihoods - Mangrove reforestation	Theme:		
	Improved resilience of agricultural systems	Female: 80 Male: 150	Female: 500 Male: 550
	Erosion control/Soil water conservation	Female: 80 Male: 150	Female: 500 Male: 550

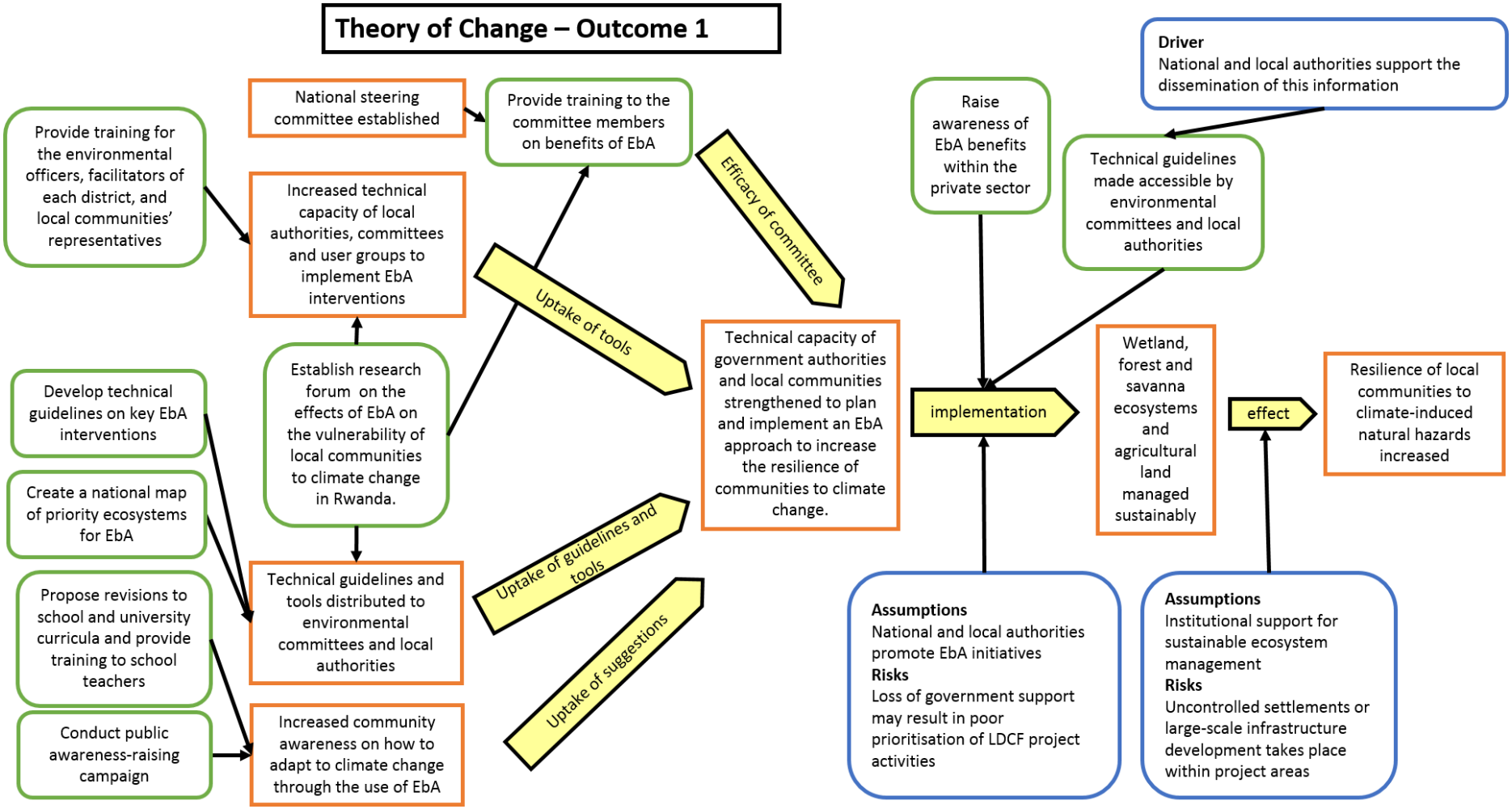
- Coastal drainage/irrigation system - Community-based adaptation - Erosion control/soil water conservation - Microfinance - Special Programs for women - Livelihoods - Water storage - Information and communication technologies (ICT) and information dissemination - Other			
Objective 3: Promote transfer and adoption of adaptation technology			
Outcome 3.2: Enhanced enabling environment to support adaptation-related technology transfer			
Indicator 3.2.2 Strengthened capacity to transfer appropriate adaptation technologies	Score (1-3) disaggregated by gender: 1. No capacity achieved (< 50% correct) 2. Moderate capacity achieved (50-75%) 3. High capacity achieved (>75% correct)	Female: 3 Male: 3	Female: 2 Male: 2
Output 3.2.1: Skills increased for relevant individuals in transfer of adaptation technology			
Indicator 3.2.1.1 No. of individuals trained in adaptation-related technologies	Number of individuals disaggregated by gender	Female: 1120 Male: 1680	Female: 100 Male: 130

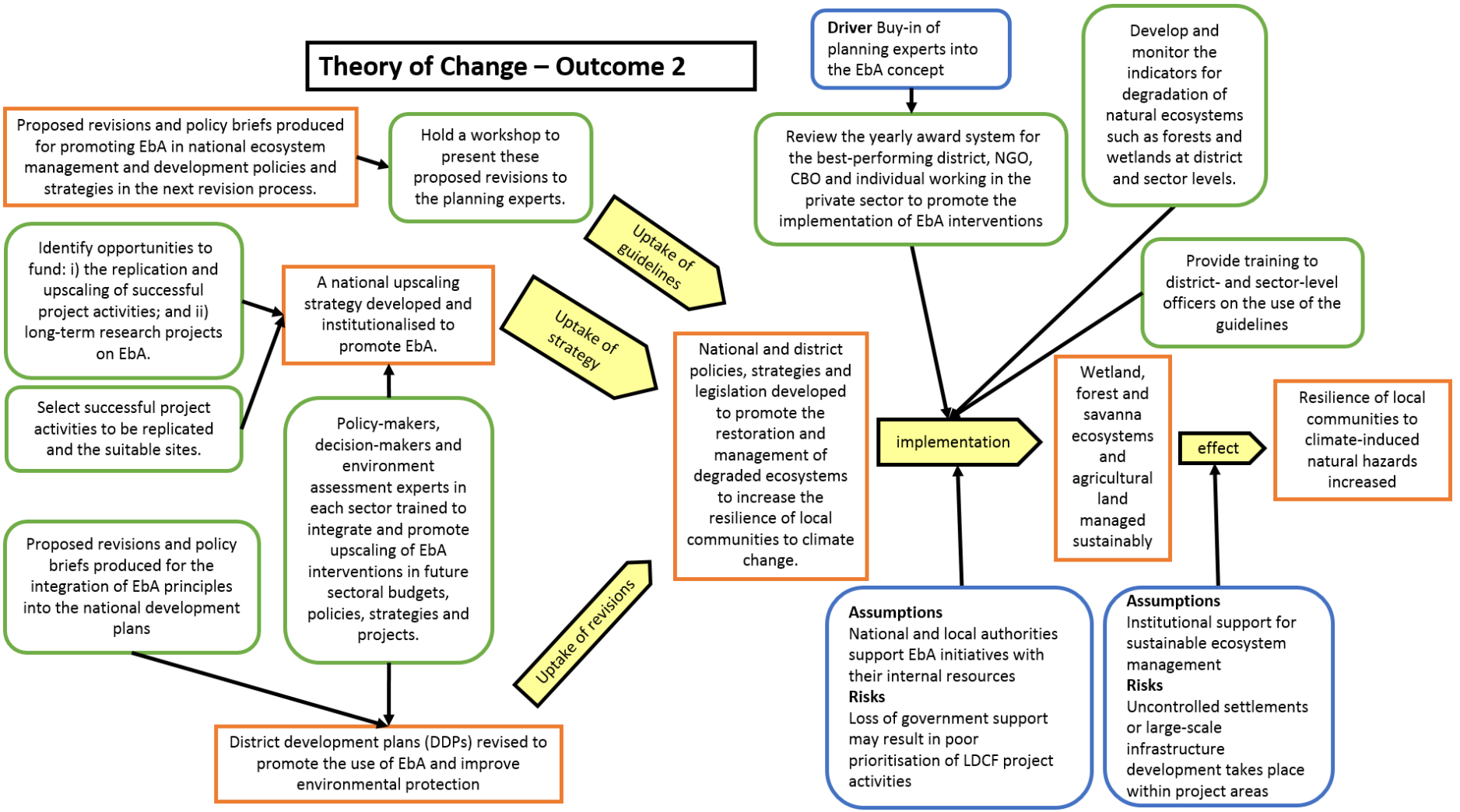
Appendix 18: Theory of Change.

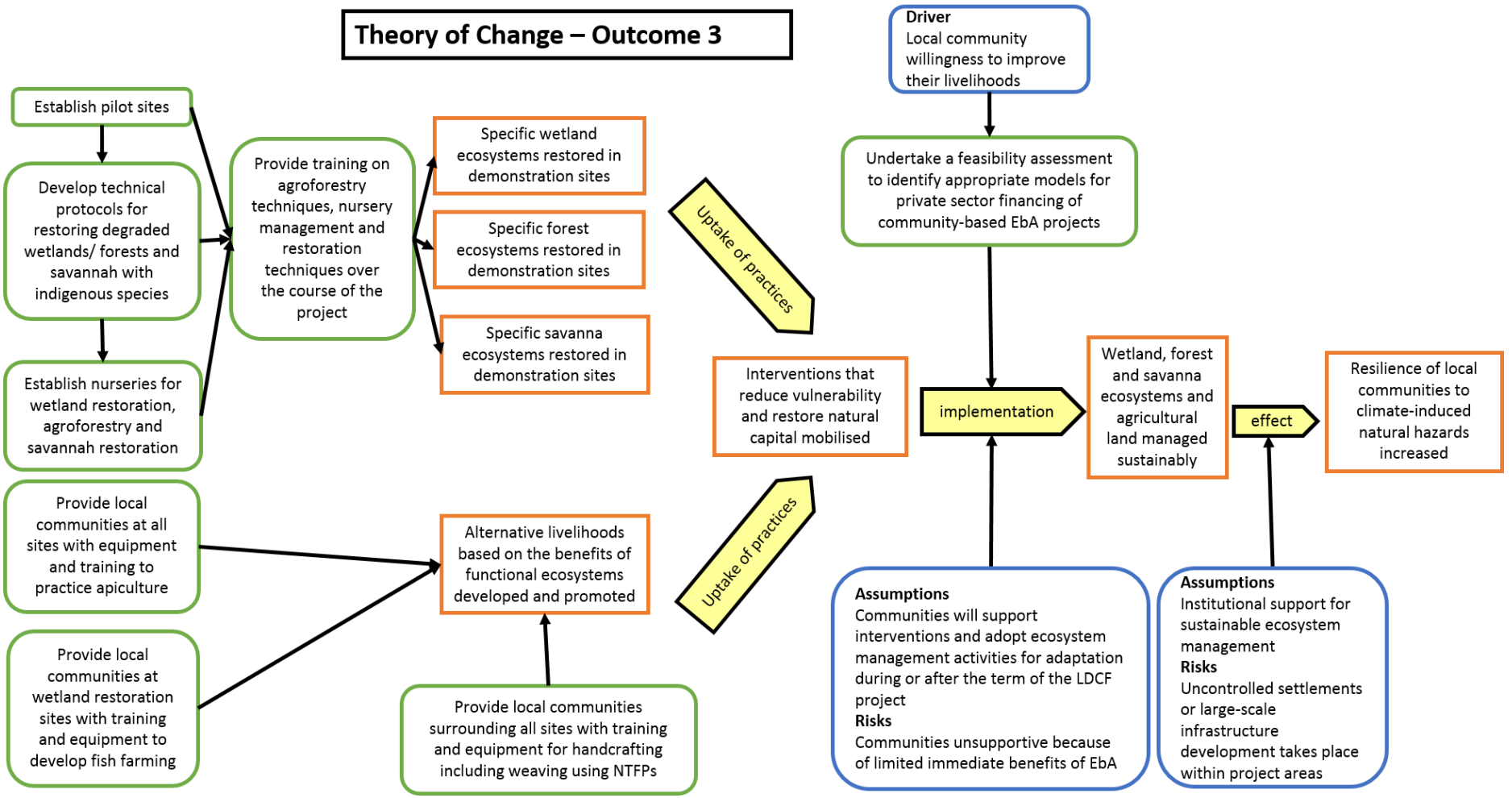


Solution Tree




Theory of Change – Outcome 1
National steering committee established
Provide training to the committee members on benefits of EbA
Provide training for the environmental officers, facilitators of each district, and local communities' representatives
Increased technical capacity of local authorities, committees and user groups to implement EbA interventions
Efficacy of committee
Uptake of tools
Establish research forum on the effects of EbA on the vulnerability of local communities to climate change in Rwanda.
Develop technical guidelines on key EbA interventions
Create a national map of priority ecosystems for EbA
Propose revisions to school and university curricula and provide training to school teachers
Conduct public awareness-raising campaign
Technical guidelines and tools distributed to environmental committees and local authorities
Uptake of guidelines and tools
Uptake of suggestions
Increased community awareness on how to adapt to climate change through the use of EbA
Technical capacity of government authorities and local communities strengthened to plan and implement an EbA approach to increase the resilience of communities to climate change.
Raise awareness of EbA benefits within the private sector
Driver
National and local authorities support the dissemination of this information
Technical guidelines made accessible by environmental committees and local authorities
implementation
Assumptions
National and local authorities promote EbA initiatives
Risks
Loss of government support may result in poor prioritisation of LDCF project activities
Wetland, forest and savanna ecosystems and agricultural land managed sustainably
effect
Resilience of local communities to climate-induced natural hazards increased
Assumptions
Institutional support for sustainable ecosystem management
Risks
Uncontrolled settlements or large-scale infrastructure development takes place within project areas


Theory of Change – Outcome 2
Proposed revisions and policy briefs produced for promoting EbA in national ecosystem management and development policies and strategies in the next revision process.
Hold a workshop to present these proposed revisions to the planning experts.
Uptake of guidelines
Identify opportunities to fund: i) the replication and upscaling of successful project activities; and ii) long-term research projects on EbA.
Select successful project activities to be replicated and the suitable sites.
A national upscaling strategy developed and institutionalised to promote EbA.
Uptake of strategy
Policy-makers, decision-makers and environment assessment experts in each sector trained to integrate and promote upscaling of EbA interventions in future sectoral budgets, policies, strategies and projects.
Proposed revisions and policy briefs produced for the integration of EbA principles into the national development plans
Uptake of revisions
District development plans (DDPs) revised to promote the use of EbA and improve environmental protection
Driver Buy-in of planning experts into the EbA concept
Review the yearly award system for the best-performing district, NGO, CBO and individual working in the private sector to promote the implementation of EbA interventions
Develop and monitor the indicators for degradation of natural ecosystems such as forests and wetlands at district and sector levels.
Provide training to district- and sector-level officers on the use of the guidelines
National and district policies, strategies and legislation developed to promote the restoration and management of degraded ecosystems to increase the resilience of local communities to climate change.
implementation
Assumptions
National and local authorities support EbA initiatives with their internal resources
Risks
Loss of government support may result in poor prioritisation of LDCF project activities
Wetland, forest and savanna ecosystems and agricultural land managed sustainably
effect
Resilience of local communities to climate-induced natural hazards increased
Assumptions
Institutional support for sustainable ecosystem management
Risks
Uncontrolled settlements or large-scale infrastructure development takes place within project areas


Theory of Change – Outcome 3
Driver
Local community willingness to improve their livelihoods
Undertake a feasibility assessment to identify appropriate models for private sector financing of community-based EbA projects
Establish pilot sites
Develop technical protocols for restoring degraded wetlands/ forests and savannah with indigenous species
Establish nurseries for wetland restoration, agroforestry and savannah restoration
Provide training on agroforestry techniques, nursery management and restoration techniques over the course of the project
Specific wetland ecosystems restored in demonstration sites
Specific forest ecosystems restored in demonstration sites
Specific savanna ecosystems restored in demonstration sites
Uptake of practices
Interventions that reduce vulnerability and restore natural capital mobilised
implementation
Wetland, forest and savanna ecosystems and agricultural land managed sustainably
effect
Resilience of local communities to climate-induced natural hazards increased
Provide local communities at all sites with equipment and training to practice apiculture
Provide local communities at wetland restoration sites with training and equipment to develop fish farming
Alternative livelihoods based on the benefits of functional ecosystems developed and promoted
Uptake of practices
Provide local communities surrounding all sites with training and equipment for handcrafting including weaving using NTFPs
Assumptions
Communities will support interventions and adopt ecosystem management activities for adaptation during or after the term of the LDCF project
Risks
Communities unsupportive because of limited immediate benefits of EbA
Assumptions
Institutional support for sustainable ecosystem management
Risks
Uncontrolled settlements or large-scale infrastructure development takes place within project areas

REPUBLIC OF RWANDA

RWANDAN ENVIRONMENT MANAGEMENT AUTHORITY

INCEPTION WORKSHOP REPORT PPG PHASE

Inception Workshop date: 5 February 2014
Location: Kigali

Prepared by
Dr Lucille PALAZY
C4 EcoSolutions, Cape Town, South Africa

JAN-FEB 2014

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Appendix 19: Inception Report

Acknowledgments

The **Lead Consultant and Project Development Specialist** (LCPDS) thank all those who participated in the workshop and consultations to share their experiences and knowledge. Your suggestions and recommendations will enable the project to meet the most urgent needs in the country and maximise the benefits of the project activities to the local communities.

Brief summary of the mission

The mission was undertaken to support the Rwanda Environment Management Authority and the UNEP Office to engage with the government and other key stakeholders in the design of a project on wetland, forest and savanna ecosystems in Rwanda, to be financed by GEF-LDCF. The primary tasks of the mission were to: i) detail the baseline projects relevant to the project objectives; and ii) update the outputs designed at the PIF stage and develop project activities. Both tasks were addressed through: i) conducting meetings with key representatives of bilateral/multilateral organisations represented in Rwanda; ii) holding a workshop with stakeholders including different government sectors; and iii) collecting field visit data through meeting district officers. The project managers of other adaptation initiatives, including another GEF-LDCF project, have been consulted to initiate a close collaboration that would mutually support the different projects.

The bilateral consultations with the partner projects took place with the management team of Poverty Environment Initiative (PEI), Landscape Approach to Forest Restoration and Conservation (LAFREC) project, Lake Victoria Environmental Management Project (LVEMP), Decentralized and Environment Management Project (DEMP), African Adaptation Project (APP) and LDCF 1 project. Additionally, bilateral consultations were organised with the management team of the baseline projects including Projet d'Appui à la Reforestation au Rwanda (PAREF), Land Husbandry Water Catchment and Hillside Irrigation Programme (LWH), and Rural Sector Support Project (RSSP). Other partner institutions such as the Department of Water Resource Management within MINIRENA and MIDIMAR have also been involved in the development of the activities.

The purpose of the inception workshop was to inform stakeholders about the project objectives and expected outputs. Particularly, the inception workshop aimed to:

i) build ownership of the project, and understanding of the project components and management requirements by all partners;
ii) have an agreement among all workshop participants on the project's objectives, design and outputs;
iii) define and clarify roles, functions and responsibilities within the project's decision-making structure and for all project partners;
iv) verify that the main adaptation measures and technologies reflect priority needs and identify more precisely the most vulnerable area where the activities should be implemented; and
v) verify that the selected baseline and partner projects are the most relevant.

The workshop was attended by 27 people, including representatives of various Government Ministries, NGOs and decentralised authorities. The list of participants is attached as Appendix 2. This report contains the minutes of proceedings of the inception workshop.

One field mission was organised at the main intervention site of the project for forest restoration: Mukura Natural Forest[138]. The objective of this day-long field visit was to meet with the Nyabihu district officer to discuss the main threats facing the forest, as well as the vulnerabilities and livelihoods of the local communities and the adjacent villages. The management team visited buffer areas around the forest, mainly mono-specific *Eucalyptus* or *Pinus* patches planted by PAREF. Additionally, the management team visited a site where mining has encroached into the protected forest. The forest size has reduced because of mining, forest exploitation for fuelwood and the expansion of agriculture land. Therefore, the forest no longer provides local communities with a buffer against the effects of climate change such as intense rainfall.

Inception workshop minutes

LDCF Project Rwanda
Building resilience of communities living in degraded wetlands, forests and savannas of Rwanda through an Ecosystem-based Adaptation approach

INCEPTION WORKSHOP MINUTES

Introduction
Climate change is causing increasing variability and uncertainty in the lives and livelihoods of rural populations in particular, through unpredictable rainfall patterns and an increasing frequency and intensity of natural hazards such as flooding and landslides.

"Building resilience of communities living in degraded wetlands, forests and savannas of Rwanda through an ecosystem-based adaptation approach" is the title given to the project proposal that the Government of Rwanda is currently developing to be financed by Least Developed Countries Fund (LDCF). This project complements and builds on the achievements of the LDCF 1 project that has been implemented in Rwanda in line with priority activities outlined in the National Adaptation Programme of Action (NAPA) submitted to the UNFCCC in 2006.

The objective of the future project is to increase the resilience of Rwandan communities to climate change primarily through the restoration of degraded ecosystems including wetlands, forests and savannas, or ecosystem-based adaptation.

In this regard, the South Africa-based C4 EcoSolutions has been contracted to collect all the data required and to develop the project document (PD) for Rwanda's the proposed project.

These are the minutes of the inception workshop for the PD preparation.

Workshop proceeding
In her opening remarks, the Director General of REMA reminded the participants that they were convened from institutions/organisations that have been identified as key to the proposed project and called them to own the project as theirs instead of being the consultant's. She ended her remarks by requesting the workshop's organisers and participants take the precious opportunity to actively contribute to the development of a successful project document.

[138] Mukura native forest is hereafter referred to as Mukura.

The presentation of Dr. Lucile Palazy, the consultant from C4 EcoSolutions, started with a quick review on the guiding principles for LDCF projects and the project development process. She explained the proposed project's objective, design and outputs. This inception presentation also discussed:

- the baseline projects and co-financing;
- partner projects; and
- risks to project implementation.

The risks to the implementation of the project were identified as:

- Current climate and seasonal variability and/or hazard events result in poor restoration results.
- Institutional capacities and relationships are not sufficient to provide effective solutions to climate problems that are complex and multi-sectoral.
- Capacity constraints of local institutions may limit the ability to undertake the interventions.
- Priority interventions implemented are not found to be cost-effective.
- Lack of commitment/buy-in from local communities because of lack of immediate benefits may result in failure of demonstration projects.
- Communities may not adopt EbA activities for adaptation because of low awareness and acknowledgement of ecosystem buffer role.
- Population growth fuels additional settlements and uncontrolled exploitation of natural resources.

On the issue of local communities not supporting the project's interventions, an observation from the audience stressed that this will depend on how the project is implemented. If the project is designed so as to let local communities receive benefits from it, they will surely be supportive to their project.

The participants' comments and observations focused on the proposed project's components. A question-answer session and group discussions on activities in the project's components followed Dr. Lucile Palazy's presentation.

Participants' remarks on proposed activities

The workshop participants were asked to split into two discussion groups and make a detailed review on the proposed activities of every project's component. The table below shows the observations by participants during the ensuing plenary session.

Activity	***Comment/observation***
Component 1: Local and national institutional capacity development (US $700,000)	
1. Train DEOs and DEFs on EbA	Add the agronomists in the training and the district forest officers.
2. Train environmental committees at province, district and sector levels in EbA	
3. Developing capacity of private companies and civil society (CSOs) on EbA implementation	- It is necessary to define what will be the role of civil society (i.e. NGOs) in the project, since they represent the main beneficiaries, namely the population. - NGOs should be included in the programme to protect Mukura's ecosystem. They will be responsible for sustaining and continue the restoration activities. - These first three activities aim to train people on the implementation of EbA. - Local community awareness should be raised as well on the benefits of ecosystems.
4. Train women and youth to develop adaptation	

Activity	***Comment/observation***
projects by using specific techniques for restoring degraded ecosystems to reduce climate risks to vulnerable communities	
5. Support the implementation of the wetland conservation plan	- 'Promote' rather than 'Support'. - There is a necessity to investigate why the wetland conservation plan (a strategy for protection will be developed by LVEMP) does not prevent settlement in these areas. There is a problem of enforcement. - The project should investigate this issue and identify an activity that can improve the situation.
6. Fund PhD and MSc students to investigate the effects of the activities on local communities' vulnerability to climate change	- There are national institutions in charge of formal education and capacity building (REB, MIFOTRA). It was recommended to not get involved in this. - Hiring PhD and MSc students poses the problem of implementation. One UN project has planned to hire a student. We should engage with them and see how things are progressing. The mechanism to hire them should be investigated because we have to follow the chain, we cannot fund a PhD straight away. - The activity/objective should be rephrased to highlight the need for the production of scientific reports on the effects of EbA.
7. Collect all data on adaptation projects and upload them on the Climate change adaptation portal	
8. Integrate green technologies into policies and strategies of all related sectors (transport, energy, etc.)	The green technology activities should go into Component 2: "Mainstreaming".
9. Develop guidelines on organic waste composting and waste water irrigation	
Component 2: Climate change adaptation mainstreaming (US $585,000)	
1. Produce environment and climate change mainstreaming guidelines for different sectors	- These guidelines are under development by REMA. - Our contribution should be more focused on EbA and produce guidelines on EbA tailored to identified sectors.
2. Mainstreaming of EbA at the educational level (integration into school curricula, training of teachers, site visits)	

Activity	***Comment/observation***
3. Integrate EbA and climate change adaptation into Strategic Environment Assessments (SEAs)	
4. Development of a map of the level of degradation/exploitation of ecosystems in Rwanda	
5. Development of a national climate change vulnerability index	
Component 3: EbA interventions that reduce vulnerability and restore natural capital (US $3,877,000)	
Output 1: Restored wetland ecosystems	
- Wetland restoration in the relocation areas around Kigali	- The activity should be reformulated to clearly mean that we will focus on the site from which people have been relocated and not in their new settlement site. - Gatsata area proposed for restoration (Kimicanga, Gatenga and Gikondo also mentioned).
- Wetland restoration in Bugesera district	- Cyohoha north proposed (Rweru and Ntarama also mentioned). - MIDIMAR vulnerability maps will be consulted to confirm that.
- Wetland restoration and development of alternative livelihoods in selected RSSP sites	- The RSSP representative agreed to assist in the identification of areas within their intervention sites for wetland restoration and development of alternative livelihoods. - He will also provide the overview of achievements and propose key sites that the project can focus on. - Kayonza, Ngoma, Rwamagana and Burera Districts proposed.
- Invasive species control in wetlands	Water hyacinth removal in Kayonza, Ngoma, Rwamagana and Burera Districts.
- River bank restoration to reduce erosion and siltation (e.g. bamboos in Sebeya River)	It was observed that many are currently targeting Sebeya River; why not look for other rivers? - Propositions were made for Rivers Gitsimbi (Rubavu), Satyinsyi (Ngororero) and Burehe. - Sebeya River is not a good implementation site because the water department is already working there. It is better to focus on areas where there is no money invested yet. - River bank restoration should be made in Mukura as well. Therefore, we should work on the Satinsyi River in Ngororero. - In Nyagatare district, work is needed on the banks of Muvumba River where the planting of native species should be promoted. In

Activity	***Comment/observation***
	Muvumba, there is a indigenous tree species that is disappearing (*Acacia kirki*). The forest is exploited for charcoal. - It seems that RSSP has interventions there, so we could potentially build on it. However, it has been said that Gatsibo was more vulnerable than Nyagatare, so it should be preferred. In Gatsibo, marshlands are being developed for agriculture, but surrounding hills are being deteriorated. - There is a high propensity of floods in Gitsimbe in the Rubavu District as well. We could focus on restoring river bank portions upstream to reduce the damages downstream.
Output 2: Restored forest ecosystems	
- Restoration of Mukura Natural Forest (PAREF N and Gov. project)	- Integrate restoration with native species in Mukura and refer to PAREF B project for more inputs. - Another natural forest called Sanza (in Ngororero) also was proposed. - It was suggested to focus on Rutsiro more than Ngororero because there are a lot of mining projects there that threaten the forest. - LAFREC focuses on Gishwati with an extension to Mukura, collaborating closely with them is very important. - PAREF B should be consulted to precisely identify the sites where the restoration with indigenous species should be made.
- Training on agroforestry techniques	- Exact activity to be specified. Development of training material? Training of agronomists? - There are institutions specialising in agronomists training (MINAGRI, RAB). Are we planning to support related higher learning institutions? Why should the proposed project be involved? How is this activity supposed to be implemented? - One group proposed the support of agroforestry development around Mukura and raising awareness. - We should not try to develop it, but use techniques and documents already available and train people how to implement these techniques. - PAREF B is going to produce a manual and provide agroforestry

Activity	*Comment/observation*
	training. They will focus on the training of trainers. We should consider including them as a baseline project and complement their activities. - It was suggested to use the modules they will develop to train environmental committees and to provide drought resilient seeds to play the role of bio-fertilisers. - Additionally, it was suggested to study the value chain for agroforestry products. - We should also: i) raise awareness of agroforestry techniques in our sites; ii) provide training; and iii) build nurseries to provide agroforestry trees.
- Develop the use of biogas in the intervention sites	- The installation of a biogas system is costly and can only work in some areas (with the possibility for human and cattle waste collection as was done in PEI). It should be investigated. - In areas where biogas initiatives seem unfeasible, improved cooking stoves should be provided. - Biogas should be developed around the restoration areas.
- Develop a Payment for Ecosystem Services (PES) system	- PES can be successful, but can also be difficult to implement. We should investigate the technicalities before adding it into the final activities. - Consult ARCOS for PES on Mukura.
Output 3: Restored savanna woodland/grassland ecosystems	Districts of Kayonza, Gatsibo and Kirehe proposed.
- Restoration of savanna ecosystems in the most vulnerable areas of the Eastern Province	- Refer to the vulnerability map (by MIDIMAR). - The implementation sites of other projects should be identified as well. - The Districts of Kayonza, Gatsibo and Kirehe were proposed.
- Hillside restoration and development of alternative livelihoods in selected LWH sites	- The site selection should be made with the LWH team. - Consult RNRA's water management department on livelihoods-based projects at ground level to limit the duplication.
- Promote silvopastoralism techniques and the use of mixed-species plantation to limit erosion (LAFREC)	Have a meeting with LAFREC and the agriculture department to identify the species to plant according to the sites that will be selected.
- Training of communities on rainwater harvesting	- All training should be done through learning-by-doing.

Activity	***Comment/observation***
techniques	- Local communities should be trained in building the rainwater harvesting infrastructures. - The infrastructures should focus on collecting surface water and not increasing infiltration to increase groundwater recharge. - Necessity of building terraces and ditches. - It was suggested to focus on training people on the use and maintenance of water harvesting infrastructure already in place. - LWH and RSSP should be consulted for their experience in building dams. - Local authorities should be consulted for site location.
- Training of local communities on how to cover the soil to reduce evaporation	- All training should be done through learning-by-doing. - Local communities should be trained in building the rainwater harvesting infrastructures. - The infrastructures should focus on collecting surface water and not increasing infiltration to increase groundwater recharge. - Necessity of building terraces and ditches. - It was suggested to focus on training people on the use and maintenance of water harvesting infrastructure already in place. - LWH and RSSP should be consulted for their experience in building dams. - Local authorities should be consulted for site location.
- Construction of small infrastructures to increase water infiltration	- All training should be done through learning-by-doing. - Local communities should be trained in building the rainwater harvesting infrastructures. - The infrastructures should focus on collecting surface water and not increasing infiltration to increase groundwater recharge. - Necessity of building terraces and ditches. - It was suggested to focus on training people on the use and maintenance of water harvesting infrastructure already in place. - LWH and RSSP should be consulted for their experience in building dams. - Local authorities should be consulted for site location
Output 4: Alternative livelihoods based on the benefits of	

Activity	***Comment/observation***
functional ecosystems developed and promoted to enhance community resilience to climate change impacts	
- Develop community-based ecotourism	In LWH sites.
- Develop bee-keeping	- There is a risk for bee-keeping failure because of the use of pesticides. - MINERENA has a new project in the Nyabihu district that develops alternative livelihoods. The documents should be used to define our activities. - This activity should be developed in collaboration with RAB. - The LDCF 1 project has developed a pilot site on bee-keeping. The MINAGRI KWAMP (Kirehe Community-based Water Management Project) project has developed some bee-keeping activities in Kirehe as well. - The project is to focus on LWH sites
- Develop poultry farming	There is potential in Kigali.
- Develop fish farming	- Fish farming could be implemented in Bugesera (in north Cyohoha and possibly in the south). - DEMP does fish farming in floating cages in Kivu Lake, we could potentially build on that.
- Develop NTFPs marketing	In LWH sites.
- Handicraft	In LWH sites.
- Medicinal plants and mushroom cultivation in forests	In LWH sites.

Other observations

On the risks and challenges, the Director General of REMA suggested that we should have a budget line as a security budget, in case of extreme climate events that would damage our investments. Participants were also reminded that progress has been made to avoid or limit insufficiency in institutional capacities and relationships through, for example, the creation of MIDIMAR, EDPRS and Climate Change department.
On the lack of commitment, the creation of terraces was suggested for consideration so as to create immediate benefits while the trees grow.
On the issue of local communities not buying in (on the risks and challenges), an observation from the audience stressed that this will depend on how the project will be implemented. If the project is designed so as to let local communities get benefits from it, they will surely be supportive to their project.

The project was also suggested to work extensively on awareness-raising.

The national UNFCCC focal point, Mr. Sebastien Dusabeyezu, who was in attendance at the workshop, highlighted that US $15 million were approved for every least developed country during negotiations and asked why the envelope being discussed in the project document development is only 5 million. It appeared that further funds mobilisation would be considered.

It was also recommended that prioritisation of activities be subjected to future revisions so as to reflect the budget requested.

Way forward

- Submission of first draft of Project Document by May 2014.
- Submission of final Project Document by June 2014.
- LDCF Project to kick off by 2015.

Stakeholder consultations programme during the mission

The information collected during the meetings listed below are presented in Appendix 3.

Date and time	Time	Stakeholder	Institution/Project
Monday 27	9h-17h	Faustin MUNYAZIKWIYE	Director of the Unit of Climate Change and International Obligations at REMA
Tuesday 28	8h-9h	Fred SABITI	Poverty Environment Initiative (PEI)
Tuesday 28	10h-11h	Gisele UMUHUMUZA	Landscape Approach to Forest Restoration and Conservation - LAFREC
Tuesday 28	13h-14h	Alphonse MUTABAZI	LDCF 1 and AAP
Tuesday 28	15h-16h	Annette Sylvie MUHAWENIMANA	Lake Victoria Environment Management Project (LVEMP)
Wednesday 29	9h-10h	Alphonsine NTABANA	Single Project Implementation Unit (SPIU) and Decentralised and Environment Management Project (DEMP)
Wednesday 29	11h-13h	Adrie MUKASHEMA	Director General of the Department of Forestry (PAREF)
Thursday 30	9h30-10h	Fabrice MUGABO	LDCF 1 and SPIU
Thursday 30	13h30	Dr Rose MUKANKOMEJE	DG of REMA
Thursday 30	20h	Charles BUCAGU	World Agroforestry Center
Friday 31	6h30-12h	Communal work in the wetland of Muhanga, Southern Province	
Monday 03	15h30	Vincent KABALISA	Department of Water Resource Management of Rwanda Natural Resources Authority (RNRA)
Monday 03	17h30-21h30	Faustin MUNYAZIKWIYE	Director of the Unit of Climate Change and International Obligations at REMA
Tuesday 04	10h15-11h15	Jean-Baptiste NSENGIYOMUA and Théogène NTARIBI	Ministry of Disaster Management and Refugee Affairs (MIDIMAR)
Tuesday 04	11h15-12h30	Esdras BYIRINGIRO	LWH and RSSP at the Ministry of Agriculture (MINAGRI)
Wednesday 05	8h-13h	Inception workshop	
Wednesday 05	16h-17h30	Jean-Damascène UMIZENE and Johan NIEUWENHUIS	PAREF at MINERENA and BTC Rwanda
Thursday 06	13h	Didace HABAMENSHI	LWH and RSSP at the Ministry of Agriculture (MINAGRI)
Friday 07	6h30-19h30	Field trip to Mukura	Rutsiro district officer

Appendix 1: Inception workshop agenda

Venue: Umubano Hotel
Date: Wednesday, 05 February 2014

Time	**Activities**	**Speaker**

08h45 – 09h	- Self Introduction and expectations	**All Participants**
09h20 – 09h40	- Introduction	**Faustin Munyazikwiye (REMA)**
09h40 – 10h00	- Opening remarks	**Dr. Rose Mukankomeje (DG REMA)**
10h00 – 10h30	- Objectives and agenda of the workshop - Principles of GEF/LDCF projects - Project structure and budget - Proposed activities - Baseline and partner projects - Potential risks to the project's success	**Dr. Lucille PALAZY (C4 EcoSolutions)**
10h00 – 10h45	Coffee break	
10h45 – 12h15	- Group discussions : two groups	**All participants**
12h15 – 13h00	- Report of the group discussions/Plenary	**Group representatives**
13h00 – 13h20	- Closing remarks	**Faustin Munyazikwiye**
13h30 – 14h30	- Lunch	**All participants**

Appendix 2: List of participants and contact details

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Appendix 3: Information collected during the stakeholder consultations.

Date and time	Participants	Outcomes
Monday 27 (9h-17h)	Faustin, Immaculée and Lucille	There are 6 departments in REMA: - Climate change mitigation department created in 2009 and fully operational since 2012 - Environment regulation department - Education and mainstreaming department - Environment, planning and research - Department of legal affairs - Administration and finance department The Single Project Implementation Unit (SPIU) coordinates all the projects executed by REMA. It was decided during this first meeting that hiring the national consultant was a matter of emergency. The consultant will be paid in 3 phases: i) 20% after having agreed on the work plan and methodology (1 week); ii) stakeholder consultant, baseline analysis and gaps, and technical needs assessment (5 weeks); and iii) institutional, governance and implementation strategy (2 weeks).
Tuesday 28 (8h-9h)	Fred Sabiti (Poverty Environment Initiative PEI)	PEI started in 2005 and have a budget until 2018, but it should be expended (US $600,000 from PAA for 2005-2007, US $2.5 million from UNDP and AAP for 2007-2010, US $1 million for 2011-2013 from UNDP and PAA, and from 2014 to 2018 US $300,000 per year from PAA and US $500,000 per year from UNDP). UNDP/UNEP fund project and Programme Africain d'Adaptation. Other funds should come from the Rwanda National Climate and Environment Fund (FONERWA), the proposal has been accepted. Objective: mainstreaming environment and CC in the government planning 3 phases: i) central government, how to implement policies and development of strategic plans; ii) local government, include CC into DDPs, define clear indicators and targets; and iii) community level, green villages. 2005-2009: training, awareness campaigns, policy briefs. 2009 to today: coordination with the Ministry of Finance and Economic Planning to increase the budget dedicated to the environment. Distribution of guidelines to all agencies. Therefore, according to the public expenditure review, the budget allocated to the environment increased from 0.5 to 2.5% of the national budget between 2010 and Oct 2012. PAA funds were received recently and will be used to extend the green village project. They are constructing pilot sites for green villages and will also develop green village toolkits for the government to take ownership. Green villages are part of the green economy initiative of capacity building and developing cleaner production. Green villages are implemented at the district level. One difficulty that slows down their project is the limited capacity. They need someone supporting them at the Ministry of Finances and mainstreaming is difficult. Green villages of 50 houses using biogas have been established (450 m^3 biogas digesters (5 families per digester), system for human waste and cow dung to enter directly), one school has been created in the village by the Ministry of Education (a second village is being developed), rainwater collection (7 tanks of 100 m^3 each), people have been moved into the villages (better conditions, for example, rainproof roofs), terraces to increase agriculture productivity. Successful: improved livelihoods.

Tuesday 28 (10h-11h)	Gisele UMUHUMUZA (Landscape Approach to Forest Restoration and Conservation - LAFREC)	The PIF has been approved. LAFREC is now at the PPG phase and is funded by the World Bank. Their budget is US $10,617,000 (from GEF 5 starts and LDCF). It should be sent by June 2014. The project will take place in 3 districts around the Gishwati-Mukura project. The landscape approach is new in Rwanda. The project has three components: 1) Building an institutional framework. 2) Forest restoration to conserve mainly native species. They will implement the restoration activities in collaboration with the Rural Agriculture Board, local communities and local government. The landscape approach considers humans as part of the system. The species that will be conserved are those most useful to the communities. 3) Landscape level restoration regarding climate change. This will be implemented in collaboration with LDCF. The sites have been chosen according to the NAPAs. Their baseline projects are RSSP 3, Gishwati Water and Land Management (GWLM), Lake Victoria Environment Management Program (LVEMP) and RFLRI (with IUCN). They add several workshops with the stakeholders to define the activities (e.g. MIDIMAR). Multi-focal area project. Her suggestion for our intervention sites are: the Eastern Province for wetland and savannas (flooding is studied more than drought); Western Province is prone to landslides and floods, she said Nyamagabe particularly and the area between Muhanga and Ngororeho. They have 3 national consultants working during the PPG phase: a landscape ecologist, an agroforestry consultant and a livelihood expert. A study on the potential for the development of Payment for Ecosystem Services in Rwanda is currently being conducted by the government on the demand of stakeholders. The results will inform LAFREC on the development of PES in Gishwati. They are waiting for the baseline study to know exactly where their activities will be implemented in order to choose which NGOs to collaborate with to implement certain activities. In Gishwati, it could be Forest of Hope, ARECA or ASENER.
Tuesday 28 (13h-14h)	Alphonse Mutabazi (LDCF1 and AAP project manager)	LDCF 1 will end in December 2014 and AAP finished in December 2012. PAREF is one of the LDCF 1 baseline projects. Their budget is US $3,486,000 from LDCF and US $600,000 from UNDP track. One of the failures of their project is the forest restoration activity. They had planned to restore 210 hectares in Gishwati, but they did not choose the right species and they started too late. The species they chose has to grow for 6 months in nurseries. 3 components: 1) Climate forecasting and provision of early warning information Work with Rwandan meteorological service and the Disaster management institutions. They now get weather forecasts 4 times a day. They are currently developing the system to transmit the information to people on the ground (emails and sms). 2) Climate change included in planning Workshops have been organised for the district planners from all districts to train them in climate change adaptation. Within REMA, climate change was introduced into DDPs and they have implemented a bee-keeping project in vulnerable areas. They are currently developing the marketing process.

		3) Rehabilitation of degraded land and livelihood improvement Several pilot projects on landscape management are running (terracing, forest restoration, agroforestry). There are 3 types of agroforestry: for fodder, fruit trees and firewood. They are currently investigating what people prefer and what is the best option. They planted bamboos near the rivers. Cows have been provided to local people as well as a veterinary pharmacy in Rutsiro district. 4) Awareness and sharing information. From LDCF 1 implementation, they learned the following lessons: 1) They worked with the Rwanda Agriculture Board (RAB) and it struggled to reach districts and communities. It is better to work directly with districts. Avoid cooperatives and NGOs because they give less money to people. For bee-keeping they asked the community to organise themselves within a cooperative afterwards. The money gets deposited into local banks in the districts (SACO). People can then get a loan. 2) Indigenous trees take more time to grow than expected. We should plant during the early stages of the implementation. Additionally, they planted *Tamarilla*, which is not suitable for that area. A consultant from MINAGRI advised planting this species, but they are still experimenting. For the second component of LDCF 2, he suggested taking LDCF 1 and AAP's successful techniques and lesson learned to provide practical guidelines, as all the policies and strategies revisions regarding climate change have been done already.
Tuesday 28 (15h-16h)	Annette Sylvie Muhayimana (LVEMP)	The project is funded by the World Bank through the international development association and is divided into 6 regional projects. It started in Rwanda in 2011 and will end in 2017. Rwanda doesn't boarder Lake Victoria, but it is a part of the Lake Victoria basin. 13 districts are targeted by the project to conduct studies and 8 for watershed management (e.g. building terraces). Trees are planted in other places. There are 4 components to the project (see brochure). The project is implemented by REMA at the national level. There is a committee and two representatives for the project per country. The PSC is made of 6 institutions (MINECOFIN, EWASA, MINAGRI, MININFRA, MINIRENA, local government). The PSC meet twice a year and the technical advisory committee meet 4 times a year. Their activities focus on wetland restoration. A MoU has been signed with the districts that receive directly the project money into their bank account. There is a coordination team per district. US $15,000,000 have been attributed to Rwanda for 5 years (the same amount has been attributed to Burundi). Activities are conducted in Nyabihu and Bugesera.
Wednesday 29 (9h-10h)	Alphonsine Ntabana (SPIU (gather all REMA projects including PAB and NYEP, coordinator of DEMP)	The Decentralized and Environment Management Project (DEMP) is currently in the 3rd phase. Phase 1 ran from 2004 to 2008, phase 2 from 2008 to 2013 and phase 3 from 2013 to 2018. All 3 phases have almost the same activities, but focus in different areas. The main objective is to protect lakes and rivers. Phase 1 was in the Western Province, in 5 districts with fragile ecosystems around Kivu lake. The first component is ecosystem restoration and the second is development of alternative livelihoods, such as cows for milk, fishing, etc. Families organised into cooperatives to develop and maintain their new livelihoods. 1,000 families have been relocated. Initially relocation was difficult, but now people are aware of climate change and experience extreme climate events. Therefore, some even ask to be relocated. 30 cooperatives were created and trained in environment management and business. Phase 2 focused on the Eastern Province, around Lakes Muhazi and Mugesera, and Phase 3 on the Northern Province, in the districts of Bugesera, Musanze, Burera and Rusizi. As part of the project, they relocate people from

		degraded ecosystems to other areas identified at the district level within their master plans. They have created a partnership with districts that obtain constructing material, cows and trees. This project produced impressive results in livelihood improvement. This was due to the integration of the communities at each step of the project, gathering and empowering them to become builders with their new skills. Community payment: Community members are paid between FrR 1,200 and FrR 1,500 per day In an account with the SACO (Saving Cooperatives). FrR 200 are saved each day. Therefore, people have some savings at the end of the project to build terraces and increase their livelihoods and productivity. All activities have been conducted in collaboration with districts. Districts signed a contract with the communities to maintain the activities after the project. The project initially signed MoUs with districts at the start of the project. Initial district selection was made through management meetings with REMA and reports from 2012 that recommended most vulnerable areas. Socio-economic surveys in the districts have been conducted to investigate the willingness of communities and districts to take ownership of the project. Budget: Phase 1 funded by UNDP (US $1,000,000) and Netherland embassy (US $3,000,000) Phase 2 UNDP (US $5,000,000) Phase 3 ONU (US $3,300,000) FONERWA expected as well. PSC was on hold on Friday 24 January. Stakeholders came with some demands on activities that could inspire us to develop our project. She suggested the adoption of an evergreen approach and that there was a need to replicate the EWS activities of LDCF1. However, we explained that our project was focused on restoration. Single Project Implementation Unit (SPIU): umbrella of all REMA's projects. The NYEP project was focused on ecosystem rehabilitation like DEMP, but concentrated on other areas. They have worked in 14 districts around the Nyaborongo River, with the exception of Ngororero. They are focused on empowering the youth and developing their skills. The project was very successful. The cooperatives are still running despite the project being finished in 2012. LVEMP is similar, but not focused on youth.
Wednesday 29 (11h-13h)	Adrie, Director General of the Department of Forestry (PAREF) shemadrie@yahoo.fr	PAREF (Projet d'Appui à la Reforestation au Rwanda) is funded by the Belgian development agency (PAREF B) and the government of the Netherlands (PAREF N). Both projects started in 2007 and have been extended. PAREF B to June 2015 and PAREF N (Phase 2) to June 2016. The objective of Phase 1 is to support the forestry sector in meeting the strategic goals of the government to increase productivity through forest management. The target is 30% forest cover by 2015. There is currently 28.3%. When the project started there was 24%. 1% is equivalent to 13,000 hectares. PAREF N is focused on the development of public and private sector partnerships. It implements participatory forest management. There are 3 types of forest: state forest 18%, district forest 12% and private forest 70%. It should therefore be managed in partnerships. The program creates a win-win situation, where the government gains highly productive forests and forests provide good quality timber for local communities. Private farmers are encouraged to be involved in the framework as well. The main challenge faced by the project is the limited capacity in terms of staff. Therefore, they need to recruit external people, which costs 10 times more than local staff. Secondly, they only have short-term projects that do not allow them to investigate the most suitable indigenous and exotic species to plant. Experiments and pilot studies are

		needed. They would therefore need funding on a longer term then 3 or 4 years. PAREF B occurs in the northern and Eastern Province (6 districts), PAREF N in the Western Province (7 districts) and in the Northern Province (2 districts) and PAGREF is a new project running from 2012 to 2015 that covers the Southern Province (8 districts). Therefore, all districts are covered except the city of Kigali. Species selection: they selected the species according to their suitability (considering soil and climate suitability). They developed an agenda in which there is a list of suitable species for each region. In the restored forest, they mainly planted *Eucalyptus* because it grows fast, is resilient to drought and produces good quality timber. *Acacia* was also planted as they are resilient to floods. They planted indigenous species and the project acknowledged their importance in terms of conservation and medicine (one lab produced medicinal treatments from indigenous species). The few remaining forests are used for gene banks. Therefore, another project aims at bringing indigenous species to the city of Kigali. It is currently being developed and they will apply for funds from FONERWA. They usually plant exotic species instead of native species because the cost of planting native species is 4 times higher than the cost of planting exotic species. For example, planting 500 hectares of indigenous forest in Gishwati costs US $590,000 (US $1,178/ha). This is more expensive because it takes much longer to grow and so necessitates long-term maintenance and protection from livestock. According to her, *Eucalyptus* is not invasive. It will only grow where you plant it. If well managed, there is no risk. However, you have to use good sylviculture practices. Only plant according to the species ecological specifications. For example, it is not allowed in wetlands where it gets attacked by fungus. It should be planted either in the lower part of the mountain, or in the higher parts. In mountains, the *Eucalyptus* grows high which provides good timbers. The first plantation was mono-specific. The plantation protocols have improved with time. In the west, there is mainly *Eucalyptus*. In the new plantations, they now fence them with native species such as Umusave, and other native species such as *Cedrella*. A new project is starting on 29 January to remove exotic trees (*Eucalyptus*) in the Gishwati and Mukura. It will be funded by the government and will run until 2017. The budget is 11,000 Francs/m^3. These forests have been recognised as endangered ecosystems that are vulnerable to mining and invasion by exotic species. A law will be adopted to protect them. Several threats to these forests have been highlighted in the Rwanda State of Environment and Outlook 2009, including fuelwood harvesting. Mukura is located at the source of water streams. The activities will be conducted using a community-based participatory approach. Our project could then replant native species where the *Eucalyptus* has been removed. For Savanna restoration, she suggested the Eastern Province. More specifically the areas boarding the Akagera National Park. The objective would be to use a natural regeneration approach managed by farmers to encourage them to plant native trees in their farms. This is a REDD+ sound approach. The techniques of sylvopastoralism for sustainable use of savanna land are described in the manual she gave us. The objective is to create incentives for the farmers to plant. PAREF N can be chosen as a baseline project as it covers the entire Western Province. We should be very precise on the type of co-financing and the amount requested (in kind or grant) when making the proposition. In 3 years, they should restore 26,000 hectares of forest. This is a big target. It is particularly challenging when the land for restoration has been transformed by humans. They want to turn it to agropastoralism and sylvopastoralism.

		For the second phase, PAREF B had 6.8 million euros, PAREF N has 6 million euros and PAGREF has 4 million euros.
Thursday 30 (9h30)	Fabrice MUGABO (LDCF1 and SPIU)	The activities linked to adaptation of LDCF 1 are all conducted in Rubavu, Nyabihu and Rutsiro. A mission is going to be conducted from 4 to 6 February in these districts to list and prioritise the remaining needs for further projects. To develop an EWS, they have installed weather stations all over the country. He highlighted that in the Western Province there was great need for increasing water availability through building solar panel boreholes. He said that during the PSC meeting of LDCF 1, it was raised that Ngororero needed some interventions. During the PSC of DEMP, stakeholders were asked to develop activities such as hillside irrigation and fishing in Bugesera. LDCF 1 did not collaborate with NGOs during the implementation because working directly with districts was quicker and more efficient.
Thursday 30 (13h30)	Dr Rose MUKANKOMEJE (DG of REMA)	She said that a lot of the activities initially identified in the PIF have been done. We should now look at them through the lens of the REMA strategy plan, Green growth and climate resilience report, vision 2020 review and NDPRS. A lot of progress has been made, but there is still high poverty levels. She asked for the project deadlines and said that the budget is defined from July to June. Therefore, the project would only be able to start in July 2015, unless we submit the final prodoc (validated by GEF) in early June. She said that she didn't want to implement activities in many districts as it decreases the impact of the activities. She insisted on the importance of creating a synergy with other projects. We proposed the area of Mukura for the forest restoration activities. She said that it was a very important forest in terms of conservation. An American NGO wanted a corridor between Gishwati and Mukura. There still are chimpanzees In Gishwati, while there might not be in Mukura anymore. Therefore She was happy with the idea of restoring forest there. For wetlands, she said that the rising idea was to use them for agriculture. So we have to work with farmers for restoration even if it is challenging. There are different categories of wetlands including the protected areas and others. We should focus on the others. In Bugeresa, a lake has disappeared because of erosion. *Eucalyptus* is a big problem as it contributes to soil degradation. *Pinus* is another invasive species. For the wetland restoration, she said that people are relocated around Kigali from high-risk zones to terrestrial ecosystems. We should restore them. Additionally, she said that working around Kigali is good for the communication and mainstreaming. There are many tea plantations in Rwanda. Woodland should be integrated into the tea plantation sites. Agroforestry is necessary there. The agroforestry program is very weak in Rwanda according to Dr. Rose. It is necessary to further develop it. Farmers should be asked to plant native trees. Component 1: A lot of capacity building has been done during LDCF 1. We should find out who was trained within rural areas: women, local communities, NGOs, national government. Additionally, training should be given to the population to move from the use of *Eucalyptus*. Provide training to stop people from drying wetlands that pose a risk to groundwater recharge. SPIU has been created to avoid replication and coordinate the different projects.

		Component 2: She said it is already done. Principal documents to refer to: the post conflict report, REMA sub-department strategic plan, NDPRS, green growth and climate change strategy, revised vision 2020. Forests: Mukura (collaborate with LAFREC to work in complementary regions) Wetlands: around Kigali and Bugesera (around the lake that has disappeared, restoration should be made in a perimeter of 50 m around the lake). Savannas: Bugesera; Agroforestry in tree plantations and where LVEMP is going to protect the river banks?
Thursday 30 (20h)	Charles BUCAGU and Athanase (World Agroforestry Center).	One of the interests of agroforestry for farmers is that fodder from trees has a higher energetic value than grass fodder. Fruit trees are often preferred among agroforestry trees because they have the highest cash flow. In Rwanda, they have used agroforestry since 1998. They work mainly in the Eastern Province where a shortage of wood lead to encroachment on the Akagera National Park and a problem of soil fertility. In Bugesera for example, they use *Alnus* species to protect lakes and upstreams at high altitudes and *Greveria* at low altitudes. Fertilisers are necessary in agroforestry, at least at the beginning until trees are established. Additionally, Fabaceae species can be used in agroforestry to provide nitrogen, but fertilisers are often necessary to provide phosphorus. The mainstreaming of agroforestry is difficult because a mainstreaming strategic plan is necessary. Awareness-raising at policy level is also necessary to allow mainstreaming, as agroforestry is not yet part of the land management plan. Agroforestry can be used for different purposes such as erosion control, stake production and/or timber production. The size of the land does not matter. Small farms can plant the trees on their edges. Planting trees in mono-cropping lands can buffer soil impoverishment.
Friday 31 (6h30-12h)	REMA staff	Community work in the wetland of Muhanga, Southern Province
Monday 03 (15h30)	Vincent de Paul KABALISA (RNRA - Department of Water Resource Management)	There is no project currently implemented by the water department. The NERSAP (near Equatorial Action Program) project is building a dam in Muvumba (Nyagatare district) to increase water availability at household levels. To increase water availability MINAGRI uses valley dams for people and livestock consumption. For the wetland restoration of LDCF 2, he suggested focusing on Nyabarongo, where several projects are already in progress. There is a need for stabilising riverbeds and questioning of the removal of papyrus in the wetland. He suggested that a study on the effect of papyrus removal was necessary. He said that restoration in the left half of Bugesera was necessary as well, as there is a lot of rice cultivation there. For savanna restoration, he suggested Nyagatare and Bugesera districts as they have the highest hydrologic stress. Contouring and stone ridging in these areas is used but not largely. He said that we should focus on terracing involving bending and mulching and that we should organise a training session on how to cover the soil to reduce evaporation (e.g. mulching). For forest restoration, he said that we should do something on a large scale, as it is a major problem. He insisted that training and awareness-raising are very important. He said that there were needs for forest restoration in

		Nyagatare as well, where there is a termite and grazing problem. Communities' empowerment to take the lead of the project is crucial. He suggested that one of our activities could be to increase the enforcement of the laws on wetland protection. To do so, training should be provided at all levels from province to villages (existence of committees at each level). Field visits should be organised and they should be structured to improve. It was suggested to provide additional training to people at the RADP responsible for EIAs, on the integration of climate change into EIAs. He also asked for training of his department in hydrological assessments.
Monday 03 (17h30-21h30)	Faustin MUNYAZIKWIYE	Discussion on the necessary activities using the report EDPRS 2 (list of activities that should be implemented by June 2018). 1) Environment and Climate Change mainstreaming: - Integrate innovative approaches and knowledge on technology transfer in irrigation, renewable energy and agroforestry in Technical and Vocational Training (TVET). - Investment in green technologies to create job opportunities and support green economy: green economy is a new concept that should be integrated into policies and strategies (the strategic plans) of all related sectors (transport, energy, etc.). It is integral to mainstreaming. - Illegal activities relocated from wetlands (no house within 20 m from the wetlands). - Produce environment and climate change mainstreaming guidelines for different sectors. - Train DEOs and DEFs on EbA - Mainstreaming of EbA at an educational level (low, high and technical education) - Training of journalists in the environment (The focal point was not convinced by this one) - Train environmental committees at province, district and sector levels in EbA - Integrate EbA and climate change adaptation into SEAs - Developing capacities of private companies and civil society (CSOs) on EbA implementation. 2) Climate change related activities - Rehabilitation of wetlands from which people have been relocated (e.g. Gitega, Kimisagara, Gtsata) (find out what was identified at the other relocation sites, and the existence of a database for the whole country). Possible sites include Nyandungu, which was identified as a priority, and Gikondo. - Development of a map on the level of degradation/exploitation of ecosystems in Rwanda. - Development of a national climate change vulnerability index. - Complement LDCF 1 on EWS: Provide training on data interpretation? (see meeting minutes with MIDIMAR) - Collect all data on adaptation projects and upload them to the Climate change adaptation portal. - Train women and youth to develop adaptation projects and investigate funding opportunities for these projects. In the green growth document, several programme of actions correspond to our project: - Rainwater harvesting (Prog. 3 Action 4); - community-based ecotourism (Prog. 11 Action 2); - intercropping/mix species in forest and savannas (Prog. 3 Action 2); - develop of a Payment for Ecosystem Services system (Prog. 11 Action 3); and

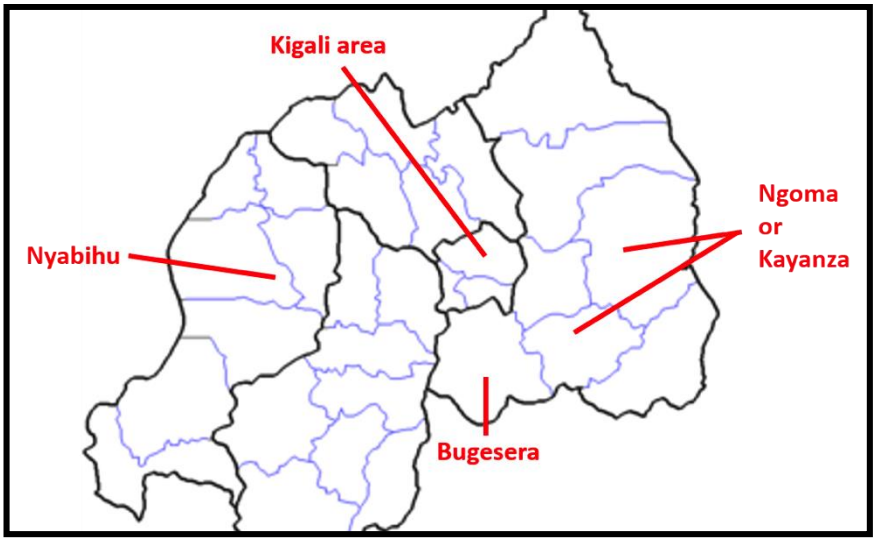
		- development of agroforestry (Prog. 12 Action 2/3).
Tuesday 04 (10h15-11h15)	Jean-Baptiste NSENGIYUMVA and Théogène NTARIBI (MIDIMAR)	A World Bank project will develop a national disaster atlas indicating the most vulnerable areas. Some of the maps have already been produced by MIDIMAR (e.g. vulnerability maps to landslide and floods). The new project will build upon these maps using satellite images and sampling. It is a one-year project that will start in December 2014. The EWS system is currently being developed in 4 districts through the project LDCF 1. It is now at the stage of training people (e.g. district authorities, government) and negotiating with the mobile phone companies (i.e. MTN, Airtel and Tigo) to develop the system to send the warning messages. Additionally, they are developing a disaster reporting system for the communities to report on any disaster and damages. They are searching for funds to extend the EWS to other districts. Suggestion of activities: 1) EWS: Training sessions on EWS could be organised in additional districts (prior to the installation of the material or help in funding the communication strategy if the mobile stakeholders would refuse. 2) Restoration: - high vulnerability to drought in the corridor between Bugesera and Kirehe. Drought has high impact as it feeds the Akagera River; - in Kigali relocation areas; - plant bamboos on river beds, particularly Sebeia River in Gishwati and Nyabogobo River in Kigali; and - flood protection is necessary in Musanze district. Rainfall in Viconga mountains falls in lower lands that are agricultural areas. 3) PES development 4) Training of decision makers (leaders) to mainstream environment protection (training on implementing, budgeting and planning). The goal is to prevent degradation where it is still possible.
Tuesday 04 (11h15-12h30)	Esdras Byiringiro – MINAGRI (LWH-RSSP) Cell: 0788743422	RSSP has been divided into 3 phases: 2001-2008; 2008-2012 and 2012-2017. The main focus of the project is to develop and rehabilitate marshland for rice production. Dams are built to retain rain water and canals for irrigation. In this way, farmers are able to crop for 2 seasons instead of one. The first season runs from July to December and second from January to June. Additionally, they plant trees around the dams (taller than 15 m) to protect the dams against erosion and siltation. Lastly, they build terraces to increase agriculture productivity on hillsides. RSSP 3 is being implemented in the Province of Kigali City and in 3 sites in Nyagatare district. The site selection

		was made according to: an economic assessment; size of the site; food security and vulnerability to floods. They systematically restore a buffer of 10 m around the marshland. He suggested that the project could do further restoration. LWH is similar to RSSP except that it focuses on hillside and not on marshlands. They build dams, canals and terraces and create buffers for protection. The main difficulty they face is convincing farmers to let their land be used for restoration instead of agriculture. Sometimes, they even have to buy the land to be able to implement the restoration activities. The project has failed in the Southern Province in Mukunguli because of erosion. The infrastructures they have built have been damaged by erosion and siltation. He raised the point, that they need studies to be sure that they were using the best techniques to implement their activities (e.g. planted species).
Wednesday 05 (8h-13h30)	Inception workshop	
Wednesday 05 (16h-17h30)	Jean-Damascène UWIZEYE – MINIRENA (PAREF), Johan NIEUWENHUIS and Peter MINERENA-BTC RWANDA (PAREF)	In Mukura, PAREF-N focuses on the creation of buffers around the forest. We could work on the restoration of indigenous forests within these buffers. In Mukura, PAREF-B focused on planting highly productive forests made of exotic species. Their objective is to maximise biomass energy and to plant forests that are carbon neutral and renewable. There is however 2000 hectares of indigenous forest that has been planted by their project in the Eastern Province. In terms of agroforestry, their project will provide training for cooperatives who will then train other farmers. They plan to do agroforestry training in secondary school as well. 6 or 7 trainers will be trained per group of 60 farmers. They suggested that our project could do additional training at the level of local communities. The agroforestry process of PAREF-B will start with a national workshop in June. MINAGRI and MINERENA will discuss their different vision at these workshops. They suggested that as agroforestry was covered by their project, we should rather build terraces and plant trees on them. The Institute of Agriculture and Animal Husbandry (ISAE) does other types of modules at the district level. In terms of savanna restoration, they suggested rather working on shrubland. In Bugesera, for example, the Gako forest needs restoration. (It would be difficult to work there because it is not a protected forest and is owned by the Ministry of Defense, meaning that there are no local communities either. They added that savanna and shrubland restoration is very difficult to achieve because we do not know what it really means. There is virtually no native savanna anymore and savanna is a low productivity ecosystem. Creation of livelihoods is therefore challenging. In Bugesera, PAREF-B mostly focuses on tree planting along the roads and terraces. The exotic species they plant as mainly *Eucalyptus camaldulensis* and one or two other species. They are going to produce a forest inventory in Bugesera and revise the forest management plan. Additionally, they will organise people within cooperatives. They do not do any community-based restoration or participatory approach. PAREF-N will likely start piloting community-based restoration on public land. Manuals on agroforestry, agropastoralism and silvopastoralism will be produced by their project. The main agroforestry species for the Eastern Province are *Alnus acuminata* (for high altitudes), *Grevillea*, *Eucalyptus*, *Senna spectabilis*. They use a lot of other trees particularly fruit trees.

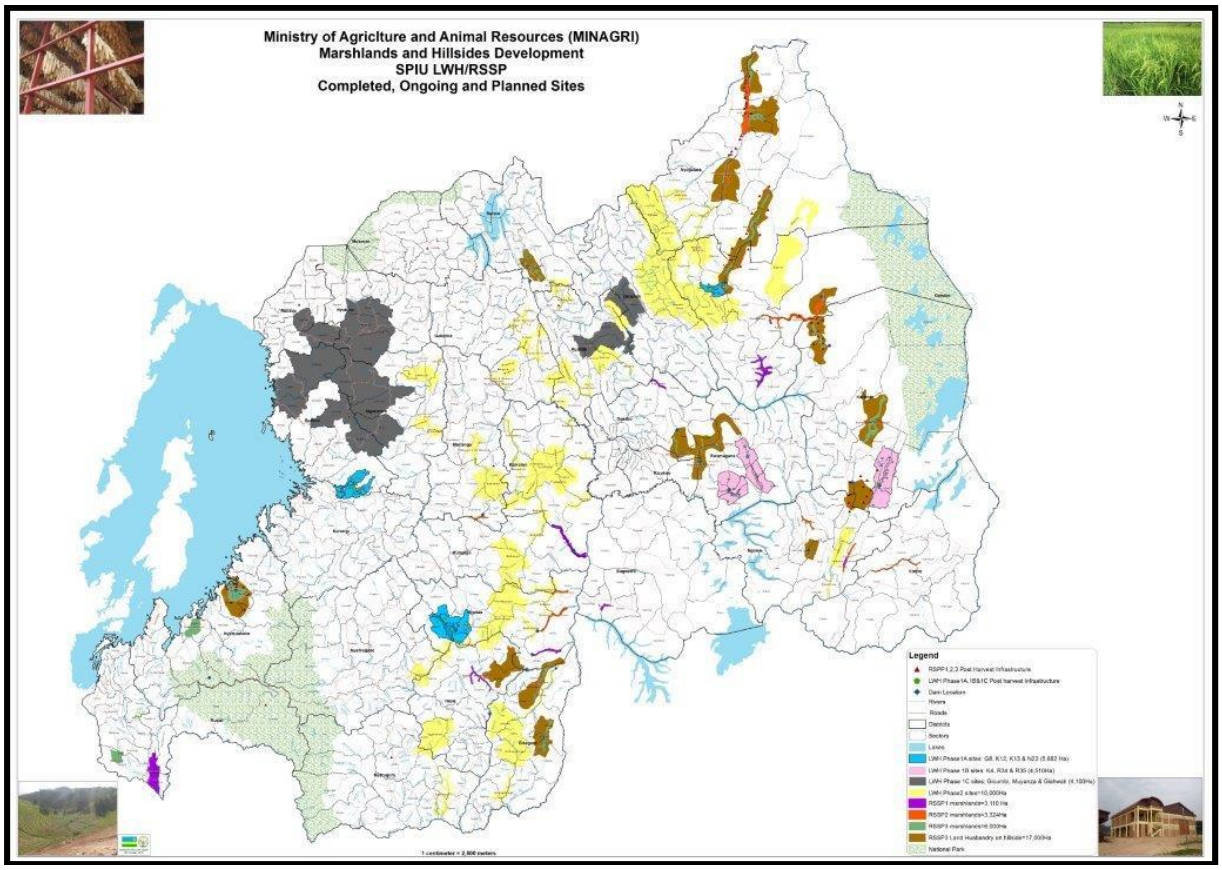
		They expressed their fear that the knowledge on how to replant and maintain native species was being lost. Some studies should be done as training and capacity building as well. They collaborate with ICRAF for the development of the training material and the development of agroforestry plots. They suggested we work mainly in Nyagatare, Kirehé (50,000 hectares of Shrubland) and Ngoma.
Thursday 06 (13h00)	Didace HABAMENSHI – MINAGRI (RSSP-LWH)	In Kayonza, they have 3 implementation sites: 2 RSSP 3 and 1 LWH. In these sites, similar activities are implemented. These activities include: dam construction; marshland rehabilitation and development of an irrigation system. In surrounding hills, they do terracing, planting banana and pasture improvement. They plant trees in areas that are suitable for cropping as well. In Ngoma, they have two implementation sites. The first one is Gisaya in the Rulengé sector. They are currently growing rice as well as maize and beans on hillsides. The second one, Ngoma 22, is new and is located in the Lemera sector. In both sites, they do terracing and retention of ditches (around bananas for example). In Kirehe, they have 2 sites (RSSP) where they do the same activities. They plant shading trees in pastures as well. They do not do any mixing of trees because fodder and fruit trees don't need the same maintenance efforts. Therefore, people moved the fruit trees closer to their houses because it was not seen as feasible to maintain 3 or 4 dispersed fruit trees. Therefore, if 2 hectares of the same fruit trees are planted, it is more cost-effective. In each site, they developed cooperatives as well. Species to be planted are chosen according to their resilience to drought. Examples of fodder trees that are planted are *Calliendra calothyrsus* and *Leucaena leucocephala*, which produce green manure and fodder among others. Fruit trees planted include mainly mangos and avocados. *Moringa sp*. is planted as well in some sites. Dams are used for fish production. Finally, agribusiness is being developed in some areas. Indigenous trees have only been planted in Muvumba Forest where there is an endangered species. This species has therefore been planted by LWH/RSSP projects in the buffer zones. For our savanna restoration activities, he suggested the site of Grunhavu in Kayonza, consisting of farms, settlements and agriculture on the border of the Akagera National Park.
Friday 07 (6h30-19h30)	Field trip to Mukura Native Forest in Rutsiro district. With Olivier, Rutsiro district officer.	For the project management they need: i) a financial expert full time; ii) a secretary; iii) a project coordinator (ask for the salary and allowances of Alphonse Mutabazi from LDCF 1); iv) they don't want to buy a car, they always hire (cost for a day range from FrR 56,000 to FrR 70,000 according to the type of car and including the driver); and v) field officers (one in Mukura, one for Bugesera/Ngora and possibly one for Kigali). The requirement of the field officers in terms of salary will depend on the activities that have to be conducted in the area (the more activities the more skilled they will have to be) No office rent is needed, but a budget line for the IT material is. RADB will produce the ToRs for the EIAs and SIAs. In Rwanda, they have a list of EIA expert companies (35 National and International companies). Information on the Mukura intervention site: The remaining natural forest of Mukura is 1050 hectares according to Olivier and 1500 hectares according to Faustin and Patrick. The area is very hilly and floods are damaging. Some settlements have been relocated. People live mainly off agriculture. They grow Irish potatoes, tea, fruits (tree tomatoes and passion fruit-Maracouja). They have livestock (cows) as well. There are two villages in the surroundings area which the activities should focus

		on. Each village contains approximately 500 households (5 people per household on average). According to Olivier, 300 to 500 hectares of forest should be restored. 30% of the forest is currently surrounded by a buffer zone (*Pinus* or *Eucalyptus*). An additional 30 to 40% might have been planned for plantation by PAREF. Apiculture is already being developed in some pilot sites around the forest. Increasing bee-keeping is included in the District Development Plan of Rutsiro. There are 2 apiculture cooperatives already (in Kagano and Kagieyo). One of the main threats to the forest is mining. Olivier said that he would find out if there are any threatened fauna and flora species in the forest. We could also speak to DEMP, who did studies on the species in Mukura, and to ARECO. The forest is being exploited for: timber; woodfuel; medicine and mining. There are currently 7 mining concessions working around the forest and they often encroach on it (refer to the pictures for the day in the field). Mining and topsoil and tree degradation creates pollution problems as well.

Appendix 4: Map of identified implementation areas



Appendix 5: Map of intervention sites of two baseline projects: RSSP and LWH.



Appendix 20: Validation Report

Appendix 20A: List of meeting that were hold and purposes

MISSION AGENDA 30 June 2014 – 9 July 2014

Date	Time	Activities	Participants
Mon 30 June	15h	Arrival of Lucille Palazy	
	15h30-17h	Meeting on the projects, the objectives of the validation mission and finalisation of the mission agenda.	Faustin Munyazikwiye, Patrick Muagbo, Herman Hakuzimana and Lucille Palazy
Tues 1 July		Public holiday	
	15h-19h	Experience with beehive development, experience with other livelihoods, green technologies, water management practices developed by their project, cost of a honey collection centre, material/beneficiaries, number of beneficiaries for LDCF1 activities.	Alphonse Mutabazi and Lucille Palazy
Wed 2 July	16h-17h	Visit to Kimicanga wetland to: i) assess the state of the ecosystem; and ii) discuss how we could combine natural ecosystem restoration and creation of recreational area (i.e. urban EbA) was well as increase the awareness impact for the inhabitants.	Kimicanga (executive secretary) (RDV at 15h), Faustin Munyazikwiye, Patrick Mugabo, Herman Hakuzimana and Lucille Palazy
	17h-18h30	Discussion on the progress that has been made to develop the project.	DG of REMA, Faustin Munyazikwiye and Lucille Palazy
Thu 3 July	9h-13h	Validation workshop	International consultant, Faustin Munyazikwiye and all stakeholders (REMA, MINIRENA, MINAGRI, MINALOC, MINENFRA, MIDIMAR, RNRA, MINECOFIN, METEO, NYC, NAWOCO, MIGEPROF, Provincial Authorities (Executive Secretary), Site specific stakeholders: District representatives (Mayor or Executive secretary) of Bugesera, Gasabo, Kayonza and Ngororero; Sector representatives of Ndego, Muhororo, Kageyo, Kimihurura, Kacyiru, and Mareba; NGOs representatives, CBOs representatives, Civil Society representative, PSF,UNEP,

			UNDP, FAO, World Bank,…)
	15h30-17h	Discussion on what are the other activities – on going and planned – in the region of Cyohoha North, and collect their knowledge and experience in the area.	Alphonsine Ntabana, Charles Sindayigaya, Patrick Nsabimana, Faustin Munyazizwiye and Lucille Palazy
Fri 4 July		Public holiday	
Saturday 5 July	18h-19h	Collect the actual cost of agroforestry and standard forest restoration as well as experience in agroforestry.	Jean-Damascene Uwizeye (project manager of PAREF) and Lucille Palazy
Mon 7 July	10h-12h	Collect the actual cost of: • savanna restoration in the buffer zone around Akagera; • wetland restoration on the banks of Satyinski and the edge of Murago wetland; • forest restoration; and • construction of radical terraces in Ngororero and progressive terraces in Bugesera.	Patrick Ntabana (FONERWA project in Bugesera), Patrick Mugabo and Lucille Palazy
Tues 8 July	8h30-17h30	Visit to Murago wetland to: • investigate: i) the current fishing practices and sustainability; ii) other current livelihoods; iii) state of the wetland and exploitation; • measure the number of ha for agroforestry and restoration; and • assess the number of beneficiaries for agroforestry, livelihoods, rainwater management practices and green technologies; and • evaluate the potential for further development of green technologies such as existence of wastewater collection systems.	Executive secretary of Mareba sector, District Environment Facilitator of Bugesera district, Executive secretary of Rugarama cell, Faustin Munyazikwiye, Adele Murebwayire and Lucille Palazy
Wed 9 July	9h-10h30	Synthesis of the changes to be made to the project document after the meetings, workshop and field visits	Faustin Munyazikwiye, Adele Murebwayire, Patrick Mugabo, Herman Hakuzimana and Lucille Palazy
	10h30-11h	Implementation of the research projects of LAFREC	Gisele Umuhumuza, Faustin Munyazikwiye and Lucille Palazy
	11h-11h30	Discussion on the outcomes of the field visit in Murago wetland	Charles Sindayigaya and Lucille Palazy
	16h	Departure of Lucille Palazy	

Figure 14: One of the four intervention sites in the Murago wetland, Mareba district, Bugesera sector.

Figure 15: Meeting with the Executive Secretary of Rugarama cell, Mareba sector, Bugesera district.

Figure 16: A community champion in Gwargana village, Mareba sector, Bugesera district.

Appendix 20B: Programme of the validation workshop and list of participants

Rwanda Environment Management Authority

Unit of Climate Change and International Obligations
B.P. 7436 Kigali, Rwanda

Kigali, 03rd July 2014

Timing	Activities	Responsible
8h00-8h30	Registration	DCCIO staff
8h30-08h40	Welcoming	Director DCCIO
8h40-08h50	Introductions	All participants
8h50-9h00	Opening remarks and expectations	DG REMA
9h00-10h30	Presentation on background, situation analysis and Intervention Strategy	Consultant
10h30-10h45	**COFFEE BREAK**	
10h45-12h15	Institutional framework and implementation arrangements; stakeholder participation; monitoring and evaluation plan; project financing and budget & appendices	Consultant
12h15-13h00	Questions and comments	All participants
13h00-13h15	Closing remarks	Director DCCIO
13h15-14h00	**LUNCH**	

List of participants [To be inserted]

Appendix 20C: Participants' questions and observations on the project, with corresponding responses.

Figure 17: The XX participants at the validation workshop, 3 July 2014, Hotel Umubano.

Figure 18: Presentation of Dr. Lucille Palazy on the project logframe at the validation workshop, 3 July 2014, Hotel Umubano.

Figure 19: Ms. Marie Laetitia BUSOKEYE representing LAFREC, commenting on the project activities at the validation workshop, 3 July 2014, Hotel Umubano.

Validation workshop for LDCF Project phase 2

Feedback from the workshop participants

1. **District Forest Officers (DFOs) and Sector Agronomists (SAs) should be added to the training activity on EbA for the DEOs and DEFs.**
   It was agreed that DFOs and SAs would be added into the training activity on EbA.
2. **The country has a number of potential savannah, forests and wetland sites. How did you chose the few projects sites for this project? What were the selection criteria?**
   The selection criteria and the selection process were explained to the participant.
3. **What are you planning to insure the project's sustainability after conclusion?**
   Firstly, the importance of engaging local government and local community was emphasised. Secondly, the necessity to create an economic value for the ecosystems by developing livelihoods that depend on them was agreed on.
4. **Regarding Sanza forest, why did you not include activities on breeding livestock such as providing pigs and goats to the poorest households? It is what people need most in Ngororero.**
   The following points where presented to address this question: i) the focus of the project on adaptation to climate change; ii) the limited sustainability of this kind of activity; and iii) the importance of prioritising ecosystem-based livelihoods.
5. **The specific role of local government is not well captured.**
   The expected engagement of local government as detailed in the project document was explained to the participant.
6. **How is LDCF 2 going to support MINEDUC's efforts to develop atmospheric studies in the curricula? Is there no plan to allocate some of the budget to sponsoring PhD or masters' scholarships?**
   This opportunity was discussed between the stakeholders. However, as it is institutionally difficult for REMA to sponsor master students, it was explained that technical staff would conduct the research projects.
7. **It is written that a significant share of the LDCF 2 budget is co-financed by Rwanda, through various projects. Did you secure that co-financing in advance so that no budget problems will rise in future? In fact, we have had some terrible experiences with budgets in similar scenarios.**
   The definition of co-financing for this kind of project was explained. Additionally, the expected role of the baseline projects in the implementation of the project regarding the sharing of experience was emphasised.
8. **Some of the LDCF 2 sites have also attracted MINAGRI and some of the ministry projects are already running there. Please work closely with MINAGRI and other stakeholders to avoid duplications!**
   Firstly, the importance of working in close collaboration with the relevant government institutions was highlighted. Secondly, the site selection criteria regarding the presence of baseline activity in the site was explained. Thirdly, the MINAGRI representatives were reminded that the REMA was expecting a close collaboration with them when the implementation phase will start.
9. **I have seen biogas activities in Eastern districts and we know that, to work properly, biogas systems require large quantities of water. Biogas projects in Kirehe have failed because of this water issue. Have you considered this problem?**
   The importance of this type of field-based experience was emphasised. It was explained that in the project document both biogas and improved cook stove options were proposed to account for the uncertainty of an adequate water supply. Particular attention will be given to this information when investigating the implementation of biogas use in Bugesera and Kayonza.
10. **Please consider including fodder plantation activities in the eastern part (savannahs). Communities usually do have large pieces of farmland but a shortage of grass for grazing for their cows is a problem.**

The tree properties that will be prioritised when selecting the species to be planted for agroforestry including the provision of fodder were presented. Following this comment, the priority given to fodder trees will be increased when selecting the species.

11. **It is a good idea to add terracing to this project's activities. However, will you only build the terraces, or will you also implement complementary activities to increase agriculture productivity and develop a system to maintain the terraces? For example, in MINAGRI we also provide lime and compost. What are you planning exactly for these terraces?**
    The importance of collaborating with these experienced stakeholders when designing the activities, was emphasised. Consequently, the related project activities will be developed according to MINAGRI's recommendations. Additionally, the complementary activities planned by the project were further detailed. This includes: i) the provision of agroforestry trees and training on the maintenance of these trees; ii) the maintenance of terraces; iii) water management techniques; and iv) the use of organic compost.
12. **What technique/technology will the project bring for rainwater harvesting? In MINAGRI, we are currently investing in dams to convey rainwater from hills to marshlands**.
    Further details were provided on the type of technologies promoted by the project including water tanks, contour bunds and potentially boreholes. It was explained that these technologies were selected according to consultations with the district and cell officers who were asked what were the best methods to increase water availability in their area.
13. **The project document seems to prefer biogas to other tree saving techniques such as the use of energy saving stoves. Why not consider both?**
    It was explained that when biogas cannot be applied, improved cook stoves (or energy saving stoves) will be purchased.
14. **You have included wastewater treatment as one of the adaptation measures but I think the feasibility in Rwandan rural areas is complicated. There are no real water infrastructures so that sewage water could somehow be recycled.**
    A common agreement was reached on removing the wastewater reuse activities from the project document.
15. **To reach the target of increased income presented in the logframe, it is necessary to develop livelihoods that will provide funding quickly. The one based on ecosystems will not. Farming should be envisaged.**
    The opportunities to increase income rapidly as shown in the project targets were further discussed. Beekeeping and fishing are the activities that are most likely to provide income to local communities within the lifespan of the project.
16. **If Sanza is one of the touristic circuits that RDB exploits, there is a way to merge efforts with RDB and increase the chances for success if the forest in not protected.**
    This information was acknowledged and the potential touristic circuits will be investigated as part of the feasibility study that will be conducted under Output 3.4 of the project.
17. **Why is MINAGRI not included in the steering committee?**
    The comment revealed a mistake in the institutional arrangement figures. It was agreed that this change would be made in the project document.
18. **Agro-ecosystems should be considered instead of focusing on natural ecosystems because the majority of Rwandan ecosystems fall into that category. Indeed, there is not much natural forest, savanna or wetland remaining in Rwanda and we should adapt the activities of this project to this situation.**
    The combination of ecosystem restoration and agroforestry activities in the project was explained as it was agreed that it was increasingly difficult to find uncultivated land in Rwanda. It was added that agroforestry trees would be planted as well as indigenous species in buffer zones. In addition, indigenous species would be promote in agroforestry sites, which illustrate the combination of methods selected by the project to adapt to the environment conditions, and population needs in Rwanda.
19. **In the title of the project, the word "building" should be replaced by "increase" or "reinforce" because the LDCF 2 will build from what has been already accomplished.**
    It was explained that at this stage it is not possible to change the title of the project as it was approved by GEF.

20. **Indigenous species grow slowly. A project of 4 years is far too short. The China project on restoration is 20 years long, which is much more appropriate.**
    It was explained that the length of the project could not be modified and consequently the ownership of the project by national, local government and authorities was important to secure long-term benefits.
21. **In Cyohoha North, since the inception workshop, two projects have been initiated. One is funded by UNDP and the other by FONERWA. She suggested focusing on Lake Gueru that is close to Cyohoha.**
    A meeting was scheduled with the corresponding stakeholders to discuss: i) the activities being implemented by other projects; ii) the activities planned by the proposed project; and iii) how to capitalise these interventions to complement each project. The partner projects will be implemented in the Lake Cyohoha North but not Murago wetland. Therefore, it was decided that the proposed project would focus on the wetland to complement the activities of the UNDP and FONERWA projects. The necessity for enduring communication between the different project teams under the same institution and between institutions was highlighted.
22. **The project should look for ways to support local livelihood opportunities.**
    The livelihoods that are supported by the project as well as the importance given to improve local communities' income, was detailed.
23. **The target of 60 ha for agroforestry development for some activities is very low. We should increase this target.**
    It was agreed that if there is scope in the budget after adjusting the costs, this number would be increased.
24. **The local demographic data of 400 households that will benefit from the project is not accurate. It should be increased.**
    The calculation of this figure was explained. The figure was based on the number of households to be employed to implement planting activities and receive material from the project. The corresponding stakeholders were required to provide any additional information to improve the accuracy of this estimate.
25. **It is not mentioned that the project will be coordinated through the SPIU.**
    It was explained that the role of SPIU was further detailed in the text in the project document. In addition, it was agreed that SPIU would be added into the institutional arrangement structure.
26. **How are you going to mainstream the EbA into DDPs? Environmental mainstreaming into DDPs has been recently done extensively. This required a tremendous amount of energy and time. How are we going to go back there and ask them to add some forgotten issue?**
    The length of the project and the fact that priorities are defined every year by the districts, was explained. This was used to validate that the revision process for DDPs was achievable in the four years.
27. **REMA's department of education has a regular activity called "schools greening" that select schools to support in various environmental activities every year. As the LDCF 2 also has an interest in schools, the department should share experience and work together in the schools selections for increased synergy.**
    It was acknowledged that close collaboration with the department of education would be highly beneficial and appreciated.
28. **The EbA mainstreaming should be targeted at sector and policy level (technical institutions) in order to speed up the process at local levels.**
    The activities regarding national strategies, policies and plans as well as development plans for economic sectors included in the project were further detailed.
29. **Salaries need to be revised. The figures here are net salaries whereas the total costs to the project are gross salaries.**
    The comment indicated that a mistake was made in the project budget as net salaries were used instead of gross salaries. It was agreed that this change will be made in the project document.
30. **It would be better if some of the project's tasks were distributed to the regular DCCIO staff in order to reduce dependence to consultants.**

There are some activities, which require a national consultant or international consultants. However, the core staff of the project or SPIU/REMA can implement other activities. For those activities that need to recruit consultants, we will follow the national procurement process.

31. **The RNRA water department is currently issuing permits for water use. Could the project incorporate the water permit campaign?**
    It was explained that the project's focus on EbA was defined in the PIF. The suggested activity falls beyond the objectives of the project.
32. **Could you include the RNRA's water department as a key stakeholder for the project LDCF 2?**
    RNRA as a whole is already included as a key stakeholder in the project.
33. **Could you reduce the budget for Component 1 and increase the budget for field activities?**
    The difference in budget already allocated to Component 1 and 2 compared to Component 3 was emphasised. It was explained that this difference resulted from the focus on on-the-ground activities rather than "soft" activities.

Appendix 21: Impact of floods and landslides per district between 2010 and 2011 in Rwanda[139].

District	Number of sectors affected by floods	Number of sectors affected by landslides
Kamonyi	7	7
Bugesera	12	0
Muhanga	7	5
Burera	6	6
Gicumbi	6	6
Ngororero	5	7
Nyamagabe	5	7
Kayonza	7	4
Rutsiro	8	2
Nyabihu	6	4
Rulindo	5	5
Gakenke	4	6
Karongi	5	4
Nyaruguru	4	5
Gasabo	7	0
Rubavu	5	2
Nyarugenge	4	3
Ngoma	3	4
Musanze	5	1
Huye	4	2
Kirehe	4	2
Rwamagana	3	3
Gisagara	5	0
Kicukiro	4	0
Ruhango	3	1
Nyanza	1	2
Rusizi	1	2
Gatsibo	2	0
Nyagatare	2	0
Nyamasheke	0	1

[139] Nsengiyumva, J.P. 2012. Disaster high risk zones on floods and landslides in Rwanda. Unit of Research and Public Awareness, MIDIMAR. Kigali, Rwanda. Mars 2012. 33 p

Appendix 22: Linkages between the baseline projects and the proposed project

Baseline projects and relevant intervention sites	Goals and activities	Climate change hazards affecting the baseline project area	Impacts to the baseline projects and targeted populations as a result of climate change	Adaptation measures supported by the proposed project	How the proposed project will contribute towards increasing the resilience of the baseline project
Support Programme for Rwanda Reforestation (PAREF) Ngororero & Bugesera	Increase agroforestry and forest cover on public land through Participatory Forest Management The objectives are to: i) build capacity within the forestry sector; ii) improve forest management; iii) increase reforestation; and iv) develop agroforestry. Project interventions include: • training national authorities on reforestation and forest resource management; • training local authorities on reforestation and forest resource management; • training private sector operators on reforestation and forest resource management; • developing legislation, decision-making and communication tools; • applying above tools at local level; • strengthening operational capacities at national level; • strengthening operational capacities at local level; • forest management; • reforestation; and • agroforestry.	Increased frequency and severity of droughts. Increased frequency of intense rainfall events and landslides.	Reduced forest productivity and tree seedling establishment as a result of: • increased temperature and water stress • increased incidence of landslides and soil erosion • reduced access to those project sites affected by landslides Increased rate of exploitation of forest resources as a result of: • increased food insecurity and loss of livelihood because of climate	Restoration of forest ecosystems using an EbA approach. Developing technical guidelines and best practices – including species selection – for the restoration of climate-resilient forests and development of climate-resilient agroforestry. Introducing and promoting climate-resilient agroforestry techniques in agricultural areas adjacent to forests. Promoting techniques to improve rainwater management. Promoting the use of green technologies such as biogas to decrease the rate of deforestation. Training local communities on the role of restored forest ecosystems and agroforestry techniques in	Increased sustainability of PAREF interventions through: • enhanced knowledge availability on techniques to restore climate-resilient forests and develop climate-resilient agriculture. • increased stabilisation of erosion- and landslide-prone degraded hillsides. • increased rainwater infiltration • decreased pressure on forest resources through development of alternative livelihoods and sources of

			change effects on agriculture	increasing their resilience to the effects of climate change. Development of sustainable, climate-resilient alternative livelihoods such as handcrafting and ecotourism. Enhancing the technical and institutional capacity of national authorities to upscale EbA interventions to increase climate-resilience. Providing training to local-level authorities on planning and implementing interventions to increase climate-resilience. Proposing revisions to DDPs to promote the integration of climate change adaptation and interventions to increase climate-resilience in local-level planning. Providing training to the private sector – EIA, SEA and EA experts – on integrating EbA into planning and projects of economic sectors to increase the implementation of ecosystem restoration activities. Promoting scientific research on techniques for,	energy. Increased knowledge and technical capacity at national and local levels to implement and maintain locally appropriate, cost-effective and climate-resilient adaptation measures.

				and cost-effectiveness of, forest reforestation and agroforestry.	
Land Husbandry, Water Catchment and Hillside Irrigation Programme (LWH) Kayonza & Ngororero	Improve land husbandry practices to increase agricultural productivity and reduce land degradation in hillside areas (e.g. hillside rehabilitation, construction of terraces) Increase water harvesting and reduce siltation to provide supplemental irrigation for agriculture (e.g. construction of dams, planting of buffer zones). Increase hillside irrigation to support the development of high-value horticultural crops (e.g. construction of canals). Build institutional capacity of local community through the creation of agricultural cooperatives. Increase productivity and diversification of agriculture in hillside areas.	Increased frequency and severity of droughts. Increased frequency of intense rainfall events and landslides.	Reduce availability and quality of water for irrigated agriculture as a result of: • increased siltation and runoff of agro-chemicals into surface water during intense rainfall events; • increased evaporation; and • increased siltation of stored surface water. Damage to irrigation infrastructure as a result of: • landslides; • siltation of stored water sources; • floods; and • droughts.	Restoration of forest and savanna ecosystems using an EbA approach. Developing technical guidelines and best practices – including species selection – the restoration of climate-resilient forests and savannas, and development of climate-resilient agroforestry. Developing and promoting techniques to improve rainwater management, rainwater harvesting, and evaporation. Promoting the use of green technologies such as biogas to decrease the rate of deforestation and increase climate resilience. Training local communities on the role of restored forest and savanna ecosystems and agroforestry techniques in increasing their resilience to the effects of climate change. Development of sustainable, climate-resilient alternative livelihoods such as handcrafting and	Increased knowledge of and capacity for ecosystem management and climate change adaptation at national and local levels. Restoration and reforestation using climate-resilient, beneficial indigenous tree species, which will result in: • Long-term increases in availability and quality of water for irrigation as a result of increased soil stability and infiltration of rainwater; • Increased productivity and climate resilience of agriculture as a result of increased shade and soil fertility; and • Increased

				ecotourism. Enhancing the technical and institutional capacity of national authorities to promote to upscale EbA interventions to increase climate-resilience. Providing training to local-level authorities on planning and implementing interventions to increase climate-resilience. Proposing revisions to DDPs to promote the integration of climate change adaptation and interventions to increase climate-resilience in local-level planning. Providing training to the private sector – EIA, SEA and EA experts – on integrating EbA into planning and projects of economic sectors to increase the implementation of ecosystem restoration activities. Promoting scientific research on techniques for and cost-effectiveness of forest and savanna reforestation and agroforestry.	stabilisation of erosion- and landslide-prone degraded hillsides as a result of improved soil structure and reduced impact of intense rainfall events. Scientifically rigorous information to guide the design and implementation of sustainable forest and savanna restoration activities and agroforestry development activities.
Rural Sector Support Project (RSSP)	Improve land husbandry practices to increase agricultural	Increased frequency and severity of	Reduced agricultural	Restoration of wetland and savanna ecosystems using	Increased knowledge of and

Kayonza, Gasabo & Ngororero	productivity and reduce land degradation in marshlands (e.g. marshland rehabilitation) Increase water harvesting and reduce siltation to provide supplemental irrigation for agriculture (e.g. construction of dams, planting of buffer zones). Develop irrigation of crops to support the development of high-value horticultural crops (e.g. construction of canals). Build institutional capacity of local community through the creation of agricultural cooperatives. Increase productivity and diversification of agriculture in marshlands.	droughts. Increased frequency of intense rainfall events and landslides.	production in marshlands as a result of: • increased crop mortality due to heat and water stress • reduced availability of surface water for irrigation • increased damage to crops and infrastructure and risk of loss of life due to landslides and floods Increased risk of loss of life and damage to infrastructure as a result of: • increased incidence of landslides and floods	an EbA approach. Developing technical guidelines and best practices – including species selection – the restoration of climate-resilient wetlands and savannas, and development of climate-resilient agroforestry. Introducing and promoting agroforestry in agricultural areas adjacent to wetlands and savannas. Promoting techniques to improve rainwater management, rainwater harvesting, and evaporation, such as constructing and strengthening terraces, water tanks, contour earthen bunds, and bio-retention systems. Promoting the use of green technologies such as biogas to decrease the rate of deforestation and increase climate resilience. Training local communities on the role of restored wetland and savanna ecosystems and agroforestry techniques in increasing their resilience to the effects of climate change.	capacity for ecosystem management and climate change adaptation at a local, regional and national level; Restoration of degraded hillside and marshland areas using climate-resilient, beneficial species, which will result in: • Reduced risk of landslides and floods; • Increased availability and quality of water for irrigation; and • Increased productivity of agriculture as a result of shelter, improved soil structure and fertility provided by beneficial agroforestry tree species Scientifically rigorous information to guide the appropriate design and implementation of

				Development of sustainable, climate-resilient alternative livelihoods such as handcrafting and ecotourism. Enhancing the technical and institutional capacity of national authorities to promote the upscaling of EbA interventions to increase climate-resilience. Providing training to local-level authorities on planning and implementing interventions to increase climate-resilience. Proposing revisions to DDPs to promote the integration of climate change adaptation and interventions to increase climate-resilience in local-level planning. Providing training to the private sector – EIA, SEA and EA experts – on integrating EbA into planning and projects of economic sectors to increase the implementation of ecosystem restoration activities. Promoting scientific research on techniques for and cost-effectiveness of forest, wetland and savanna reforestation and	forest and savanna restoration and agroforestry.

				agroforestry.	

Appendix 23: Information collected by the national consultants during their field missions as part of the PPG phase.

PROVISIONAL SCHEDULE FOR VISITS

DISTRICT	PROPOSED SITES	Responsible person	DATE
RUTSIRO	Mukura	MUNYAZIKWIYE Faustin, MUGABO Patrick, PALAZY Lucille	07 February 2014
NYARUGENGE	Mageragere	HAKUZIMANA Herman	26 March 2014
GASABO	Kimicanga		
	Gatsata		
BUGESERA	Cyohoha	MUREBWAYIRE Adèle	26 March, 2014
NGOMA	Rukumberi	MUGABO Patrick	24-25 March, 2014
KAYONZA	Ndego	MUREBWAYIRE Adèle	24-25 March, 2014
	Kageyo		
NGORORERO	Satinsyi	UWIMANA Immaculée	24-25 March, 2014
	Sanza		Collected remotely (09 April, 2014)

NYARUGENGE, MAGERAGERE, AKAGERA WETLAND

1. Name of the site	MAGERAGERE, AKAGERA WETLAND
2. Location of the site (District and sector(s))	NYARUGENGE DISTRICT, MAGERAGERE SECTOR
3. Type of selected site	□ Savannah □ Wetland + □ Forest
4. Proposed project activities for the site	1. Wetland restoration (stop exploitation of clay and conserve the palm plants which are threatened see the photo in annex) 2. Introduction of climate resilient agricultural practices (Agro forestry on hillside) 3. Resilient livelihoods in households (Fishing)
5. Surface area to be restored (ha)	Not known
6. Baseline area (ha)	As a baseline there are some unplanted palm trees that need to be conserved. The area they cover is not known.
7. What are the indigenous tree species in the site?	1. Palm trees 2. Wetland Vegetation: Cyperus paperus (Urufunzo) and cyperaceae plants (Urukangaga)
8. What are other species of conservation interest found in the site?	Wetland vegetation
9. What are the main plant species in the savannah?	NA
10. What are tree species planned for the site restoring?	None
11. What is the area of the savannah compared to agricultural land?	NA
12. Agro forestry species/ha (baseline)	NA
13. Do surrounding communities grow livestock?	Yes They keep pig , caprins , Poutry and ships
14. Do surrounding communities practice organic composting?	Some of them (few)
15. Do surrounding communities use chemical fertilizers?	Yes for some of them but it is less applicable.
16. How many hectares of terraces in the areas?	None

3. What types of terraces are there?	NA	
17. How many additional hectares terraces needed?	NA	
18. What the rain water harvesting techniques in use?	a. Household level None b. Agricultural level None	
19. What are current/past initiatives in the area?	None	
20. What are NGOs/cooperatives operating in the area? What are they working on?	1. Dufatanye umurimo cooperative Which charges bricks on vehicles; 2. Abishyizehamwe cooperative working on bricks making	
21. How many cells are around the site? Cfr John	1. Mataba Cell	Population: Refer to the previous information sent by John Household:
22. What infrastructures are available?	Roads: Asphalted road towards Bugesera and non asphalted road Schools (number & types): None Health facilities: None Sanitation systems Solid waste collection system	
23. Number of teachers?	NA	
24. How many students?	NA	
25. How many schools with environmental clubs?	NA	
26. What are the sources of energy?	1.Charcoal for cooking 2. Electricity for lighting 3. In kiln for bricks they use waste from woodwork (carpentry)	
27. Three main economic activities in the surrounding communities?	1. Agriculture, informal commerce.	
28. Describe gender equity issues	Percentage of women having Mutuelle: Percentage of girls in primary and secondary schools: % of involvements of women in income generating activities: Not available	
29. What is the average income per household per day?	Not available	
30. What is the average annual income per household (USD)?	Not available	
31. Do surrounding communities do fishing?	No	
32. Do communities do beekeeping?	No	
33. What crops do grow in the area? And productivity (kg/ha)?	1. Cassava 3.Beans 4.Mais 5. Sweet potatoes Note: The productivity not available	
34. What are the main problems of the communities around the site? (Economical, environmental, health, social, governance…)	1. Poverty 2. Foods 3. Clay is decreasing	
35. From the point of view of exploitation, how is the site used by surrounding communities?	Surrounding communities work for investors who make bricks for construction. They make bricks and charge vehicles (Man power)	

36. How will LDCF 2 site activities negatively affect the surrounding communities?	
37. How will LDCF 2 site activities positively affect the surrounding communities?	
38. What could be done to ensure community support for LDCF2 activities in the site?	1. 2. 3. …
39.	

GASABO, KIMIHURURA AND KACYIRU, KIMICANGA

1. Name of the site	KIMICANGA WETLAND
2. Location of the site (District and sector(s))	GASABO DISTRICT, KIMIHURURA AND KACYIRU SECTORS
3. Type of selected site	□ Savannah □ Wetland + □ Forest
4. Proposed LDCF 2 activities for the site	1. Wetland restoration 2. Creation of recreational park (Plantation of trees, and flowers in the open space, Put a demarcation line on Kimicanga wetland, Installation a paved path way)
5. Surface area to be restored (ha)	Not yet available (to check with Fides)
6. Baseline area (ha)	Some bamboo trees planted by RNRA in the wetland (Check for the surface area covered)
7. What are tree indigenous species in the site?	Wetland Vegetation: Cyperus paperus (Urufunzo) and cyperaceae plants (Urukangaga)
8. What are other species of conservation interest found in the site?	Planted Bamboo, some trees planted during community work (names ?)
9. What are the main plant species in the savannah?	NA
10. What are tree species planned for the site restoring?	There is an MoU signed between the Sector and an Individual investor to grow vegetables in the wetland but no other plan for restoration. According to the Executive Secretary of Kimihurura Sector, if they could find someone who has a good plan for restoration of the wetland, they can stop the signed MoU and restore the wetland.
11. What is the area of the savannah compared to agricultural land?	NA
12. Agro forestry species/ha (baseline)	NA
13. Do surrounding communities grow livestock?	Yes
14. Do surrounding communities practice organic composting?	Yes
15. Do surrounding communities use chemical fertilizers?	Yes
16. How many hectares of terraces in the areas?	NA
17. What types of terraces are there?	NA
18. How many additional hectares terraces needed?	NA
19. What the rain water harvesting techniques in use?	c. Household level None. Few households have water tanks d. Agricultural level None

20. What are current/past initiatives in the area?	RNRA planted bamboo, there are some trees planted by the District during community work, Association y'abamotari ihakora isuku yanahateye inteja ku muhanda.	
21. What are NGOs/cooperatives operating in the area? What are they working on?	Many cooperatives working on agriculture and livestock in the area on the side of Rwintare : KOPAKINYA, WICECEKA,ABAHUJE IBIKORWA, KOKAWI,…	
22. How many cells are around the site? Cfr John	Kacyiru Sector : Kamatamu Kimihurura Sector: Kamukina	Population: To check with Fides Household:
23. What infrastructures are available?	Roads: Asphalted road crossing the wetland Schools: 3 Schools: **Kigali Harvest School** (Primary & Secondary), **Glory** secondary **school** and La colombiere. Sanitation systems: Solid waste collection system	
24. Number of teachers?	?	
25. How many students?	?	
26. How many schools with environmental clubs?	All the 3 schools have environmental clubs	
27. What are the sources of energy?	1.Charcoal for cooking 2. Electricity for lighting 3. Gas (For some households)	
28. Three main economic activities in the surrounding communities?	Commerce (formal and informal), Agriculture, Abakozi ba Leta n'abandi bakorera umushahara	
29. Describe gender equity issues	Percentage of women having Mutuelle: Percentage of girls in primary and secondary schools: % of involvements of women in income generating activities: Not available	
30. What is the average income per household per day?	Not available (to check with District statistitian)	
31. What is the average annual income per household (USD)?	Not available (to check with District statistitian)	
32. Do surrounding communities do fishing?	No	
33. Do communities do beekeeping?	No	
34. What crops do grow in the area? And productivity (kg/ha)?	Mais, Soja, Beans, Vegetables Note: The productivity/ ha not available	
35. What are the main problems of the communities around the site? (Economical, environmental, health, social, governance…)	4. Poverty 5. unemployment 6. Farmers do not have enough land to cultivate 7. Thieves who hide themselves in planted bamboo 8. Many plastic bags and other non biodegradable materials where the houses were removed	
36. From the point of view of exploitation, how is the site used by surrounding communities?	One part of the wetland is used for agricultural purposes (Rwintare part) and in the remaining part there natural wetland vegetation	
37. How will LDCF 2 site activities negatively affect the surrounding communities?		
38. How will LDCF 2 site activities positively affect the surrounding communities?		
39. What could be done to ensure community support for LDCF 2 activities in the site?	1. 2. 3. …	
40.		

GASABO, GATSATA

1. Name of the site	GATSATA WETLAND

2. Location of the site (District and sector(s))	GASABO DISTRICT, GATSATA SECTOR	
3. Type of selected site	□ Savannah □ Wetland + □ Forest	
4. Proposed LDCF 2 activities for the site	3. Wetland restoration	
5. Surface area to be restored (ha)	Not available	
6. Baseline area (ha)	None	
7. What are tree indigenous species in the site?	Wetland Vegetation: Cyperus paperus (Urufunzo) and cyperaceae plants (Urukangaga)	
8. What are other species of conservation interest found in the site?	Some other wetland vegetation	
9. What are the main plant species in the savannah?	NA	
10. What are tree species planned for the site restoring?	None	
11. What is the area of the savannah compared to agricultural land?	NA	
12. Agro forestry species/ha (baseline)	NA	
13. Do surrounding communities grow livestock?	NO	
14. Do surrounding communities practice organic composting?	NO	
15. Do surrounding communities use chemical fertilizers?	NO	
16. How many hectares of terraces in the areas?	NA	
17. What types of terraces are there?	NA	
18. How many additional hectares terraces needed?	NA	
19. What the rain water harvesting techniques in use?	e. Household level A small number of the pop have tanks f. Agricultural level NA	
20. What are current/past initiatives in the area?	None	
21. What are NGOs/cooperatives operating in the area? What are they working on?	No NGOs , Cooperatives of spare parts sellers	
22. How many cells are around the site?	Two cells: Namabuye and Nyamugari	Population: To check with Fides Household:
23. What infrastructures are available?	Roads: Asphalted road crossing the wetland Houses: Inzu z'uruganda rwakoraga ibiringiti rutagikora, amazu y'abaturage , Amazu y'ubucuruzi. Sanitation systems: Solid waste collection system	
24. Number of teachers?	NA	
25. How many students?	NA	
26. How many schools with environmental clubs?	No school	

27. What are the sources of energy?	1.Charcoal for cooking 2. Electricity for lighting
28. Three main economic activities in the surrounding communities?	Commerce (formal and informal)
29. Describe gender equity issues	Percentage of women having Mutuelle: Percentage of girls in primary and secondary schools: % of involvements of women in income generating activities: Not available
30. What is the average income per household per day?	Not available (to check with District statistitian)
31. What is the average annual income per household (USD)?	Not available (to check with District statistitian)
32. Do surrounding communities do fishing?	No
33. Do communities do beekeeping?	No
34. What crops do grow in the area? And productivity (kg/ha)?	No
35. What are the main problems of the communities around the site? (Economical, environmental, health, social, governance…)	9. Floods
36. From the point of view of exploitation, how is the site used by surrounding communities?	There are some settlements and and commercial houses (spare parts)
37. How will LDCF 2 site activities negatively affect the surrounding communities?	
38. How will LDCF 2 site activities positively affect the surrounding communities?	
39. What could be done to ensure community support for LDCF 2 activities in the site?	1. 2. 3. …

BUGESERA, MAREBA, RUGARAMA

1. Name of the site	RUGARAMA
2. Location of the site (District and sector(s))	MAREBA Sector; BUGESERA District
3. Type of selected site	□ Savannah □ Wetland: V □ Forest
4. Proposed LDCF 2 activities for the site	1. Wetland restoration: V 2. Forest restoration 3. Creation of Agro-forests: V 4. Introduction of climate resilient agricultural practices 5. Resilient livelihoods in households
5. Surface area to be restored (ha)	100 ha
6. Baseline area (ha)	182 ha
7. What are tree indigenous species in the site?	1. Euphorbia tirucalli (Umuyenzi) 2. 3. 4.
8. What are other species of conservation interest found in the site?	1. Grevillea robusta (Gereveriya) 2. Markhamia lutea (Umusave) 3. Cassia spectabilis

	4. Leucaena leucocephala 5. Calliandra calothyrsus	
9. What are the main plant species in the savannah?	There is no savannah	
10. What are tree species planned for the site restoring?	1. Grevillea robusta (Gereveriya) 2. Markhamia lutea (Umusave) 3. Cassia spectabilis 4. Leucaena leucocephala 5. Calliandra calothyrsus 6. Threes for fruits (Imyembe, avoka)	
11. What is the area of the savannah compared to agricultural land?	There is no distinction because the available space is used both for agriculture and for livestock	
12. Agroforestry species/ha (baseline)	Unknown results	
13. Do surrounding communities grow livestock?	V (581 Households/905)	
14. Do surrounding communities practice organic composting?	V	
15. Do surrounding communities use chemical fertilizers?	V	
16. How many hectares of terraces in the areas?	-	
17. What types of terraces are there?	-	
18. How many additional hectares terraces needed?	There is no need	
19. What the rain water harvesting techniques in use?	g. Household level Only 5 households have Water thanks for rain water harvesting h. Agricultural level They use traditional methods for irrigation using watering cans	
20. What are current/past initiatives in the area?	1. Tree planting by HIMO (in the past years) 2. Distribution of Seedlings (Fruits) by PAIRB 2. Preparation for Seedlings by DUTERIMBERE (Fruits) and TURENGERE IBIDUKIKIJE (Agroforestry) cooperatives 3. Fishing by ISANO cooperative	
21. What are NGOs/cooperatives operating in the area? What are they working on?	1. PAIRB: Distribution of Seedlings (Fruits) 2. DUTERIMBERE cooperative: Preparation for Seedlings (fruits) 3. TURENGERE IBIDUKIKIJE: Preparation for Seedlings (Agroforestry) cooperatives 3. ISANO cooperative: Fishing	
22. How many cells are around the site?	1. Bushenyi	Population: 6,028 Household: 1,363
	2. -	Population:……. Households:…….
23. What infrastructures are available?	Roads Main Road well managed only Schools (number & types) 1 School: G.S Mareba Health facilities 1 Health Center: Mareba Sanitation systems Water treatment machine to help the Health center and the community around to have safe drinking water	
24. Number of teachers?	G.S Mareba: 34 Teachers (18 male & 16 Female)	

25. How many students?	G.S Mareba: 1,726 Students (1,000 male & 726 Female)
26. How many schools with environmental clubs?	We have one environmental club
27. What are the sources of energy?	1. Fire wood 2. Charcoal 3. Cooking stoves (Rondereza) in 642 households 4. Electricity from EWSA
28. Three main economic activities in the surrounding communities?	1. Agriculture 2. Livestock 3.Commerce
29. Describe gender equity issues	Percentage of women having Mutuelle: 52 % (MUSA) Percentage of girls in primary and secondary schools: • G.S Mareba : 42 % (Students) % of involvements of women in income generating activities: 50 %
30. What is the average income per household per day?	1,500 Rwf/Day
31. What is the average annual income per household (USD)?	450,000 Rwf/Year (750 USD)
32. Do surrounding communities do fishing?	Yes (in MURAGO marshland and in CYOHOHA lake)
33. Do communities do beekeeping?	Only one people with beekeeping
34. What crops do grow in the area? And productivity (kg/ha)?	1. Rice: 7.5 T/ha 2. Cassava: 4T/ha 3. Banana: 4T/ha 4. Maize: 3T/ha 5. Beans: 3T/ha
35. What are the main problems of the communities around the site? (Economical, environmental, health, social, governance…)	1. Drought 2. Water shortage 3. Poverty of the community (This Cell is located in VIP Sector) 4. Resistance of people
36. From the point of view of exploitation, how is the site used by surrounding communities?	1. Grazing 2. Fishing 3. Tree cutting and firewood 4. Agriculture
37. How will LDCF 2 site activities negatively affect the surrounding communities?	-
38. How will LDCF 2 site activities positively affect the surrounding communities?	1. Climate vulnerability reduced 2. Crop production increased (Fishing and Agriculture) 3. To combat malnutrition 4. Income per household will be increased with other alternative activities
39. What could be done to ensure community support for LDCF 2 activities in the site?	1. Sensitize the population to maintain the project activities 2. Formulation/Establishment of cooperatives 3. Multiplication of alternative activities 4. Reinforcement of existing Environment community

NGOMA, RUKUMBELI, KAROKORA AND GITUZA

1. Name of the site	Karokora (Village)	Gituza (village & cell)
2. Location of the site (District and sector(s))	Rukumbeli Sector, Ngoma District	Rukumbeli Sector, Ngoma District
3. Type of selected site	Savannah	Savannah
4. Proposed LDCF 2 activities for the site	Savannah restoration Water access	Savannah restoration Agroforestry

		Water access Introduction of climate resilient agricultural practices
5. Surface area to be restored (ha)	Around 5 ha	45 ha
6. Baseline area (ha)	0	0
7. What are tree indigenous species in the site?	1. Akateye (*Lantana camara*) 2. Mukotozi (*Maytenus sp.*) 3. Imishubi (*Maytenus buchananii*) 4. Umuyigi (*Dalbergia nitidula*)	1. Akateye (*Lantana camara*) 2. Mukotozi (*Maytenus sp.*) 3. Imishubi (*Maytenus buchananii*) 4. Imiyenzi (*Euphorbia tirucalli*) 5. Iminyinya (*Acacia sp.*) 6. *Opuntia sp.*
8. What are other species of conservation interest found in the site?	None	Imijwiri
9. What are the main plant species in the savannah?	1. Akateye (*Lantana camara*) 2. Mukotozi (*Maytenus sp.*) 3. Imishubi (*Maytenus buchananii*) 4. Umuyigi (*Dalbergia nitidula*) 5. Imiyenzi (*Euphorbia tirucalli*)	1. Akateye (*Lantana camara*) 2. Mukotozi (*Maytenus sp.*) 3. Imishubi (*Maytenus buchananii*) 4. Imiyenzi (*Euphorbia tirucalli*) 5. Iminyinya (*Acacia sp.*) 6. *Opuntia sp.*
10. What are tree species planned for the site restoring?	The district has no restoration plan for the site (however the site has a few eucalyptus trees that have been planted by umuganda)	The district has no restoration plan for the site
11. What is the area of the savannah compared to agricultural land?	No agricultural land	30 ha agriculture 15 ha savannah
12. Agroforestry species/ha (baseline)	None	None
13. Do surrounding communities grow livestock?	Yes 1 household/10 has a cow Every household has goats	Yes
14. Do surrounding communities practice organic composting?	Yes	Yes
15. Do surrounding communities use chemical fertilizers?	Yes (for maize)	Yes (for maize)
16. How many hectares of terraces in the areas?	None	No terraces
17. What types of terraces are there?	N/A	N/A
18. How many additional hectares terraces needed?	N/A	N/A
19. What the rain water harvesting techniques in use?	i. Household level Ibidomoro, amabasi, indobo… j. Agricultural level None	a. Household level Ibidomoro, amabasi, indobo… b. Agricultural level None
20. What are current/past initiatives in the area?	No past or current initiatives at the site. However illegal mining is currently being made on the site for tin	MINAGRI has used the space as a grazing area years ago The District gave some land to returnees from Tanzania as reintegration assistance
21. What are NGOs/cooperatives operating in the area? What are they working on?	Apart from churches no NGOs are operating in the area There are cooperatives for ibimina, fishers, banana growers…	Apart from churches no NGOs are operating in the area There are cooperatives for ibimina, fishers, banana

			growers…
22. How many cells are around the site?	1.	Population:…… Household:……	
	2.	Population:……. Households:……	
	3.	Population:……. Households:……	
23. What infrastructures are available?	Roads *No roads* Schools (number & types) 3 schools (2 groupes scolaires+1 primary) Health facilities Yes (within a 40 minutes walking distance) Sanitation systems None		Roads *No roads* Schools (number & types) 3 schools (2 groupes scolaires+1 primary) Health facilities Yes (within a 40 minutes walking distance) Sanitation systems None
24. Number of teachers?	95		95
25. How many students?	4,261		4,261
26. How many schools with environmental clubs?	Ecole primaire Sholi Groupe scolaire Rwintashya Groupe scolaire Gituza		Ecole primaire Sholi Groupe scolaire Rwintashya Groupe scolaire Gituza
27. What are the sources of energy?	1.electricity 2.candle 3.kerosene 4.firewood 5.charcoal		1.electricity 2.candle 3.kerosene 4.firewood 5.charcoal
28. Three main economic activities in the surrounding communities?	1.agriculture 2.fishing		1.agriculture 2.fishing
29. Describe gender equity issues			
30. What is the average income per household per day?			
31. What is the average annual income per household (USD)?			
32. Do surrounding communities do fishing?	Yes		Yes
33. Do communities do beekeeping?	No		Unimportant
34. What crops do grow in the area? And productivity (kg/ha)?	1.beans (600kg/ha) 2.sorghum (1.5 t/ha) 3.cassava 4.banana 5.maize		1.beans (600kg/ha) 2.sorghum (1.5 t/ha) 3.cassava 4.banana 5.maize 6. arachides 7. Soya
35. What are the main problems of the communities around the site? (Economical, environmental, health, social, governance…)	1. Water scarcity 2. electricity		1. Water scarcity 2. electricity

36. From the point of view of exploitation, how is the site used by surrounding communities?	1. grazing (cow and goats) 2. tree cutting and firewood 3. other (specify) *Mining*	1. cattle farming 2. firewood collection 3. agricultural land
37. How will LDCF 2 site activities negatively affect the surrounding communities?		
38. How will LDCF 2 site activities positively affect the surrounding communities?		
39. What could be done to ensure community support for LDCF 2 activities in the site?	1. 2. 3. …	
40. General comment	The site relatively small and landlocked in the middle of privately owned lands what could make any restoration efforts worthless in the long run Surrounding communities consider the plot as their backup grazing are They have also started mining activities and some spots within the site are likely to be subjected to serious degradation	The site is ideal for agroforestry activities because the crop land is virtually uncovered by anything else apart from crops The agroforestry activities could go with the efforts to restore the remaining savannah part which is also relative important compared to the previous site This would be the best savannah site for LDCF 2 in Ngoma District.

KAYONZA, NDEGO, ISANGANO

1. Name of the site	ISANGANO
2. Location of the site (District and sector(s))	NDEGO Sectot; KAYONZA District
3. Type of selected site	□ Savannah: V □ Wetland □ Forest
4. Proposed LDCF 2 activities for the site	1. Wetland restoration 2. Forest restoration 3. Creation of Agro-forests: V 4. Savana restoration: V 5. Introduction of climate resilient agricultural practices 6. Resilient livelihoods in households
5. Surface area to be restored (ha)	540 ha
6. Baseline area (ha)	540ha
7. What are tree indigenous species in the site?	1. Imikona 2. Ntare y'irungu 3. Imisave y'ishyamba 4. Umumuna
8. What are other species of conservation interest found in the site?	1. Euphorbia tirucalli (Umuyenzi 2. Cassia spectabilis
9. What are the main plant species in the savannah?	1. Umumuna 2. Imisave y'ishyamba 3. Cassia spectabilis 4. Grevillea robusta
10. What are tree species planned for the site restoring?	1. Cassia spectabilis 2. Imisave 3. Grevillea robusta

11. What is the area of the savannah compared to agricultural land?	Savannah: 50% Agricultural land: 50%	
12. Agroforestry species/ha (baseline)	Unknown results	
13. Do surrounding communities grow livestock?	V	
14. Do surrounding communities practice organic composting?	V	
15. Do surrounding communities use chemical fertilizers?	V (Urée, DAP)	
16. How many hectares of terraces in the areas?	130 ha of progressive terraces	
17. What types of terraces are there?	Progressive terraces	
18. How many additional hectares terraces needed?	There is no need	
19. What the rain water harvesting techniques in use?	k. Household level 400 households have Water thanks for rain water harvesting l. Agricultural level 15 households have the small pump machines used for irrigation	
20. What are current/past initiatives in the area?	1. Terraces by PAIGELAC project 2. Distribution of Water harvesting thanks by LWF 3. 5 water ponds and “5 machines à pédale” by AAP	
21. What are NGOs/cooperatives operating in the area? What are they working on?	-	
22. How many cells are around the site?	1. Karambi	Population: 5,300 Household: 1,050
	2. Kiyovu	Population: 4, 780 Households: 970
23. What infrastructures are available?	Roads Main Road well managed only Schools (number & types) One G.S, Three Primary schools and One Twelve YBE Health facilities No Health Center in this Cell. They have only 1 Health Center in all Ndego sector Sanitation systems -	
24. Number of teachers?	1. G.S Ndego II: 35 Teachers (21 male & 14 Female) 2. Two Primary schools (Ndego I and Amahoro): 24Teachers (16 male & 8 Female) 3. Twelve YBE: 21Teachers (18 male & 3 Female)	
25. How many students?	1. G.S Ndego II: 2,246 Students (1,138 male & 1,108 Female) 2. Two Primary schools (Ndego I and Amahoro): 1,773 Students 3. Twelve YBE: 351 Students (176 male & 175 Female)	
26. How many schools with environmental clubs?	We have one environmental club on each school but, they ate not operational	
27. What are the sources of energy?	1. Fire wood 2. Charcoal 3. Solar energy at Sector’s Office only	
28. Three main economic activities in the surrounding communities?	1. Agriculture 2. Livestock 3. Fishing	

29. Describe gender equity issues	Percentage of women having Mutuelle: 54 % (MUSA) Percentage of girls in primary and secondary schools: • Schools : 34 % (Teachers) % of involvements of women in income generating activities: 54 %
30. What is the average income per household per day?	1,500 Rwf/Day
31. What is the average annual income per household (USD)?	450,000 Rwf/Year (750 USD)
32. Do surrounding communities do fishing?	Yes (in Rwakibare and Kagese Lakes)
33. Do communities do beekeeping?	Yes (Around Rwakibare Lake)
34. What crops do grow in the area? And productivity (kg/ha)?	1. Cassava: 18T/ha 2. Maize: 3T/ha 3. Sorghum: 2T/ha 4. Beans: 1.2T/ha 5. Soya beans: 1.2T/ha 6. Sun flowers: 500 Kg/ha
35. What are the main problems of the communities around the site? (Economical, environmental, health, social, governance…)	1. Drought 2. Water shortage 3. Crop damaged by Hippopotamus 4. Resistance of people 5. No respect of programmes and plans for the previous projects
36. From the point of view of exploitation, how is the site used by surrounding communities?	1. Grazing 2. Fishing 3. Tree cutting and firewood 4. Agriculture
37. How will LDCF 2 site activities negatively affect the surrounding communities?	-
38. How will LDCF 2 site activities positively affect the surrounding communities?	1. Savannah restoration and environmental protection in general 2. Community will get money from the various activities related to the implementation of the project
39. What could be done to ensure community support for LDCF 2 activities in the site?	1. Sensitize the population to maintain the project activities 2. Formulation/Establishment of cooperatives 3. Multiplication of alternative activities 4. Reinforcement of existing Environment community 5. Involvement of the community in all project activities

KAYONZA, MWIRI, KAGEYO

1. Name of the site	KAGEYO
2. Location of the site (District and sector(s))	MWIRI Sectot; KAYONZA District
3. Type of selected site	□ Savannah □ Wetland: V □ Forest
4. Proposed LDCF 2 activities for the site	1. Wetland restoration: V 2. Forest restoration 3. Creation of Agro-forests: V 4. Introduction of climate resilient agricultural practices 5. Resilient livelihoods in households
5. Surface area to be restored (ha)	500 ha
6. Baseline area (ha)	1,000 ha
7. What are tree indigenous species in the	1. Acacia sieberiana

site?	2. Shrubs in general 3. 4.	
8. What are other species of conservation interest found in the site?	1. Eucalyptus camaldulensis 2. Acacia 3. Grevillea robusta 4. Casualina	
9. What are the main plant species in the savannah?	There is no savannah in this area	
10. What are tree species planned for the site restoring?	Relevant threes for agroforestry and for fruits	
11. What is the area of the savannah compared to agricultural land?	There is no distinction because the available space is used for agriculture and for livestock	
12. Agroforestry species/ha (baseline)	Unknown results	
13. Do surrounding communities grow livestock?	V	
14. Do surrounding communities practice organic composting?	V	
15. Do surrounding communities use chemical fertilizers?	V	
16. How many hectares of terraces in the areas?	No	
17. What types of terraces are there?	No	
18. How many additional hectares terraces needed?	There is no need	
19. What the rain water harvesting techniques in use?	m. Household level 400 households have Water thanks for rain water harvesting n. Agricultural level They use traditional methods for irrigation	
20. What are current/past initiatives in the area?	1. Tree planting by RESERVE FORCE 2. Distribution of “Rondereza” and Seedlings by ADRA 3. Water supply by WATER LIVING INTERNATIONAL 4.	
21. What are NGOs/cooperatives operating in the area? What are they working on?	1. WINIROCK/RWISP 2. RSSP 3. KEPECO (Kayonza Environmental Protection Cooperative)	
22. How many cells are around the site?	1. KAHI in Gahini sector	Population:…… Household:……
	2. NYAMUGALI in Mwiri Sector	Population:……. Households:……
	3. MUKOYOYO in Rwinkwavu Sector	Population:……. Households:……
23. What infrastructures are available?	Roads Main Road well managed only Schools (number & types) 2 Primary Schools Health facilities 1 Health Center Sanitation systems No specific	
24. Number of teachers?	1. RWISIRABO Primary School: 21 Teachers 2. NDAGO Primary School: 12 Teachers	
25. How many students?	1. RWISIRABO Primary School: 1,274 Students 2. NDAGO Primary School: 1,069 Students	

26. How many schools with environmental clubs?	We have Environmental club in each school
27. What are the sources of energy?	1. Fire wood 2. Charcoal 3.Solar energy at School and at Health Center 4.
28. Three main economic activities in the surrounding communities?	1. Agriculture 2. Livestock 3.Commerce 4. Handcraft (“Uduseke” from “Urukangaga”) in “UMOJA” cooperative 5.
29. Describe gender equity issues	Percentage of women having Mutuelle: 65 % (MUSA) Percentage of girls in primary and secondary schools: • RWISIRABO Primary School: 59 % • NDAGO Primary School: 49.7 % % of involvements of women in income generating activities: 70 %
30. What is the average income per household per day?	1,500 Rwf/Day
31. What is the average annual income per household (USD)?	450,000 Rwf/Year (750 USD)
32. Do surrounding communities do fishing?	No
33. Do communities do beekeeping?	No
34. What crops do grow in the area? And productivity (kg/ha)?	1. Sorghum: 30T/ha 2. Maize: 25T/ha 3. Beans: 15T/ha 4. Soya beans: 5T/ha 5.
35. What are the main problems of the communities around the site? (Economical, environmental, health, social, governance…)	1. Drought 2. Water shortage 3. Lack of electricity 4. Resistance of people 5.
36. From the point of view of exploitation, how is the site used by surrounding communities?	1. grazing 2. fishing 3. tree cutting and firewood 4. agriculture 5. other (specify) …….
37. How will LDCF 2 site activities negatively affect the surrounding communities?	-
38. How will LDCF 2 site activities positively affect the surrounding communities?	1. Climate vulnerability reduced 2. Increase of production (Agroforestry and Wetland restoration) 3. To combat malnutrition 4. Income per household increased
39. What could be done to ensure community support for LDCF 2 activities in the site?	1. Sensitize the population to maintain the project activities 2. Formulation/Establishment of cooperatives 3. …

NGORORERO, BWIRA AND SOVU, SATINSYI RIVER

40. Name of the site	Satinsyi river catchment
41. Location of the site (District and sector(s))	District :Ngororero Wetland covers two sectors : Bwira and Sovu

	In Bwira, the wetland stretches in Gashubi, Bungwe and Cyahafi cells. In Sovu it extends on 4 cells which are Nyabipfura, Kanyana, Musenyi and Rutovu	
42. Type of selected site	□ Savannah V Wetland □ Forest	
43. Proposed LDCF 2 activities for the site	1. Wetland restoration and resilient agricultural practices on hillsides in order to reduce sediment transport to the water body: • River bank protection by planting fodder plants like Pennisetum purpureum • Agroforestry practices on hillsides • Terracing on hillsides Bee-keeping can also apply	
44. Surface area to be restored (ha)	• For river banks: 89,6ha • For agroforestry and terracing 4122ha	
45. Baseline area (ha)	• For river bank protection 10ha • For agroforestry….. • Terracing…….	
46. What are tree indigenous species in the site?	none	
47. What are other species of conservation interest found in the site?	None	
48. What are the main plant species in the savannah?	1. 2. 3.Not applicable 4.	
49. What are tree species planned for the site restoring?	Persea gratissima, Calliandra calothyrsus, Psidium guajava and Alnus acuminata	
50. What is the area of the savannah compared to agricultural land?	Not applicable	
51. Agroforestry species/ha (baseline)	50trees/ha	
52. Do surrounding communities grow livestock?	Yes	
53. Do surrounding communities practice organic composting?	Yes using grasses and manure from animals	
54. Do surrounding communities use chemical fertilizers?	Yes. Like DAP and urea	
55. How many hectares of terraces in the areas?	Refer to number 6	
56. What types of terraces are there?	Bwira:Progressive terraces Sovu: progressive and radical	
57. How many additional hectares terraces needed?	3822ha	
58. What the rain water harvesting techniques in use?	o. Household level …… p. Agricultural level Not applicable	
59. What are current/past initiatives in the area?	Distribution of agroforestry seedlings in the context of Vision Umurenge Programme (VIUP)	
60. What are NGOs/cooperatives operating in the area? What are they working on?	Two local cooperatives. Imboni (coffee grower) and Icyerekezo (Maize grower)	
61. How many cells are around the site?	There are 5 cells plz refer to 1	Population:35,142 Household: 8356 4.1per/HH

62. What infrastructures are available?	**Roads** There are few and poorly managed Schools (number & types) Primary Schools: there are five primary schools (Bungwe A, Kanyana B, Kagano B, Rutovu and Nyabipfura) Three 9 Years Basic Education Schools : Gashubi, Kanyana A and Kagano A One 12 Years Basic Education School: Bungwe B Health facilities: There are 4 Health Centers Sanitation system: Pit latrines
63. Number of teachers?	Bungwe A : 10 Kanyana B: 15 Kagano B: 9 Rutovu:10 Nyabipfura: 10 Bungwe B: 39 Gashubi: 37 Kanyana A: 17 Kagano A :20 **Total: 150**
64. How many students?	Bungwe A: 525 Kanyana B: 894 Kagano B: 590 Rutovu : 640 Nyabipfura: 605 Bungwe B: 1667 Gashubi: 1915 Kanyana A: 749 Kagano A: 977 **Total: 8562**
65. How many schools with environmental clubs?	All nine schools have environmental clubs
66. What are the sources of energy?	1. Wood 2. Kerosene 3. 4. 5. …
67. Three main economic activities in the surrounding communities?	1. Agriculture 2. Mining 3.
68. Describe gender equity issues	Percentage of women having Mutuelle: Percentage of girls in primary and secondary schools: % of involvements of women in income generating activities: Women and men are equally involved in the economic activities, boys and girls have same chance to have access to education
69. What is the average income per household per day?	
70. What is the average annual income per household (USD)?	
71. Do surrounding communities do fishing?	No
72. Do communities do beekeeping?	Yes. Gashubi Cooperative named COTIDU
73. What crops do grow in the area? And productivity (kg/ha)?	1. Beans : 1,2 t/ha 2. Maize : 2,5 t/ha 3. Bananas : 25 t/ha 4. Casava: 15 t/ha 5.

74. What are the main problems of the communities around the site? (Economical, environmental, health, social, governance…)	1. High soil erosion which affects the land productivity 2. Water pollution by sediment load from hillsides 3. Limited health facilities 4. 5.
75. From the point of view of exploitation, how is the site used by surrounding communities?	The site is mainly used for agriculture but also used for mining
76. How will LDCF 2 site activities negatively affect the surrounding communities?	No negative effects
77. How will LDCF 2 site activities positively affect the surrounding communities?	The implementation of the activities of the proposed project in this area will increase land productivity, provide local community with tree (source of wood, and fruits), provide local community with fodder plants for livestock and protection of the river as a source of water. Briefly, LDCF 2 will improve the livelihood of the local community.
78. What could be done to ensure community support for LDCF 2 activities in the site?	1. Awareness raising through training 2. Involvement of local communities in the implementation of the project

NGORORERO, MUHORORO, SANZA

High vulnerability of local communities to climate change impacts	The local communities in Sanza Cell rely on agriculture and livestock for their livelihood. However, the high density of the population (477people/sqkm), land scarcity, high slopes combined with poor farming practices expose the area to the severe effects of climate change such as soil erosion and landslides. This lead to the degradation of forest resources in search for agricultural land, pasture and firewood and also to the illegal mining activities which have devastated the natural forest.
High vulnerability of the ecosystem to climate change impacts & High ecosystem degradation	• Sanza is a natural remnant forest located between 1777m and 1991m of altitudes in Western Province, Ngororero district, Muhororo sector, in Sanza Cell. The total surface area covered by the forest is 20 hectares. The presence of grass species like *Digitaria sp.*, *Eragrostis sp.* and *Isachne mauritiana*, in the outer portions of Sanza forest reveals the anthropogenic activities which can contribute to the extinction of some natural plant species. In total, 135 plant species have been recorded in Sanza relict forest, and among them orchids (endemic), *Eucalyptus sp.* (exotic) and *Plantago palmata* (medicinal) are examples. Exotic species like *Pinus patula* is found inside the forest. Albertine Rift Endemic species like orchids (*Satyrium trinerve*) and *Impatiens burtonii* are also found within Sanza. On one side, *Alnus sp.* trees constitute a buffer on the boundary of this relict forest. In addition to these plants and tree species, Sanza constitutes a habitat for a number of wild animals; 39 bird species and some mammals such as Servaline genet, Mongoose, Jackal and Gambian rats have been found in this forest. • Ngororero District is one of the western regions which is affected by the impacts of climate change such as landslides and high soil erosion.These have direct impacts on agricultural production in the region. The decrease in food production from agricultural land, lack of enough area for pasture and lack of firewood in the area surrounding forests are the main drivers which contribute to their degradation. • In the same context, the communities around Sanza forest cut trees to acquire new land for agriculture extension to increase food production, grazing for their livestock, firewood collection, charcoal and collection of plants materials for handcrafts. • Another main factor that is destroying Sanza forest is the illegal mining activities. As the productivity of land is decreasing the local communities find mining activities as an alternative way of increasing their income, therefore destroying the forest trees in order to get sand and stone which are then sold as

	construction materials. • In general, all these activities have taken away a forest cover of around 20ha from Sanza forest.
High potential of restored ecosystem to buffer extreme events such as droughts, floods and landslides	The restoration of 20 hectares of Sanza remnant forest plus 60ha of agroforestry trees in the area surrounding the forest will provide potential for reducing recurrent landslides and soil erosion but also, will contribute to the water quality improvement in Satinsyi River.
High potential to improve productivity of small-scale/traditional practices	Increase in forest cover in the area combined with the agroforestry activities will reduce soil degradation, therefore increasing agricultural production. In additional to this, the restored ecosystem forest will provide other services to the local population such as beekeeping, which will raise the income for them.
High potential to complement and/or upscale related projects/initiatives	The restoration of Sanza forest has a high potential to complement or even to upscale a good number of project activities that have been/being implemented in the area nearby Sanza forest to restore and protect Gishwati and Mukura forests. These include: • PAREF Project that was implemented in three Districts (Rutsiro, Ngororero and Nyabihu) with the objective of increasing the forest cover in Gishwati forest through forest management, protection and restoration; • Gishwati Forest protection which is being implemented by Forest of Hope Association; • Reducing Vulnerability to Climate Change by Establishing Early Warning and Disaster Preparedness Systems and Support for Integrated Watershed Management in Flood Prone Areas, project funded by LDCF; • Forest Model project which will increase the awareness on Gishwati forest management in the four Districts Nyabihu, Musanze, Rubavu, Rutsiro; • Mukura Forest protection activities which are being implemented by ARCOS; and • LAFREC which will restore Mukura Forest.
Availability of policies and legislation	A number of policies and legislations are in place to support and sustain this project. These are: • The National Forest Policy (2010) which gives provisions for Rwanda's forest biodiversity shall be conserved and used wisely in support of local and national socio-economic development and international environmental obligations; • The revised Forest Law (2012) determining the management and utilization of forests in Rwanda; • The biodiversity policy; • Environmental policy; • Mining Policy and Mining Law; and • Agriculture policy
Communities willingness to take ownership of the project	The local communities are used to participate and collaborate in the implementation of governmental projects/programmes. This shows that once the project will be lauched, the local communities will participate in the implementation and play a great role to sustain the benefits of the project once the project will be closed.
Poverty rate/level	Poverty is another important contributing factor to vulnerability to climate change in the area surrounding the Sanza forest. According to the District report, around 24% of households in Sanza Cell live under the poverty line.
Gender (families headed by women)	The number of households headed by women is 189. This is equivalent to 21.7%.
Proximity to national parks and potential to form biodiversity corridors between parks/ecotones to allow species migration	Sanza forest is located at 22km from Mukura Forest. Previous assessment in Sanza forest has shown that this forest is the habitat of different species of birds and mammals. The restoration of Sanza will increase the area of habitat where some birds and mammals may migrate to from nearest natural forests.

Appendix 24: Linkages between the proposed project's Components, Outcomes and Outputs, including related activities.