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Report No: {ReportNo}

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED GRANT FROM THE
GLOBAL ENVIRONMENT FACILITY TRUST FUND
IN THE AMOUNT OF US$ 5.49 MILLION

AND A

PROPOSED GRANT FROM THE
LEAST DEVELOPED COUNTRIES FUND
IN THE AMOUNT OF US$ 4.05 MILLION

TO THE

REPUBLIC OF RWANDA

FOR A

LANDSCAPE APPROACH TO FOREST RESTORATION AND CONSERVATION
(LAFREC) Project (P131464)
{RVP/CD CLEARANCE DATE - SAME AS ON MOP}

Environment, Water Resources and Disaster Risk Management Unit (AFTN2)}
Africa Region

FISCAL YEAR
July 1 – June 30

ABBREVIATIONS AND ACRONYMS

ARCOS	Albertine Rift Conservation Society
CDD	Community-Driven Development
CFAA	Country Financial Accountability Assessment
CPS	Country Partnership Strategy
CQS	Consultant Qualification
DA	Designated Account
DAF	Director of Finance and Administration
DC	Direct Contracting
DEMP	Decentralization and Environment Management Project
DPCT	District Project Coordination Team
DRC	Democratic Republic of Congo
DRM	Disaster Risk Management
EAC	East African Community
EDPRS	Economic Development and Poverty Reduction Strategy
ENRSSP	Environment and Natural Resources Sector Strategic Plan
ERR	Economic Rate of Return
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
EWS	Early Warning System
FA	Framework Agreements
FAO	Food and Agriculture Organization
FBS	Fixed budget Selection
FM	Financial Management
FMS	Financial Management Specialist
FONERWA	National Fund for Environment and Climate Change
GACP	Gishwati Area Conservation Program
GDP	Gross Domestic Product
GEF	Global Environment Facility
GEO	Global Environment Objective
GIS	Global Information System
GNI	Gross National Income
GoR	Government of Rwanda
GWLM	Gishwati Water and Land Management
IBRD	International Bank for Reconstruction and Development
IC	Individual Consultant
ICB	International Competitive Bidding
ICGLR	Internal Conference on Great Lakes Region
ICR	Implementation Completion and Results Report
ICRAF	World Agroforestry Centre
IDA	International Development Association

IEG	Internal Evaluation Group (of World Bank)
IFAC	International Federation of Accountants
IFMIS	Integrated Financial Management Information System
IFR	Internal Financial Report
ILO/ITC	International Training Center of the International Labor Organization
IMF	International Monetary Fund
IPMP	Integrated Pest Management Plan
IPSAS	International Public Sector Accounting Standards
IS	Implementation Support
IT	Internal Tender
ITC	Internal Tender Committee
IUCN	World Conservation Union
JADF	Joint Action Development Forum
LCS	Least-Cost Selection
LDCF	Least Developed Country Fund
LIB	Limited International Bidding
LVEMP	Lake Victoria Environmental Management Program
LWH	Land Husbandry, Water Harvesting & Hillside Irrigation project (of the World Bank)
M&E	Monitoring and Evaluation
MAB	Man and Biosphere (program of UNESCO)
METT	Protected Areas Management Effectiveness Tracking Tool
MIDIMAR	Ministry of Disaster Management and Refugee Affairs
MINAGRI	Ministry of Agriculture and Animal Resources
MINALOC	Ministry of Local Government
MINECOFIN	Ministry of Finance and Economic Planning
MINIRENA	Ministry of Natural Resources
MIS	Management Information System
MoU	Memorandum of Understanding
Mt	Megaton
MTEF	Medium Term Expenditure Framework
NAEB	National Agricultural Exports Development Board
NAPA	National Adaptation Program of Action
NCB	National Competitive Bidding
NGO	Non-Governmental Organization
NPSC	National Project Steering Committee
NTFP	Non-Timber Forest Product
NVP	Net Present Value
OAG	Office of the Auditor General
OBL	Organic Budget Law
ODA	Official Development Assistance
OECD	Organization for Economic Cooperation and Development
OP/BP	Operational Policy/Bank Procedure
PAREF	Reforestation Support Project
PDO	Project Development Objectives
PES	Payment for Environmental Services
PFM	Public Financial Management
PIF	Project Identification Form (for GEF)

PIM	Project Implementation Manual
PPP	Purchasing Power Parity
PSC	Project Steering Committee
PU	Procurement Unit
QBS	Quality Based Selections
QCBS	Quality and Cost Based Selection
RAB	Rwanda Agriculture Board
RAP	Resettlement Action Plan
RDB	Rwanda Development Board
REMA	Rwanda Environment Management Authority (of MINIRENA)
RMA	Rwanda Meteorology Agency
RNRA	Rwanda Natural Resources Authority (of MINIRENA)
RPF	Resettlement Policy Framework
RPPA	Rwanda Public Procurement Authority
RSSP	Third Rural Sector Support Project
RWF	Rwandan Franc
SFB	School of Finance and Banking
SL(W)M	Sustainable Land (and Water) Management
SOE	Statement of Expenditures
SOP	Standard Operating Procedures
SPIU	Single Project Implementation Unit
SRFP	Standard Request for Proposals
SSS	Single-Source Selection
SWOT	Strengths-Weaknesses-Opportunities-Threats analysis
TA	Technical Assistance
TC	Tender Committee
tCO_2eq	tons of carbon dioxide-equivalent
TEV	Total Economic Value
TTL	Task Team Leader
UK	United Kingdom
UNDP	United Nations Development Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNOPS	United Nations Office for Project Services
UOM	Unit of Measurement
USA	United States of America
WA	Withdrawal Application
WB	The World Bank
WCS	Wildlife Conservation Society
WMO	World Meteorological Organization
WRI	World Resources Institute
WWF	Worldwide Fund for Nature

Regional Vice President:	Makhtar Diop
Country Director:	Diarietou Gaye
Sector Director:	Jamal Saghir / Paula Caballero
Sector Manager:	Jonathan S. Kamkwalala / Magda Lovei
Task Team Leader:	Stephen Ling

RWANDA
LANDSCAPE APPROACH TO FOREST RESTORATION AND CONSERVATION PROJECT

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PAD DATA SHEET

Rwanda

Landscape Approach to Forest Restoration and Conservation (LAFREC) (P131464)

PROJECT APPRAISAL DOCUMENT

AFRICA

AFTN2

Report No.: PAD1041

Basic Information			
Project ID P131464	EA Category B - Partial Assessment		Team Leader Stephen Ling
Lending Instrument Specific Investment Loan	Fragile and/or Capacity Constraints [ ]		
	Financial Intermediaries [ ]		
	Series of Projects [ ]		
Project Implementation Start Date 01-Jan-2015	Project Implementation End Date 31-Dec-2019		
Expected Effectiveness Date 15-Dec-2014	Expected Closing Date 31-Dec-2019		
Joint IFC No			GEF Focal Area Multi-focal area
Sector Manager Jonathan S. Kamkwalala	Sector Director Jamal Saghir	Country Director Diarietou Gaye	Regional Vice President Makhtar Diop
Borrower: MINECOFIN			
Responsible Agency: REMA-MINELA			
Contact: Telephone No.:		Title: Email:	
Project Financing Data(in USD Million)			

[ ]	Loan	[ ]	IDA Grant	[ ]	Guarantee
[ ]	Credit	[X]	Grant	[ ]	Other

Total Project Cost:	9.53	Total Bank Financing:	0.00
Financing Gap:	0.00		

Financing Source	**Amount**
Borrower	0.00
Global Environment Facility (GEF)	5.49
Least Developed Countries TF for Climate Change Activities	4.05
Total	9.53

Expected Disbursements (in USD Million)

Fiscal Year	2015	2016	2017	2018	2019	2020	0000	0000	0000
Annual	0.87	1.94	2.05	1.86	1.85	0.96	0.00	0.00	0.00
Cumulative	0.87	2.81	4.86	6.72	8.57	9.53	0.00	0.00	0.00

Proposed Global Environmental Objective(s)

The project development and the global environmental objective is to demonstrate landscape management for enhanced environmental services and climate resilience in one priority landscape.

Components

Component Name	**Cost (USD Millions)**
Forest-friendly and climate-resilient restoration of Gishwati-Mukura landscape	10.88
Research, monitoring and management	1.30

Institutional Data

Sector Board

Environment

Sectors / Climate Change

Sector (Maximum 5 and total % must equal 100)

Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %
Agriculture, fishing, and forestry	Forestry	80		80

Water, sanitation and flood protection	Flood protection	10	100	
Agriculture, fishing, and forestry	Irrigation and drainage	10	50	
Total		100		

☐ I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.

Themes

Theme (Maximum 5 and total % must equal 100)

Major theme	Theme	%
Environment and natural resources management	Other environment and natural resources management	35
Environment and natural resources management	Climate change	24
Social protection and risk management	Natural disaster management	21
Environment and natural resources management	Biodiversity	20
Total		100

Compliance

Policy

Does the project depart from the CAS in content or in other significant respects?	Yes [ ] No [X]
Does the project require any waivers of Bank policies?	Yes [X] No [ ]
Have these been approved by Bank management?	Yes [X] No [ ]
Is approval for any policy waiver sought from the Board?	Yes [ ] No [X]

Explanation:

As the project involves some limited hydrological studies (but no works) related to flood forecasting management, the task team has been advised that the project triggers OP 7.50 on International Waters, but falls within the list of Exceptions for notification of other riparian states under paragraph 7(b) of the Policy. This Exception was granted by the Regional Vice President on May 20, 2014

Does the project meet the Regional criteria for readiness for implementation?	Yes [X] No [ ]

Safeguard Policies Triggered by the Project	**Yes**	**No**
Environmental Assessment OP/BP 4.01	**X**	
Natural Habitats OP/BP 4.04	**X**	

Forests OP/BP 4.36	**X**	
Pest Management OP 4.09	**X**	
Physical Cultural Resources OP/BP 4.11	**X**	
Indigenous Peoples OP/BP 4.10		**X**
Involuntary Resettlement OP/BP 4.12	**X**	
Safety of Dams OP/BP 4.37		**X**
Projects on International Waterways OP/BP 7.50	**X**	
Projects in Disputed Areas OP/BP 7.60		**X**

Legal Covenants

Name	**Recurrent**	**Due Date**	**Frequency**
Project Steering Committee		30-Dec-2014	

Description of Covenant

The Recipient shall establish and thereafter maintain throughout Project implementation, a Project Steering Committee (PSC).

Name	**Recurrent**	**Due Date**	**Frequency**
Project coordinator & accountant		30-Dec-2014	

Description of Covenant

The Recipient shall cause the Project Implementing Entity to appoint and thereafter maintain throughout Project Implementation, a Project Coordinator, an additional accountant and an additional procurement specialist.

Name	**Recurrent**	**Due Date**	**Frequency**
District Project Coordination Teams		01-Mar-2015	

Description of Covenant

The Recipient shall cause the Project Implementing Entity to establish and thereafter maintain throughout Project implementation in each District in which the Project is to be implemented, a District Project Coordination Team.

Name	**Recurrent**	**Due Date**	**Frequency**
Gishwati Integrated Landscape Planning Working Group		01-May-2015	

Description of Covenant

The Recipient shall cause the Project Implementing Entity to establish the Gishwati Integrated Landscape Planning Working Group with functions satisfactory to the World Bank and with adequate resources to carry out its functions under the Project.

Name	Recurrent	Due Date	Frequency
Work plans	X		Yearly

Description of Covenant

The Recipient shall ensure and cause the Project Implementing Entity to prepare and furnish to the World Bank by May 30, an annual program of activities proposed for implementation under the Project during the following Fiscal Year, together with a proposed budget for the purpose.

Name	Recurrent	Due Date	Frequency
Audit Committee		30-Dec-2014	

Description of Covenant

The Recipient shall cause the Project Implementing Entity to establish and thereafter maintain throughout Project implementation an internal audit committee.

Conditions

Source Of Fund	Name	Type

Description of Condition

Team Composition

Bank Staff

Name	Title	Specialization	Unit
Mary Y. Jackson	Temporary	Team Assistant (DC)	AFTN2
Antoinette Kamanzi	Procurement Assistant	Procurement Assistant	AFMRW
Jane A. N. Kibbassa	Senior Environmental Specialist	Environmental safeguards	AFTN3
Julian Lee	Environmental Specialist	Landscape management, operational support	AES
Stephen Ling	Natural Resources Mgmt. Spec.	Team Lead	AFTN3
Stephen Mugendi Mukaindo	Counsel	Counsel	LEGAM
Francis M. Muraya	Disaster Risk Management Specialist	Disaster Risk Management Specialist	AFTN2
Belinda Mutesi	Team Assistant	Team Assistant (RW)	AFMRW
Valens Mwumvaneza	Rural Development Specialist	Rural Development Specialist	AFTA2

Lillian Brenda Namutebi	Consultant	FM Specialist	AFTME
Constance Nekessa-Ouma	Social Development Specialist	Social Development Specialist	AFTCS
Yasmin Tayyab	Senior Social Development Specialist	Senior Social Development Specialist	AFTCS
Pascal Tegwa	Senior Procurement Specialist	Senior Procurement Specialist	AFTPE

Non Bank Staff

Name	Title	City

Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
Rwanda	Western Province	Western Province	**X**		

I. STRATEGIC CONTEXT

A. Country Context

1. Rwanda, a small, landlocked and mountainous country, is subject to some of the highest demographic pressures in Sub-Saharan Africa, with a population estimated at 11 million, growing at 2.6% p.a., while only 52% of its land is arable. Mean landholdings are very small: 60% of households cultivate less than 0.7 ha, and more than 25% less than 0.2 ha, typically divided between tiny, scattered plots. Rwanda remains among Africa's poorest countries, despite having made significant progress in the past decade. In 2013, GDP per capita stood at $ 693 ($1,332 measured at PPP). Despite impressive growth rates averaging 7.2% between 2008 and 2013, poverty remains deep and pervasive, with the poverty headcount ratio at $1.25 a day (PPP) sitting at 63.2% in 2011. More than 90% of the poor live in rural areas. In recent years, ODA reached 26% of GDP, or $64 per capita, driven by severe need, but also by impressive results in improving indicators of social well-being. From 2005 onwards, the OECD has consistently rated Rwanda as one of the countries that uses aid most effectively. Recent political events have severely impacted the reliability of some forms of donor support, however.

2. Much of Rwanda's economy depends directly upon its land, water and biodiversity resources – that is on its landscapes. The agricultural sector accounts for about 32.7% of GDP (2012), 80% of employment, and in 2010, 45% of foreign exchange earnings (mostly from tea and coffee). Around 50% of power generation comes from (small-scale) hydropower, and 85% of the domestic energy supply in the country is from wood fuels. In addition to ecological services supporting these sectors, biodiversity makes a substantial direct contribution to the economy through tourism, which was Rwanda's largest foreign exchange earner (at $251m) in 2011. Leisure tourism is almost exclusively nature-based, with gorilla-watching in Volcanoes National Park being the flagship, but with other protected areas, especially Nyungwe and Akagera National Parks growing in importance.

3. Steep terrain and the highest population density in sub-Saharan Africa make sustainable land and landscape management strict necessities for Rwanda's natural-resource-dependent sectors. Between 2000 and 2011, the agricultural sector accounted for 31-47% of the national GDP and 71% of export revenues. It is also the main source of income for 87% of Rwandans. Agricultural productivity is low, with yields of several key crops lagging behind other sub-Saharan African countries. About 40% of Rwanda is classified as being at very high risk to high erosion, 75% is classified as "highly degraded" by FAO, and the country has one of the highest negative nutrient balances in sub-Saharan Africa with more than 14 million tons of soil being lost each year.

4. Almost two thirds of forests have been lost since independence, and currently the country has about 20% forest cover. Remote sensing completed in 2007 indicates that forests (natural montane forests, savannah forests, and tree plantations) cover about 330,576 ha (of which 215,739 ha are natural forests and 114,837 ha tree plantations). Other forest resources (small wood lots, agroforestry trees) account for another 222,520 ha, bringing total forest cover to 553,098 ha. Forest ecosystems in Rwanda are primarily contained within the protected transboundary areas of Akagera National Park, Nyungwe National Park, and Volcanoes National Park, and within Gishwati Forest Reserve, Iwawa Island Forest Reserve and Mukura Forest Reserve. Protected areas have been encroached and reduced in size through successive

re-gazetting. In addition to these protected forest areas, Rwanda also contains remnant terrestrial ecosystems that have resulted from the fragmentation of former larger ecosystems. In order to reverse deforestation, the government has embarked on a vigorous afforestation program, aiming to achieve 30% forest cover by 2020.

5. Forests in Rwanda provide wood fuel, food, construction materials and medicinal herbs to local communities. Forests also support a series of economic activities in the agriculture, tourism and energy industries. Their ecological roles include acting as a biodiversity repositories, groundwater and stream recharge, flood control and regulators of regional and microclimates.

6. The average temperature in Rwanda has increased over the last twenty years, while rainy seasons are becoming shorter with higher intensity. Climatic factors, exacerbated by loss of forest and vegetation cover, steep slopes and high dependence on traditional rain-fed agriculture, are causing a variety of impacts. The eastern and southeastern regions (Umutara, Ngoma, Bugesera and Mayaga) are most affected by prolonged drought, while the northern and western regions (Musanze, Rubavu, Nyamagabe and Huye) experience abundant rainfall that causes erosion, flooding and landslides. These extreme climate events have adverse impacts on agricultural productivity. For instance, 2008 harvests were negatively affected by serious droughts that came at the beginning of both planting seasons.

B. Sectoral and Institutional Context

7. Rwanda's long-term development vision articulated in the Rwanda Vision 2020 document is to become a lower middle income economy operating as a knowledge-based service hub by 2020. Within this long-term vision, the first Economic Development and Poverty Reduction Strategy (EDPRS) focused on growth and governance. EDPRS II (2013-2018) highlights four thematic areas: (i) economic transformation, including green growth; (ii) rural development; (iii) productivity and youth employment; and (iv) accountable governance. It also identified environment and climate change, and disaster management as cross-cutting issues to be mainstreamed throughout all sectors. The proposed project is aligned with the thematic areas under specific programs, such as intensification of sustainable agriculture systems, rehabilitation of ecosystems, enhancing cross-sectoral coordination and implementation through local government, and use of local labor.

8. A number of sectoral strategies further elaborate goals germane to the project, many of which are also reflected in the Environment and Natural Resources Sector Strategic Plan (ENRSSP, 2009), and programs of agricultural intensification through terracing and a comprehensive national land titling program form part of the Agriculture Sector Strategic Plan. Rwanda's National Adaptation Plan of Action (NAPA, 2006) identifies the Northern and Western provinces in Rwanda as priority areas due to risks of floods and landslides, which led to the choice of the Gishwati forest area as the main focus for implementation of adaptation investments under the proposed project. The project will contribute to the implementation of the following strategies outlined in Rwanda's National Biodiversity Strategy and Action Plan (NBSAP): (i) Research and promotion of technologies adapted to a rational use of biological resources; (ii) Strengthening of partnership and constitution of actors networks for the promotion of conservation of biodiversity and sustainable use of biological resources; (iii) Development of alternatives to the use of wood fuels, including promotion of energy saving

technologies; and (iv); Increased benefits obtained by grassroots communities from the use biological diversity through sustainable management of natural and agro-ecosystems. There are also a number of recent and current projects in related sectors, including the World Bank-financed Land Husbandry, Water Harvesting and Hillside Irrigation Project (LWH – which is investing in terracing), the Lake Victoria Environmental Management Project (LVEMP – which aims to improve the health of the Lake Victoria basin), and a UNEP / UNDP LDCF grant focused on enhancing community resilience to climate shocks in the Nile-Congo Crest area. The latter two are implemented by the Rwanda Environment Management Authority (REMA) (see Annex 2 for more details). The Rwanda Development Board (RDB) has also identified the east shore of Lake Kivu as a focal area for tourism development. The completion of a sealed road along the length of the Lake (currently under construction) should make the "Kivu Belt" a scenic overland link between the Volcanoes and Nyungwe National Parks – two of the country's largest attractions.

9. Rwanda has a relatively comprehensive and progressive legislative framework, and has established agencies to work cross-sectorally to support natural resource management, notably REMA and the Rwanda Natural Resources Authority (RNRA) within the Ministry of Natural Resources (MINIRENA). In addition, a National Fund for Environment and Climate Change (FONERWA) has been established to address cross-sector financing needs. Rwanda also recognizes the importance of engaging multiple stakeholders and has established mechanisms including regular cross-sectoral planning meetings and the Joint Action Development Forums (JADF), consultative platforms used for promoting cooperation between the private sector, civil society and the public sector. Nevertheless, in the face of extremely high pressure on land and inevitable trade-offs required in land use, effective collaboration is still a challenge. A 2011international stakeholder consultation on forest landscape restoration in Rwanda organized by IUCN and MINIRENA revealed: conflicting targets and indicators between sectors; inadequate appreciation of environmental issues and capacity amongst non-environment sectors (e.g. infrastructure) resulting in limited use of existing coordination platforms; and a need to broaden civil society, private sector and, in particular, vulnerable groups in evidence-based planning and decision-making processes.

C. Higher Level Objectives to which the Project Contributes

10. The new FY14-18 CPS is in the process of being finalized. The CPS consistent with the donor division of labor whereby the Bank agreed with GoR to prioritize engagement in three sectors—agriculture, energy, and urban development—as well as some cross-sector areas. Although stand-alone IDA investments in the environment sector are unlikely, the CPS does recognize the importance of ensuring environmental sustainability in the key development sectors, which would continue to be supported through regional and non-IDA resources. The CPS is framed around three strategic themes:

    a. Accelerating economic growth that is private-sector driven and job-creating; particularly through development of the energy, urban and financial sectors.

    b. Improving the productivity and incomes of the poor through rural development and social protection.

    c. Supporting accountable governance through public-financial management and decentralization.

11. The project will primarily contribute to CPS theme 2, supporting sustainable agricultural production alongside the existing Bank projects that are promoting sustainable agriculture and watershed management – i.e. RSSP, LWH and LVEMP II. However, it will contribute to a broadening of this approach, helping to promote direct and indirect economic values to landscape management that go beyond local agricultural output, and include tourism and protection of water resources for energy and water supply. It is also relevant to reducing social vulnerability in that it will enhance climate resilience amongst highly vulnerable rural communities.

12. The project is also well aligned with the World Bank Strategy for Africa. Pillar Two of the Strategy - Vulnerability and Resilience – highlights the need to support adaptation to the effects of climate change, building resilience against the impacts of droughts and other climate-related risks on the agriculture sector. In many cases, this will be achieved through better management of water resources through the adoption of sustainable land and water management approaches and technologies, as well as of improved management of biodiversity resources and adoption of sustainable forest management.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO / GEO

13. The project development and the global environmental objective is to demonstrate landscape management for enhanced environmental services and climate resilience in one priority landscape.

14. It will result in a major advance in the restoration of the highly degraded Gishwati-Mukura landscape, enhancing both productive and environmental values. The project will work concurrently in the three major elements of the landscape – rehabilitating forests and biodiversity within the Gishwati and Mukura Forest Reserves, enhancing sustainable land management in the agricultural lands between them, and introducing silvo-pastoral approaches in the rangelands of the central former Gishwati Reserve. These interventions will be synergistic, enhancing biological connectivity at the landscape level in a fashion that offers strong potential for global recognition as a UNESCO Biosphere Reserve and longer-term re-orientation of the local economy towards nature-based tourism. They will also be complemented by livelihoods diversification and the establishment of flood warning and response systems, that will further enhance climate resilience within one of the most disaster-prone areas of Rwanda.

15. Environmental benefits from improvements in vegetation cover and soil conservation will come in the form of: (i) improved native biodiversity within a global priority ecoregion; (ii) carbon sequestration; (iii) improved watershed function, reducing sedimentation and related costs to downstream water infrastructure and fisheries; and (iv) higher productivity and diversity of natural-resource-based livelihoods. Sustainable land management and watershed rehabilitation have intrinsic adaptation benefits. Climate resilience benefits will additionally accrue from diversification of livelihoods, targeting the most vulnerable, and improvement in flood warning, and preparation systems for those faced with the most acute climate threats.

B. Project Beneficiaries

16. The project beneficiaries will be rural residents of the Gishwati-Mukura landscape, who will benefit directly from support for sustainable intensification of agricultural production through improved land management, livelihoods diversification and improved flood warning and response systems. They will also benefit indirectly from improvements in environmental services, including watershed function, and potentials for nature-based tourism development linked to improved management of the scenic landscape and biodiversity.

C. PDO Level Results Indicators

17. PDO-level results for the project are:

    1. Area of protected forests (Gishwati-Mukura Forest Reserves / National Park) under enhanced biodiversity protection
    2.
        a. Land area where sustainable land management practices have been adopted as a result of the project
        b. Of which, new areas outside protected areas managed as biodiversity-friendly
    3. Households in the project area with access to advanced warning of individual major rainfall or flood events
    4.
        a. Project beneficiaries
        b. Of which female

III. PROJECT DESCRIPTION

A. Project Components

Component 1: Forest-friendly and climate-resilient restoration of Gishwati-Mukura landscape (US$8.227 M)

18. This component will support the application of the landscape approach to forest restoration and conservation for the improvement of ecosystem functions and services in the Gishwati-Mukura landscape, and possibly adjacent parts of the Nile-Congo Crest. It aims to arrest and eventually reverse the ongoing land conversion in the area through forest restoration (to the extent feasible) and agro-forestry approaches in a manner that will maximize ecological connectivity and hydrological function in the landscape.

<u>Sub-Component 1.a.: Upgrading and sustainable management of Gishwati andMukura Forest Reserves (US$ 1.408 million)</u>

19. The project will support the planned upgrading of the remnant Gishwati natural forest area (the remaining natural forest area within the former Gishwati Forest Reserve) and

the Mukura Forest Reserve to a single protected area. The 19 km stretch of hills between the two reserves is also densely populated and mainly occupied by agricultural land (see Annex 2 for details on the challenges faced by the two reserves).

20. Investments in this protected area will complete the planning process, strengthen management and accelerate ecological restoration in support of upgrading to national park status and to improve the protection of two key biodiversity refugia within the Nile-Congo crest. Based on consultations with RDB, it was agreed that the priority investments to be supported will focus on:

    a. *Physical demarcation of the reserves*. The boundaries of core forest areas and buffer zones for the national park are proposed in a draft law. The vegetation, use and co-management structure of the buffer zones will be discussed and agreed with local communities. The project will support consultation meetings and costs of physical demarcation for completion of this process.

    b. *Restoration of degraded natural habitats*. In both reserves, assisted regeneration of degraded portions will be carried out involving planting of native species, and where necessary removal of exotics. In some limited areas where mining has taken place, there may also be needs for small-scale works to fill excavations. Local labor will be used for restoration works.

    c. *Development (and updating) of management plans*. A management plan exists for Mukura Forest Reserve, but it is outdated. None exists yet for the remnant Gishwati natural forest. A plan will be developed for the management of both areas as a single reserve. The management plan will address ongoing restoration and ecological management needs, a protection plan based on identification of the most critical biodiversity elements, and a strategy for eco-tourism development. Much of the plan, however, will address the management of needs of the local population, in particular provision of substitutes for resources which were previously accessed from the forest reserves, co-management and sustainable use arrangements for the buffer zone, and to the extent possible, benefit-sharing arrangements, including local participation in tourism development. The management planning process is also expected to result in the preparation of a Biosphere Reserve nomination to UNESCO for the Gishwati-Mukura National Park and surrounding the landscape.

    d. *Training and equipping of local eco-guards*. After establishment of the national park, the cadre of existing eco-guards is expected to be extended to 12 persons each for the Gishwati and Mukura sections. The project will provide basic equipment to the guards, as well as training to enhance their capacity for systematic threat monitoring for the reserve, and to act as community liaisons. In addition to the community-based activities of the eco-guards, the project will provide resources to mobilize periodic spot-checks and support from local law enforcement agencies where serious issues are involved, taking a sensitive and graduated approach with local offenders. Chimpanzee habituation and tourist

guiding will also be supported. Should there be a delay in the establishment of the national park, the Project may directly support the existing community eco-guards with stipends as an interim measure.

e. *Installation of basic infrastructure*. In accordance with the management plan, the project will provide basic infrastructure, such as the construction of visitor centers, a park headquarters, viewing platforms, signed nature trails, and patrol posts.

f. *Environmental education*. An environmental education program targeting local communities and environmental clubs in schools will be continued in the area surrounding the remnant Gishwati natural forestand extended to Mukura to explain the need for biodiversity protection and the specific responsibilities of local residents. Activities may also include creating literacy centers for adults as focal sites for environmental education, as well as local exchanges with communities around Volcanoes National Park.

Sub-Component 1.b.: Forest restoration and land husbandry in the Gishwati-Mukura landscape (US$ 3.019 million)

21. Moving beyond the core forests, the project will work on management of the broader Gishwati-Mukura landscape to enhance both production and watershed values, whilst capitalizing on opportunities to increase the representation of native forest elements and therefore biodiversity connectivity in the landscape. The project would finance planning at the landscape level and with individual communities, and would support the implementation of tree-based landscape restoration approaches through provision of training, seeds, materials, and through payment for local labor.

22. The priority investments will focus on:

a. *Sustainable land management with corridor communities*. Establishment of a Gishwati-Mukura forest corridor has been adopted as a national goal and is reflected in the National Land Use Master Plan. However, the high population density and the almost complete agricultural conversion of the putative corridor area mean that there is no realistic potential for re-establishment of a broad swath of forest without major economic dislocation of local communities. The project will therefore focus on increasing the representation of native forest elements in the landscape, enhancing biological connectivity via an archipelago of ecological islands and soft boundaries. Set aside of highly vulnerable ridge-tops, extreme slopes, and riparian buffers (in keeping with national legislation that requires such buffers) and/or unproductive lands, combined with agroforestry techniques which favor native species, offers the potential to greatly increase biological connectivity whilst maintaining or enhancing the productive value of the landscape. Significant investments in land use intensification would be offered to communities in return for restricting agriculture in the most vulnerable lands and

establishing protection forests. The project will pilot this approach through participatory micro-watershed planning with local communities to identify sustainable land management investments with a particular emphasis on the promotion of agroforestry techniques that incorporate native species. The planning process would result in agreement on a set of watershed rehabilitation actions, similar to those under other project, such as LWH, but with added emphasis on identification of agroforestry potentials.

b. *Silvo-pastoralism in Gishwati rangelands*. Within rangeland areas of the former Gishwati Forest Reserve, the project will invest in establishment of silvo-pastoral techniques, emphasizing the use of native species. This would include establishing trees on ridge-tops, extreme slopes, riparian buffers, and as live fences, shelter belts and shade trees, through planting and managed natural regrowth. Although this would involve a marginal loss in the area of pasture, silvo-pastoral approaches are expected to improve the overall productivity of rangelands (in addition to enhancing forest cover and biological connectivity) by protecting against land degradation, providing shelter for animals from climatic extremes, and through provision of additional fodder and forest products. Silvo-pastoral interventions would be accompanied, where necessary, with training on improved livestock and pasture management.

c. *Agroforestry and forest restoration support to MINAGRI and Forests Department*. The project may help finance the completion ongoing re-establishment of natural forest started under the GWLM project in the north of the former Gishwati Forest Reserve, ensuring the use of an appropriate and diverse mix of native species. Subject to agreement with the Department of Forests of RNRA through the joint landscape planning process, the project may also finance the conversion of a portion of the production pine forests into natural forest. Furthermore, within the areas of the Gishwati-Mukura landscape that are being targeted for investment through LWH, the project would provide supplementary assistance in the form of technical advice and seedlings for diversification (and where feasible intensification) of agroforestry techniques.

d. *Joint land use planning for the Gishwati landscape*. The project would work with the Department of Lands in RNRA to establish a working group to revise and harmonize existing land use planning for the landscape. This working group, with participation from relevant ministries, agencies, and districts would agree on a land use planning framework within which LAFREC would operate, maximizing potential synergies and avoiding unnecessary conflicts. An early task for the working group will be to assign a task force to undertake a technical review of mining activities in the Gishwati-Mukura landscape.

Sub-Component 1.c.: Sustainable and resilient livelihoods (US$ 2.616 million)

23. This sub-component will support demand-driven income-generating activities in order to increase (i) the breadth of the economic options and security of the livelihoods base of

the population within the Gishwati-Mukura landscape, thereby improving climate resilience; and (ii) the sustainability of land and forest management investments within the landscape. Livelihoods support will be available to communities surrounding the remnant Gishwati natural forest and the Mukura Forest Reserve, within targeted areas of the Gishwati-Mukura corridor, and involved in project re-forestation interventions in the area of the forest within the former Gishwati Forest Reserve. The activities will target some of the most vulnerable residents of the landscape, including recently resettled households from the Kinyenkanda area. The design of livelihood activities will take into account general vulnerability indicators, such as female-headed and low-income households and the project will ensure that those who have been using river banks or forest resources are targeted, as they are typically among the most vulnerable within the community. Support will preferentially be provided to livelihood options which: (i) decrease dependency on highly climate-vulnerable livelihoods; (ii) decrease dependency on unsustainable exploitation of forest resources, through provision of alternatives for products from protected forest and increased energy efficiency; (iii) depend directly on successful application of SLM technologies or management of resources; (iv) add value to agricultural or forest products, justifying increased investments in sustainable land and natural resources management; or (v) provide additional income with negligible environmental impact.

24. Identification of livelihood potentials will largely occur as an integral part of community-based participatory planning activities in the course of the landscape restoration activities discussed above - i.e. protected area and buffer zone management planning, micro-catchment planning in the corridor area, and planning for rangeland management activities in the former Gishwati Forest Reserve. These community-based planning exercises will explicitly review climate vulnerabilities to strengthen the linkage of land and livelihood interventions to resilience, as well as helping to target vulnerable groups. This ground-up approach will also be complemented with top-down advisory services from an agribusiness consultant/NGO that will organize trade fairs; and identify and support establishment of production and marketing linkages with the private sector. This will take into account community production strengths and opportunities in a limited number of value chains, identification of bottle necks and quality requirements, and the development of new economic opportunities during the course of the project associated with ongoing regional development activities.

25. Development and start-up of alternative livelihoods will support capacity-building for farmer groups and cooperatives, as well as training (including peer learning, local exchange visits and study tours), initial inputs (e.g. seed) and tools in support of specific livelihood interventions. Within the project area, farmer groups are already established, and many have significant capacity to manage group activities and finances. Need for additional support to build organizational, technical, financial and business capacities will be therefore be assessed in terms of past performance and current linkages to other forms of support. Linkage to restoration activities will also be promoted in terms of piggy-backing on the use of local labor for landscape restoration work.

Sub-Component 1.d.: Flood forecasting and preparedness (US$ 1.184 million)

26. Floods have had a great impact on human development, properties, infrastructures as well as the environment in northwestern Rwanda. Steep slopes, soil instability, heavy rains, insufficient drainage systems combine with inappropriate land management to create high vulnerability. This sub-component aims to improve the technical capacity of flood forecasting institutions and complement identified important milestones required to have a fully integrated early warning system (EWS) in an effort to reduce economic losses and risks to life in pilot flood-prone watersheds.

27. LAFREC project will focus on establishing an EWS through the introduction of operational precipitation and flood forecasting. This a is multi-sectoral activity which will be a joint effort of the Rwanda Meteorology Agency (RMA, responsible for development of precipitation forecasts, including utilization of data from a Doppler radar that will be installed soon, and issuing warnings to authorized government and municipal authorities), RNRA (real time stream gauging, flood modeling and forecasting), and MIDIMAR (issuing warnings to public, guiding mitigation activities) and local authorities/communities. It is expected that this activity will be piloted in a few small/medium size watershed with high risk of flooding.

28. Main activities in this sub-component will include purchase of select equipment and technical assistance:

    a. To RMA for calibration and maintenance of existing stations, integration into rainfall forecasting systems of previously purchased Doppler radar equipment, installation of an automatic rain gauges, and communication equipment for EWS information; training for improved weather and risk forecasting; engagement with actual and potential users of weather information to improve access and usability of information services.
    b. To the Integrated Water Resources Management Department of RNRA for a hydrological modelling study for (at least) the Sebeya catchment to allow flood forecasting to be conducted on the basis of rainfall forecasts; capacity building for the introduction of hydrological modeling and flood forecasts; installation of automated hydromet stations and sharing to a common alerting protocol platform.
    c. To MIDIMAR for a participatory assessment of community vulnerability; and for participatory design and implementation of flood mitigation measures, local communication systems, and preparedness and rescue plans.

Component 2 – Research, monitoring and management (US$1.305 M)

<u>Sub-Component 2.a.: Applied research and impact monitoring (US$ 0.861 million)</u>

29. The project aims to demonstrate the potential and inform future implementation of forest-friendly land rehabilitation approaches to leverage the much larger land husbandry investment programs being led by the agriculture sector, as well as any potential future investment programs in the water resources or forestry sectors that may also be interested in adopting the approach. To this end, support for applied research and systematic impact evaluation that goes beyond the immediate needs of the project is a sound investment.

30. *Impact monitoring* would support: (i) the establishment of a national modeling platform to map indicators of landscape health, and identify landscape management priorities, based on hotspots of degradation, and the feasibility and benefits of restoring lost environmental and economic functions; and (ii) comparative field-based monitoring of a range of environmental and associated economic functions, to demonstrate the effectiveness of land rehabilitation techniques. Various agencies, programs and projects are investing in land and watershed rehabilitation following related, but somewhat different approaches. Structured impact monitoring across a range of sites would aim to establish the most cost-effective techniques for restoring environmental and economic functionality, and specifically to demonstrate to the value that enhanced agroforestry and incorporation of natural forest elements can add. Based on a statistically robust comparative design, such work would provide the basis for developing a sustainable financing strategy for forest landscape restoration, as it would quantify the environmental and economic benefits associated with it.

31. *Applied research* would support the establishment of partnerships with key research and knowledge institutions to improve management knowledge of the Gishwati-Mukura landscape, and to improve restoration techniques, particularly in relation to scope for incorporation of native species. The project would support field costs and studentships for research students to work on a set of agreed priority topics. The main technical partners would include the Departments of Agriculture and Biology at University of Rwanda, the RAB Research Directorate, and ICRAF.

32. The project would also support the production and dissemination of technical notes and manuals for practitioners, based on the finding of the applied research, and also building on work and models generated under previous projects, such as PAREF.

33. A list of priority topics would include: (i) Biodiversity inventory and forest ecology for the Gishwati and Mukura Reserves; (ii) Ecological investigations on the health, needs and constraints of the chimpanzee population and other primates, with a view to developing a long-term recovery (and potentially eco-tourism strategy); (iii) Forest restoration ecology; (iv) Propagation of native tree and forest species; (v) Integration and productive use of native species within agroforestry systems; (vi) Benefits of agroforestry techniques in rangeland and estate crop settings; (vii) Improved woodlot management; (viii) Rural energy solutions.

Sub-Component 2.b.: Project management (US$ 0.444 million)

34. Project management expenditures will cover routine administrative overheads, such as coordination between project implementing partners, work-planning, procurement and contract management, accounting and audit costs, field supervision, maintaining an internal project M&E system, and reporting. The internal M&E system will incorporate information on project outcomes generated through the field-based impact monitoring described above, but it will also maintain financial and output data for project-specific monitoring and management purposes.

A. Project Financing

35. The project will be a full-sized investment project financing with a five-year implementation period, to be financed by a GEF grant in the amount of US$ 5.487 million and an LDCF grant of US$ 4.045, for a total project size of US$ 9.532 million. A separate GoR in-kind contribution is estimated to be US$ 2.65 million. This contribution is composed of projected amounts as follows over the life-span of the project: 1) routine staffing costs of some $0.45 million, 2) transfer payments to the communities surrounding the planned Gishwati-Mukura National Park of some $0.455 million, and 3), $1.746 million in government staff time.

Project Cost and Financing

Project Components	GEF (US$ million)	LDCF (US$ million)	Total (US$ million)
1. Forest-friendly and climate-resilient restoration of Gishwati-Mukura landscape	**4.736**	**3.491**	**8.227**
1.a. Upgrading and sustainable management of Gishwati-Mukura Protected Area	0.810	0.598	1.408
1.b. Forest restoration and land husbandry in the Gishwati-Mukura landscape	1.738	1.281	3.019
1.c. Sustainable and resilient livelihoods	1.506	1.110	2.616
1.d. Flood forecasting and preparedness	0.682	0.502	1.184
2. Research, monitoring and management	**0.751**	**0.554**	**1.305**
2.a. Applied research and impact monitoring	0.496	0.365	0.861
2.b. Project management	0.255	0.189	0.444
Total	**5.487**	**4.045**	**9.532**

B. Lessons Learned and Reflected in the Project Design

36. Bank projects – for example in Albania and Ethiopia – have shown that integrating forest, pasture and agriculture management with strong involvement of local communities, whole landscapes can recover with dramatic results. However, landscape management projects are complex by their very nature. As the Loess Plateau project demonstrated in China, in a landscape management project, a design that narrowly focuses on the development objectives facilitates outcome-oriented project implementation. Numerous requests to address additional development challenges are likely to be made of the project, which – also due to its limited size – must nevertheless focus its activities on its core objective of demonstrating landscape management for enhanced environmental services and climate resilient livelihoods. Without neglecting the importance of connected but non-core issues, continuous discussions of the project objectives of increasing income and improving the environment can keep the focus on how to achieve

these most effectively, given institutional and other constraints.

37. In Rwanda, the government is engaged in an ambitious, country-wide agricultural intensification program led by MINAGRI and supported in part through the World Bank-financed Land Husbandry, Water Harvesting and Hillside Irrigation (LWH) Project, and in future through a new results-based sector support operation. In addition, MINAGRI has previously carried out landscape planning and restoration efforts have been carried in the project's target region through the Gishwati Water and Land Management Project. MINAGRI has developed a proven model for intensification and hillside restoration using capital-intensive terracing. LAFREC is designed in coordination with ongoing LWH activities, but will aim to add value to them through the enhancement of forest-based approaches.

38. A lesson from the series of Rural Sector Support Projects (RSSPs) is the importance of having clearly defined criteria to guide the selection of sites targeted for silvo-pastoralism on pasture lands within the confines of the former Gishwati Forest Reserve and for forest restoration and land husbandry in the proposed corridor. The first RSSP was constrained by the absence of a coherent and operational strategic framework for marshland development in Rwanda. As a result, RSSP priorities were not clearly identified, stakeholder involvement approaches were not clearly articulated, and opportunities were missed to develop irrigation in a cost-effective and sustainable way. The national land use master plan and GWLM's land-use plan provide important guides for LAFREC's site selection, and clear criteria determine how selection will take place.

39. Through previous and concurrent projects such as the IMCE Project and the Lake Victoria Environmental Management Project, REMA has built up an effective Single Projects Implementation Unit (SPIU) and has demonstrated its ability to implement projects. Given REMA's status as a regulatory agency, and the overlapping mandates and related activities of other ministries (MINIRENA, MINAGRI etc.), it is important that REMA coordinate its work closely with its counterparts. The technical preparation committee thus comprises representatives from these agencies that will help to ensure proper coordination.

40. An FAO evaluation of the forestry sector's contributions to poverty alleviation in Zambia[1] highlighted the importance of effective coordination between government agencies in managing forest resources. LAFREC has taken on board this lesson through the Technical Committee that supervised project design, the Project Steering Committee and the establishment of a landscape-level planning and coordination working group. It is expected that these coordination mechanisms will yield the necessary coordination and collaboration, while also contributing to wider coordination of initiatives on landscape and forest management in the country. Close collaboration between LAFREC and IUCN's landscape restoration initiatives will further reinforce these processes.

    Projects such as the Western Kenya Community-Driven Development and Flood

[1] Marguerite France-Lanord, Fred Kafeero, Beatrice Lukama, Rosalie McConnell (2007): Linking National Forest Programmes and Poverty Reduction Strategies: Zambia. FAO, Rome.

Mitigation Project and the Arid Lands Resource Management Project (also in Kenya) have illustrated the value of intense local community involvement. Both of these projects used a community-driven development (CDD) approach. Given the experience under LVEMP, which suggests that CDD approaches should be within a clear strategic framework to deliver results for landscape rehabilitation, LAFREC will not implement a full-fledged CDD approach. However, it will retain elements thereof. Notably, the adoption of SLM techniques and livelihood alternatives will be negotiated with and driven by communities, and their choice will be based on community-driven climate vulnerability assessments. This guided CDD mechanism, in which communities are able to choose from a set of pre-selected activities, can be critical for the promotion of SLM and/or livelihood options, as the Kenya Natural Resources Management Project has also demonstrated. These lessons are also reflected in the project's approach to monitoring, which will in part rely on community inputs.

41. Protected areas are more effective at reducing deforestation when they are designed and managed by the people that live in and around them and depend on the forest for resources. Poverty can be exacerbated by limiting or restricting communities access to forests through the creation or expansion of a park or a protected area if due consideration is not paid to livelihoods. In accordance with these findings from the Internal Evaluation Group (IEG) Review of the Bank's forestry portfolio, the project will work closely with the communities surrounding the Gishwati and Mukura Forest Reserves to ensure that they benefit from the improved management of these protected areas, and will pay particular attention to their poverty-reduction potential. The Great Apes Trust's activities in the remnant Gishwati natural forest have laid the foundation of a successful model for doing so, and have informed the project design. To promote the reserves' sustainability – for which community acceptance is key – and as part of its adaptation strategy, the project is placing a particular emphasis on designing alternative livelihood components. The project will attempt to buck the historically high tendency to miss their objectives, as documented by IEG, by conducting a careful analysis of unmet demand in the local economy. The model of the *Atelier de cordonnerie moderne*, a successful small manufacturing and leatherworks enterprise fostered through the GWLM project, provides a model to be studied.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

42. At the national level, the project will be implemented through MINIRENA. A Project Coordination Team responsible for day-to-day implementation will be based within the SPIU housed in REMA, which coordinates all current donor projects under REMA. REMA is the national environmental regulatory authority, but its mandate extends beyond the regulatory function to include environmental coordination, mainstreaming and monitoring. It also has a direct implementation mandate in specific areas that require cross-sectoral collaboration, including climate change and biodiversity. However, LAFREC requires the active involvement of all arms of MINIRENA, and is therefore

established as a project of the Ministry, which REMA will administrate on its behalf.

43. An additional M&E expert will be hired under the project, and a procurement expert, accountant and community development expert will be shared between the LAFREC and LVEMP projects. Services provided by the existing SPIU staff to the project will include oversight, GIS and communications. A Project Implementation Manual (PIM) will provide guidance on the formats for planning, reporting, monitoring and evaluation, and fiduciary management procedures. Memoranda of Understanding (MoUs) will be signed with partner agencies where those institutions will be in charge of implementation.

44. Project activities on the ground will be implemented through the Districts under MoUs in accordance with national decentralization policies. A District Project Coordination Team (DPCT) of sector experts will be established in each participating District to coordinate participatory planning for land management and livelihoods activities. Two project field environment officers will provide support and oversight, and local teams of project assistants and service providers will bolster the capacity of District and Sector staff. Due to the significant time required for these interactions, they will be supported by local service providers.

45. A Steering Committee consisting of senior representatives of key ministries, agencies, and non-governmental organizations will provide overall strategic direction and ensure political support. A Gishwati Integrated Landscape Planning Working Group will integrate existing land use and development plans from various sectors, and agree on future coordination structures.

B. Results Monitoring and Evaluation

46. Project monitoring and evaluation involve several components:
    a. Annex 1 summarizes the Project Development Objectives (PDO) and related PDO and intermediate outcome indicators, including targets. Monitoring of performance against these indicators will be used in the formal assessment of project performance by the World Bank. GEF / LDCF tracking tools are also used to estimate and target project outcomes strategic objectives under each focal GEF / LDCF area - biodiversity, land degradation, sustainable forest management and climate adaptation.
    b. Implementation Monitoring will involve tracking of project inputs, activities and outputs, as well as procurement and financial management tracking systems, allowing the project coordinator and SPIU to follow implementation progress in near to real-time.
    c. In addition to monitoring of indicators directly related to LAFREC, Component 2 includes an impact monitoring program which will provide a comparative evaluation of environmental and economic impacts in the project target landscape and areas subject to land management interventions in other parts of Rwanda.

47. The project will use a simple, spreadsheet-based monitoring system to guide project implementation. The MIS will be based on the project results framework and M&E plan,

will be able to report against all indicators in the framework, include and assess progress against the project's work plan, and be able to generate simple tables and graphs to inform project management of achievements, and will summarize these in a dashboard of key indicators and progress milestones.

48. An M&E officer will support project monitoring activities, although monitoring will be a shared responsibility of all project staff, who will be required to feed appropriate information related to their activities and duties into the MIS.

49. Communities participating in implementing landscape management interventions will also be involved in project M&E activities. Some outcome monitoring activities will directly rely upon community members, such as training selected farmers to collect local stream flow and sediment data. Projects contracts signed with beneficiary groups and including high resolution images to indicate the locations of interventions, will provide basis for mutual accountability with project implementing teams.

C. Sustainability

50. Rwanda's central government institutions have strong capability, and local government authorities have expressed their strong support for the project's goals as they address key issues of landscape management in one of its priority regions that has been subject to both significant land use challenges and natural disasters, while also having been identified as a an area with potential for the development of tourism through conservation by both the national government, which is in the process of converting the remnant Gishwati natural forest and the Mukura Forest Reserve into a single national park, and by district governments such as that of Rutsiro, which is basing a portion of its district development plan on nature-based tourism, linked to broader tourism development plans for the Kivu Belt. There has long been recognition at senior levels of the rehabilitation needs in the Gishwati-Mukura landscape, and these are reflected in the National Land Use Master Plans. Actual restoration efforts to date have been piecemeal, but the views of key agencies are coalescing around a shared set of goals, which the joint land use planning under the project will aim to solidify. As long as project implementation is effective, local support is expected to be available for continuing management of the Gishwati-Mukura forests in coordination with the surrounding lands, and to be formalized in the form of a proposal and eventually establishment of a Biosphere Reserve centered on the Gishwati-Mukura National Park.

51. Options for long-term external financing or payment for environmental services, e.g. through carbon finance or eco-certification, will be considered during the course of the project[2], but due to unclear demand (including weak carbon markets), these will not be relied upon. Sustained support for project interventions from local communities will be based on delivering long-lasting benefits to private land users in terms of increased food security and reduced disasters, as well as instilling a sense of civic pride in the overall

[2] For instance, the project team is already looking at models for supporting small-holder agroforestry through voluntary carbon markets being implemented in neighboring countries.

transformation of the landscape (including through targeted communications campaigns). Following participatory planning exercises, project support to community groups will be based on signed contracts clarifying the agreed contribution and responsibilities of each party. Opportunities will also be explored to formalize these through longer-term local government ordnances (e.g. at the sector or cell level) on land use. Land husbandry has already been proven to be sustainable in the context of the LWH and GWLM projects, and has delivered substantial livelihood benefits to its users. LAFREC will seek to extend those models through integration of silvopastoralism and enhanced agroforestry, particularly involving the use of native species. As this represents an innovation, a degree of experimentation and adaptive management will be needed in finding the most robust local approaches.

52. More broadly, the project aims not only to sustain interventions in the Gishwati landscape, but also influence much larger programs of investment in land rehabilitation at the national level. Through sizeable projects, such as LWH, GoR has already shown a willingness to invest in large-scale land husbandry programs, and a further agriculture sector support program (within a total expected value of around US$ 1 billion[3]) is currently being prepared, which will include land rehabilitation amongst its key objectives. Preparation of LAFREC has already led to commitments from MINAGRI to provide complementary investments in terracing within the project areas through LWH, and this collaboration will be continued during implementation, particularly through the establishment of a comparative impact monitoring program aimed at demonstrating the value-added or tree-based and multipurpose approaches to landscape management.

V. KEY RISKS AND MITIGATION MEASURES

A. Risk Ratings Summary Table

Risk	Rating
Stakeholder Risk	S
Implementing Agency Risk	
- Capacity	S
- Governance	M
Project Risk	
- Design	S
- Social and Environmental	M
- Program and Donor	M
- Delivery Monitoring and Sustainability	M
Overall Implementation Risk	**S**

B. Overall Risk Rating Explanation

[3] The Bank is supporting this through the development of a Transformation of Agriculture Sector P4R operation, expected to involve $300 million of IDA financing.

53. Rwanda has an impressive record of effective and accountable project implementation, including in relation to land management. However, the intrinsic complexity of a landscape management project, in terms of the range of both activities and stakeholders included, presents a number of risks to timely and efficient implementation. The project design has emphasized focus on a single landscape to avoid dilution of effort, and development of locally appropriate coordination structures, without overelaboration of setting of unrealistic objectives. Complexities will remain during implementation that will require close monitoring of both activities and impacts and adaptive management in the face of potential physical or political contingencies.

54. Capacity-related and fiduciary risks are present, but not insurmountable within the context of strong and accountable public sector performance, and a lead agency (REMA) that has gained experience of watershed management models and implementation of Bank-financed projects, particularly through LVEMP II. Safeguards risks are limited given the scale of the interventions and their targeting on environmental and social benefits. The main risks are associated with the intrinsic complexity of a landscape management approach that involves elements of planning and implementation touching on biodiversity conservation, forestry, agriculture, rural livelihoods and disaster management. The project requires not just coordination of diverse sectors for effective implementation, but also the ability to manage initiatives that may come from these or other sectors that could threaten broader landscape objectives. A joint landscape planning working group and cross-sectoral task force to look specifically at mining issues are included in the design.

55. Implementation risk is rated as substantial, but with the design taking account of the risks and complexities, then implementation risk and overall project risk should be moderate.

VI. APPRAISAL SUMMARY

A. Economic and Financial (if applicable) Analysis

56. An incremental cost analysis for the project from the GEF is included in Annex 7. The GEF grant of US$ 5.487 million (from LD, BD, and SFM) and LDCF grant of US$ 4.045 million, along with a separate GoR in-kind contribution estimated to be US$2.196 million, will be complemented with associated financing totaling US$ 49.4 million. The total project cost under the baseline scenario is US$ 50.305 million and the GEF alternative is US$ 61.128 million.

57. The economic benefits generated by the project would result from 1) economic opportunities resulting from the upgrading of the Gishwati and Mukura Forest Reserves to national park status and the associated expected tourism revenues; 2) increases in agricultural productivity through sustainable land management activities, silvo-pastoralism, agroforestry, and through associated reductions in land degradation; 3) reductions in soil erosion through better land management and reforestation, with consequent reduced siltation of the Sebeya River watershed and associated reductions in water treatment and hydroelectricity production costs, and reduced vulnerability to

flooding; 4) diversified and improved livelihoods through off-farm income generating activities, with attendant reductions in climate vulnerability of household incomes; 5) reduced vulnerability to flood events through better forecasting and early warning systems; 6) unassigned economic conservation values stemming from the conservation of valuable biodiversity resources and the soil and biomass sequestration of carbon, both of which contribute to the preservation of global public goods; and 7) unassigned economic value from increasing the knowledge base on forest-friendly land rehabilitation approaches that can be integrated into the GoR's national land management strategy.

58. Based on the estimates and assumptions listed above and a discount rate of 7 percent, the project's ERR over a 20-year period is 35 percent, and NPV net benefit of $25.47 million will be generated for the economy.

B. Technical

59. The Gishwati-Mukura landscape faces some of the highest rates of soil erosion in Rwanda, resulting in decreasing agricultural productivity. The population is heavily dependent on subsistence farming and agricultural incomes - which in turn are subject to climatic variations - while also being vulnerable to flood and landslide events. Current national approaches to land rehabilitation underemphasize the inclusion of forests. In addition, the viability of the Gishwati and Mukura Forest Reserves is doubtful under current management arrangements.

60. The technical design is considered to be highly appropriate for a number of reasons:
    - The project links restoration activities across a number of landscape elements (forest reserves, cropland and rangeland), and land management interventions with sustainable livelihood diversification, to capture synergies and long-term potentials for a transformational effect through establishment of a Biosphere Reserve oriented to integrated landscape management and nature-based tourism.
    - Climate adaptation and landscape management are integrated throughout the planning and implementation cycles, maximizing synergies and helping to target more vulnerable persons. The additional element of addressing critical disaster risk management issues both demonstrates (through flood-risk modelling) and solidifies the resilience benefits of the landscape interventions.
    - Concentration on a single landscape allows for a critical mass of impact, whilst providing relevant lessons and knowledge to support national-level restoration efforts.

C. Financial Management

61. A financial management (FM) assessment was conducted in accordance with the Financial Management Manual issued by the Bank's Financial Management Sector Board on March 2010. The objective of the assessment was to determine whether the participating institutions have adequate financial management systems and related capacity in place which satisfies the Bank's Operation Policy/ Bank Procedure (OP/BP) 10.00. The assessment also included the identification of key perceived financial management risks that may affect program implementation and proceeded to develop

mitigation measures against such risks. The assessment was conducted on the Rwanda Environmental Management Authority (REMA), which is the agency designate of the Ministry of Natural Resources (MINIRENA).

62. The project financial management arrangements will be coordinated and managed by REMA. Based on the assessment conducted, the proposed FM arrangements in REMA meet the IDA's requirements as per OP/BP 10. They are adequate to provide, with reasonable assurance, accurate and timely information on the status of the project required by IDA. An action plan will be agreed with the implementing agencies to address some of the weaknesses observed. The residual FM risk, after implementation of mitigation measures, is rated as ***Substantial***. Detail FM arrangements are documented in the FM assessment report where key aspects are summarized under annex 3.

D. Procurement

63. REMA-SPIU will be responsible for the procurement of the services, works and goods under the components to be implemented at national level. The SPIU will also provide assistance and guidance to the districts regarding contracts to be implemented at the district level. A procurement capacity assessment of REMA was undertaken in accordance with the World Bank's Procurement Risk Management System to assess overall project risk and identify mitigation actions. Understaffing, a relative lack of proficiency in the SPIU in World Bank procedures, and lack of experience with World Bank procedures at the District level resulted in a procurement risk rating of High. A critical weakness in the SPIU has been the recent absence of a dedicated procurement officer with experience of Bank procurement procedures. This vacancy is currently being filled, however. Further mitigation measures required to attenuate procurement risks are summarized in Annex 3 and, if implemented, can result in a risk rating of Moderate. REMA has developed a simplified Procurement Plan, acceptable to the Bank and consistent with the simple project design, with focus on investment activities and technical assistance. The Procurement Plan will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

E. Environment and Social (including Safeguards)

Environmental Issues

64. The project is expected to make investments in improving the sustainability of land management, protecting biodiversity resources, and reforesting fragile land. While each of these activities will have to be carried out with the requisite technical expertise so as to avoid unintended consequences, they are expected to provide substantial environmental benefits and cause no significant negative environmental impacts. Only limited remnant areas of natural habitat remain in the target landscape. The project will protect and restore these whilst introducing complementary, multi-purpose land management techniques into the surrounding production landscape.

Social Issues

65. The project landscape includes areas from which the GoR resettled some 1,500 households in 2007 from sites that were deemed to be highly vulnerable to natural disasters. A report on this resettlement indicates that due to the small size of land parcels in the resettlement sites, the resettled households face a lack of economic opportunities to meet their livelihoods, while also having a sense of having lost their original homes. This included the relocation of 152 households from the Kinyenkanda area, which made way for the extension of remnant Gishwati natural forest area. The previously resettled households from the Kinyenkanda area will be eligible for livelihoods support through the project, given that they are amongst the more vulnerable persons within the broader project area, and their traditional relationship with the Gishwati forest.

66. The project is anticipated to result in increased empowerment of the people living in the Gishwati-Mukura landscape and the improvement of their livelihoods, through systematic adoption of participatory natural resources and environmental management approaches, and also implementation of livelihood improvement activities. Priority investments will be done in a participatory, transparent, and accountable manner. This implies active participation in decision-making by key actors, including civil society and affected communities. Similarly, gender and other concerns of most vulnerable groups who are targeted for improved watershed management, shall be addressed through the same participatory processes.

67. Nonetheless, there is a small chance of physical resettlement and/or land acquisition related to project interventions. There is also a potential for limitations on access to natural resource use in or around protected areas. As such, OP 4.12, Involuntary Resettlement is triggered. Restoring a mixed use landscape involving agricultural, agroforestry, grazing, production forest and protection forest elements can potentially result in land taking and/or restriction to forest reserves.

Safeguards Policies Triggered

68. Overall, the project is expected to provide significant environmental and social benefits, both onsite and downstream. Nevertheless some of its activities may have (i) localized and/or temporary small adverse environmental impacts on human populations or environmentally important areas - including wetlands, forests, grasslands, and other natural habitats; and/or (ii) involve some limited land acquisition, and/or restrict access to some natural resources. As the project is not likely to have significant adverse environmental and social impacts that are sensitive, diverse, or unprecedented, the proposed project is classified as Category B.

69. The proposed project activities under Component 1 (1a, 1b and 1c) have substantive similarities with the on–going Lake Victoria Environmental Management Project (LVEMP II). REMA has in place the Environmental and Social Management Framework (ESMF) and Integrated Pest Management Plan (IPMP) that were prepared for LVEMP II. These documents have therefore been adapted to provide the basis for specific

Environmental and Social Impact Assessment (ESIAs) and/or Environmental and Social Management Plans (ESMPs), as the need arises under LAFREC.

70. Given the fragile and the changing environment of the Gishwati Forest Reserve, Mukura Forest Reserve and the Gishwati-Mukura corridor, REMA has conducted a social assessment (SA) to identify potential social impacts of the project interventions and any issues related to previous resettlement.

71. Based on the SA, the existing LVEMP II RPF was updated and a Process Framework for limitations on access to natural resource use in or around protected areas was developed. The Process Framework establishes a process by which communities potentially affected by restricted resource access and the forest management authority engage in informed and meaningful consultations and negotiations to identify and implement means of reducing or mitigating the impact of restricted resource access.

Environmental and Social Safeguard Policies Triggered by the Project	**Yes**	**No**
Environmental Assessment (OP/BP 4.01)	X	
Natural Habitats (OP/BP 4.04)	X	
Pest Management (OP 4.09)	X	
Indigenous Peoples (OP/BP 4.10)		X
Physical Cultural Resources (OP/BP 4.11)	X	
Involuntary Resettlement (OP/BP 4.12)	X	
Forests (OP/BP 4.36)	X	
Safety of Dams (OP/BP 4.37)		X
Projects in Disputed Areas (OP/BP 7.60)*		X
Projects on International Waterways (OP/BP 7.50)	X	

Annex 1: Results Framework and Monitoring

Project Development Objective (PDO):

To demonstrate landscape management for enhanced environmental services[4] and climate resilience[5] in one priority landscape.

PDO Level Results Indicators	Core	UOM[6]	Baseline	Cumulative Target Values					Frequency	Data Source/ Methodology	Responsibility for Data Collection	Comments
				2015	2016	2017	2018	2019				
1. Area of protected forests (Gishwati-Mukura Reserves / National Park) under enhanced biodiversity protection	☒	Ha	0	0	0	0	0	3428	Yearly	Assessment based on METT score	REMA	Enhance biodiversity protection to be assessed on the basis of a significant increase in mean METT score for reserves or single score for Gishwati-Mukura National Park once established. Baseline score is 21. A significant increase is interpreted to involve reaching a threshold of at least 50.
2a. Land area where sustainable land management practices have been adopted as a result of the project	☒	Ha	0	0	0	500	1500	3000	Yearly	Project reports	REMA	Aggregate of areas subject to establishment of silvo-pastoral systems and improved micro-catchment management through enhanced forestry, agroforestry and sustainable

[4] Environmental services are reflected in the PDO indicators in terms of the improvements to biodiversity from improvements in the management of the forest reserves and establishment of biodiversity-friendly land management outside the reserves. However, improvements in vegetation cover and soil conservation from the project activities are expected to accrue additional environmental benefits, including higher productivity and diversity of provisioning services, improvements in watershed function (increased stream perenniality and reduction in sediment loads), and carbon sequestration. Specific targets have not been established for most of these functions, but they will be evaluated under the project impact monitoring program. Total net carbon sequestration benefits are expected to be in the order of 1.27 million t CO_2e, as estimated through use of the EX-ACT tool.

[5] Climate resilience is reflected in the PDO indicators through the spread of sustainable land management practices (which are inherently less vulnerable to climate variability) and the provision of improved flood warning systems to households facing the most acute climate risks. It is also reflected in the intermediate indicators in terms of the diversification of livelihoods.

[6] **UOM = Unit of Measurement.**

												land management techniques supported by the project.
2b. Of which, new areas outside protected areas managed as biodiversity-friendly	☒	Ha	0	0	0	200	600	1200		Project reports	REMA	Subset of project treatment areas outside of reserves which are subject to reforestation activities based on use of native species – e.g. silvo-pastoralism, protection forest strips, rehabilitation of natural forest in northern Gishwati.
3. Households in the project area with access to advanced warning of individual major rainfall or flood events	☐	Number	0	0	0	0	90	90	Annual	Project reports and surveys	RMA, MIDIMAR, REMA	The number of households subject to high flood risk that will benefit from early-warning systems community-level preparedness training
Beneficiaries												
4a. Project beneficiaries	☒	Number	0	0	2,000	6,000	10,000	12,000	Yearly	Project reports	REMA	Number of household members within the project area benefiting from directly improved livelihoods (increase in income as a result of livelihood diversification activities or increase in agricultural productivity) and indirectly improved livelihoods (including through access to better flood warning systems).
4b. Of which female (beneficiaries)	☒	%	0	50	50	50	50	50	Yearly		REMA	

Intermediate Results and Indicators												
Intermediate Results Indicators	**Core**	**Unit of Measurement**	**Baseline**	**Cumulative Target Values**					**Frequency**	**Data Source/ Methodology**	**Responsibility for Data Collection**	**Comments**
				2015	**2016**	**2017**	**2018**	**2019**				
Intermediate Result 1: Forest-friendly and climate-resilient restoration of Gishwati-Mukura landscape												
5. UNESCO Biosphere Reserve proposal submitted	☐	Y/N	N	N	N	N	N	Y	At project end	Proposal	REMA	
6. Area restored or re/afforested.	☒	Ha	0	0	500	1000	1500	2500	Yearly	Project reports	REMA	Including areas rehabilitated within reserves and buffer zones, and new or rehabilitated production or protection forests outside of reserves.[7]
7. Land users adopting sustainable land management practices as a result of the project.	☒	Number	0	0	1,000	4,000	8,000	10,000	Yearly	Project reports	REMA	Total members of households involved in land use management activities under the project, including micro-catchment rehabilitation in corridor and silvo-pastoral activities.
8. Subprojects generating profits from new or enhanced livelihoods.	☐	Percent	0	0	0	0	20	70	Yearly	Farmer group records / project reports	REMA	Profitability will be assessed according to business plans and book-keeping of the groups. The expected climate vulnerability of each livelihood subproject will be graded, and at least 30% of the target number are expected to be in the low vulnerability category.
9. Flood risk mapping and hydrological model developed for at least 1 target basin.	☐	Y/N	N	N	N	Y	Y	Y	Yearly	Project reports	REMA	

[7] Net carbon sequestration benefits associated with forest restoration (and avoided deforestation / degradation) activities are expected to be in the order of 1.27 million tons (Mt) of carbon dioxide-equivalent (CO_2eq) over a 20-year period, as detailed in Annex 7 and reflected in the GEF SFM tracking tool.

Intermediate Results and Indicators												
Intermediate Results Indicators	**Core**	**Unit of Measurement**	**Baseline**	**Cumulative Target Values**					**Frequency**	**Data Source/ Methodology**	**Responsibility for Data Collection**	**Comments**
				2015	**2016**	**2017**	**2018**	**2019**				
Intermediate Result 2: Improved coordination, science and management												
10. Impact monitoring study on land rehabilitation techniques produced	☐	Y/N	N	N	N	N	N	Y	At project end	Project reports	REMA	
11. Number of knowledge products on landscape management disseminated to target audience	☐	Number	0	0	0	0	6	12	Yearly	Project reports	REMA	Knowledge products will be made publically available on-line and some are expected to be published in peer-reviewed journals, but the primary target audience will be relevant decision-makers, agencies and technical staff within Rwanda, and dissemination will be through a mix of policy notes, workshops and incorporation into relevant manuals.

Annex 2: Detailed Project Description

Description of Project Area

1. **The Albertine Rift** is the western branch of the East African Rift, and covers parts of Rwanda, Uganda, the Democratic Republic of the Congo (DRC), Burundi and Tanzania. It reaches from the northern end of Lake Albert to the southern end of Lake Tanganyika. The Rift includes the valley and the surrounding mountains, and harbors more endemic mammals, birds, and amphibians than any other region in Africa. It is part of Conservation International's Eastern Afromontane Biodiversity Hotspot, a designation reserved for areas of high endemism that face extreme threats and have already lost more than 70 percent of their original vegetation. BirdLife International has designated the Albertine Rift an "Endemic Bird Area", a region that represents natural areas of bird endemism. The Rift's Montane Forests Ecoregion has been designated by WWF as a "Global 200 Ecoregion", one of Earth's most biologically outstanding habitats. Indeed the Albertine Rift Montane Forests Ecoregion is an area of exceptional faunal and floral endemism, hosting 52% of all bird species and 39% of all mammal species on the African continent.[8] About 280 species of flowering plants from Rwanda are considered to be endemic to the Albertine Rift. Of these endemic species, approximately 20 are found only in Rwanda, 50 species are found only in Rwanda and Eastern Congo, and 20 species are found only in Rwanda and Burundi.[9]

2. Throughout much of the ecoregion, especially in Burundi and Rwanda, the rural human population density is among the highest in Africa, in places exceeding 1000 inhabitants per square kilometer. This juxtaposition of high human population density, high levels of poverty, recent (and in some cases ongoing) conflict and high biodiversity means that there are many challenges for conservation and sustainable use of biodiversity in the region.

3. **Rwanda,** a small, landlocked and mountainous country, harbors six percent of the Albertine Montane Forests Ecoregion. The country is subject to some of the highest demographic pressures in Sub-Saharan Africa, with a population estimated at 11 million, growing at 2.6% p.a.,[10] while only 52% of its land is arable.[11] Mean landholdings are very small: 60% of households cultivate less than 0.7 ha, and more than 25% less than 0.2 ha, typically divided between tiny, scattered plots.[12] Rwanda remains among Africa's poorest countries, despite having made significant progress in the past decade. In 2012, GDP per capita stood at $620 and at $1,332 measured by PPP.[13] Despite impressive growth rates averaging 5.4% between 2008 and 2012, poverty remains deep and pervasive, with the poverty headcount ratio at $1.25 a day (PPP) sitting at 63.2% in

[8] WWF (undated): Albertine Rift Montane Forest Ecoregion. http://wwf.panda.org/who_we_are/wwf_offices/eastern_southern_africa/our_solutions/albertine_rift_forest_/ Accessed November 12, 2013.
[9] REMA (2009): State of the Environment Report and Outlook Report. Kigali.
[10] 2012 Population and Housing Census, Report on provisional results, Nov. 2012, NISR
[11] World Bank (2013): Data. http://www.data.worldbank.org. Accessed November 12, 2013.
[12] IMF (2008): Rwanda Poverty Reduction Strategy Paper. IMF Country Report No. 08/90.
[13] World Bank (2013): Data. http://www.data.worldbank.org. Accessed November 12, 2013.

2011.[14] More than 90% of the poor live in rural areas. In 2011, ODA reached 20% of GNI and $113 per capita,[15] driven by severe need, but also by impressive results in improving indicators of social well-being. From 2005 onwards, the OECD has consistently rated Rwanda as one of the countries that uses aid most effectively. Recent political differences with certain donors have severely impacted the reliability of some forms of support, however.

4. Much of Rwanda's economy depends directly upon its land, water and biodiversity resources - that is on its landscapes. The agricultural sector accounts for about 33% of GDP (2012), 80% of employment, and in 2010, 45% of foreign exchange earnings (mostly from tea and coffee). It is also the main source of income for 87% of Rwandans. Around 50% of power generation comes from (small-scale) hydropower, and 85% of the domestic energy supply in the country is from wood fuels. In addition to ecological services supporting these sectors, biodiversity makes a substantial direct contribution to the economy through tourism, one of Rwanda's largest foreign exchange earners (at $218m, or 35%) in 2010.[16] Leisure tourism is almost exclusively nature-based, with gorilla-watching in Volcanoes National Park being the flagship, but with other protected areas, especially Nyungwe and Akagera National Parks growing in importance.

5. Steep terrain and the highest population density in sub-Saharan Africa make sustainable land and landscape management strict necessities for Rwanda's natural-resource-dependent sectors. Agricultural productivity is low, with yields of several key crops lagging behind other sub-Saharan African countries. About 40% of Rwanda is classified as being at very high risk to high erosion, 75% is classified as "highly degraded" by FAO, and the country has one of the highest negative nutrient balances in sub-Saharan Africa[17] with more than 14 million tons of soil being lost each year.[18]

6. Almost two thirds of forests have been lost since independence, and currently the country has about 28.3% forest cover. Image-based inventory completed by 2012 using aerial orthophotos indicates that forests (natural montane forests, savannah forests, and tree plantations) cover about 673,636 ha (of which 125,889 ha are natural forests and 547,747 ha forest plantations of which 60% are smallholder woodlots, 12% are district forests and 28% are state forest.[19] Forest ecosystems in Rwanda are primarily contained within the protected transboundary areas of Akagera National Park, Nyungwe National Park, and Volcanoes National Park, and within Gishwati Forest Reserve, Iwawa Island Forest Reserve and Mukura Forest Reserve. Protected areas have been encroached and reduced in size through successive re-gazetting, particularly linked to the need to the resettlement of refugees after the 1994 conflict. In addition to these protected forest areas, Rwanda

[14] IMF (2008): Rwanda Poverty Reduction Strategy Paper. IMF Country Report No. 08/90.
[15] Ibid.
[16] Ibid.
[17] Ministry of Lands, Environment, Forestry, Water and Mines (2008): Rwanda Ecosystem Rehabilitation and Poverty Eradication Programme , draft concept note, Kigali, January 30, 2008, p. 1
[18] REMA (2007): Economic Analysis of Natural Resource Management in Rwanda.
[19] RNRA (2012): Rwanda Forest Cover Mapping using Aerial Photographs, Kigali, December, 2012, 110p. Definition of forest as it is provided in the forest law (2013): land covered with trees, shrubs and other plants or land which was covered with trees and is in the process of regeneration or under replantation or land that has not been covered with trees but is intended for forestry purposes or other activities related to forests

also contains remnant terrestrial ecosystems that have resulted from the fragmentation of former larger ecosystems. There are five such ecosystems in the Western Province (Mukura, Nyabitukura, Shagasha, Mashyuza and Kumbya Natural Forests); one in the Northern Province (Buhanga Natural Forest); seven in the Eastern Province (Ibanda-Makera, Nyagasenyi, Nyenyeri, Bukora, Rujambara, Muvumba and Karama Natural Forests); and one in the Southern Province (Busaga Natural Forest). Ecosystems contained within military domains in Rwanda are perhaps the best biodiversity reservoirs outside of protected areas, and consist of the Gabiro, Gako, and Nasho military domains, all located within the Eastern Province. In order to reverse deforestation, the government has embarked on a vigorous afforestation program, aiming to achieve 30% forest cover by 2020.

7. Forests in Rwanda provide wood fuel, food, construction materials and medicinal herbs to local communities. Forests also support a series of economic activities in the agriculture, tourism and energy industries. Firewood and charcoal supply 86% of the country's primary energy, and their value was estimated to be $122 million, or 5% of GDP in 2007. Plantations consist to 59% of Eucalyptus, and 28% pine trees.[20] Some 45% of wood on the market is Eucalyptus;[21] this wood comes from plantation forests. Forests also fulfil ecological roles, including acting as a biodiversity repositories, groundwater and stream recharge, flood control and regulators of regional and microclimates.

8. The average temperature in Rwanda has increased over the last twenty years, while rainy seasons are becoming shorter with higher intensity.[22] Climatic factors, exacerbated by loss of forest and vegetation cover, steep slopes and high dependence on traditional rain-fed agriculture, are causing a variety of impacts. The eastern and southeastern regions (Umutara, Ngoma, Bugesera and Mayaga) are most affected by prolonged drought, while the northern and western regions (Musanze, Rubavu, Nyamagabe and Huye) experience abundant rainfall that usually causes erosion, flooding and landslides. These extreme climate events have adverse impacts on agricultural productivity. For instance, 2008 harvests were negatively affected by serious droughts that came at the beginning of both planting seasons.

9. **The Nile-Congo Divide,** which roughly delineates the western boundary of the Albertine Rift, forms the divide between the two largest catchments in Africa along a north-south line: The westernmost fifth of Rwanda lies within the Congo basin, whereas the remainder is part of the Nile basin. Rwanda's two most important forest protected areas lay at either end of the Rwandan portion of the crest – to the north the Volcanoes National Park, and Nyungwe National Park to the south. The ridge in between has been largely deforested. It does, however, include Rwanda's two largest forest reserves, Gishwati and Mukura (see descriptions below, and map in Annex 8), which have been designated Key Biodiversity Areas for supporting population of eastern chimpanzee and an endangered swamp warbler, respectively. Other species of conservation concern along the Divide include mountain monkey, golden monkey (which is regionally endemic) owl-

[20] Sander, K. and Hendriksen, G., eds. (2012): Establishing a Green Charcoal Value Chain in Rwanda. The World Bank, Washington, DC.
[21] REMA (2009): State of the Environment Report and Outlook Report. Kigali.
[22] REMA (2011): Atlas of Rwanda's Changing Environment: Implications for Climate Change Resilience. Kigali.

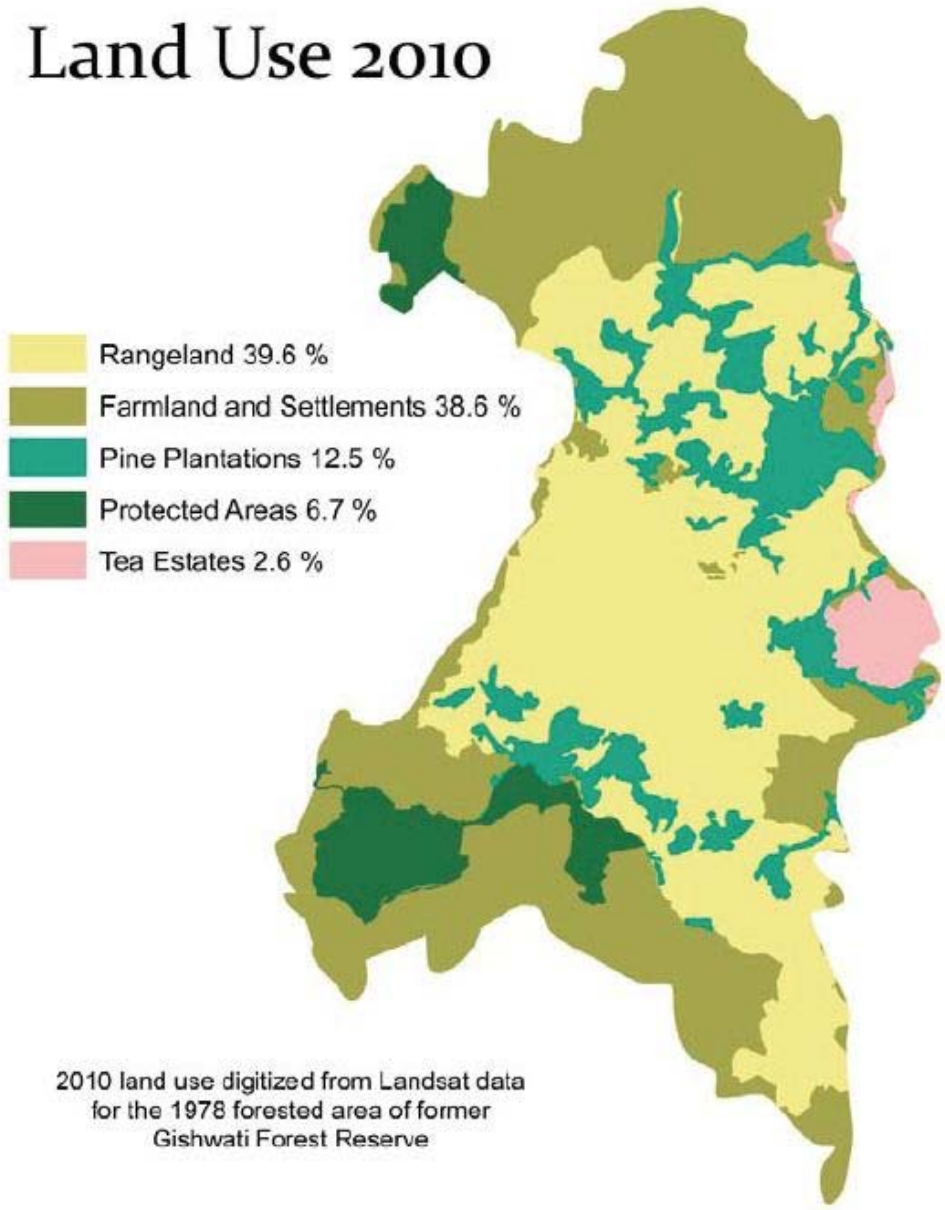
faced monkey, unusual aggregations of Angolan colobus which form groups numbering more than 400 individuals, Ruwenzori turaco, red-collared mountain babbler, Kivu ground thrush, and several endemic plants that have only been found in this landscape. 29 bird species are endemic to the Rwandan portion of the Nile-Congo Divide.[23] The total number of mammal, bird, reptile, amphibian, and plant species recorded from this landscape to date number 1,924, of which 213 species are endemic to the Albertine Rift and 43 species are threatened under the 2010 IUCN Red List.[24]

10. In higher regions of the Nile-Congo divide, temperatures vary between 15°C and 17°C, although they are on an upward trend. Rainfall and topography in Rwanda are most severe along the Nile-Congo Divide. Rainfall follows a bimodal cycle although it is generally abundant throughout the year along the divide, with average annual rainfall of between 1,200 and more than 1,500 mm.[25] Risks of flash floods and landslides are highest where recent deforestation has occurred, such as in the former Gishwati Forest Reserve (about two thirds of the sectors in the project area have been identified as exposed to flooding or landslides, or both). One flood event in 2007 alone caused more than a dozen deaths and led to extensive crop and property damage. A study on the economics of climate change in Rwanda estimated that the direct economic costs of the 2007 flood ranged from $4 million to $20 million in two districts alone.[26] Landslides and erosion in the Sebeya watershed are estimated to cause the loss of a million tons of soil per year, meaning that the watershed, which constitutes 1% of the Rwandan territory, is responsible for 7% of the national soil loss[27], reducing local agricultural productivity and causing heavy siltation of the Sebeya River, increasing water supply and hydropower maintenance costs.[28]

11. **The former Gishwati Forest Reserve** extends across Ngororero, Nyabihu, Rubavu, and Rutsiro Districts, all located within Western Province. Its relief is characterized by steep hills with an elevation range of 2,000-3,000 m above sea level (see Map for land use).

12. In all, using the local poverty line of RWF 64,000/month, 48.4% of the population of the Western Province lives below the poverty line, with 27.4% of the poor suffering from extreme poverty (2010/11 figures).[29] Poverty rates are higher in Rutsiro and Ngororero districts than in Nyabihu and Rubavu. Levels of food insecurity are higher in Nyabihu and Ngororero Districts than in Rutsiro, and are lowest in Rubavu.

[23] Personal communications with James Hogg, Albertine Rift Conservation Society (ARCOS).
[24] WCS (undated): Congo-Nile Divide Landscape. http://www.albertinerift.org/WildPlaces/CongoNileDivide.aspx Accessed November 12, 2013.
[25] REMA (2011): Atlas of Rwanda's Changing Environment.
[26] Stockholm Environment Institute (2009): The Economics of Climate Change in Rwanda.
[27] REMA (2007): Economic Analysis of Natural Resource Management in Rwanda.
[28] Andrew, G. and Masozera, M. (2010). Payment for ecosystem services and poverty reduction in Rwanda. Journal of Sustainable Development in Africa (Vol.12 (3). Clarion University of Pennsylvania, Clarion, Pennsylvania. http://www.fao.org/fileadmin/user_upload/kagera/resource/Rwanda%20PES.pdf (Accessed on December 17, 2011).
[29] National Institute of Statistics of Rwanda, Ministry of Health of Rwanda, and ICF International. 2012. Rwanda Demographic and Health Survey 2010. Calverton, Maryland, USA: NISR, MOH, and ICF International.



This map was received from Bruce W. Pengra, a Geographer at USGS Center for Earth Resources Observation and Science.

Map 1: Land Use (2010) of the Gishwati Forest Reserve

13. The land use in the former Gishwati Forest Reserve is dominated by cattle ranching (39.6% in 2010), smallholder farmland and settlements (38.6%), planted pine and eucalyptus woodlands (12.5%), and tea plantations (2.6%).[30] High population density has pushed agriculture onto steep slopes, and land holdings are usually very small and

[30] REMA (2011): Atlas of Rwanda's Changing Environment.

fragmented. Pasture land is being titled, with one hectare being given to each household, and parcels of land grouped by groups of ten households. There is a small amount of artisanal mining in the area. Infrastructure is poor, although the upcoming surfacing of the road linking Rubavu to Karongi is expected to improve transportation in the area.

14. The mountainous rainforest's story over the last eight decades has been one of dramatic deforestation for conversion to settlements, agricultural lands and pasture, and as well as for timber and energy usage. The forested area stood at about 70,000 ha in 1930, 28,000 ha in 1960 and 8,800 ha in 1990.[31] Inappropriate land use management policies in the early 1980s that sought to establish a forestry industry alongside cattle ranching led to the conversion of 70% of the former Gishwati Forest Reserve's natural forest cover into pasture and pine plantations. Deforestation continued apace between 1990 and 2005, in part due to the settlement in the area of refugees returned after the 1994 genocide. By 2008, the residual natural forest amounted to only 610 ha in the remnant Gishwati natural forest (see below), with some additional isolated tree stands remaining on the highest elevations. Some areas have also been reforested with exotic tree monocultures. The former Gishwati Forest Reserve was once an important source of goods and services ranging from wild fruit, wild vegetables, wild animals, foods and medicinal herbs. However, the deforestation of the former Gishwati Forest Reserve has resulted in serious loss of biodiversity.

15. Apart from a drastic reduction of endemic flora, fauna and avifauna, negative environmental impacts of this land conversion culminated in flooding in the neighboring low lying areas. Beyond loss of human life and extensive property and crop destruction and damage, flooding has been associated with increased health risks, as the flooded low-lying valleys and ponds act as breeding grounds for the malaria-transmitting mosquito. Following the 2007 floods, families that had settled on areas that were especially prone to soil erosion and landslides were resettled outside the area.

16. Like other tropical forests, the former Gishwati Forest Reserve helped maintain soil quality, limit erosion, stabilize hillsides and modulated seasonal flooding. It protected downstream water resources from siltation. The loss of the forest in many areas had environmental consequences such as accelerated soil erosion and landslides. This is exacerbated by cultivation on steep slopes and the fragile volcanic soil of the region. The area's mountainous relief combined with in appropriate land use and cultivation techniques leads to high soil loss. This, together with the unpredictable weather patterns associated with climate change, has reduced agricultural productivity. Agricultural loss in the Gishwati-Mukura landscape due to degradation was estimated by farmers to be about RWF 120,000 per season.[32] Soil erosion also leads to the heavy siltation of the Sebeya River, raising the costs of both purifying water and hydropower plant maintenance downstream in Rubavu District.

17. The area has been subject to a few interventions to rehabilitate it. The US$ 3.3 million LDCF-funded project "Reducing Vulnerability to Climate Change by Establishing Early

[31] Ibid.
[32] REMA (2009): State of the Environment Report and Outlook Report. Kigali.

Warning and Disaster Preparedness Systems and Support for Integrated Watershed Management in Flood-Prone Areas" is helping 10 districts in Rwanda – including the four in which LAFREC will work– to pilot adaptation measures. Activities include those to lessen soil erosion, such conservation of river banks, agroforestry, afforestation, progressive terracing, and water retention structures. The project is expected to draw to a close by 2014.[33]

18. The US$ 0.9 million second phase of the Decentralization and Environment Management Project (DEMP), supported by UNDP, sought to undertake collaborative planning and management of environment and natural resources of Lake Kivu, associated catchment areas, islands, and marginal and fragile ecosystems close to the LAFREC project area. Running from 2008 to 2013, it focused on scaling up environmental protection investments and community-based resource management capabilities for improvement of livelihoods. Using decentralized delivery mechanisms from the district down to the *umudugudu* level, it rehabilitated ecosystems to maintain biological diversity, conducting tree planting, lakeshore, riverbank, and watershed protection, among other activities.[34]

19. The US$ 16 million Gishwati Water and Land Management (GWLM) project, led by MINAGRI, conducted land husbandry interventions until 2013, however it only covered 10 percent of the area it had initially targeted. The project re-zoned land use in of the Arusha sector in the northern part of the former Gishwati Forest Reserve, which is subject to high flood risk, determining that around two-thirds of the crop land should be turned over to pasture or forest. On the remaining crop land, the project established improved terraces, using a similar to that of the LWH project. The reallocation of land use required resettlement of a significant number of households, which a cross-sectoral Gishwati Land Redistribution Committee was established to manage.

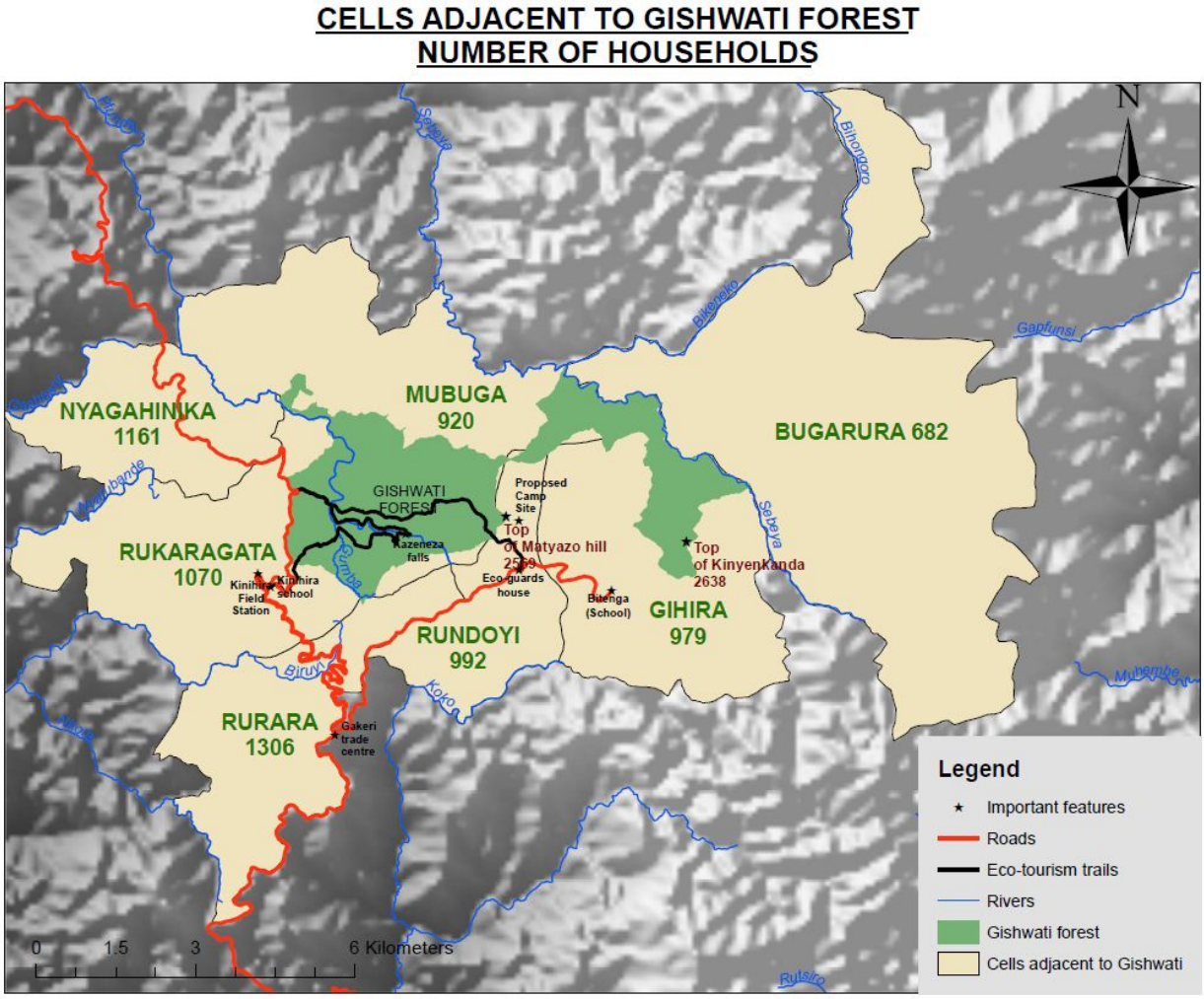
20. In addition, the government of Rwanda, led by MINALOC, has completed the process of giving land titles to the population. However, the land use priorities of the various government and private sector stakeholders in the area sometimes conflict, and there is general recognition that increased coordination would render more sustainable the utilization of the Gishwati–Mukura Landscape.

21. **The remnant Gishwati natural forest**, a forest reserve in its own right, is the last remaining stand of natural forest situated within the former Gishwati Forest Reserve (see Map 2 for context). Along with the Mukura Forest Reserve (see below), it also forms the only remaining natural forest in the wider landscape. Natural regeneration and extension of the Core Forest through the Gishwati Area Conservation Program (GACP) – conducted by the Great Apes Trust in collaboration with REMA from 2008 to 2012 – increased the size of the Core Forest from 610 to 1,484 hectares. The project actively involved local communities as eco-guards and as beneficiaries of a number of sustainable livelihood practices based on the remnant natural forest's tourism potential. However that

[33] http://www.thegef.org/gef/node/3340

[34] www.undp.org/content/rwanda/en/home/operations/projects/environment_and_energy/decentralization_and_environment_management_project_phase_II/

potential still largely remains to be tapped as no further investment in tourism infrastructure or promotion has taken place since the closure of the project in 2012. A local NGO, Forest of Hope Association, comprised of former employees of the project remains in place and carries out basic ecoguard functions with external funding, including a recent grant from WWF-Sweden.



Map 2: Gishwati core forest and adjacent cells with number of households[35]

22. To allow for the expansion of the core forest, the government resettled 152 families from the Kinyenkanda site to Bitenga, a nearby village. Although the families were compensated for the resettlement, a study carried out by the local NGO APEFA found several shortcomings in the process and outcomes, as indeed is the case for broader resettlement activities carried out under GWLM.[36]

[35] Source: Great Apes Trust

[36] Bizoza, A., Shirimpumu, A., Nkeshimana, G. (undated): Socio-Economic Baseline Survey of Resettled Households from Gishwati. APEFA.

23. The core forest still faces several challenges, including: illegal use of forest resources including illegal mining, cattle grazing, charcoal making, firewood collection, timber harvesting, collection of handcraft materials and collection of wild honey; presence of eucalyptus and ferns; insufficient local support for conservation activities; lack of sustainable source of funding for long-term conservation; insufficient wildlife habitat; and insufficient understanding of ecosystem dynamics.[37]

24. The core forest has recorded 58 species of trees and shrubs, including numerous indigenous hardwoods and bamboo. A wide range of fauna can be found within the forest. This includes four species of primates (Eastern chimpanzee, and golden, blue, and L'Hoest's monkeys). The chimpanzee population increased from 13 to 20 during GACP's operation, and current estimates put the number around 30[38]. Other mammals in the reserve include the red river hog, the black front duiker, the southern tree hyrax, the serval, and *felis aurata*. In addition, 209 species of birds, 20 of which are endemic to the Albertine Rift, and 10 of which are on the IUCN Redlist (White-backed Vulture, Hooded Vulture, White-headed Vulture, Bateleur, Martial Eagle, Crowned Eagle, Pallid Harrier, Dwarf Honeyguide, Lagden's Bushshrike, Shelley's Crimsonwing) and a number of amphibians and reptiles have been recorded in the reserve.[39]

25. A Great Apes Trust survey found 194 individuals using the areas immediately abutting the core forest. The primary land use is for pasture, with some mixed pasture-cropping systems, but relatively few pure cropping systems and only very small areas of plantation forests.[40] In the broader vicinity, residents cultivate tea, potatoes (mainly Irish), maize, and beans.

26. More broadly speaking, in Rutsiro District, 92% of women and 76% of men are engaged in agriculture (compared to 84% and 68%, respectively, as a national average), with the difference among men made up primarily by unskilled and skilled labor. Primary school attendance in Rutsiro District is the lowest in the country, and secondary school attendance among the lowest.[41]

27. **Mukura Forest Reserve** extends across Rutsiro (Mukura and Rusebeya Sectors) and Ngororero (Ndaro and Bwira Sectors) Districts. Mukura has enjoyed reserve status since 1951, and today covers 1,913 ha, 1,726 of which are natural growth and 187 ha naturally regenerated forest. This reduction is the result of a succession of deforestation in the surrounding areas, especially following the settlement of refugees in the area in 1994.[42] The forest stabilizes agriculture in surrounding areas by absorbing excess water and

[37] Great Apes Trust (2012): Handover for Management of the Gishwati Forest Reserve Between Great Ape Trust / Earthpark and Ministry of Natural Resources (Former Ministry of Environment and Lands).
[38] Personal communication, Forest of Hope Association.
[39] Personal communication, James Hogg (ARCOS), and Jean P Vande Weghe and Gaël R Vande Weghe (2011): Birds in Rwanda an Atlas and Handbook (RDB)
[40] Great Apes Trust (2012): Land use around Gishwati Forest Reserve.
[41] National Institute of Statistics of Rwanda, Ministry of Health of Rwanda, and ICF International. 2012. Rwanda Demographic and Health Survey 2010. Calverton, Maryland, USA: NISR, MOH, and ICF International.
[42] Munanura, I., Mulindahabi, F. and Barakabuye, N. (2005): Mukura Forest Biodiversiety Survey. WCS and ARECO, Kigali.

preventing runoff and erosion. It serves as the sources for a number of rivers and streams, including Ntaruko, Ndaba and Rutanzongera. However, the disappearance of some parts of the forest has led many of these springs to become seasonal. On its exterior, the forest is surrounded by agriculture lands, scattered pine plantations that serve as an incomplete buffer zone, and other physical features such as rivers and roads. Small-scale mining is taking place on the edge of the reserve, potentially affecting water courses running through the natural forest. Significant mining is currently also taking place within and around the reserve. Moreover, previous studies have found human encroachment in the form of livestock grazing, poaching, wood, honey and liana collection,[43] and agriculture.[44]

28. Due to its high elevation of 2,000 to 2,700 meters, Mukura's mean annual temperature is 15 °C. Its mean annual rainfall is 1500 mm, though this is erratic.[45] As the relief is very steep and the tree cover is very low, there is a high risk of soil erosion and land degradation. Current climate variations are increasing the stress on the natural resources which are already overused by the dense and poor population surrounding the reserve.

29. Mukura Forest Reserve contains highly diversified and rich flora. Among its at least 243 plant species,[46] the following are predominant: *Psychotria mahonii*, Macaranga, *Psydrax parviflora*, *Syzygium guineense*, *Rytiginia kigeziensis*, mutundu, *Rapanea melanophroides*, lemonwood, *Peddiea rapaneoides*, *Galiniera saxifraga*, *Vernonia lasiopsis*, *Chassalia subchreata*, hagenia, false assegai, *Olinia rochitiana*, chewstick, lebekyet, silky bark and *Vernonia kirungae*. The forest contains common mammal species, including the fire footed rope squirrel, the Ruwenzori sun squirrel, the greater cane rat, the black-backed jackal, and *Herpestes urva*, but no primates.[47] In addition, it is home to at least 15 bird species endemic to the Albertine Rift, and 57 that are listed on the IUCN Red List, of which two (Grauer's Swamp Warbler and the Grey Crowned Crane) are endangered. The forest also shelters various reptile species, including the puff adder.[48] The reserve has a partial buffer zone, however, like in the remnant Gishwati natural forest, locals believe it is not sufficiently demarcated.

30. Mukura Forest Reserve is surrounded by densely populated areas (Rutsiro District has a population density of 279 inhabitants per km^2, and Ngororero of 493, however in some sectors, the density exceeds 1,000 inhabitants per km^2) Children and youth make up 80% of the population of Rutsiro District. The vast majority of the communities surrounding the reserve are engaged in agriculture (78% of households in Rutsiro District, 74% in Ngororero). However, landholdings are small and insufficient for subsistence: In Rutsiro District, 52% of households have less than 0.3 ha of land under cultivation, and 50% in

[43] Ibid.
[44] Zirimwabagabo Bikaba, D. and Habiyambere, T. (2009): Plan d'aménagement et de gestion de la Réserve forestière de Mukura en Province de l'Ouest au Rwanda : 2007-2011. ARECO, Kigali.
[45] REMA (2011): Atlas of Rwanda's Changing Environment. Kigali.
[46] Munanura, I., Mulindahabi, F. and Barakabuye, N. (2005): Mukura Forest Biodiversity Survey. WCS and ARECO, Kigali.
[47] REMA (2009): State of the Environment Report and Outlook Report. Kigali.
[48] ARECO (2012): Mukura Forest Integrated Landscape Assessment: A report on Status of Biodiversity, Ecosystem Services, and Socioeconomic conditions.

Ngororero. In Rutsiro, only 37.5% of agricultural households use fertilizers, and only 5% use improved seeds, whereas in Ngororero 43% use fertilizers and 22% improved seeds (agroforestry is practiced by only about a third of households in the Gishwati-Mukura landscape, though only a fifth in the northern parts[49]). As a result, only 49% of incomes derive from agriculture in Rutsiro[50], and many rely on occasional labor or micro-enterprises to supplement their incomes, while others rent land for cultivation from non-farmers. Mining forms a particularly important income source around Mukura. Soils in the area are perceived to be generally poor and knowledge of sustainable land management techniques is low among farmers. The main crops grown are potatoes, maize, beans, and tree tomatoes. Other economic activities include mining for coltan, cassiterite, and wolfram, and bee keeping.

31. The poverty rate around Mukura Forest Reserve is somewhat higher than in the Western Province as a whole (in Rutsiro District, it is 53%, with 26.1% in extreme poverty, in Ngororero 51.9% and 29.5%, respectively. while the average Western Province poverty rate is 48.4%). [51] Most residents have access to an improved water source, and about half do so within less than 10 minutes' walking distance from their home. Health centers and schools are also judged to be relatively accessible,[52] however Rutsiro and Ngororero Districts still have among the lowest school attendance rates in the country. A non-representative survey in the area found the average family to have 5.7 members,[53] larger than the national rural average of 4.4.[54] The surrounding areas suffer from a shortage of firewood and charcoal as a result of generalized deforestation in the area, which results in pressure on the reserve's wood resources.[55] As a result of a high sensitivity and low adaptive capacity, the overall vulnerability to climate change in the wider Gishwati-Mukura landscape is very high.[56]

32. A law has now been drafted to gazette the remnant Gishwati natural forest and the Mukura Forest Reserve into a joint national park measuring 3,427.5 ha (1,439.7 ha and 1,987.7 ha, respectively). The draft law is undergoing a process of consultation and must then be ratified by parliament, but it is hoped that this process will be completed in 2014. Maps 3 and 4 show the boundaries of the Gishwati and Mukura sections of the park (and their buffer zones) as proposed in the draft law.

[49] Glwadys Gbetibouo and Dr. Anthony Mills (2012): Baseline information and indicators for the Rwanda AAP Project: "Supporting Integrated and Comprehensive Approaches to Climate Change Adaptation in Africa – Building a comprehensive national approach in Rwanda" and 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" C4 Ecosolutions.

[52] The remainder is made up of: 23.2% from wages, 12.7% from business, 6.9% from private transfers, 1.4% from public transfers and 6.4% from rents

[52] Ibid.

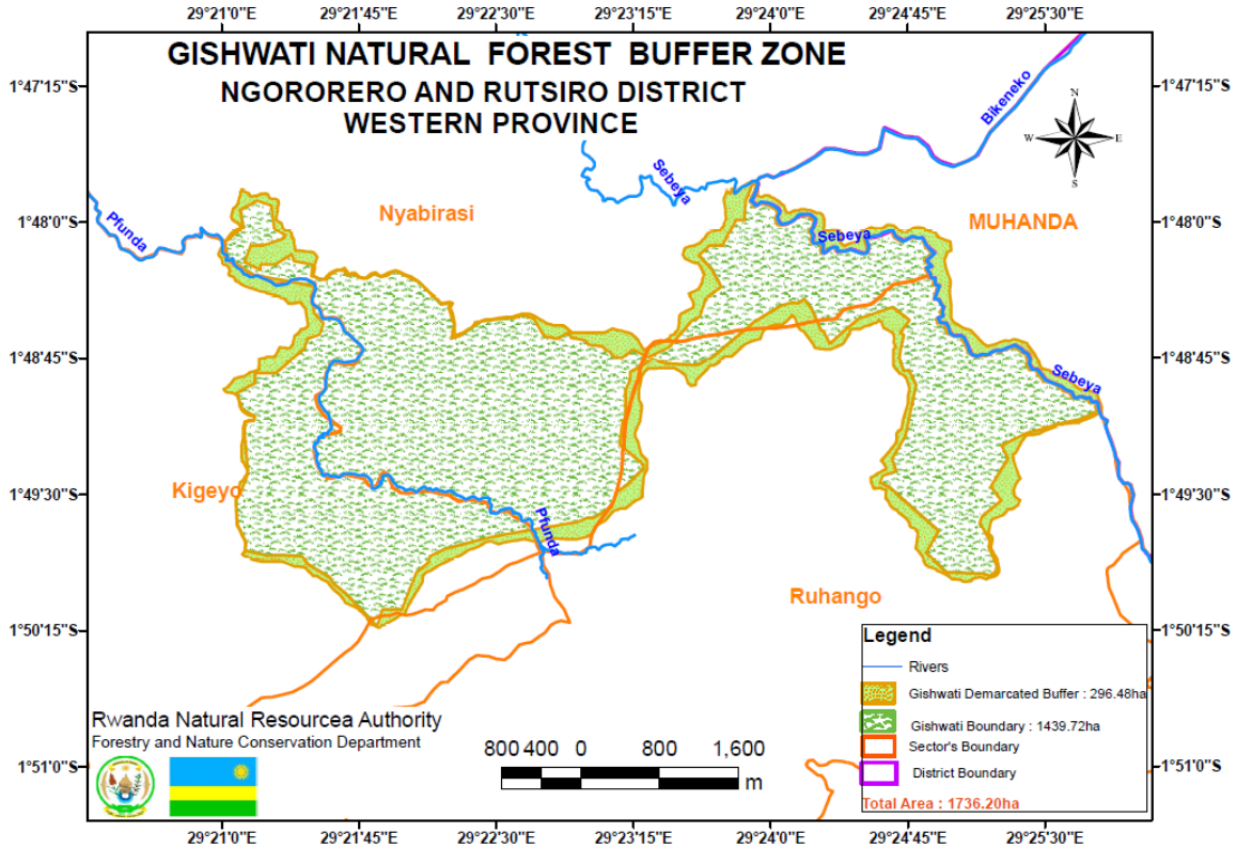
[53] Ibid.

[54] National Institute of Statistics of Rwanda, Ministry of Health of Rwanda, and ICF International. 2012. Rwanda Demographic and Health Survey 2010. Calverton, Maryland, USA: NISR, MOH, and ICF International.

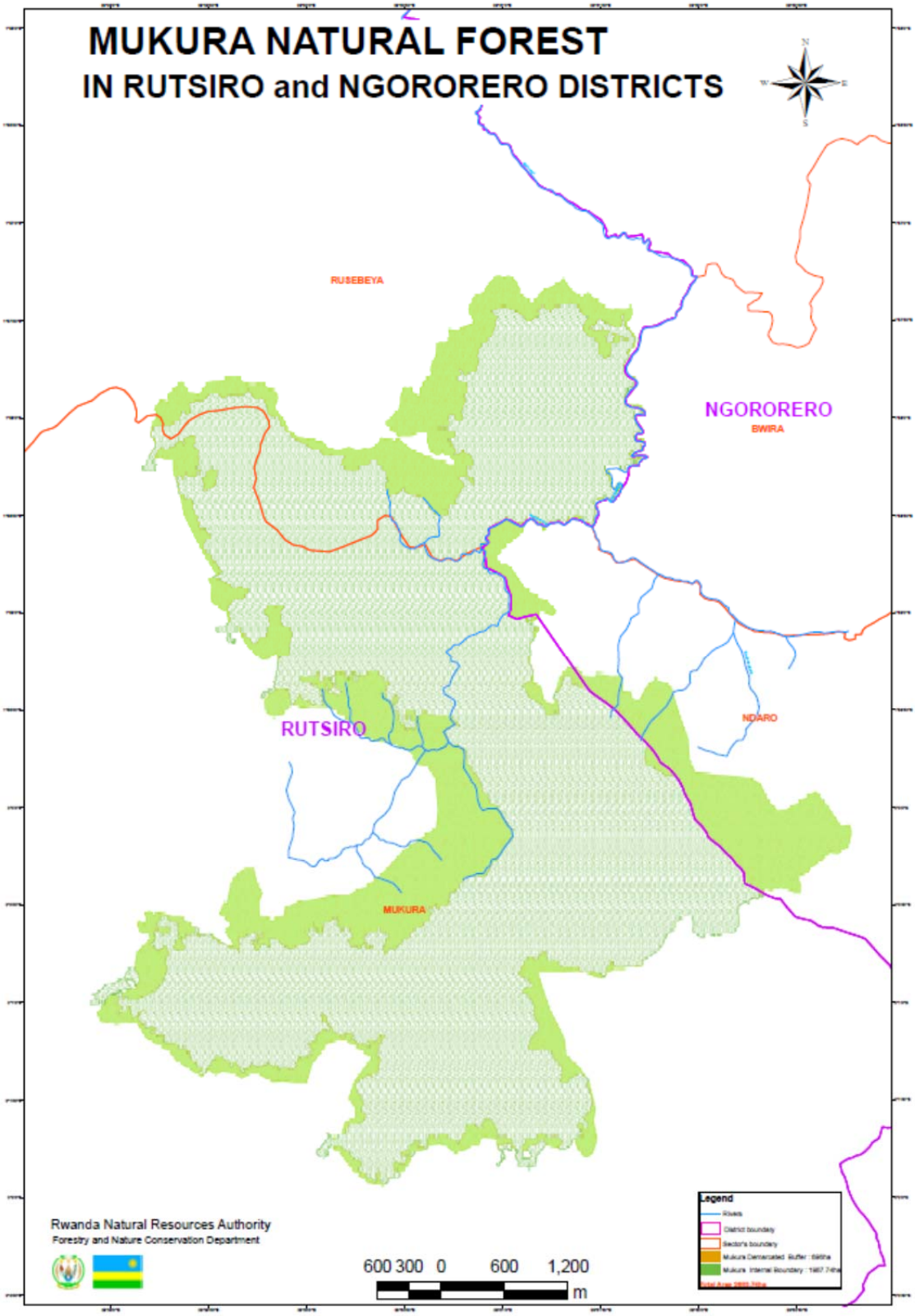
[55] Zirimwabagabo Bikaba, D. and Habiyambere, T. (2009): Plan d'aménagement et de gestion de la Réserve forestière de Mukura en Province de l'Ouest au Rwanda : 2007-2011. ARECO, Kigali.

[56] Glwadys Gbetibouo and Dr. Anthony Mills (2012) op cit.

33. LAFREC targets an area of some 40,000 ha, which covers the former Gishwati Forest Reserve, a corridor between the remnant Gishwati natural forest and Mukura Forest Reserve, and Mukura Forest Reserve itself. The area of interest is home to cells that are home to a total of 224,533 people.



Map 3. Gishwati section of National Park according to draft law.



Map 4. Mukura section of National Park according to draft law.

Description of Project Components

Component 1: Forest-friendly and climate-resilient restoration of Gishwati-Mukura landscape (US$8.227 M)

34. The first component will finance technical assistance, workshops, goods, works, services and operational costs in support of the application of a landscape approach to forest restoration and conservation in the Gishwati-Mukura landscape,[57] which is of exceptional national importance for both forest conservation and climate adaptation.[58] It aims to reverse the processes of deforestation and land degradation that have occurred in this landscape over recent decades through forest restoration, agroforestry and land husbandry approaches that will enhance ecological connectivity and hydrological functions of the landscape. In synergy with the land management interventions, the component will also enhance community resilience through promoting diversified and climate-smart livelihoods, and improving flood forecasting, early-warning and preparedness.

35. The main activities of this component are:

    a. Forest restoration and strengthened management of the remnant Gishwati natural forest and Mukura Forest Reserve, supporting the establishment of a national park to protect the largest remnant natural forest areas of the Nile-Congo Crest outside of the existing national parks system.
    b. Collaboration with the LWH project to support restoration of a forest mosaic within the former Gishwati Forest Reserve through silvo-pastoralism, re-planting of protection forests and promotion of agro-forestry techniques incorporating native species.
    c. Participatory micro-catchment planning and management in the Gishwati-Mukura corridor area emphasizing the re-establishment of protection forest strips to enhance watershed function as well as biological connectivity.
    d. Strengthening of community organization and capacities, and material support for adoption of diversified livelihoods that complement landscape restoration activities, and enhance climate resilience.
    e. Improved flood forecasting and preparedness to further attenuate a critical climate risk linked to landscape management.

[57] The target landscape is composed of the area of the former Gishwati Forest Reserve, the Mukura Forest Reserve and its environs, and the putative corridor area linking Mukura to the remnant Gishwati natural forest in the SW corner of the former Gishwati Forest Reserve. Flood forecasting work would cover the whole of the Sebeya River basin (and potentially small flood-prone catchments in the north of the former Gishwati Forest Reserve, such as Lake Karogo), which covers much of the area of the former Gishwati Forest Reserve, but extends beyond it to the West, reaching the shores of Lake Kivu at Rubavu. Much of the target landscape is located along the boundary between Rutsiro and Ngororero Districts, the former Gishwati Forest Reserve also includes southern parts of Rubavo and Nyahibu Districts.

[58] Rwanda's NAPA identifies two sets of Districts for priority implementation of climate adaptation activities: (a) districts prone to drought - Bugesera, Kirehe, Kayonza, Gatsibo, Rulindo and Nyamagabe; and (b) districts prone to floods - Nyabihu, Rubavu, Rutsiro and Ngororero. The flood-prone districts are all situated around the Gishwati landscape as its high relief, rainfall and recent loss of protective vegetation have made it the highest risk area for floods and landslides in the country.

Sub-Component 1.a.: Upgrading and sustainable management of Gishwati andMukura Forest Reserves (US$ 1.408 million)

36. The project will support the planned upgrading of the remnant Gishwati natural forest (the remaining natural forest area within the former Gishwati Forest Resrve) and the Mukura Forest Reserve to a single protected area. These are the only two significant remnant natural forest areas along the Nile-Congo Crest between Nyungwe and Volcanoes National Parks. The Forest Department of RNRA is currently preparing a proposal to designate the two sites as a single national park. A new law establishing the Park has been drafted and the process is hoped to be completed around the time that LAFREC becomes Effective at the end of 2014, at which point the day-to-day management responsibility would pass to RDB. Over 7,000 people live in the vicinity of the remnant Gishwati natural forest and a roughly similar number around the Mukura Forest Reserve. The 19 km stretch of hills between the two reserves is also densely populated and mainly occupied by agricultural land.

37. Once the park is legally gazetted, RDB would support routine operating costs, such as the salaries of eco-guards and tourist guides, which the Project would complement with investments to complete the planning process, provide basic infrastructure and accelerate ecological restoration. Based on consultations with the Forest Department, it was agreed that the priority investments to be supported will focus on:

38. *Physical demarcation of the reserves*. The boundaries of core forest areas and buffer zones for the National Park are proposed in the draft Law. Under the Rwandan protected areas management approach, buffer zones are legally gazetted as part of the reserve and serve to demarcate the boundary of the reserve, as well as providing for some sustainable use by local residents (given that almost all extractive use is banned within the reserves proper). They typically comprise narrow belts of tree crops or other perennials that dissuade wildlife from moving into surrounding agricultural land, as well as boundary demarcation. Establishment of buffer zones for Gishwati and Mukura may affect some small plots of agricultural land, but no housing. Any resettlement issues associated with the establishment of buffer zones will be dealt with according to the Resettlement Policy Framework for the project. The project will support consultation meetings with local communities to determine the use and co-management structure for the buffer zones, re-planting of the buffer zones according to the agreed usage, and physical demarcation of the park with fencing and signage (which is already partially in place for the remnant Gishwati natural forest).

39. *Restoration of degraded natural habitats*. Around 600 ha of the remnant Gishwati natural forest area, much of which was previously subject to extensive human use, is highly degraded and in need of restoration, including the Kinyenkanda extension that is currently under passive regeneration. There are also extensive habitat restoration needs within Mukura Forest Reserve (perhaps totaling 200+ ha), due to the history of previous cultivation and illegal artisanal mining in the area, as well as patches of eucalyptus and other non-native species that need to be replaced. In both reserves, assisted regeneration

will be carried out involving planting of native species, and where necessary removal of exotics, such as eucalyptus or ferns that can also suppress tree regeneration. In some limited areas where mining has taken place, there may also be needs for small-scale works to fill excavations and return top soil and/or organic nutrients. An experimental approach may be taken in some locations, establishing trial plots with varying degrees or models of intervention in the natural regeneration process. Local labor will be used for restoration works, including (which feasible) for the production of native tree seedlings.

40. *Development (and updating) of management plans*. A management plan exists for Mukura Forest Reserve, but it is outdated. None exists yet for the remnant Gishwati natural forest. A plan will be developed for the management of both areas as a single reserve. The management plan will address ongoing restoration and ecological management needs,[59] a protection plan based on identification of the most critical biodiversity elements, and a strategy for eco-tourism development.[60] Much of the plan, however, will address the management of needs of the local population, in particular provision of substitutes for resources which were previously accessed from the forest reserves[61], co-management and sustainable use arrangements for the buffer zone, and to the extent possible, benefit-sharing arrangements[62], including local participation in tourism development. This will rely on socioeconomic surveys of the local population, SWOT analysis identifying key actors and their roles, and validation through stakeholder consultation at the local and national levels. Around the remnant Gishwati natural forest, this will also build on the experience of the earlier Great Apes Conservation Trust project and activities that have been maintained by the Forest of Hope Association, such as the establishment of a handicrafts cooperative and bee-keeper's association, and support to groups involved in traditional healing and collection of medicinal plants, as well as traditional culture and dance.

41. The management planning process is also expected to result in the preparation of a Biosphere Reserve nomination to the UNESCO Man and the Biosphere Program for the Gishwati-Mukura National Park and surrounding the landscape. UNESCO have carried out an initial visit to the area and are enthusiastic about its potential to qualify for

[59] A long-term management strategy is needed for the chimps and other primates in the remnant Gishwati natural forest, if they are to be able to recover to a viable long-term population size. This should consider the potential for recolonization of adjacent areas of regenerating forest and/or re-introduction to Mukura Forest Reserve to form part of a managed meta-population. Work on this will begin during the project with studies of the primate populations (see Component 2), and elements will be incorporated into short-term management plans as appropriate.

[60] Ecotourism will be based on a realistic assessment of the short and long-term potentials in relation to the broader development of access and tourism in the Lake Kivu Region. It will also take into account the need to avoid stressing key wildlife populations (particularly the remaining chimps in the remnant Gishwati natural forest) by encouraging an inappropriate intensity or pattern of visitation. These small forest areas are not going to rival Volcanoes or Nyungwe National Parks as international tourist attractions, but may provide interesting day trips for a mixture of scenic, bird-watching, ethnic and eventually primate-watching activities for visitors overnighting next to Lake Kivu.

[61] The Process Framework developed as part of the social safeguards documents for the project will set out minimum requirements in this regard.

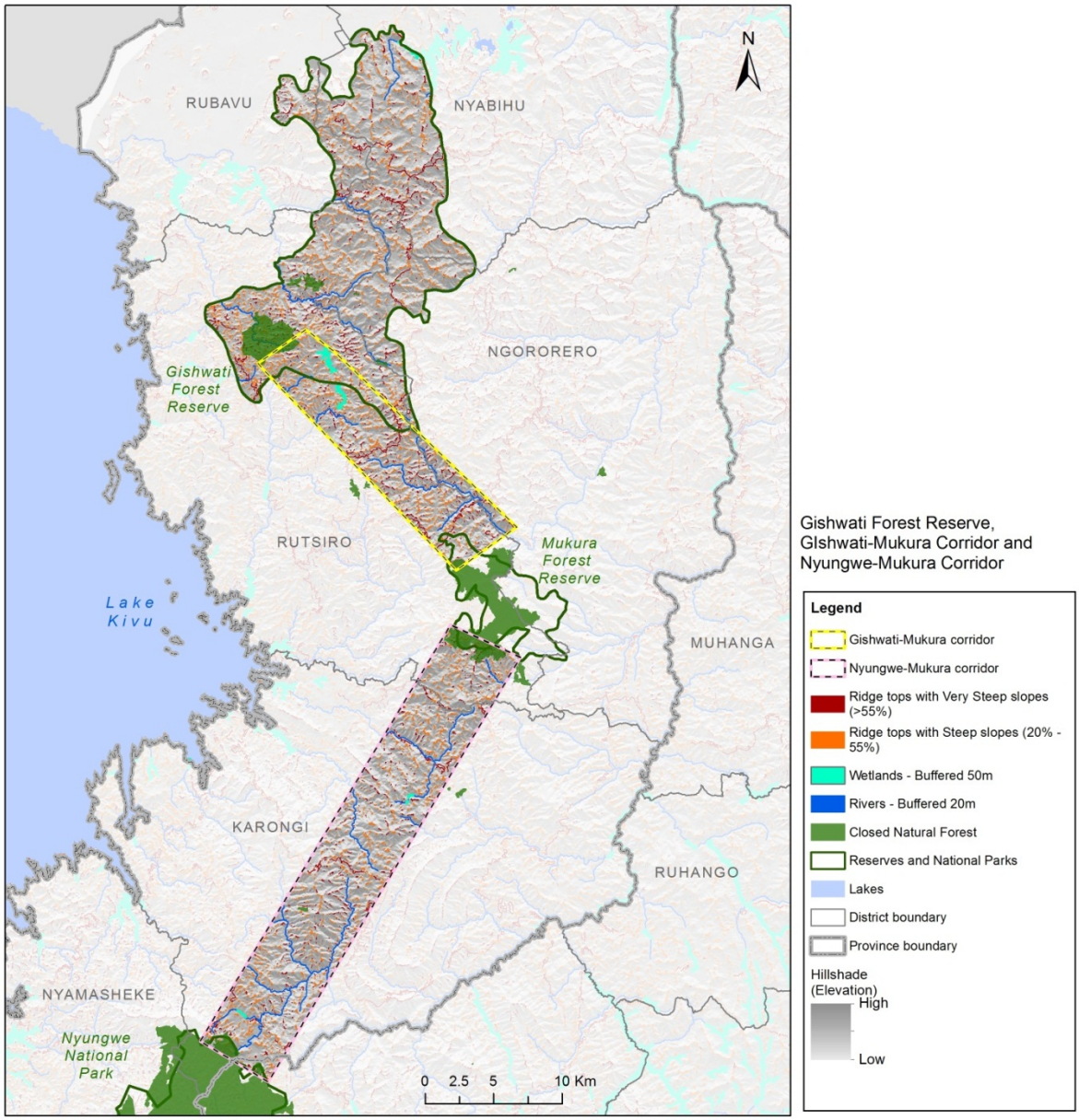
[62] Even before the Gishwati-Mukura Park itself generates significant visitor revenue, some RDB revenues from other Parks, especially Volcanoes, are expected to be shared with local revenues, as funds are shared across the National Park system.

Biosphere Reserve designation as a site to highlight the integration and restoration of biodiversity within a productive landscape. Such a designation would bring international recognition to the site, supporting efforts to increase tourism and the potential for external support.

42. *Training and equipping of local eco-guards*. Six local eco-guards have been supporting community-based protection of the remnant Gishwati natural forest for several years. After establishment of the national park, the cadre of eco-guards is expected to be extended to 12 persons each for the Gishwati and Mukura sections. The project will provide basic equipment such as boots and uniforms to the guards, as well as training to enhance their abilities to record systematic threat monitoring for the reserve (likely using WWF's SMART system), act as community liaisons. In addition to the community-based activities of the eco-guards, the project will provide resources to mobilize periodic spot-checks and support from local law enforcement agencies where serious issues are involved. Although enforcement will take a sensitive and graduated approach with local community offenders, there will be zero tolerance of mining (which is a completely illegal activity within the reserves), and repeat offenders will be subject to criminal prosecution. Chimpanzee habituation and tourist guiding responsibilities may also be granted to the eco-guards or to additional staff engaged specifically for those purposes. Should there be a delay in the establishment of the national park, the project may directly support the existing community eco-guards with stipends as an interim measure, given that the existing funding through the Forests of Hope NGO is extremely limited.

43. *Installation of basic infrastructure*. In accordance with the management plan, the project will provide basic visitor infrastructure, such as visitor centers, viewing platforms, signed nature trails (around 20km in each area), and patrol posts (probably three for each area).

44. *Environmental education*. An environmental education programs, particularly targeting local communities and environmental clubs in schools will be continued in the area surrounding the remnant Gishwati natural forest and extended to that surrounding the Mukura Forest Reserve to explain the need for biodiversity protection and the specific responsibilities of local residents. Activities may also include creating literacy centers for adults as focal sites for environmental education, as well as local exchanges with communities around Volcanoes National Park. Effectiveness will be assessed through attitudinal surveys, and programs adjusted as necessary.



Map 5: Potential protection forest areas within the Gishwati-Mukura Corridor, based on analysis of IUCN / WRI

<u>Sub-Component 1.b.: Forest restoration and land husbandry in the Gishwati-Mukura landscape (US$ 3.019 million)</u>

45. Moving beyond the core forest reserves themselves, the project will work on management of the broader Gishwati-Mukura landscape to enhance both production and watershed values, whilst capitalizing on opportunities to also increase the representation of native forest elements and therefore biodiversity connectivity in the landscape. The target landscape comprises a roughly 50 km long section of the Nile-Congo Crest, including the former Gishwati Forest Reserve and the (corridor) area to its south as far as the Mukura Forest Reserve and its surroundings. The project would finance planning at

the landscape level and with individual communities, and would support the implementation of tree-based landscape restoration approaches through provision of training, seeds, materials (including tools and fencing), and through payment for local labor.:

46. *Sustainable land management with corridor communities*. Establishment of a Gishwati-Mukura forest corridor has been adopted as a national goal and is reflected in the National Land Use Master Plan. However, the high population density (in the order of 500 person per km^2) and the almost complete agricultural conversion of the putative corridor area mean that there is no realistic potential for re-establishment of a broad swath of forest without major economic and residential dislocation of local communities. The foreseeable goal is therefore not to establish a contiguous natural forest corridor, but to increase the representation of native forest elements in the landscape, enhancing biological connectivity via an archipelago of ecological islands and soft boundaries. Preliminary analysis of forest landscape restoration potentials by IUCN identified potential protection forest strips along ridge-tops, extreme slopes, and riparian buffers, whose re-forestation would be expected to enhance overall landscape function (protection against extreme run-off, land slips, erosion and siltation). Similar preparatory work was conducted by the Great Apes Trust.[63] Set-aside of these highly vulnerable and/or unproductive lands, combined with agroforestry techniques which favor native species, offers the potential to greatly increase biological connectivity whilst maintaining or enhancing the productive value of the landscape. The project will pilot this approach through participatory micro-watershed planning with local communities to identify sustainable land management investments with a particular emphasis on the promotion of agroforestry techniques that incorporate native species. The planning process would result in agreement on a set of micro-catchment rehabilitation actions, similar to those under other projects, such as LWH and the GEF Kagera project, but with added emphasis on identification of agroforestry potentials (see text box below). Whereas LWH emphasizes areas with potential for intensive hillside rehabilitation investments in the form of radical terracing, the approach would be adapted to map and target areas with potential for establishment of protection forest strips. Significant investments in intensification of land use via terracing could be offered to communities in return for restricting agriculture in the most vulnerable lands and establishing protection forests. Where there is little scope for restoring forest elements, project investments would be limited to more extensive SLM investments, such as enhanced multi-purpose agroforestry techniques. Planning and implementation of the corridor pilot would start at either end, in the environs of the two reserves, as the project will need to work with these stakeholder communities anyway, but mapping and reconnaissance of the entire area would also be used to identify sections of the corridor with the greatest potential and willingness to restore natural forest elements.

[63] Great Ape Trust/Earthpark Gishwati Area Conservation Program (undated): Carbon Farming for Sustainable Forest and Biodiversity Restoration in the Gishwati Forest, Rwanda. Proposal for a Pilot Program.

Text box –Land husbandry to landscape management.
The LWH project already utilizes a land husbandry model that incorporates multiple sustainable land management technologies. Drainage is managed in treated areas with drainage lines and cut-off drains established to reduce surface flow across agricultural plots. Check dams (small-scale in-stream silt traps constructed with sticks and vegetation) are established along drainage lines to reduced water velocity and sediment transport. Irrigation ponds and reservoirs are protected by concentric rings of grasses, shrubs and trees (consisting where possible of economically useful species) to further reduce siltation.
In-field, compost is applied, and legumes and trees incorporated. Additional soil protection measures are applied depending on slope. On flat lands (0-6% slope), grass strips, trash lines and mulching are applied; progressive terracing (construction of bunds) is applied on 6-16% slope; bench terraces are established on 16-40% slopes and narrow-cut bench terraces on slopes up to 60%; and above 60% gradients, only planting pits for fruit and other agroforestry trees are established.

LAFREC will aim to extend this model through identifying and implementing options with local communities for enhanced forest representation and landscape functions, including:

- Intensification and diversification of agroforestry techniques: This will involve extending the diversity and intensity of agroforestry trees already used to stabilize the slopes of terraces and improve soil fertility, promotion of perennials and tree-crops (including tea, shade coffee, fruit trees, etc), inter-cropping or planting of in-field trees, and shelter-belts / live-fences. This will particularly promote the use of local species, such as Podocarpus, Polyscias fulva, Entantophrama, croton megalocarpus, Markhamia lutea, Vernonia Amydalina Mytragyna, and sygygium, in addition to exotics like Alnus acuminata, Acacia Agustima and Acacia melanoxylon.
- Establishment and improved management of woodlots: Rwanda already derives most of its household energy from small-scale woodlots, but they are typically managed inefficiently, and significant productivity gains can be achieved through improved spacing, and soil and fire protection. There are also potentials for introducing more environmentally friendly approaches than typical eucalyptus monocultures, which may involve intercropping and a broader species mix to establish more complex understories and greater hydrological and pest resilience.
- Wetland / riparian habitat restoration: REMA has been investing in restoration of wetland buffers, including in northwest Rwanda through the DEMP and LDCF projects, but additional areas remain within the Gishwati-Mukura landscape. These reduce soil loss and improve the health and productivity of wetlands.
- Addressing point-source pollution: Even in a rural setting, specific point sources may contribute a significant part of pollution loads. In the Gishwati-Mukura landscape, large amounts of sediment are released from small-scale cassiterite and coltan mining which dot the landscape, which may be amenable to treatment with simple technologies such as sediment barriers or settling pools. There are already programs to consolidate the mining activities into larger cooperatives, which may provide an entry-point. Other potential sources of pollution could also be considered, including coffee washing stations close to Lake Kivu.
- Establishment of protection forest strips: This would involve planting of establishment of limited areas of forest cover on the steepest and most vulnerable lands which are not suitable for agriculture, and utilizing a mixture of native and economic species.
- Training programs on integrated pest and nutrient management.

47. *Silvo-pastoralism in rangelands in the former Gishwati Forest Reserve*. Within rangeland areas of the former Gishwati Forest Reserve, the project will invest in establishment of silvo-pastoral techniques, emphasizing the use of native species. This would include establishing trees on ridge-tops, extreme slopes, riparian buffers, and as live fences, shelter belts and shade trees, through planting and managed natural regrowth. Although

this would involve a marginal loss in the area of pasture, silvo-pastoral approaches are expected to improve the overall productivity of rangelands (in addition to enhancing forest cover and biological connectivity) by protecting against land degradation, providing shelter for animals from climatic extremes, and through provision of additional fodder and forest products. Silvo-pastoral interventions would be accompanied, where necessary, with training on improved livestock and pasture management. LAFREC interventions will particularly aim to link natural forest blocks through micro-corridors in the silvo-pastoral landscape according to a broader plan for Gishwati-Mukura landscape restoration.

48. *Agroforestry and forest restoration support to MINAGRI and Forests Department*. Under the previous GLWM project, re-establishment of natural forest was begun on 500 ha within the northern part of the Gishwati-Mukura landscape with a further 300 ha also set aside for reforestation. The Project may help finance the completion of this work, ensuring the use of an appropriate and diverse mix of native species. In agreement with the Department of Forests of RNRA, the project may also finance the conversion of a proportion of the production pine forests in the center of the former Gishwati Forest Reserve into natural forest. Furthermore, within the areas that are being targeted for investment through LWH, or which already received investments through GLWM, the project could provide supplementary assistance in the form of technical advice and seedlings for diversification (and where feasible intensification) of agroforestry techniques, including diversification from heavy reliance on *Alnus accumulata* to a broader mix of native species including *Vernonia, Markhamia* and *Acacia*.

49. *Joint land use planning for the Gishwati-Mukura landscape*. Land use planning processes already exist in Rwanda – notably a National Land Use Master Plan and a law on land use and development were completed in 2012 (which includes the Gishwati-Mukura corridor) and provides a framework under which similar spatial development plans are currently being drawn up at the District level. Draft district land use plans have already been drawn up for the four project Districts. Their validation is expected by June 30, 2014. MINAGRI drew up in 2011 a land use plan for the area of the former Gishwati Forest Reserve based on geo-spatial analysis of soil potentials, slope, etc., through the GWLM project. This, and other sectoral development plans are shared and discussed through local forums, including JDAF. The MINAGRI plan implied wholesale land use changes, however, which are no longer expected to take place due to an emerging consensus that further resettlement should be avoided in the area. Instead, there are various plans for incremental improvements and adjustments to the existing pattern of land use in the area:

    a) The LWH project will work on the restoration and intensification of agricultural lands on the west, east and southern peripheries of the former Gishwati Forest Reserve, aiming to establish around 4000 ha of terracing within 3 target blocks totaling a little over 20,000 ha. Unlike the former GWLM project, however, it will not convert large areas of existing agricultural land to forest and pasture.
    b) There are plans to establish a dairy facility and a saw mill in the central area of the former Gishwati Forest Reserve, confirming its long-term use for a mixture of

pastoralism and production forestry. The Ministry of Trade and Commerce (MINICOM) has also invested in some market and handicrafts facilities in the local area.

c) The Department of Minerals in RNRA has mapped a number of potential mining concessions.
d) NAEB has plans to expand tea cultivation, particularly on the eastern edge of the Gishwati-Mukura landscape.

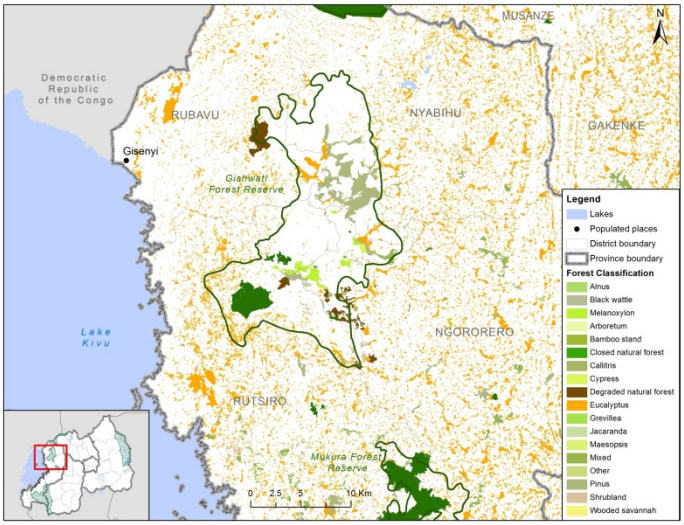
50. In light of the need to update the earlier land use plan prepared by MINAGRI to take account of the newer realities, the project would work with the Department of Lands in RNRA to establish a working group to revise and harmonize land use planning for the landscape. This working group, with participation from MINAGRI, NAEB, RNRA (forests, mines, and lands departments), REMA, RDB, MIDIMAR, MINICOM, the four districts and the private sector, would agree on a land use planning framework within which LAFREC would operate, maximizing potential synergies and avoiding unnecessary conflicts. For instance, it would agree on:
    - Which areas of state production forest within the former Gishwati Forest Reserve could be converted to natural forest, to allow LAFREC to target silvo-pastoral activities aimed at connecting these into a network of natural forest elements.
    - Which areas would be suitable for tea plantations and the measures to be adopted to ensure that connectivity of natural forest blocks is maintained or enhanced and that adequate fuel wood supply is provided.
    - Areas where mining concessions might be granted, and appropriate environmental management measures to be incorporated.
    - The corridor areas in which LWH, as opposed to LAFREC would take the lead, in order to avoid duplication in participatory micro-catchment planning..

51. An early task for the working group will be to assign a task force (including at least the Departments of Geology and Mines and Lands and Mapping of RNRA, RDB and REMA) to undertake a technical review of mining activities in the Gishwati-Mukura landscape. This will review the locations, nature and scale of current mining activities, the conformity of those operations with good environmental practices, and the potentials for future development of mining activities in the area, particularly the likelihood that surface deposits are being exhausted, and that future mining operations will have to adopt more capital-intensive deep mining techniques. Of direct relevance to LAFREC, the review is intended to establish (i) the potential for providing artisanal miners within the Forest Reserves the opportunity to formalize their activities on concessions outside the forest as an incentive to stop illegal mining, (ii) the need to improve environmental management within the local mining sector, and (iii) the long-term compatibility of mining with the new Gishwati-Mukura National Park.

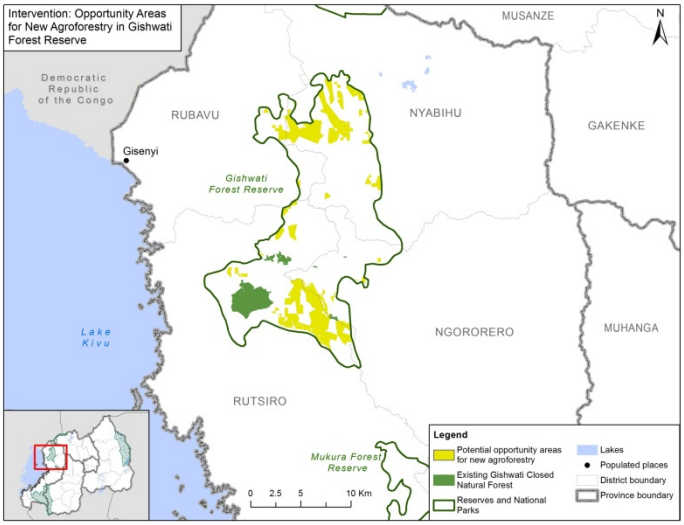
52. The working group would be established initially as a temporary structure to integrate existing land use plans at the landscape level, and agree on longer term structures for coordination (e.g. at the district level and via the Project Steering Committee). Depending on its success and the interests of the participating agencies, however, there is scope for it

to be adopted as a longer term planning and coordination structure, perhaps linked to the management of a Gishwati-Mukura Biosphere Reserve[64]. .

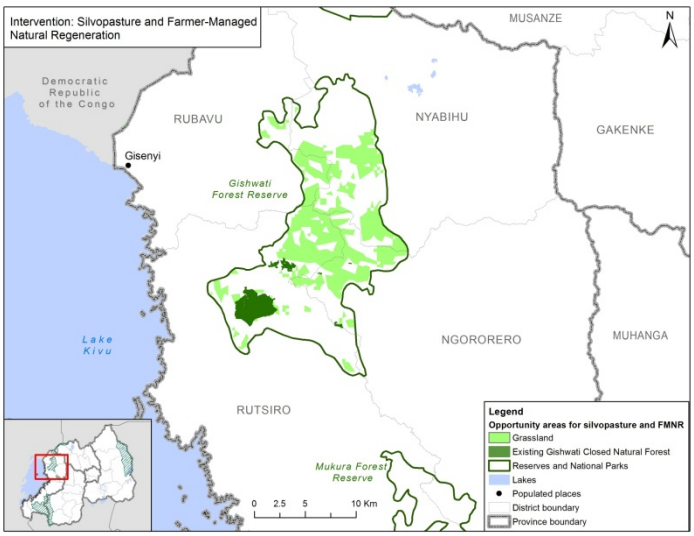
Existing tree cover in the former Gishwati Forest Reserve



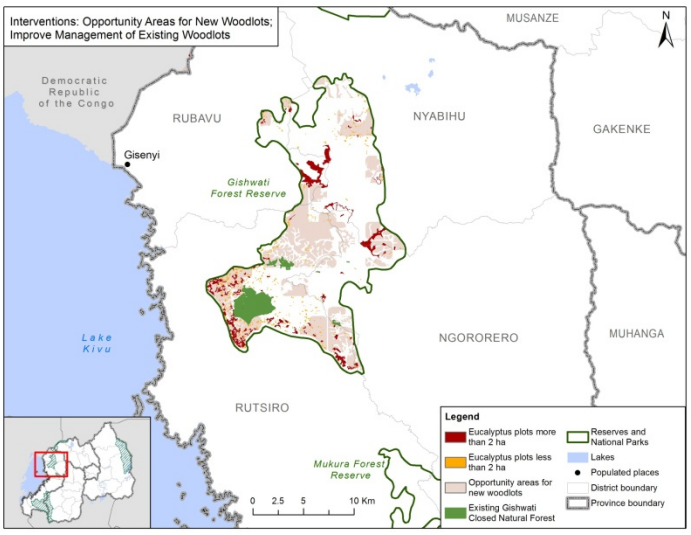
Potential areas for agroforestry



Potential areas for silvopastoralism

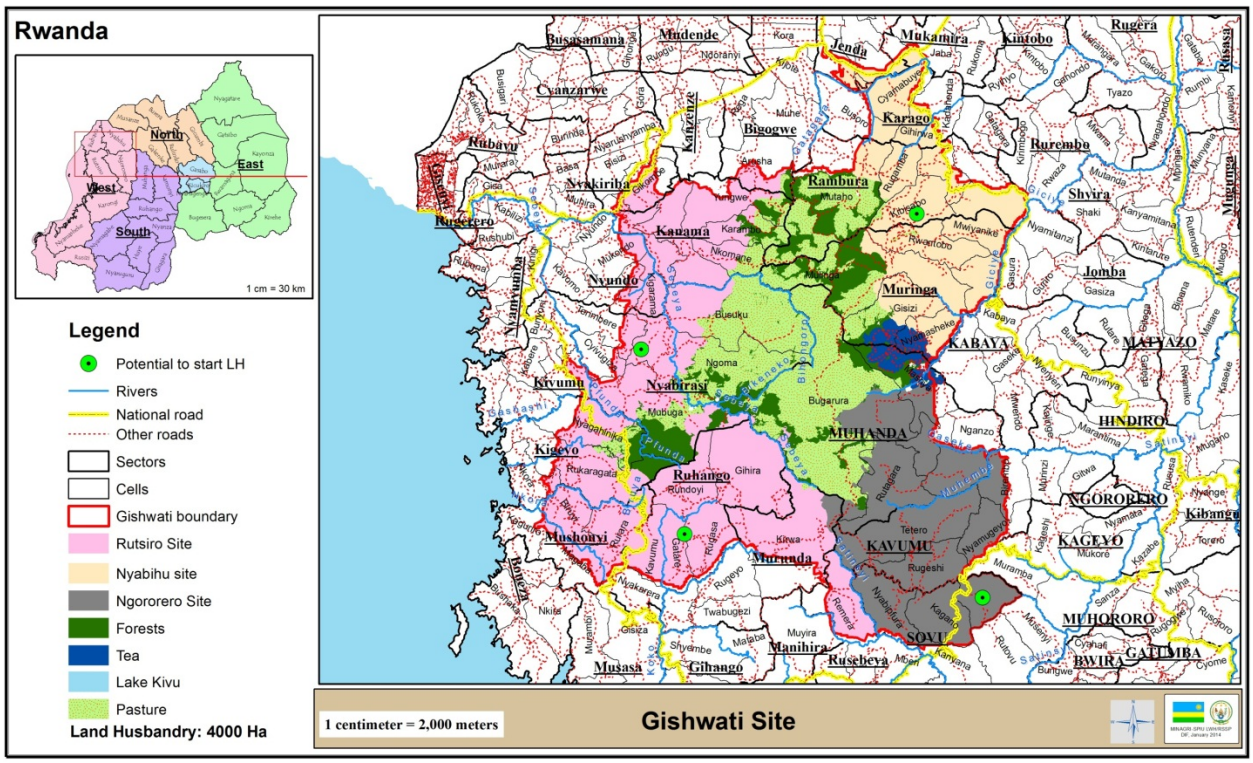


Potential areas for management of woodlots



Map 6. Map of existing tree cover in the Gishwati-Mukura landscape, and potentials for tree-based approaches in the area of the former Gishwati Forest Reserve.

[64] The final report of the Land Redistribution Committee, established to manage the resettlement issues arising from the GLWM project, called for a permanent coordinating body to be put in place for the Gishwati-Mukura landscape. There have also been proposals in the past for a fund to support the rehabilitation and management of the landscape.



Map 7. Targeted intervention areas of the LWH project around the former Gishwati Forest Reserve.

Sub-Component 1.c.: Sustainable and resilient livelihoods (US$ 2.616 million)

53. This sub-component will support demand-driven income-generating activities in order to increase: (i) the breadth of the economic options and security of the livelihoods base of the population within the Gishwati-Mukura landscape, thereby improving climate resilience; and (ii) the sustainability of land and forest management investments within the landscape. Livelihoods support will be available to communities surrounding the remnant Gishwati natural forest area and the Mukura Forest Reserve, within targeted areas of the Gishwati-Mukura corridor, and involved in project re-forestation interventions in the area of the former Gishwati Forest Reserve[65]. The activities will target some of the most vulnerable residents of the landscape, including recently resettled households from the Kinyenkanda area. The design of livelihood activities will take into account general vulnerability indicators, such as female-headed and low-income households and the project will ensure that those who have been using river banks or forest resources are targeted, as they are typically among the most vulnerable within the community. Support will preferentially be provided to livelihood options which:

    a. decrease dependency on highly climate-vulnerable livelihoods;

[65] Note that communities partaking in the GWLM/LWH interventions on land husbandry and agricultural intensification are not expected to be targeted under the livelihoods subcomponent of LAFREC, as they will already be receiving high levels of investment to enhance production.

b. decrease dependency on unsustainable exploitation of forest resources – especially where forest loss poses the greatest risk of leaving people, livelihoods and assets more exposed to climate change[66] - through provision of alternatives for products from protected forest (e.g. woodlots for fuel and poles, cultivation of medicinal plants and mushrooms) and increased energy efficiency (e.g. improved charcoal production and stoves; potential for bio-digesters linked to cattle-rearing will also be assessed);
c. depend directly on successful application of SLM technologies or management of resources (e.g. agroforestry products, ecotourism, honey, stall-reared cattle associated with cut-and-carry fodder banks[67]);
d. add value to agricultural or forest products, justifying increased investments in sustainable land and natural resources management (e.g. crop diversification for higher yield varieties or cash cropping, storage and processing); or
e. provide additional income with negligible environmental impact (e.g. handicraft production, tree nurseries).

54. *Identification of livelihood potentials* will build on initial identification of potentials during preparation, but will largely occur as an integral part of community-based participatory planning activities in the course of the landscape restoration activities discussed above – i.e. protected area and buffer zone management planning, micro-catchment planning in the corridor area, and planning for rangeland management activities in the former Gishwati Forest Reserve. These community-based planning exercises will explicitly review climate vulnerabilities to strengthen the linkage of land and livelihood interventions to resilience, as well as helping to target vulnerable groups. This ground-up approach will also be complemented with top-down advisory services from a rural livelihoods / markets consultant / NGO that will organize trade fairs; and identify and support establishment of production and marketing linkages with the private sector. This will take into account community production strengths and opportunities in a limited number of value chains, identification of bottle necks and quality requirements, and the development of new economic opportunities during the course of the project associated with ongoing regional development activities[68]. The project will review national marketing studies currently under development[69] to establish whether they recommend interventions that could be applied at the local level in support of LAFREC objectives. With a view to the longer term, the Project may investigate the potential to support the maintenance and up-scaling of landscape restoration activities through carbon finance or other PES schemes.

[66] An appropriate assessment will form part of the vulnerability assessments that will guide the selection of alternative livelihood activities
[67] This is aimed at cropland famers in accordance with GoR's one-cow-per-family program, but elements of stall-feeding / cut-and-carry systems could also potentially be introduced to rangeland systems.
[68] For instance, planned development of feeder roads in the Lake Kivu area may provide new opportunities for marketing of fresh produce, including dairy development, and development of the Kivu Belt as a tourist zone may fundamentally expand the potential for tourism-related livelihood activities during the course of the project.
[69] MINAGRI is carrying out a national market chain analysis for agricultural products, and the World Bank financed Governance and Competitiveness TA project is developing sector development plans for tourism and horticulture (including tree crops) in support of GoR's National Export Strategy.

55. *Development and start-up of alternative livelihoods* will support capacity-building for farmer groups and cooperatives, as well as training (including mentoring, business planning, peer learning, local exchange visits and study tours), initial inputs (e.g. seed) and tools in support of specific livelihood interventions. Within the project area, farmer groups are already established, and many have significant capacity to manage group activities and finances. Need for additional support to build organizational, technical, financial and business capacities will therefore be assessed in terms of past performance and current linkages to other forms of support. Activities will also include media coverage and recognition of leading communities in micro-watershed management and NRM activities, to reinforce messages, and promote wider awareness, pride and leadership. Small-scale and community-based equipment or facilities for post-harvest processing may also be supported. Civil works will be outsourced as applicable to engineering firms and contractors, supervised by the district teams and project technical staff. Construction will be based to the extent practical on community labor. The planning and capacity-building approaches will also require appropriate participation of women and consideration of their requirements as vital members of both landscape management and climate resilience efforts.

56. *Linkage to restoration activities* will also be promoted in terms of piggy-backing on the use of local labor for landscape restoration work. Although the project will not provide cash grants to farmer groups, they will be encouraged to jointly save a proportion of their income from paid labor for implementation of communal forest restoration and SLM activities, as capital for expansion of livelihood activities demonstrated and established under the project. This approach has been used with some success under the DEMP project. In addition, communities will be paid for production and supply of certain inputs to the restoration process (e.g. agroforestry seedlings, compost), and wherever long-term demand is likely to be present, they will be encouraged to develop these into independent businesses.

Sub-Component 1.d.: Flood forecasting and preparedness (US$ 1.184 million)

57. Floods have had a great impact on human development, properties, infrastructures as well as the environment in northwestern Rwanda. Steep slopes, soil instability, heavy rains, insufficient drainage systems combine with inappropriate land management to create high vulnerability. This sub-component aims to improve the technical capacity of flood forecasting institutions and complement identified important milestones required to have a fully integrated Early Warning System in an effort to reduce economic losses and risks to life in pilot flood-prone watersheds.

58. The existing LDCF project, supported by TA from the UK Met Office, has already been supporting improvements in meteorological forecasting and establishment of district and community level early warning systems in the Gishwati-Mukura landscape. However, resources are limited, and there are needs for additional activities, particularly to support the technical capacity for forecasting of flood events.

59. LAFREC project will focus on establishing early warning systems (EWS) through the introduction of operational precipitation and flood forecasting. This a is multi-sectoral activity which will be a joint effort of the Rwanda Meteorology Agency (RMA, responsible for development of precipitation forecasts, including utilization of data from a Doppler radar that will be installed soon, and issuing warnings to authorized government and municipal authorities), RNRA (real time stream gauging, flood modeling and forecasting), and MIDIMAR (issuing warnings to public, guiding mitigation activities) and local authorities/communities. It is expected that this activity will be piloted in a few small/medium size watershed with high risk of flooding. The Sebeya River is proposed as one of priority watersheds where flood forecasting can be piloted, with other watersheds to be selected during future steps of project preparation or implementation.

60. Main activities in this sub-component will include technical assistance and select equipment items for the following agencies:

61. RMA:

    a. Calibration and maintenance of existing stations, including the calibration of previously purchased Doppler radar equipment and its integration into rainfall forecasting systems and products, installation of an automatic rain gauges in Gishwati (2 per district), and setting up of communication equipment (single side band machine) for EWS information receipt and transmission.
    b. Training for improved weather and risk forecasting, including mesoscale weather systems associated with extreme weather events, numerical weather prediction and verification, risk mapping, GIS and remote sensing, seasonal forecasting, and public weather information services including TV forecasts.
    c. Engagement with actual and potential users of weather information, to improve access and usability of information services and develop sector-specific guidelines on how to deal with extreme weather events, including floods.

62. Integrated Water Resources Management Department of RNRA:

    a. A hydrological modelling study for (at least) the Sebeya catchment to map flood risk areas and allow flood forecasting to be conducted on the basis of rainfall forecasts.
    b. Capacity building and operational support for the introduction of hydrological modeling, selection and testing of hydrological models for pilot watersheds, development of flood and flash flood forecasts, and flood data collection.
    c. Installation of automated hydromet stations, including online data transmission, processing via hydrological models and sharing to a common alerting protocol platform.

63. MIDIMAR:

a. Participatory assessment of community vulnerability to hazards.
b. Participatory design and implementation of flood mitigation measures (through meetings, workshops and drills), including local communication systems (megaphones, sirens and drums etc.), and preparedness and rescue plans.

Component 2 – Research, monitoring and management (US$1.305 M)

64. The component will finance operational costs, services, equipment and technical assistance for the project's management, and for applied research and impact monitoring that will significantly enhance the national knowledge base on forest and landscape restoration techniques and outcomes. It will also finance knowledge products and communication activities related to the dissemination of this knowledge base.

Sub-Component 2.a.: Applied research and impact monitoring (US$ 0.861 million)

65. The project objectives are not simply to provide a major contribution to the restoration of the Gishwati-Mukura landscape, but also demonstrate the potential and inform future implementation of forest-friendly land rehabilitation approaches in order to leverage the much larger land husbandry investment programs that are being led by the agriculture sector, as well as any potential future investment programs in the water resources or forestry sectors that may also be interested to adopt the approach. To this end, support for applied research and systematic impact evaluation that goes beyond the immediate needs of the project is considered a sound investment.

66. *Impact monitoring* would support: (i) the establishment of a national modeling platform to map indicators of landscape health, and identify landscape management priorities, based on hotspots of degradation, and the feasibility and benefits of restoring lost environmental and economic functions; and (ii) comparative field-based monitoring of to a range of environmental (i.e. soil protection, hydrological, biodiversity, climate mitigation, climate resilience, agricultural production) and associated economic functions, to demonstrate the effectiveness of land rehabilitation techniques. Various agencies, programs and projects under both MINAGRI and MINIRENA are investing in land and watershed rehabilitation following related, but somewhat different approaches. Structured impact monitoring across a range of sites (including, but not limited to LAFREC field sites) would aim to establish the most cost-effective techniques for restoring environmental and economic functionality, and specifically to demonstrate to the value that enhanced agroforestry and incorporation of natural forest elements can add. Based on a statistically robust comparative design, such work, likely carried out by national contractors, would provide the basis for developing a sustainable financing strategy for forest landscape restoration, as it would quantify the environmental and economic benefits associated with it.

67. *Applied research* would support the establishment of partnerships[70] with key research and knowledge institutions to improve management knowledge of the Gishwati-Mukura landscape, and to improve restoration techniques, particularly in relation to scope for incorporation of native species. The project would support field costs and studentships for research students to work on a set of agreed priority topics. The main technical partners would include:

    a. Departments of Agriculture and Biology at University of Rwanda.
    b. RAB Research Directorate (previously the Rwanda Agricultural Research Institute – ISAR), which is responsible for agricultural research for the benefit of farmer livelihoods, including on agroforestry. The Tree Seed Center, which propagates native tree species, is part of the Directorate.
    c. The Rwanda office of the World Agroforestry Centre (ICRAF), whose mission is to generate science–based knowledge about the diverse roles that trees play in agricultural landscapes, and research to advance policies and practices that benefit the poor and the environment.

68. The project will also support the production and dissemination of technical notes and manuals for practitioners, based on the finding of the applied research, and also building on work and models generated under previous projects, such as PAREF. This activity would include the provision of stipends or internships for recently graduated students or other technical young professionals to develop knowledge products and tools. It would be structured under the development of a knowledge management and communications strategy for the project that would address the needs of technical practitioners, decision-makers and local stakeholders, making use of both traditional and new media and networks.

69. Research would be applied, field-based and wherever appropriate involve participation of local residents. Experimental designs to selected interventions within LAFREC would support the learning approach. Priority topics would focus upon:

    a. Biodiversity inventory and forest ecology for Mukura and Gishwati Forest Reserves.
    b. Ecological investigations on the health, needs and constraints of the chimpanzee population and other primates, following on from work already started through collaborations between Forests of Hope and Western researchers and with a view to developing a long-term recovery and population management strategy.
    c. Forest restoration ecology.
    d. Propagation of native tree and forest species.
    e. Integration and productive use of native species within agroforestry systems.
    f. Benefits of agroforestry techniques in rangeland and estate crop settings.
    g. Improved woodlot management

[70] Research partnerships will be on the basis of establishing MoUs with and direct support to key national partners, such as the University of Rwanda, the National Tree Seed Center and RDB, but opportunities to develop links with external researchers and academic institutions will also be pursued. For instance, researchers at West Chester and Drake Universities in the USA are already involved in studies on chimpanzee ecology in Gishwati.

h. Rural energy solutions.

Sub-Component 2.b.: Project management (US$ 0.444 million)

70. Project management expenditures will cover routine administrative overheads, such as coordination between project implementing partners, work-planning, procurement and contract management, accounting and audit costs, field supervision, maintaining an internal project M&E system, and reporting. The internal M&E system will incorporate information on project outcomes generated through the field-based impact monitoring described above, but it will also maintain financial and output data for project-specific monitoring and management purposes. More details on project monitoring, reporting and fiduciary management systems are contained in Annexes 3. Some of the SPIU costs (particularly office space and equipment, accounting and procurement functions, will be shared with other projects through the REMA SPIU, but the project will hire an overall Project Coordinator for exclusive management of the project. Overall costs for project management overheads will be kept within the 5% ceiling specified by GEF.

Annex 3: Implementation Arrangements

RWANDA: Landscape Approach to Forest Restoration and Conservation

1. PROJECT ADMINISTRATION MECHANISMS

Overall Project Administration

1. The project will be implemented by the Ministry of Natural Resources (MINIRENA), through its Rwanda Environment Management Authority (REMA). In accordance with current national arrangements for project management, REMA maintains a Single Project Implementation Unit (SPIU) for the administration of donor projects to ensure that activities undertaken by multiple projects are streamlined and therefore managed in a way that leads to enhanced complementarities, avoids duplication of activities, and allows leverage of resources for improved efficiencies and effectiveness. The REMA SPIU already administers the Bank-financed Lake Victoria Environment Management Program (LVEMP). More broadly, the SPIU in REMA runs three programs within REMA: Climate Change; Ecosystem Rehabilitation and Pollution Control; and Mainstreaming Environment & Climate Change in Development Programmes. The staff is composed of:

    a. Core staff including the SPIU coordinator, DAF, Chief accountant, Procurement specialist and HR serving all the programs.

    b. Technical staff depending on the nature and scope of the project.

2. REMA is the national environmental regulatory authority, but its mandate extends beyond the regulatory function to include environmental coordination, mainstreaming and monitoring. It also has a direct implementation mandate in specific areas that require cross-sectoral collaboration, including climate change and biodiversity. Given the breadth of its mandate, and the fact that it is the only body under MINIRENA that has an established SPIU and experience of managing World Bank projects, REMA is an appropriate agency to coordinate a multi-sectoral, demonstration project with strong emphasis on environmental monitoring, as it already does in a number of other cases. However, LAFREC requires the active involvement of all arms of MINIRENA, and is therefore established as a project of the Ministry, which REMA will administrate on its behalf.

3. LAFREC will be administered through the SPIU, with an overall Project Coordinator hired to oversee the project as a whole and ensure that administrative functions including planning, coordination, procurement, contract management, financial management, M&E and reporting are carried out in a timely and effective manner. An additional M&E expert will be hired under the project, and a procurement expert, accountant and community development expert will be shared between the LAFREC and LVEMP projects. Services provided by the existing SPIU and regular REMA staff to the project will include oversight, and GIS and communications support.

4. Through Memoranda of Understanding (MoUs), the implementation of some of the

technical activities of the project will be the responsibility of partner agencies and institutions working in collaboration with REMA:

a. The Rwanda Development Board (RDB) will be responsible for management of the Gishwati-Mukura National Park, once formally gazetted.

b. Flood-forecasting and preparedness activities will be implemented through cooperation of a number of agencies according to their mandate. Improvements in rainfall forecasting will be implemented by the Rwanda Meteorological Agency (Meteo Rwanda), within the Ministry of Infrastructure. Hydrological models for flood forecasting will be developed between Meteo Rwanda and the Integrated Water Resources Management Department of RNRA. Local disaster preparedness planning will be carried out by Ministry of Disaster Management and Refugee Affairs (MIDIMAR).

c. Research activities will be carried out through partnerships with key research institutions, which are expected to include the University of Rwanda, and the Tree Seed Center of RAB.

d. Depending on the scope of activities, to be determined under initial landscape planning, the Departments of Forestry & Nature Conservation and Geology & Mines of RNRA may also directly implement activities under MoUs related to enrichment of plantation forests with native species and environmental management of mining activities. Otherwise, these will be implemented through district-level joint project teams, involving RNRA staff. In the case of the Forestry Department, the coordinator for the National Forest Landscape Restoration Program is expected to help support technical coordination.

5. The Project Implementation Manual will provide guidance on the formats for planning, reporting, monitoring and evaluation, and fiduciary management procedures. As far as possible, it will use existing government procedures as far as possible, and also harmonize with procedures and formats already used under the SPIU, particularly for LVEMP.

Local Level Implementation Arrangements

6. Project activities on the ground in the Gishwati-Mukura landscape will be implemented through the District level under MoUs, in accordance with national decentralization policies. A District Project Coordination Team (DPCT), including district agriculture, environment, forestry, mines, lands, and cooperatives (i.e. under the Rwanda Cooperatives Authority) officers, as well as relevant sector-level staff, will be established in each participating District to coordinate participatory planning for land management and livelihoods activities. These processes will be supported and guided by two project field environment officers, based in the project area.

7. Capacity-building and joint micro-watershed / silvo-pastoral and livelihoods planning

activities with communities and cooperatives will be overseen by DPCTs and project field staff, but due to the significant time required for these interactions, they will be supported by local teams of project assistants and/or service providers / NGOs depending on the local circumstances[71]. In the immediate vicinity of the Gishwati-Mukura National Park, conservation NGOs will be engaged to support alternative livelihoods planning and conservation education, and will also be expected to help build collaboration with external expert partners.

8. The output of participatory planning processes will be contracts signed between the project and communities / cooperatives committing support for specified livelihood and landscape restoration activities in return for the beneficiaries active involvement in implementing and maintaining landscape restoration investments. This support will be provided through DPCTs, bolstered where necessary with additional specific technical government experts, and consultants. Implementation on the ground will also be supported by peer learning structures involving demonstration plots, local knowledge exchanges, and a network of para-extensionists identified according to enthusiasm and aptitude, who will be supported with per diems to assist in training and technical support to their neighbors.

9. Local teams of project assistants / service providers will bolster the capacity of the District (and Sector) staff on the ground, providing for more sustained interaction with local participants during planning and oversight of implementation. Under the guidance of the field environment officers, they will also help to improve long-term capacity on the side of both local government staff and community peer-learning networks, aiming to leave them in position from which they can continue to negotiate, implement and monitor long-term local agreements on land use within the project area (extending from, and potentially formalizing key elements of the project contracts).

Oversight and coordination

10. **Project Steering Committee (PSC):** The PSC will be chaired by the PS/MINIRENA or DG of REMA and comprise the DGs for Planning from MINAGRI, RDB and MIDIMAR, the Deputy Director General of the RNRA Forests Department, the Vice Mayors for Economic Affairs of each of the project districts, and representatives of the local and international NGOs – ARCOS, ACNR, WCS, IUCN. Additional representatives from the private sector and from the civil society may also be included.

11. The Project Coordinator will serve as the Secretary to the PSC. The PSC will be convened by the Chair on a semi-annual basis. Any Permanent Secretary may be invited to attend the PSC meetings as and when required to provide orientation to the meeting. The PSC will be mainly responsible for the following aspects, on a national basis: (i) policy guidance on all issues relating to the project; (ii) approval of project investments; (iii) approval and monitoring of project annual work plans and budgets; and (iv)

[71] I.e. where experienced groups with appropriate skills are available, like Forests of Hope operating around the Gishwati remnant forest, they can be recruited by the project. Where they are not available, the project will instead directly recruit a team of individual assistants to support implementation capacity on the ground.

resolving implementation bottlenecks and providing positive impetus to facilitate achievement of the project's development objectives (results/outcomes). The PSC may also request technical inputs from the constituent agencies to better guide the implementation of the project.

12. As described above in annex 2, a **Gishwati-Mukura Integrated Landscape Planning Working Group** will be established with participation from MINAGRI, NAEB, RNRA (forests, mines, and lands departments), REMA, RDB, MIDIMAR, the four districts and the private sector. Initially, this will be convened on a temporary basis, specifically for the purpose of integrating existing land use and development plans from various sectors, and of agreeing on coordination structures going forward. But if considered valuable, it would be developed into a more permanent landscape coordination structure, perhaps linked formally to the management of a future Gishwati-Mukura Biosphere Reserve.

2. FINANCIAL MANAGEMENT

Country issues

1. The evaluation of the Public Financial Management (PFM) environment in Rwanda has been documented through several diagnostic reviews which include the Country Financial Accountability Assessment (CFAA) carried out in 2007**.** The 2007 PEFA provided a strong foundation to have a better understanding of the PFM environment and together with other assessments provided as basis for GoR's five year PFM Reform Strategy (2008-2012) approved in December 2009. A second PEFA was conducted in 2010 and found that there had been notable improvement in budgeting but that there were gaps in accounting, recording and reporting. Earlier strides had been made towards improving accountability through the adoption of the Organic Budget Law (OBL), accompanying financial instructions in 2006-2007 and the strengthening of the budget preparation process through the MTEF. PFM functions still show signs of weaknesses which require more reform efforts in the areas of accounting, recording, reporting (especially timeliness of in-year budget reports and quality of annual financial statements), composition of budget expenditure, extent of unreported government operations, effectiveness in collection of tax payments, and capacity issues.

Project Financial Management System

2. Financial management for the project will be carried out by the SPIU at REMA, which will engage a Project Accountant and will utilize the services of REMA's internal auditor for the SPIU. The SPIU will use IFMIS for recording financial data and reporting.

Budgeting Arrangements

3. The project will follow the Government of Rwanda planning and budgeting procedures. REMA as a spending agency will prepare its budget which will also include the project plan and budget. The overall budget will be integrated in the sector budget and submitted to MINECOFIN for review, discussion and approval by the parliament/legislature.

4. At the project level the SPIU will prepare the budget, work plan and cash flow forecast for each component and submit them for the necessary approvals to the steering committee and the World Bank for no objection.

5. To further improve the budgeting and monitoring process for the project**,** it is recommended that the project budget be broken down into quarters to facilitate the quarterly monitoring as part of the IFR reporting. The project will include a variance analysis schedule in the quarterly interim financial reports including reasons for any variances that may have occurred during a given quarter.

Accounting Arrangements

6. ***Basis of Accounting***; The accounts will be prepared on a cash basis in accordance with International Public Sector Accounting Standards (IPSAS) issued by IFAC and where appropriate disclosures are made to ensure compliance with the requirements of Article 70 of the Organic Law on State Finances and Property: Law No. 37/2006 of 12 September 2006 and Ministerial Order N°002/07 of 9 February 2007 relating to Financial Regulations, and the legal agreement.

7. ***Staffing Arrangements*****;** The single project implementation unit (SPIU) at REMA is adequately staffed with 6 accountants including a Director of Finance and Administration (DAF). The DAF has a Diploma in accounting and 7 years' experience with REMA. All 5 accountants have either a degree in accounting or in management.

8. ***Accounting Manual;*** The SPIU does not have a single harmonized manual although each project in the SPIU is dependent on either an individualized manual (LVEMP) or the government financial management and accounting manual. Accountants in the SPIU depend on the donor instructions or manuals related to the projects for which they are responsible for. We therefore recommend that the SPIU should harmonize all manuals with the intention of having a single SPIU financial management manual.

9. ***Transaction currency***. The base currency is the US Dollar. Assets denominated in currencies other than the US Dollar shall be translated into US dollars at the rate of exchange prevailing at the end of the year/month under review. Transactions denominated in foreign currency shall be translated into US dollars at the rate of exchange ruling on the day. Exchange rate differences arising from the translations shall be dealt with in the statement of income and expenditure for the period.

10. ***Books of accounts and chart of accounts*****;** the SPIU at REMA will maintain the books of accounts for the Project. Such books of accounts to be maintained should include: a cash book, ledgers, journal vouchers, fixed asset register and a contracts register, accounts payable and receivables ledgers. These will include appropriate records and documentation to track commitments and to safeguard assets. The SPIU responsible for the project management will ensure that; a). All important business and financial processes are adhered to; b). Adequate internal controls and procedures are in place; c). Interim un-audited Financial Reports (IFRs) are prepared on a timely basis; d). The financial information required by the SPIU is provided promptly; e). The financial statements are prepared on a timely basis and in accordance with the International Public Sector Accounting Standards (IPSAS); f). The external audit is completed on time and audit findings and recommendations are implemented expeditiously.

11. ***Information systems;*** currently in the SPIU there are multiple information systems being used. Some projects within the SPIU are using either Tompro, SAGE PASTEL or EXCEL while IFMIS is used for government expenditures. Some of these systems such as Pastel have been found to be inadequate to meet the reporting requirements for the projects. Tompro on the other hand is adequate for reporting purposes however it is expensive . In this regard LAFREC will use IFMIS which is a government system and is supported by the government. IFMIS has been initiated for LVEMP II and currently they're in the process of uploading data in the system. IFMIS still has challenges especially with project reporting but the SPIU will ensure their timely resolutioned. The software developers currently produce the required reports for other projects.

Internal Control and Internal Auditing

12. The project Accounting Manual will incorporate relevant internal control procedures, payment processes and the overall control environment including the relevant lines of communication. The SPIU currently does not have a harmonized accounting manual rather all projects develop individual manuals. There is also no single document that describes the internal control system for the SPIU, therefore it is not clear if these controls are effective and efficiently applied. The most recent external audit report for LVEMP has noted weaknesses in the internal controls such as asset management, stock management, lack of working papers for internal audit and a dormant bank account. On the other hand, there is adequate segregation of duties and responsibilities, reconciliations are done on a monthly basis, authorization is given per transaction, cash thresh holds are set, and clear communication lines are in place. A fixed assets register is currently maintained however it requires some improvements given that there are gaps and cases of incompleteness. The fixed register is not comprehensive and is project-specific as opposed to covering the entirety of the SPIU. We therefore recommend that the SPIU should have a comprehensive assets register as well as a comprehensive SPIU manual with a detailed description of the SPIU internal control system.

13. ***Internal Audit***: The SPIU is supported by the REMA internal auditor. We noted that the SPIU structure has a provision for an internal auditor however this position is vacant. It was also noted that the REMA auditor's workload doesn't enable adequate supervision of the SPIU systems. The recent external audit for LVEMP II for the period ended June 30, 2013 noted that the external auditor was unable to review the working papers of the internal auditor or work done by internal audit hence had no evidence of whether any work was undertaken by internal audit. Similarly during the assessment and LVEMP II supervision the World Bank team was unable to obtain copies of internal audit reports.

14. ***Audit committee***; REMA is currently considering the establishment of an audit committee in order to review the internal audit reports and to follow up the implementation of internal audit and external audit recommendations. We recommend an audit committee to be established for the SPIU.

15. ***Governance and Anti-Corruption issues***; The prevention and detection of fraud and corruption is a critical project management responsibility. In order to deter such occurrences, the following mitigation measures will be embedded in the financial management arrangements of the project. (i) specific aspects on the assessment of fraud risks would be included in the external audit TOR; (ii) the internal auditor at the SPIU will report directly to MINECOFIN as well as present quarterly audit reports to the World Bank; (iii) the SPIU will design a payment

checklist in such a way that at all levels/steps necessary to ensure compliance are undertaken including procurement and signed by each person involved in the process to hold individuals accountable. (iv) strong FM arrangements (including qualified Financial Management Specialist, periodic IFR including budget execution and monitoring; (v) measures to improve social accountability and transparency are built into the project design.

16. The project management will ensure that the project is carried out in accordance with the World Bank Anti-corruption guidelines.

Financial Reporting Arrangements

17. The SPIU will prepare interim un-audited financial statements (IFRs) on a quarterly basis to be submitted to the World Bank within 45 days after the end of the calendar year quarter. Advances to the Districts and other implementing agencies will be accounted for on the basis of SOEs which will be consolidated into the IFR prepared by the SPIU and a single report will be submitted to the Bank. The IFR submitted will include the following:

(i) A statement of Sources and Uses of Funds
(ii) A statement of Uses of Funds by Project Activity/Component
(iii) Variance analysis
(iv) Designated account activity statement
(v) Executive summary and notes to the accounts

18. IFRs prepared so far by the SPIU under the LVEMP II have had quality and timeliness issues which the SPIU is working on improving. The Financial statements will be prepared in accordance with International Public Sector Accounting Standards (IPSAS). The Project Accountant at the SPIU and Finance Officers from participating Districts will be trained on the preparation of SOEs and IFRs. The project together with the Bank will agree on the IFR format during negotiations.

External Auditing arrangements

19. The external auditing for the project will be undertaken by the Office of the Auditor General (OAG) which is the Supreme Audit Institution. The Auditor General of State Finances has the constitutional responsibility for carrying out all audits for the Government of Rwanda. IDA funding may be used to pay the cost of the audit. The audits will be conducted in accordance with International Standards on Auditing. The accounting year end for the project will be June 30th. The IDA Credit Agreement will require the submission of audited financial statements for the project to the Bank within six months after the financial year-end. The financial statements of the project will consist of:

(i) *A Statement of sources and uses of funds*. This statement will account for all cash receipts, cash payments and cash balances controlled by the entity and separately identifies payments by third parties on behalf of the entity.

(ii) *A statement of accounting policies adopted with explanatory notes.* This statement and notes should be presented in a systematic manner with items on the Statement of Sources and Uses of Funds being cross-referenced to any related information in the

notes. Examples of this information include a summary of fixed assets by category of assets, and a summary of SOE Withdrawal Schedule, listing individual withdrawal applications; and

(iii) *A Management assertion on use of funds*. The management will provide a statement asserting that Bank funds have been expended in accordance with the intended purposes as specified in the relevant World Bank legal agreement**.**

20. The SPIU audit for LVEMP II for the period ended June 30, 2013 was qualified mainly due to the under-performance on the planned activities for the project.

21. Appropriate terms of reference for the external audit will also be prepared and agreed during negotiations. The audit reports for the project that will be required to be submitted to the Bank are:

Audit Report	***Due Date***
Project Specific Financial Statements	Submitted within **six** months after the end of each financial year.

*Banking arrangements***;**

22. A single pooled designated account (DA) will be opened at the National Bank of Rwanda for both grants. The designated account will be denominated in USD. A project account may also be opened for payments in local currency. Account signatories for the Bank Accounts will be documented in the Financial Management Manual in order to ensure only authorized persons are allowed to sign for withdrawals from the Bank.

Funds flow arrangements;

23. The envisaged implementation arrangement for the project is as follows; the SPIU will open a new Designated Account denominated in US Dollars at the National Bank of Rwanda for LAFREC. A local account in Francs may be opened to receive transfers from the USD account. The authorized ceiling of the pooled Designated Account for the GEF and LCDF grants will be set to USD 700,000. The ceiling is based on the estimated expenditures over a 4-month period. It is also expected that funds will flow to the participating districts and other implementing agencies in form of advances. Districts will be required to open separate accounts to receive advances from the DA.

24. The disbursement of World Bank funds to the Designated Account will be Transaction-Based through the use of statements of expenditure (SOE). The project may follow one or a combination of the following disbursement methods: Advances, Direct Payment, Reimbursement and Special Commitment.

FUNDS FLOW CHART FOR IDCB PROJECT

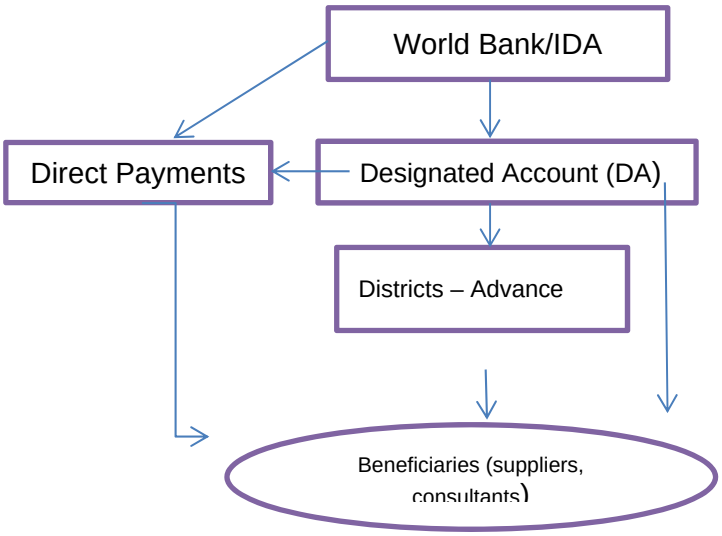


Figure 1: Funds Flow Chart

Reporting on use of IDA Credit and Grant Proceeds and SOE limits

25. Disbursements for all expenditures should be made against full documentation except for contracts valued at less than as follows: i) US$ 200,000 for works; (ii)US$ 200,000 for goods; (iii) US$ 100,000 for consulting firms and (iv) US$ 50,000 for individual consultants (v) training and workshops, and operating costs on all contracts regardless of the amount which will be claimed on the basis of Statement of Expenditures (SOEs). All supporting documentation for SOEs will be retained at the SPIU. They will be kept in a manner readily accessible for review by regular IDA missions and internal and external auditors. The statement of expenditures will be included in the Withdrawal Applications that will be submitted to IDA on a monthly basis.

26. The supporting documentation for reporting eligible expenditures paid from the Designated Account will be summary reports and records evidencing eligible expenditures for payments against contracts valued above the SOE thresholds defined above. The supporting documentation for direct payment requests should be records evidencing eligible expenditures (i.e., copies of receipts, suppliers' invoices, etc.). The project will submit a bank statement and a reconciliation of the Designated Account together with the Withdrawal Application on a monthly basis.

Minimum Value of Application

27. The Minimum Value of Applications for Direct Payment and Special Commitments will be twenty percent (20%) of the Designated Account ceiling. The Project will have a life of five years. Disbursements will be made in accordance with procedures and policies outlined in the Bank's Disbursement Guidelines (*World Bank Disbursement Guidelines for Projects*, dated May 1, 2006) and the project FM manual.

28. **e–Disbursement.** The World Bank has introduced the e-Disbursement for all its supported projects. Under e-Disbursement, all transactions will be conducted and associated supporting documents scanned and transmitted on line through the Bank's Client Connection system. e-Disbursement will considerably speed up disbursements and facilitate project implementation. It is a mandatory application for all World Bank financed projects starting January, 2013. The e-Disbursement functionality would (i) expedite World Bank processing of disbursement requests; (i) prevent common mistakes in filling out Withdrawal Applications (WAs) (Form 2380); and (iii) reduce the time and cost of sending paper WAs and supporting documentation to the Bank. The e-Disbursement would not require any changes to the Project current internal procedures and controls for preparing and submitting WAs.

29. Upon credit effectiveness, the SPIU will be required to submit withdrawal applications for initial advances to the Designated Account for the project drawn from the grant/credit. The initial advance will be up to the ceiling amount of the Designated Account. Replenishment of funds from IDA to the Designated Account will take place upon providing the Bank with evidence of satisfactory utilization of the advance, reflected in the SOE. Replenishment applications would be required to be submitted on a monthly basis. If ineligible expenditures are found to have been made from the Designated Account, the PIU will be obligated to refund the same. If the Designated Account remains inactive for more than six months, the SPIU may be requested to refund to IDA amounts advanced to the Designated Account.

30. IDA will have the right, as reflected in the grant/credit Agreement, to suspend disbursement of the funds if reporting requirements are not complied with.

Risk Assessment and Mitigation

31. The table below shows the results of the risk assessment and the risk rating summary that identifies the key risks project management may face in achieving project objectives. It also provides a basis for determining how management should address these risks.

Table 1: Financial Management Risk Assessment and Mitigation

Risk	***Risk Rating Before mitigation***	***Risk Mitigating Measures Incorporated into Project Design***	***Residual Risk Rating***	***Condition of Negotiations, Board or Effectivene***
	Inherent Risk			

Risk	*Risk Rating Before mitigation*	*Risk Mitigating Measures Incorporated into Project Design*	*Residual Risk Rating*	*Condition of Negotiations, Board or Effectivene*
Country Level; Findings of the repeat PEFA Assessment in 2010 identified certain areas that still need strengthening these included weaknesses in accounting processes, annual reporting, certain aspects of budgeting and capacity gaps.	M	Key issues raised in the November 2012 independent evaluation report on the implementation of the PFM Reform Strategy (2008/09-2012/13) would be taken onboard in designing the next phase of PFM reforms with emphasis in tackling the key PFM weaknesses in a more comprehensive and sustainable manner	M	N
Entity Level REMA has project management experience and World Bank in particular. SPIU staff have been trained although fiduciary capacities are still feeble. FM systems have been established but still require strengthening.	S	The respective SPIU staff will continue to receive capacity building support through training by MINECOFIN and World Bank	M	
Project Level The scope of the project is average however project implementation will involve multiple partners, such as partner agencies, institutions and 4 districts covering the Gishwati area. There are capacity gaps at district level.	S	Among the key PFM priorities for the next 5 years is improving PFM systems at sub national levels. The finance units of the districts implementing the project will receive training and capacity building support during implementation.	S	N
	Control Risk			

Risk	*Risk Rating Before mitigation*	*Risk Mitigating Measures Incorporated into Project Design*	*Residual Risk Rating*	*Condition of Negotiations, Board or Effectivene*
Budgeting Budgetary execution, control, and budget monitoring are still areas of weaknesses that require more strengthening. Project budgets are included in the overall sector planning although they are not included in IFMIS. Budget information is not adequately shared between the responsible technical and financial teams.	S	The project will follow the planning and budget preparation process as that of the government. A steering committee will be responsible for the budget approval together with the Bank. The project will have an accounting and financial management manual that will clearly lay out the budget preparation, monitoring and approval process. Quarterly budget execution reports will be prepared and shared with the Bank, these will include clear explanations of budget variances and corrective action taken or to be taken.	M	N
Accounting The SPIU currently is using multiple accounting systems, such as SAGE, TOMPRO and IFMIS to record budget and financial information. They use multiple accounting manuals, and human capacities are varied IFMIS still has challenges in generating the required project reports	H	The SPIU to allocate or recruit qualified and experienced project accountant The SPIU to harmonize its information systems and accounting manuals LAFREC will use the government information system – IFMIS.	S	N

Risk	*Risk Rating Before mitigation*	*Risk Mitigating Measures Incorporated into Project Design*	*Residual Risk Rating*	*Condition of Negotiations, Board or Effectivene*
Internal Control An internal control framework at REMA SPIU exists, the control system was developed on the basis of the government accounting manual however no manual or document has been developed to describe the internal control system specific for REMA. Without a proper description of the REMA/SPIU internal control system could impede proper monitoring of the system The use of multiple systems within the SPIU poses risks	S	The SPIU will document its internal control system, ensuring that there is a proper control environment for budget execution, payment process, assets safeguard, reconciliations, and reporting. The SPIU will harmonize its accounting manuals and systems with the support of technical assistance Regular supervision from the Bank will entail follow up and support the project in the implementation of this system.	S	N
Internal Audit Currently the SPIU depends on REMA's internal audit department. No audit reports however have been reviewed to evidence the work carried out by internal audit.	H	Establish an audit committee Train the internal auditor to build capacity	S	
Funds Flow; The SPIU will be responsible for the flow of funds, separate accounts will be opened at the districts. Implementing agencies will receive funds on the basis of advance There is a risk of delayed	S	Districts will report on a monthly basis on the use of funds and a team from REMA will visit the districts on a quarterly basis to monitor both financial and technical activities and follow up on SOEs Training to be provided for the	S	N

Risk	*Risk Rating Before mitigation*	*Risk Mitigating Measures Incorporated into Project Design*	*Residual Risk Rating*	*Condition of Negotiations, Board or Effectivene*
Financial Reporting; The SPIU has prepared IFRs before under LVEMP project however the quality and timeliness of IFRs has been poor, hence a risk that this project reporting may be affected	S	Project IFRs will be prepared by the SPIU, and IFR preparation training will be given by the WB FMS IFR templates to be agreed upon with IDA as part of negotiation MINICOFIN to ensure that the	S	N
Auditing; The OAG has the overall responsibility for external audit, however capacity issues may affect the timely submission of audits	S	The Auditor General's office will audit the project, terms of references will be developed and agreed upon immediately after project effectiveness	M	N
Overall Risk Rating	**S**		S	

H – High S – Substantial M – Modest L – Low

32. The overall financial management risk rating for this project is assessed as Substantial after mitigation measures**.** Follow up on the suggested mitigation measures to be done during implementation support and the risk may change as measures are put in place to reduce the assessed risk.

FM Covenants;

33. FM Covenants; The following are the main FM covenants to be included in the Financing agreement:

- Maintain acceptable FM arrangements
- Quarterly reporting- The SPIU will prepare quarterly un-audited Interim Financial Reports (IFRs) for the project in form and content satisfactory to the Bank and submits these to the Bank within 45 days after the end of the quarter per EFY.
- Audit-The project shall have its accounts audited annually by auditor acceptable to the Bank and submit the audit reports in form and content satisfactory to the Bank within 6 months after the end of each FY.

34. **Implementation support plan. S**upervision missions to review financial management will be an integral part of the project's implementation reviews. The budget for supervision will take into account the need to increase the efficiency of financial controls and related support in project implementation. It is also envisioned that joint supervision missions with procurement staff to strengthen Bank control and support will be conducted. Bi - Annual supervision visits to the field are anticipated.

- **Financial Management Action Plan**

35. The following actions need to be undertaken in order to enhance the financial management arrangements for the Project:

	Action	**Deadline**	**Responsible agency**
Accounting	Prepare a harmonized detailed accounting and financial management manual describing in detail the processes and procedures that are followed by the SPIU including a detailed internal control system. Allocate an accountant within the existing team to support the project as a focal person at the SPIU	6 months after effectiveness By effectiveness	REMA
Reporting	Project Accountant and DAF to be trained on the preparation of SOEs. The project together with the Bank will agree on the IFR format during negotiations	2 months after effectiveness	REMA
Internal Control/Internal Audit	Establish and internal audit committee	Dec 30 2014	REMA SPIU

3. PROCUREMENT

36. **Procurement Arrangement at National Level:** REMA-SPIU will be responsible for the procurement of the services, works and goods under the components to be implemented at national level. The SPIU will also provide assistance and guidance to the districts regarding contracts to be implemented at the district level. REMA has been implementing LVEMP II, a Bank-financed project, and use the same procurement unit of the SPIU.

37. Timely implementation of projects mostly depends on the capacity of procurement and contracts management of the project implementing agency. At present, the Procurement Unit of REMA-SPIU has only one procurement officer, the head of procurement. Hiring of one additional procurement officer is underway and at the time of writing was expected to be finished by June 2014. An additional procurement officer is expected to be hired for this project upon the start of the project. Staffing of the procurement unit would be sufficient only if the

planned two procurement officers will be hired. The absence of sufficient staffing would pose a risk to timely implementation.

38. **Procurement Arrangement at District Level:** At the local government level, project activities will be implemented through the Districts under MoUs, in accordance with national decentralization policies. The coordination teams in participant districts should include a procurement officer to support procurement functions.

39. The project implementation manual (PIM) should include a procurement manual with detailed procurement procedures to be applied both at national and district levels.

40. **Procurement capacity assessments of REMA-SPIU** were conducted in February 2013 and March 2014. The assessments looked at the legislative and regulatory framework; procedures and processes; procurement planning and records keeping; and control systems.

41. **Procurement Institutional Set-up and Legal Framework:** REMA implements several projects funded by various donors and the Rwandan government. The agency has a SPIU responsible for implementing donor financed projects. Currently, the unit is implementing an ongoing World Bank project (LVEMPII), and it is ready to take on this project.

Legislative and regulatory framework

42. Procurement in Rwanda is regulated by Law No. 12 of 2007 and its associated regulations. The Law is quite robust and covers all aspects of public procurement at all levels of Government. The Rwanda Public Procurement Authority (RPPA) was established under Law No. 63 of 2007 and is responsible for procurement oversight function of public procurement both at central and local government level. The procurement law also establishes institutional arrangements at the procuring entity level, including; (i) Procurement Unit (PU); (ii) Tender Committee (TC); and (iii) Accounting Officer (Chief Budget Manager). The SPIU is responsible for carrying out the procurement process from the planning process to the completion of the contract execution. SPIU is composed of the following Units: (i) Coordination; (ii) Procurement Unit; (iii) Administration and Financial Unit; (iv) Climate Change Program; (v) Ecosystem Rehabilitation & Pollution Control Program; (vi) Mainstreaming Environment in Development Programs; and (vii) Monitoring & Evaluation Unit. However, the mission was informed that the structure is being revised. The TC is responsible for conducting bids opening, evaluation and recommendation for contracts award. The Chief Budget Manager approves reports of the TC and signs the contract on behalf of the procuring entity.

43. The RPPA has prepared several tools to facilitate procuring entities to execute procurement efficiently. These tools include: user guide; standard bidding documents for procurement of works, goods; standard request for proposals; standard template for bid opening; and standard template for bid evaluation.

Procedures and Processes

44. Save for LVEMP II that is implemented following World Bank procurement procedures and guidelines, all donor-financed projects are implemented following national procurement procedures.

45. The districts normally advertise bids for open competitive bidding (local) for procurement of works and goods through national newspapers (Imvaho Nshya) frequently written in local language. They use the standard bidding documents and templates prepared by RPPA. In general, the districts do not have experience in International Competitive Bidding (ICB) procedures.

46. Other methods that are commonly used are (a) Restricted Tendering; (b) Request for Quotations; (c) Community Approach is used for reforestation (planting trees) by community.

47. Selection of consultants is done in similar way as procurement of works and goods. RPPA is ready to assist in capacity building on a demand basis as the Authority now has a Capacity Building Department that takes care of new recruited procurement staff. RPPA mentors the new recruits until they are able to work independently.

48. The public procurement law has established a decentralized mechanism of conducting independent administrative reviews of complaints. There are Independent Review Panels at the national and district levels. Appeals against the decisions taken by a district Independent Review Panel are referred to the Independent Review Panel at the National level.

Procurement Staffing and Internal Tender Committee

49. REMA has an SPIU with its own procurement unit dedicated to projects financed by development partners. At the same time, REMA has another procurement unit that is responsible for procurement function of contracts financed by government funds. This unit has one Procurement Officer. The SPIU Procurement Unit is understaffed. Currently, it has only one Procurement Specialist who is responsible for procurement management of seven projects. REMA's Procurement Officer and the SPIU Procurement Specialist back each other up when one of them is absent. During the initial assessment of February 2013, there was a second Procurement Officer dedicated only to phase two of LVEMP II, but he resigned about a year ago and REMA was still in the process of replacing him at the time of writing. The mission was informed that the Procurement Specialist under recruitment was expected to be on board within a month of the end of the mission. The procurement turnover in FY11-12 was estimated at US$1 million out of which US$525,000 was an ICB contract for supply of meteorological equipment for projects funded by UNDP/UNEP. The turnover in the current FY13-14 is estimated at US $ 4,722,236.

50. The SPIU Procurement Specialists who is the Head of Procurement Unit has four years' of work experience on procurement: two years with the National University of Rwanda, and two years with REMA/SPIU. He is conversant with national procurement procedures and will attend a training on the World Bank procurement procedures in May 2014.

51. REMA has one Internal Tender Committee that covers both government projects and SPIU procurement operations. It is composed of seven members as follows : (i) Chairman, in charge of climate change, REMA; (ii) Vice Chairman (V/C), Monitoring and Evaluation, SPIU; (iii) Secretary, Procurement Officer, REMA; (iv) SPIU Procurement Specialist, member; (v) Research Officer, REMA/member; (vi) IT Officer, REMA/Member; (vii) Officer in Charge of Education & Mainstreaming, REMA/Member. The LVEMP II Procurement Officer attends the evaluation sessions when his project is concerned, and technical specialists from user departments are invited to attend ITC meetings as required.

52. The ITC meets every Monday or as needed. All tender committee members attended a three-week procurement training organized by the School of Finance and Banking (SFB) in collaboration with International Training Center of the International Labor Organization (ILO/ITC).

53. Contract management is handled by individual project focal points and technical user departments for quality assurance in collaboration with the Procurement Specialist. REMA's lawyer is involved in the preparation of the contracts. There is a tendency of using country standard contract documents for contracts requiring the use of World Bank Standards.

Procurement Planning and Records Keeping

54. Procurement planning is part of the budgeting process, and every time the budget is revised, the procurement plan is also revised in accordance with the updated annual action plan. Only LVEMP II uses World Bank Procurement procedures as per its Financing Agreement and procurement guidelines; the rest of the projects funded by UNDP/UNEP are implemented using national procurement procedures. The mission was informed that most of processed contracts are related to the selection of consultants.

55. Records are kept in the Office of Procurement Unit and REMA intends to get additional space for records keeping. In addition, the Procurement Specialist was advised to get a safe for financial proposals and all related confidential documents. So far, the Head of SPIU Procurement Unit manages the workload, but would need an additional procurement officer when LAFREC comes on board. He will also need a procurement assistant to help with filing, advertisement, preparing notification letters and other administrative work as it is already a challenge to him. The implementing agency will be responsible for records keeping and filing of procurement records for ease of retrieval of procurement information. So far, the procurement documents are filed case by case rather than separate files for each. In this respect, each contract shall have its own file and should contain all documents on the procurement process in accordance with the requirements and as described in the national procurement law.

Control System

56. An annual audit is conducted by the Auditor General's Office. REMA has also an Internal Auditor who covers REMA and the SPIU. The Internal Auditor is independent and reports directly to the Director General of REMA. In addition, sometimes RPPA conducts procurement review, as since February 2011 they are no longer involved in procurement operations.

Risk Rating

57. The overall procurement risk of the proposed project is **high** due to inadequate procurement capacity of the intended implementing agencies. The SPIU lacks proficiency in IDA procedures and the current workload is too high for one Procurement Specialist to handle. His departure for training as of May 2014 escalates the risk. At district level, the capacity in using national procurement procedures is generally acceptable but they don't have prior experience in World Bank procedures. Thus, the procurement risk at district level is substantial. Following are the proposed mitigation measures to address the weaknesses. The risk may change to moderate after implementation of these mitigation measures.

Mitigation measures:

Risk	Action Required	By When	Responsible Entity
Limited experience in using World Bank procurement procedures, particularly on selection of consultants at national level	Training on World Bank procurement procedures on selection of consultants	During project preparation	REMA/WB
No prior experience in using World Bank procurement procedures at district level	Training on World Bank procurement procedures on selection of consultants	During Project Implementation	REMA/WB
Only one Procurement Specialist for 7 projects	Hiring one additional Procurement Specialist conversant with World Bank Procurement procedures	Dec 30 2014	REMA
Insufficient filing space, lack of safe for financial proposals and poor filing system.	Getting additional space for records keeping and a safe for financial proposals and other confidential documents. A module on Record keeping will be included in the proposed training.	During Project Implementation	REMA
There is a tendency of using country standard contract document by the REMA's lawyer	Training for the lawyer and TC on procedures of World Bank financed projects	Just before project starting date	REMA in collaboration with the Bank

Applicable Procurement Guidelines, Procurement Plan and Procurement Methods

58. **Guidelines.** Procurement for the proposed project would be carried out in accordance with the World Bank's "Guidelines: Procurement of Goods, Works and Non-Consulting Services

Under IBRD Loans and IDA Credits & Grants by World Bank Borrowers" dated January 2011; "Guidelines: Selection and Employment of Consultants Under IBRD Loans and IDA Credits & Grants by World Bank Borrowers" dated January 2011; "Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants, (the Anti-Corruption Guidelines)" dated October 15, 2006 and revised in January 2011; and the provisions stipulated in the Financing Agreement. The various items under different expenditure categories are described below. For each contract to be financed by the Credit, the different procurement methods or consultant selection methods, the need for pre-qualification, estimated costs, prior review requirements, and time frame are agreed upon between the Borrower and the Bank in the Procurement Plan. The Procurement Plan will be updated at least annually, or as required to reflect the actual project implementation needs and improvements in institutional capacity. The Borrower, as well as contractors, suppliers, and consultants, will observe the highest standards of ethics during procurement and execution of contracts financed under this project.

Bidding Documents and Request for Proposals Applicable to the Project

59. The Bank's Standard Bidding Documents (SBDs) will be used for procurement of works and goods under International Competitive Bidding (ICB); and the Standard Request for Proposals (SRFP) will be used for consultants' contracts. In addition, the implementing agency will use Standard Bid Evaluation Forms for procurement of goods and works for ICB contracts, and the Sample Form of Evaluation Report for Selection of Consultants selected using the Bank's SRFP for consultants' contracts. However, National Bidding Documents acceptable to the Bank may be used for (i) procurement of works and goods under National Competitive Bidding (NCB) procedures, and (ii) consultants contracts. Furthermore, in accordance with para.1.16 (e) of the Procurement Guidelines, each bidding document and contract financed out of the proceeds of the Financing shall provide that**:** (i) the bidders, suppliers, contractors and subcontractors shall permit the Association, at its request, to inspect their accounts and records relating to the bid submission and performance of the contract, and to have said accounts and records audited by auditors appointed by the Association; and (ii) the deliberate and material violation by the bidder, supplier, contractor or subcontractor, of such provision may amount to an obstructive practice as defined in paragraphs 1.16(a) (V) of the Procurement Guidelines.

Applicable Procurement Methods

60. **Scope of Procurement**: The implementation of the Project entails procurement of various types, but it generally comprises: (a) works for protection and conservation of critical ecosystems; (b) Construction of water harvesting for households aiming to support communities; (c) Supply, Installation of equipment for water quality analysis and training of end users; (d) Procurement of the analytical equipment for water quality (e) goods (computers, computer software, etc); (e) consulting services (i.e. technical assistance (TA), research studies, M&E, etc.); and (f) training and workshops.

61. **Procurement of Works.** Contract packages estimated to cost US$10 million equivalent per contract and above will be procured through International Competitive Bidding (ICB) procedures. Contracts estimated to cost less than US$10 million equivalent per contract would

be procured through National Competitive Bidding (NCB) procedures. Small works contracts estimated to cost less than US$200,000 equivalent per contract may be procured through Shopping procedures by comparing prices for quotations received from at least three (3) reliable contractors or suppliers. In such cases, request for quotations shall be made in writing and shall indicate the description, scope of the works, the time required for completion of the works and the payment terms. All quotations received shall be opened at the same time. If the Borrower has been unable to obtain at least three quotations, it shall provide the Bank with reasons and justification why no other competitive method could be considered and obtain a no objection before proceeding on the basis of the only responses already received. Direct Contracting (DC) for works may exceptionally be an appropriate method in emergency situation, provided the Bank is satisfied in such cases that no advantage could be obtained from competition and that prices are reasonable.

62. **Procurement of Goods.** Contract packages estimated to cost US$1 million equivalent per contract and above will be procured through International Competitive Bidding (ICB) procedures. Contracts estimated to cost less than US$1million equivalent per contract would be procured through National Competitive Bidding (NCB) procedures. Small contracts estimated to cost less than US$100,000 equivalent per contract may be procured through shopping procedures by comparing prices for quotations received from at least three (3) reliable contractors or suppliers. In such cases, request for quotations shall be made in writing and shall indicate the description and specifications, quantities, delivery period and payment terms. All quotations received shall be opened at the same time. As a general rule, a qualified supplier who offers goods or materials that meet the specifications at the lowest price shall be recommended for award of the contract. Limited International Bidding (LIB) for goods may exceptionally be used when there are only a limited number of known suppliers worldwide. Direct Contracting (DC) for goods may exceptionally be an appropriate method in emergency situation, provided the Bank is satisfied in such cases that no advantage could be obtained from competition and that prices are reasonable. Vehicles to be provided under this project could also be grouped together and delivered by UNOPS pursuant to paragraph 3.10 of the Guidelines. In this case the Borrower shall submit to the Bank for its no objection a full justification and the draft form of agreement with UNOPS.

63. **3. Procurement of non-consulting services**: Non-consulting services which are services that are not of intellectual or advisory nature will include for instance the distribution of supplies from central-level procurement to the decentralized entities, or maintenance of equipment. The procurement of non-consulting services shall follow the existing Bank's SBDs for ICB, or national standard bidding documents for NCB, with appropriate modifications.

64. **Use of Framework Agreements (FAs):** Common supplies, for example, stationery and consumables will be aggregated and procured through framework contracts to enable implementing agencies place orders for urgently needed supplies at short notice, at a competitive price. FAs shall not restrict foreign competition, and should be limited to a maximum duration of 3 (three) years. The Borrower shall submit to the Bank for its no objection the circumstances and justification for the use of an FA, the particular approach and model adopted, the procedures for selection and award, and the terms and conditions of the contracts. FA procedures applicable to

the project are those of the Borrowers that have been deemed acceptable by the Bank, and shall be described in the Grant Agreement.

65. The procurement procedures and SBDs to be used for each procurement method, as well as model contracts for works and goods to be procured, will be presented in the PIM.

66. **Selection of Consultants**. Consulting contracts will as far as possible be awarded under **Quality and Cost Based selection (QCBS)** procedures. Other methods of selection will be determined for each assignment depending on the type of assignment and the provisions of the Consultant Guidelines, and will be indicated in the procurement plan. **Quality Based Selection (QBS)** and/or **Fixed Budget Selection (FBS)** may be used for assignments which meet the requirements of paragraph 3.2 and 3.5 of the Consultants Guidelines respectively. However, consultants used for assignments of a standard and routine nature such as audits and other repetitive services would be selected through **Least-Cost Selection (LCS)** method in accordance with paragraph 3.6 of the Consultants Guidelines. Contracts for consulting services, using firms, estimated to cost less than US$200,000 equivalent and for which the cost of a full-fledged selection process would not be justified may be selected on the basis of **Consultant Qualifications (CQS)** in accordance with paragraphs 3.7 of the Consultants Guidelines. **Short List of consultants** for services estimated to cost less than US$ 200,000 equivalent per contract may be comprised entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines. For consulting assignments of engineering and contract supervision, short list of consultants for services estimated to cost less than US$300,000 equivalent per contract may be comprised entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines.

67. **Single-Source Selection (SSS)** of consulting firms or individuals would be applied only in exceptional cases if it presents a clear advantage over competition when selection through a competitive process is not practicable or appropriate and would be made on the basis of strong justifications and upon Bank's concurrence to the grounds supporting such justification. Paragraph 3.8-3.11 for consulting firms and paragraph 5.6 for individual consultants will be taken as a reference for use of single source.

68. **Individual Consultants (IC)** will be selected on the basis of their qualifications by comparison of CVs of at least three candidates from those expressing interest in the assignment or those approached directly by the Implementing Agency in accordance with the provision of Section V of the Consultants' Guidelines.

69. **Training and Workshops**: Detailed training plans and workshop activities will be developed during project implementation and included in the project annual work plan and budget for Bank's review and approval. The training plans would include details on: (i) type of training to be provided; (ii) number of beneficiaries to be trained, duration of training, and estimated cost; (iii) institutions selected based on their expertise; and (iv) expected learning outcomes. Workshops shall be prior reviewed as a part of the annual work-plans of the Implementing Agency.

70. **Operating and Incremental Operating Costs** include expenditures for maintaining equipment; fuel; office supplies; utilities; consumables; workshop venues and materials; and per diems, travel costs, and accommodation for staff when travelling on duty during implementation of this project, but excluding salaries of civil/public servants. These will be procured using the Borrower's administrative procedures, acceptable to the Bank. Operating expenditures are neither subject to the Procurement and Consultant Guidelines nor prior or post reviews. Operating expenditures are normally verified by TTLs and FM Specialists.

Bank's Review Thresholds

71. **Bank's Review Thresholds**: The Borrower shall seek World Bank prior review in accordance with Appendix 1 of both Procurement and Consultant Guidelines for contracts above the thresholds as agreed in the Procurement Plan. For purposes of the initial Procurement Plan, the Borrower shall seek Bank prior review for: (i) works contracts estimated to cost US$5 million equivalent per contract and above; (ii) goods contracts estimated to cost US$500,000 equivalent per contract and above; (iii) all consultancy contracts for services to be provided by consulting firms of US$200,000 equivalent per contract and above; (iv) for individual consultants contracts estimated to cost US$100,000 equivalent per contract and above; (iv) all direct contracting and single source selection contracts regardless of their value; and (v) annual training plan. In addition, a specified number of contracts to be identified in the procurement plan for the procurement of goods and works below the ICB threshold would also be subject to prior review. These prior review thresholds may be re-visited annually and any revisions based on the assessment of the implementing agencies' capacity will be agreed with the Borrower and included in an updated Procurement Plan.

72. ***Monitoring:*** Monitoring and evaluation of procurement performance will be carried out through: Bank supervision and post procurement review missions

73. ***Frequency of Procurement Supervision*:** In addition to the prior review supervision to be carried out from Bank offices, the capacity assessment of the Implementing Agency has recommended semi-annual supervision missions to conduct field visits, of which at least one mission will involve post review of procurement actions.

Procurement Thresholds

Thresholds for Procurement Methods and Prior Review

No	Expenditure Category	Contract Value Thresholds** (US$)	Procurement Method	Contracts Subject to Prior Review (US$)
1	Works	≥ 10,000,000	ICB	All Contracts
		< 10,000,000	NCB	Each contract of value equal or above US$5,000,000 equivalent.
		≤ 200,000	Shopping	None
		All values	Direct Contracting	All contracts
2	Goods and Services	≥ 1,000,000	ICB	All Contracts

	(other than Consulting Services	< 1,000,000	NCB	Each contract of value equal or above US$500,000 equivalent.
		< 100,000	Shopping	None
		All values	Direct Contracting	All Contracts
3	IT Systems, and Non-consulting Services	≥ 1,000,000	ICB	Each contract of value equal or above US$500,000 equivalent.
		< 1,000,000	NCB	Each contract of value equal or above US$500,000 equivalent.
4	Consulting Services	≥ 200,000 firms	All	All Contracts
		< 200,000	All	Only TORs
		≥ 100,000 individuals	IC	All contracts
		< 100,000 individuals	IC	TORs
		All Values	Single Source Selection	All Contracts
5	Training, Workshops, Study Tours	All Values	To be based on Annual Work Plan & Budgets and training plan	
	[Community Participation in Procurement acceptable to the Association and described in the PIM]			

****These thresholds are for the purposes of the initial procurement plan. The thresholds will be revised periodically based on re-assessment of risks.**

74. ***Procurement Plan. REMA SPIU*** will prepare the initial 18-month procurement plan (simplified procurement plan), which will provide the basis for the procurement methods. This plan will be concluded and agreed on by the government and the project team at negotiations. It will also be available in the project database and on the Bank's external website. The procurement plan will be updated in agreement with the project team annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

75. **Procurement Capacity Assessment at District Level:** From May 7-8, 2014 the Bank procurement team visited Rubavu, Nyabihu and Ngororero Districts that were assessed among the four Districts implementing the LAFREC project. The assessment revealed that all Districts are using same national procurement laws and procedures and have more or less similar structure and capability.

76. Procurement Arrangement at District Level: The same procurement law is used at all administrative levels, including the Districts. Procurement responsibilities are clearly stated in the Procurement Law, Manual and Procedures. Procurement process flow is as follows: initiated by user department –> Procurement unit –> Procurement Officer –> Tender Committee –> approval of Chief Budget Manager.

77. The chief budget manager (Executive Secretary) is mandated to approve awards. However in practice no formal approval of award is given, though required by the procurement law. The

signing of award notification by the chief budget manager is considered as internal approval, as he signs after he has been debriefed and only if he agrees with the evaluation result. The system is effective but authority delegated "on paper" is not applied consistently in practice.

78. Procurement Institutional Set-up and Legal Framework: In general internal manuals are well disseminated and the procurement staff has clarity about procurement processes. The Procurement Law, Presidential and Ministerial Orders, Manuals, Procedures and Standards are available both in soft and hard copies with the Procurement Officers. The Rwandan Procurement Law is robust and has addressed all steps of the procurement processes. The procurement officers and TC get training by RPPA, at average once every year and whenever changes are made to the laws. Manuals and policies are disseminated by RPPA and consulted by staff in undertaking procurements.

79. Legislative and Regulatory Framework: The regulatory framework is similar across all agencies at all administrative levels in Rwanda.

80. Procedures and Processes: The tender document clearly states the use of pass-fail criteria for Works and Goods. But with consultancy services, procurement requests for expression of interest (REOI) short listing is skipped and RFPs are directly advertised on an open competitive basis. All interested consultants then purchase the RFP and are evaluated on open competitive basis like with procurement of goods and works as opposed to the selective (short list) bidding required by the law. This is a drawback with all assessed Districts. After receiving proposals on an open competitive basis the technical and financial evaluations follow the same procedure as required by the law for selection of consultants. Two envelopes (technical and financial) are received and the technical proposal is opened and evaluated for quality. Financial proposals of technically qualified applicants are then opened for further evaluation and comparison. 70% is the minimum score to qualify for financial assessment. The technical score is given 70% weight, and the financial one 30%, though some Districts apply an 80% to 20% ratio.

81. The Districts use the standard bidding document (BD) and standard request for proposals (RFP) issued by RPPA, and both are ready within a few weeks once initiated.

82. Bids/proposals are consistently advertised in media with wide circulation, such national newspapers that are easily accessible to potential bidders, in line with the advertising principles of the country system, which is similar to the Bank's Guidelines. All bids are deposited in a Tender Box and procurement officers keep the keys. The boxes are opened in public in the presence of bidders/representatives immediately following the deadline for bid submission.

83. Procurement Staffing and Internal Tender Committee: There are one or two procurement officers per District, depending on expected procurement volume. The procurement officers have the required experience and a satisfactory track record in procurement in general, but little experience with donor-funded projects. All procurement officers in the assessed Districts have at minimum a B.A. degree.

84. A tender committee (TC) with seven members meets on a regular basis. The TC is responsible for opening, evaluating and giving an award recommendation. The quorum for bid opening is three and five for evaluation.

85. Contract management expertise is sought from respective departments in collaboration with the procurement officer. The assessment revealed that sometimes districts face budget shortages because of replenishment delays from MINECOFIN, which sometimes take as long as three months. As a result, payments to contractors/suppliers/service providers may be delayed for a considerable amount of time.

86. Procurement Planning and Record Keeping: Each contract has separate box file. All files are marked with contract descriptions and are placed chronologically on the basis of implementation year. Access to the filing rooms is restricted to procurement officers only. In general the Record Keeping & Document Management Systems is good but some districts like Ngororero need more space for records keeping, especially in light of two other Bank-funded projects, namely Feeder Roads Project and Agriculture PfoR Program.

87. A procurement plan (PP) is prepared according to a RPPA standard template, which includes the necessary activities. It is mandatory to accompany the annual budget with PP. The procurement plan is revised/updated once following budget revision. The PPs are published on the RPPA web site. The districts have no experience in complex contracts. These are beyond their capabilities, in particular ICB contracts with less experience with donor's procurement procedures.

88. Control System: An annual audit is conducted by Office of Auditor General (OAG) and RPPA. Districts have also internal auditors who audit procurement on a regular basis. The ombudsman's office also closely monitors procurement as part of fraud and corruption prevention and investigation and sometimes also conducts a deep audit of procurement operations. Rubavu District is one of the four Districts sampled by "Transparency International – Rwanda" to oversee procurement operations.

89. Contract notifications are made immediately after the evaluation is completed and the winner is recommended. According to the procedure, bidders have 15 days to furnish performance bonds and sign the contract. If they fail to do so, the runner-up bidder will be invited.

90. There is a disclosure policy in place (award decisions, debriefing, and right of information). But the practice is to post on the internal notice board and report to RPPA for publishing on RPPA's web site. This drawback is observed at all implementing agencies across the country, and needs to be corrected in future so as to bring it into compliance with the procurement laws.

91. There is a formal complaint handling mechanism in place known to bidders. Complaints are presented to the District's Chief Budget Manager, and can be escalated to the District Independent Review Panel and then to the national Independent Review Panel when necessary.

92. **Summary of Findings:** In general, all Districts have one or two procurement officers, depending on the volume of works to be done. They are conversant with national procurement procedures but none of them has prior experience with World Bank procedures.

93. There is no formal internal approval to contract award by authorized personnel (Chief Budget Manager), as required in the evaluation and recommendation reports. The letter notification signed by the Chief Budget Manager is considered as award approval, which is not formal.

94. Consultancy services are procured like goods and works - without request for expression of interest (REOI) and short listing, but rather by directly issuing an RFP on an open competitive basis. This is not in compliance with the national procurement law.

95. Though there is a disclosure policy in place, award decisions are not published in widely circulated national media. These media are used for procurement advertisements only. Disclosure is limited to posting on the internal notice board and reporting to RPPA for publishing on RPPA's web site.

Risk Rating:

96. Based on the findings of the assessment, the procurement risk at district level is substantial but the overall procurement risk of the proposed project is **high** as already highlighted. At district level, the capacity in using national procurement procedures is generally acceptable but they don't have prior experience in World Bank procedures.

5. ENVIRONMENTAL AND SOCIAL (INCLUDING SAFEGUARDS)

Environmental and Social Impacts Instruments Prepared

98. An assessment of the proposed project activities was carried out to establish potential environmental and social impacts and to determine the required safeguards instruments. The proposed project activities under Component 1 (1a, 1b and 1c) have substantive similarities with the on–going Lake Victoria Environmental Management Project (LVEMP II). These activities include: forest restoration and conservation in the Gishwati-Mukura landscape; participatory micro-catchment planning and management to enhance watershed functions as well as biological connectivity in the Gishwati-Mukura corridor; restoration of degraded habitats and production of native tree seedlings; support to demand-driven income generating activities to communities within targeted areas; etc.

99. Overall, the project is expected to provide significant environmental and social benefits, both onsite and downstream. Only limited remnant areas of natural habitat remain in the target landscape. The project will protect and restore these whilst introducing complementary, multi-purpose land management techniques into the surrounding

production landscape. Nevertheless some of its activities may have (i) localized and/or temporary small adverse environmental impacts; and/or (ii) involve some limited land acquisition, and/or restrict access to some natural resources. For these reasons, the proposed project is classified as Category B, as it is not likely to have significant adverse environmental and social impacts that are sensitive, diverse, or unprecedented.

100. Similar to LVEMP II, the proposed project will be implemented by the SPIU in REMA. REMA has in place the Environmental and Social Management Framework (ESMF), Resettlement Policy Framework (RPF) and Integrated Pest Management Plan (IPMP) that were prepared for LVEMP II at appraisal.

101. The safeguards assessment indicates that the environmental safeguards measures for LVEMP II are essentially sufficient to address potential environmental and social impacts from the proposed LAFREC project activities. In view of the above, the LVEMP II ESMF documents has been adapted to be the basis for the preparation of the specific Environmental and Social Impact Assessment (ESIAs) and/or Environmental and Social Management Plans (ESMPs) under LAFREC, as need arises. The IPMP document for LVEMP II has been adopted without any changes under LAFREC, as it is already national in scope. This IPMP was disclosed both in-country and in InfoShop for the purpose of LVEMP II on May 12, 2011.

Social Issues

102. Rwanda is very densely populated, with a population that is predominantly rural and agrarian although progressively urbanizing, highly dependent on natural resources for livelihoods and energy, predominantly poor, and largely young (three quarters of the population is under 25 years of age and more than half are under 17). Especially vulnerable groups that would be targeted under the project include, among others, women and female-headed households, the elderly, HIV/AIDS-afflicted persons, landless groups, youth and particularly orphans and street children.

103. With almost 84% of its population still depending mainly on subsistence agriculture, almost half of the population holds less than 0.5 hectares of cultivation land. The Strategic Plan of the Agricultural Transformation of Rwanda, aiming at land consolidation and a "*monetarised"* and "*modernised"* agriculture, states that "the Rwandan family farm unit is no longer viable" (GoR 2004). Population growth, the government's aim of modernizing rural communities, and the growing awareness for the importance of natural resources and environmental issues in the face of the projected climate change clash in many places in Rwanda. The former Gishwati Forest Reserve is a prime example for these differing interests.

104. The former Gishwati Forest Reserve has a history of deforestation extending over the past 50 years, in part because of ill-advised large-scale cattle ranching schemes of 1980s, resettlement of refugees after the genocide, inefficient small-plot farming, free grazing of cattle, and establishment of plantations of non-native trees. During the civil war between 1990 and 1994, military actions against militia hiding in the forest caused

further degradation (UNDP 2008). In 1994, two million refugees, including well-armed soldiers and militias responsible for the genocide, crossed the border into then Zaire. Concurrently, tens of thousands of Congolese Tutsi fled the killings that started in the Kivu region and came to Rwanda. However, since the new Rwandan government could not cope with the large number of refugees, areas that had not been occupied in the past, such as the former Gishwati Forest Reserve, were now subject to fast and unplanned settlement. The returnees cut down much of the forest as a means of survival, leading to serious soil erosion and landslides arising from the deforestation on steep slopes.

105. The interest to restore what used to be the Gishwati Forest has been growing since 2002 when floods and landslides devastated this area. The government reacted in 2007 after landslides following heavy rains killed people that were living close to Kitako, and declared the former Gishwati Forest Reserve a national conservation area. Its boundaries were re-evaluated and plans for reforestation were developed. As a mitigation measure for erosion and flooding and to protect the population from environmental hazards, the GoR decided to resettle the population. Due to the new boundaries of the forest, not only the "new" settlers within the forest were evicted, but also those who had long been living around the forest and had suffered from deforestation in the first place. In 2010, the population of Kitako was informed that they would have to leave their homesteads and fields.

106. Following the 2007 floods, the GoR initiated the GWLM project to respond to the environmental pressure and the challenge of landslides and erosion risks by identifying and defining land use systems as: i) crop land, ii) rangeland; and iii) natural and plantation forest land. In response to these efforts, almost 1,500 households were removed from the former forest area and resettled in various resettlement sites of Nyabihu, Rutsiro and Rubavu districts and compensated with an average landholding of 0.5 to 1 ha, and for families in Mukamira Sector just 0.25 ha per household, significantly smaller from most previous landholdings. With an average household size of 8 (above the national average of 4.8), the small size and low productivity of land, loss of free grazing following the GoR policy on fencing cattle, loss of access to forest products have resulted in decreases in household earnings. The lack of economic opportunities and inability of the young men to construct an additional house to start their family on the small family plots is leading to growing frustrations.

107. The relocated communities, though pleased with the alternative settlement and resulting protection from natural disasters, are feeling the pinch of having to make a livelihood from a much smaller plot of land. More significant than the loss of livelihood was the loss of what most of the households called "home" and an attachment to the forest. The forest had been home to most of the resettled since 1914, they now find themselves removed from their social network. The people from Kitako claim that problems of erosion only occurred after the area was deforested following the 1994 events. While they support the conservation policy, they see no reason as to why they should vacate their homes since these were originally below the former forest boundary (Claudia Gebauer & Martin Doevenspeck; University of Bayreuth)

108. Anti-erosion measures have been a prominent medium of state intervention in rural Rwanda since the colonial period. Introduced by the Belgian authorities, anti-erosion structures, often built through forced labor, were intentionally destroyed after independence. Later, the Habyarimana regime reinstalled this anti-erosion policy with similar sanctions.

109. Today, the discourse on forest protection and poverty has become a zero-sum game. Without reforestation, extreme weather events are increasing the dangers such as flooding and landslides for the population. LAFREC aims to balance the conservation of forest reserves with the restoration of livelihood and cohesion among the communities.

110. The project is anticipated to result in increased empowerment of the people living in the Gishwati-Mukura landscape and the improvement of their livelihoods, through systematic adoption of participatory natural resources and environmental management approaches, and also implementation of livelihood improvement activities. Therefore, the project's planned social development outcomes of greater empowerment and social inclusion are likely to be achieved. This is because priority watershed management investments will be done in a participatory, transparent, and accountable manner. This implies active participation in decision-making by key actors, including civil society and affected communities. Similarly, gender and other concerns of most vulnerable groups who are targeted for improved watershed management, shall be addressed through the same participatory processes.

111. Nonetheless, there is a small chance of physical resettlement and/or land acquisition related to project interventions. There is also a potential for limitations on access to natural resource use in or around protected areas. As such, OP 4.12, Involuntary Resettlement is triggered. Restoring a mixed use landscape involving agricultural, agroforestry, grazing, production forest and protection forest elements can potentially result in land taking and/or restriction to forest reserves.

Safeguards Policies Triggered

112. The Bank's safeguard policies applicable to the project are: (i) Environmental Assessment (OP/BP 4.01); (ii) Natural Habitats (OP/BP 4.04); (iii) Pest Management (OP 4.09); (iv) Involuntary Resettlement (OP/BP 4.12); (v) Physical Cultural Resources (OP/BP 4.11); (vi) Forests (OP/BP 4.36); and (vii) Projects on International Waterways (OP/BP 7.50). The following safeguard instruments have been prepared: (i) Environmental and Social Management Framework (ESMF); (ii) Resettlement Policy Framework (RPF) and Process Framework (PF); and (iii) Integrated Pest Management Plan (IPMP)[72].

113. Given the fragile and the changing environment of the Gishwati and Mukura Forest Reserves and the Gishwati-Mukura corridor, REMA has conducted a social assessment (SA) to identify potential social impacts of the project interventions and any issues related to the previous resettlement. The SA was conducted through consultative

[72] Safeguards documents are still in the process of being completed as of 22nd April.

meetings with the communities and their representatives, and the outcome informed the project design, including the identification of the livelihood support activities. The existing LVEMP II RPF was updated based on the findings of the SA, and a Process Framework for limitations on access to natural resource use in or around protected areas was developed. The Process Framework established a process by which communities potentially affected by restricted resource access and the forest management authority engage in a process of informed and meaningful consultations and negotiations to identify and implement means of reducing or mitigating the impact of restricted resource access.

114. The safeguard documents were prepared in consultation with representatives from national and local stakeholders, such as REMA, and the target districts. All safeguard documents were cleared by REMA and the Bank and were then disclosed at the World Bank's Infoshop and in-country on June 5, 2014.

Environmental and Social Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment (OP/BP 4.01) The project will support investments in soil and water conservation, small farm crops and livestock, community demand-driven income generating activities and other rural livelihoods. Because the exact locations of such investments have not been identified *ex-ante,* an ESMF was prepared.	X	
Natural Habitats (OP/BP 4.04) The project area contains small, but biologically important remnant natural habitats. The project is intended to benefit natural habitats, and the ESMF aims to ensure that inadvertent negative impacts do not occur.	X	
Pest Management (OP 4.09) The project will support SLM activities, including improved agricultural practices which may involve the need to control agricultural pests. IPM plan prepared for the purpose of LVEMP II has covered most of the pest problems in the whole country and is adequate to address the requirements of this policy for the implementation of this project.	X	
Indigenous Peoples (OP/BP 4.10) There are no populations qualifying as Indigenous Peoples within the project target areas.		X
Physical Cultural Resources (OP/BP 4.11) The policy is triggered as a precautionary measure in case cultural artifacts are unexpectedly found during implementation of works. Chance find procedures have been included in the ESMF.	X	
Involuntary Resettlement (OP/BP 4.12) Although physical resettlement is very unlikely to occur, the project will support activities, such as livelihoods interventions and establishment of reserve buffer zones, which could lead to small amounts of land acquisition. Improved management of the Mukura and Gishwati reserves will also lead to restrictions in the use of natural resources. An RPF and PF have been prepared.	X	
Forests (OP/BP 4.36) The project will establish community forest management systems, forest restoration in Gishwati and agroforesty approaches to improve the ecosystem functions and services. These may entail planting of trees and possibly enhanced management of forests on state or communal lands. Large-scale commercial forestry operations are not included within the project. In the case of this project, requirements for this policy overlap with those of the natural habitats one.	X	
Safety of Dams (OP/BP 4.37) SLM investments could potentially include the construction of very small water retention structure to attentuate stream flow and trap sediment. These would not qualify as large dams, and the ESMF includes screening tools and guidelines to address any potential issues.		X
Projects in Disputed Areas (OP/BP 7.60)*		X

The target landscape does not overlap any disputed areas.		
Projects on International Waterways (OP/BP 7.50) The policy is triggered as the project concerns flood control in the Sebeya catchment (part of the Congo basin) and potentially other small watersheds (within the Victoria-Nile system). However, the project should receive an exception to the notification requirement under clause 7b of OP 7.50 due to the fact that no water storage infrastructure will be built. The flood risk mapping and hydrological modelling included in the project fall under the category of water resource surveys and feasibility studies. TORs for that work will include consideration of downstream impacts, but the project activities are not expected to cause any appreciable harm to other riparians, nor to be harmed by their possible water use.	**X**	

Measures to be Taken by the Borrower and the Implementing Agencies

115. Environmental and social framework documents to guide the project during implementation have been prepared. The ESMF, RPF, PF and IPMP provide step by step guidance on how to address potential environmental and social impacts from the project activities. The ESMF proposes mitigation measures and their monitoring plans an integral part of the project design and costs. This includes the institutional responsibilities for the screening of activities and assigning an environmental category, undertaking Environmental and Social Impact Assessment (ESIA) in the event of Category B activities, monitoring, public consultation and disclosure, and supervision. Mitigation measures under the Natural Habitats and Forests policies are covered under each ESMF. The project will not finance interventions which destroy natural habitats or forests. Instead, it will support those which reverse degraded natural habitats, such as overexploited forests.

116. The IPMP has: (a) identified the key pests of major crops and livestock (b) assessed the impact of the current pest control methods in the; (c) analyzed the institutional, policy and legal frameworks for pest control and management; (d) developed an IPM strategy and its monitoring framework; and (e) identified key researchable areas in pest management. Since livelihoods or income generating interventions have not been selected in advance, each activity which triggers the policy will prepare its specific Pest Management Plan (PMP). The IPM will serve as a guidance/reference document for the preparation of specific PMPs.

117. The RPF outlines the principles and procedures for minimizing and/or carrying out satisfactory resettlement and/or compensation of eligible persons (including the formulation and implementation of Resettlement Action Plans (RAPs) in the project area in cases where physical resettlement and/or land acquisition occurs, which refers to potential impacts of the subprojects to be developed under Component 1

118. The project will undertake both desk and field appraisal of the planned project interventions, and the Bank will approve all RAPs prior to commencement of the subprojects. Compensation for any physical resettlement and loss of land will be funded from government budget. The grievance mechanism has been documented in RPF and the project will utilize the existing systems and structures from the lowest levels through local governments.

119. The Process Framework (PF) establishes the process for how to involve potentially affected communities in planning and implementation of the project while at the same time it identifies how affected communities will be assisted in restoring their livelihood, as a consequence of lost access to traditional natural resources. The Process Framework will outline the criteria and procedures as described in OP 4.12, which is triggered because of project-induced involuntary restriction of access to forest and other protected areas under the mandate of the GoR, resulting in adverse livelihoods impacts. To ensure that eligible, affected persons are assisted in their efforts to restore or improve their livelihoods in a manner that maintains the environmental sustainability of the natural resources in question, the Process Framework will describe the participatory process by which the project-affected persons will be involved in: (a) developing eligibility criteria of affected persons; (b) identifying impacts and mitigation strategies; (c) identifying livelihoods options and sub-project activities; and (d) establishing a grievance redress mechanism.

120. The institutional environmental management capacity in country has been assessed as part of the project design. The Ministry of Natural Resources (MINIRENA) is responsible for the protection and management of the environment per the Organic Law on Environmental Protection, Conservation and Management. Rwanda Environment Management Authority (REMA) was established through Article 65 of this law. REMA is charged with a responsibility of ensuring compliance with laid down environmental impact assessment procedures in planning and execution of development projects. This Project will be executed by REMA.

121. The main implementing agency, REMA has adequate in-house capacity to supervise, monitor, and guide the implementation of safeguard policies amongst the other implementing sectors. Supervision of safeguard work at district level will be carried out by district environment officers, supported by project field staff.

122. The project envisages strengthening the project implementing entities by providing training for its operation officers mainly a district and community levels to ensure systematic implementation and monitoring of environmental and social issues.

6. PROJECT MONITORING AND EVALUATION

123. Project monitoring and evaluation involve several components:

i. ***Project specific outcome monitoring.*** Annex 1 summarizes the Project Development Objectives (PDO) and related PDO and intermediate outcome indicators, including targets. Monitoring of performance against these indicators will be used in the formal assessment of project performance by the World Bank.

Although changes can be made to the project and these indicators during implementation, if necessary, they provide an agreed benchmark against which the success of the project is expected to be judged. GEF / LDCF tracking tools are also used (baselines are completed, and will be updated at mid-term and project completion) to estimate and target project outcomes in direct relation to GEF's / LDCF's strategic objectives under each focal funding area – biodiversity, land degradation, sustainable forest management and climate adaption.

ii. ***Implementation Monitoring.*** Implementation monitoring will involve tracking of project inputs, activities and outputs, as well as procurement and financial management tracking systems, allowing the project coordinator and SPIU to follow implementation progress in as near to real-time as possible.

iii. ***Impact Monitoring.*** In addition to monitoring of indicators directly related to LAFREC, component 2 includes an impact monitoring program which will provide a comparative evaluation of environmental and economic impacts in the project target landscape and areas subject to land management interventions in other parts of Rwanda (likely 2 or 3 additional sites). The impact monitoring study will involve the use of high resolution imagery to track land use and vegetation cover changes, monitoring of simple hydrological function indicators (i.e. flow and sediment loads), and standardized household surveys to assess changes in production and income. As far as possible, the design and implementation of the system will piggyback on existing data collection, particularly the monitoring and impact evaluation programs linked to LWH, which already involve farmer-based collection of steam-flow and water quality data and household livelihoods surveys.

Management Information System (MIS)

124. All these elements of monitoring will be supported by a Management Information System. To ensure swift start-up in time for baseline collection, as well as easy implementation the project will use a simple, spreadsheet-based (MS Excel or Google Spreadsheets / Google Forms, depending on the degree of decentralized data collection and entry required, and the ability of field staff to connect to the internet) monitoring system to guide project implementation. The MIS will be based on the project results framework and M&E plan, will be able to report against all indicators in the framework, include and assess progress against the project's work plan, and be able to generate simple tables and graphs to inform project management of achievements, and will summarize these in a dashboard of key indicators and progress milestones. This set-up will not only perform the function of managing project data, but will also enable the project management teams to monitor and evaluate the performance of individual project components and subcomponents. The project MIS will be based as much as possible on the existing SPIU MIS, adding only simple tools to cover any project-specific elements not included within the existing system. The project will not invest in developing sophisticated new data storage or analysis applications unless these are enhancements to the existing system intended for widespread use, or otherwise relate to standard indicators that will be monitored beyond the lifetime of the project.

Monitoring capacity

125. An M&E officer will be recruited to support to coordinate project monitoring activities, although monitoring will be a shared responsibility of all project staff, who will be required to feed appropriate information related to their activities and duties into the MIS. Existing monitoring programs of partner agencies will also be used to the extent possible, i.e. if Districts already have programs to collection information on agricultural production, this will be used rather than duplicating efforts. The monitoring officer may also assign different implementing agencies and contact consulting firms to conduct specific M&E activities, including studies and surveys.

126. Communities participating in implementing landscape management interventions will also be involved in project M&E activities. Some outcome monitoring activities will directly rely upon community members, such as training selected farmers to collect local stream flow and sediment data. Projects contracts signed with beneficiary groups and including high resolution images to indicate the locations of interventions, will provide basis for mutual accountability with project implementing teams. Development of simple business plans for livelihoods interventions will encourage producer groups to monitor and assess their own progress against established benchmarks, and simple monitoring approaches with public display and discussion of results will be part of the peer-learning system established to support the interventions on the ground. The community-based M&E will provide a continuing source of qualitative information on the performance of services, and enhance stakeholders' engagement for a continuous review of progress, as well as avail the opportunity to take action on non-performing areas.

Reporting

127. The project will prepare quarterly reports for internal purposes and report semi-annually to its technical steering committee and development partners. The semi-annual joint Bank-GoR implementation support missions will assess the status of key project outcomes and update legal covenant compliance. A Mid-Term Review will be conducted two years after effectiveness to assess the project halfway through implementation.

128. Upon project completion, the Bank will review the results and prepare the implementation completion report. This will be submitted no later than six months after project closure.

129. The project will also need to report at endorsement, mid-term and closure using the four GEF tracking tools.

Annex 4

Operational Risk Assessment Framework (ORAF)

anda: Landscape Approach to Forest Restoration and Conservation (LAFREC) (P131464)

isks						
	Rating	**Substantial**				
	Risk Management:					
ment project, LAFREC faces a vironment involving several ment, as well as local, private velopment partner stakeholders. roject coordinating agency, aching beyond its mandate, and imited cooperation from other	Risk Management: Significant effort has been expended during preparation to ensure that stakeholders are involved in the project discussions, and that appropriate coordination structures are included in the design, specifically a representative Project Steering Committee and a working group to coordinate planning for the Gishwati landscape to ensure coordination of landscape management activities at the working level. The effectiveness of these structures will have to be followed closely during implementation and adjustments made as necessary. The project aims not to position REMA as the agency for landscape management, but rather to engage other agencies in novel and collaborative approaches that are intended to encourage the adoption of more holistic models going forward.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Both	Not Yet Due	Both	☐		

y (IA) Risks (including Fiduciary Risks)						
	Rating	**Substantial**				
	Risk Management:					
experience through the former of Critical Ecosystems project and experience of managing ial management systems in Bank procedures is still under	Necessary actions to strengthen fiduciary capacity of REMA's Special Projects Implementing Unit (and other agencies as required) have been built into the project design on the basis of the assessments made by the Bank's procurement and FM specialists. This includes upgrading of the grades for some key positions to addresses issues of turnover that the SPIU has encountered in the past.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**

<table>
<tr><td rowspan="4">development in REMA, and is even more limited in at the local government level.

The technical capacity to understand, adapt and apply in a context-specific fashion a range of land management and adaptation options is still limited, particularly at local government level.</td><td>Both</td><td>Not Yet Due</td><td>Both</td><td>☐</td><td></td><td></td></tr>
<tr><td colspan="6">Risk Management:

Rwanda has demonstrated a high capacity to implement proven models for land management activities, aided by systems for strong accountability in the delivery of project results. Project preparation has emphasized making available a range of applicable technologies, including experimental approaches, a significant research component and a strong M&E component to evaluate success. Activities will build on existing processes and materials, but supplement these with additional technical guidelines and training courses.</td></tr>
<tr><td>Resp:</td><td>Status:</td><td>Stage:</td><td>Recurrent:</td><td>Due Date:</td><td>Frequency:</td></tr>
<tr><td>Both</td><td>Not Yet Due</td><td>Both</td><td>☐</td><td></td><td></td></tr>
<tr><td>Governance</td><td>Rating</td><td colspan="5">Moderate</td></tr>
<tr><td rowspan="4">Risk Description:

Decision-making affecting land use within target landscapes may not be fully inclusive of competing sectors and the interests of local communities, jeopardizing both landscape management objectives and the long-term sustainability of interventions.</td><td colspan="6">Risk Management:

The project will be designed to support government systems of decentralization, emphasizing the role of district governments in planning based on technical inputs from a range of line agencies. Spatial planning for the Gishwati landscape is intended to be coordinated through a technical working group and integrated into iterations of the District Spatial Development plans. A decision has already been taken following the GLWM project not to continue with wholesale land use changes and re-allocation. Project support will be based on enhancing the sustainability and productivity of existing land uses, through participatory methods with local farmers. The RPF sets forth a grievance redress mechanism for the unlikely event that disputes result from project activities.</td></tr>
<tr><td>Resp:</td><td>Status:</td><td>Stage:</td><td>Recurrent:</td><td>Due Date:</td><td>Frequency:</td></tr>
<tr><td>Both</td><td>Not Yet Due</td><td>Both</td><td>☐</td><td></td><td></td></tr>
<tr><td colspan="6">Risk Management:

(i) Train staff in quality control and financial and technical auditing to strengthen the internal control mechanisms included in project design; (ii)engage auditing firm to carry out technical and financial audit; (iii) Regular monitoring to continue during implementation.</td></tr>
</table>

	Resp:	Status:	Stage:	Recurrent:	Due Date:	Frequency:
	Client	Not Yet Due	Implementation	☐		

Project Risks

Design	**Rating**	**Substantial**				
Risk Description: Landscape management projects are necessarily complex. LAFREC is likely to involve biodiversity conservation, forestry, agriculture, rural livelihoods and disaster management, as well as the need to coordinate with other sectors (such as infrastructure, agriculture and energy) whose interests may intersect with project objectives. Complexity can dilute focus and the ability to deliver results efficiently. Despite often favorable outcomes and analysis of cost/benefit on paper, improved land management technologies are not always adopted as enthusiastically as expected, due to a range of cultural and practical barriers. Resistance from local populations to new practices, particularly where upfront investments may take some time to yield appreciable benefits remains a risk for these types of projects.	**Risk Management:** The project design has built upon a growing body of watershed management experience, particularly under LVEMP II, and has taken care to define achievable objectives and to only include as much complexity as is needed to achieve them. The design has selectively narrowed down from the potential scope identified at the concept and first preparation mission phase. It has resulted in a focus on a single landscape to concentrate impacts, whilst also developing models and research findings that will support national forest landscape rehabilitation efforts.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Both	Not Yet Due	Both	☐	27-Jun-2014	
	Risk Management: The project design draws from a growing body of work, both nationally and regionally to select interventions and approaches that have been shown to work, including aspects of community organization, peer-learning and the balance of project versus beneficiary inputs expected. Stakeholder consultation and social assessment will also be used to understand motivations and social structures amongst local communities during preparation. Research and M&E activities will support a strong learning focus. The project covers a broad area that includes more people than can be fully included. It will therefore have the flexibility to select local leaders who are most keen to work with the project, and will motivate others to engage, rather than imposing participation on all.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Both	Not Yet Due	Both	☐		
Social and Environmental	**Rating**	**Moderate**				
Risk Description: There are residual risks of inadvertent environmental	**Risk Management:** The project will involve a range of activities similar to a number of existing Bank					

impacts from new technologies (e.g. introduction of inappropriate species, promotion of agricultural intensification without consideration of potential increases in use of agrochemicals, etc.), as well as the potential for very localized land-taking from installation of small infrastructure (for water-harvesting, slope stabilization, etc.). In addition, community-based or state managed protection of shared resources may raise issues of resource access restriction.	projects in Rwanda (i.e. LWH, LVEMP II), and has therefore developed a set of safeguards based on the systems already being used under those projects, and informed by local circumstances (particularly a social assessment conducted in the project area). The safeguards documents include an ESMF and IPMP based on the documents from LVEMP II (which has a similar range of activities), a Resettlement Policy Framework to guide the preparation of RAPs in the event that these are needed, and a Process Framework to address potential issues related to resource access restriction in the forest reserves. The project will also provide livelihoods support to families previously resettled by government from the Kinyenkanda area, as they are amongst the most vulnerable persons in the project area and have a traditional relationship with the Gishwati forest.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Both	Not Yet Due	Both	☐		
Program and Donor	**Rating**	**Moderate**				
Risk Description: Other than the complementary activities by IUCN, the project is not directly dependent on support from other donors or programs. However, the design of interventions in the remnant natural forests of Gishwati and Mukura is premised on RDB adopting routine operating responsibilities and costs, which would be threatened by any delays in the legal declaration of the new National Park. Longer-term uptake of the landscape planning and management approaches promoted will depend on their mainstreaming into sector planning processes and donor-supported programs.	**Risk Management:** In the event that there are unforeseen problems with the passage of a new law establishing the Gishwati-Mukura National Park, the project would need to delay and eventually even re-consider some of the investments – e.g. in training, equipment and facilities for new Park staff. However, it would still be possible to strengthen protection of these forests through a continuation of the existing NGO-led model of working with local community eco-guards, and if this were functioning adequately, then investments in forest rehabilitation would still be justified.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Both	Not Yet Due	Both	☐		
	Risk Management: The project will involve developing / strengthening the national knowledge base and identifying funding sources (e.g. PES, adaptation funding) that should promote understanding and mainstreaming by relevant sectors, such as agriculture, water resources and disaster management. This work is expected to be complemented by IUCN with funding from the German Environment Ministry.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**

	Both	Not Yet Due	Both	☐		
Delivery Monitoring and Sustainability	**Rating**	**Moderate**				

Risk Description:

Monitoring of project impacts as well as delivery is challenging for a landscape management project. Many of the interventions are small and widely distributed, and some of the intended outcomes are long-term and difficult to assess directly (e.g. biodiversity improvements). Establishing sophisticated and comprehensive M&E systems is expensive in relation to a relatively small GEF project.

Sustainability of interventions on the ground is a potential concern, particularly the maintenance of native trees in the productive landscape after the end of the project and the support for their initial establishment.

The project, particularly the LDCF component, is intended to increase climate resilience. Nevertheless, severe weather events during the project could still have a disruptive effect on activities and progress.

Risk Management:

In addition to standard GEF monitoring tools, the project will attempt to exploit economies of scale by building on watershed monitoring systems being developed under LVEMP II. REMA's comparative advantage lies in coordinating, guiding and monitoring environmental mainstreaming, rather than trying to implement activities on the ground that fall under the remit of land, water, forestry, agriculture or other sectors. Hence the importance of the M&E function is reflected in the project design, particularly the impact monitoring program that will go beyond the confines of the project interventions themselves.

Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
Both	Not Yet Due	Both	☐		

Risk Management:

The project approach will stress local ownership, giving project participants a lead in the detailed planning of activities in their areas, and offering a selection of methodologies and species from which to choose. It will also foster pride in project activities as part of a civic effort to restore the landscape as a national asset for Rwanda and a foundation for the local economy, which would be supported by eventual international recognition as a Biosphere Reserve. The project will also examine potentials for long-term sustainability through PES-related financing – e.g. through carbon finance and/or eco-certification / marketing of local produce.

Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
Both	Not Yet Due	Implementation	☐		

Risk Management:

As the project will already be designed to mitigate expected climate risks, there is little extra that can be done, but even if resilience measures are only partially in place when extreme events occur, they could also provide an opportunity to assess and demonstrate the effectiveness of the investments. For this purpose, it will be important that the project is prepared to respond rapidly to any events that do occur both in terms of

	assessing and documenting impacts (including in control areas), and if necessary to re-prioritize activities towards shorter-term recovery.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Both	Not Yet Due	Implementation	☐		

Overall Risk		
Overall Implementation Risk:	**Rating**	**Substantial**

Risk Description:

Although the number of controls built into the project design is substantial, there is always a residual risk with a landscape projects due to their inherent complexity and the many stakeholders that are involved and the decentralized nature of the project design. The design is judged to be necessary to embed landscape planning at the decentralized level in keeping with Rwanda's decentralization policy, but means that the project will therefore necessitate close monitoring.

Annex 5: Implementation Support Plan

Strategy and Approach for Implementation Support

1. The strategy for Implementation Support (IS) has been developed based on the nature of the project and its risk profile, and aims to provide flexible and efficient implementation support to the client. IS will pay special attention to the risk mitigation measures defined in the ORAF.

2. **Procurement**. Implementation support will include: (i) training to SPIU staff; (ii) reviewing procurement documents and providing timely feedback; (iii) providing detailed advice on the Bank's Procurement Guidelines; (iv) monitoring procurement progress against the detailed Procurement Plan; and, (v) monitoring that implementation of contracts is compliant with the World Bank's fiduciary guidelines as well as with contract obligations.

3. **Financial management**. The FM Implementation support plan will be risk based and will include: (i) the review of audit reports and Interim Financial Reports (IFRs); (ii) advice and training to task team on FM issues as needed; (iii) provision of guidance on the Bank's fiduciary guidelines as well as procedures spelled out in the Project Implementation Manual (PIM) (iv) provision of timely follow up with the SPIU of issues arising, e.g. on accounting, reporting and internal controls; and, (v) participation in project supervision missions as appropriate. Based on the current risk assessment, which is moderate, the project will be supervised at least twice a year and may be adjusted when the need arises. To the extent possible, mixed on-site supervision missions will be undertaken with procurement monitoring and evaluation and disbursement.

4. **Environmental and social safeguards**. The Bank team will supervise the implementation of all safeguard instruments and provide guidance to the SPIU on how to address any issues that may arise. In addition, capacity building activities in the areas of environmental and social management may be provided to implementing partners at national and local levels.

5. **Memorandum of Understanding**. Implementation support will include: (i) guidance on the establishment of MoUs with the partner implementing agencies;

6. **Coordination with other development partners**. Implementation support will include promoting close coordination with other development partners, research institutions and NGOs involved in similar initiatives and operating in the area, such as IUCN, UNDP, ICRAF and World Bank-supported initiatives such as the LWH Project.

7. **Monitoring and evaluation**. Implementation support will include the supervision of the outcomes achieved following the results framework as well as facilitating the impact evaluation to be conducted at the end of the project.

Implementation Support Plan

8. The project will benefit from the joint technical support from the team working on LVEMP, the Burundi Coffee Project, and LAFREC. World Bank staff based in the region as well as in the Washington DC headquarters will participate in the joint implementation support

missions. Formal joint implementation support missions and field visits will be carried out twice a year. The implementation support costs will be covered by LAFREC.

9. **Technical inputs**: The project will be technically guided by: the TTL, a social specialist, an environmental specialist, a communication specialist, the procurement specialist, and a financial management specialist. Other Bank staff and/or consultants may be required to provide support as needed in areas such as agroforestry practices, protected area management, and landscape management. In addition, and as needed, the task team may seek additional highly specialized technical inputs from technical partners with whom close coordination and collaboration has been established during project preparation.

10. **Fiduciary requirements and inputs**. Supervision missions to review financial management will be an integral part of the project's implementation reviews. Supervision will take into account the need to increase the efficiency of financial controls and related support in project implementation. Bi-annual joint implementation support missions with procurement staff to strengthen Bank control and support will be conducted. A financial management action plan has been agreed with the implementing agency to address some of the weaknesses observed.

11. **Safeguards**. Environmental inputs will be provided by the environmental specialist and other team members who are environmental specialists. The social development specialist on the team will provide timely implementation support on social aspects on a regular basis. Supervision will focus on implementation of the Environmental and Social Management Framework (ESMF), the Resettlement Policy Framework (RPF), the Process Framework (PF), and the Integrated Pest Management Plan (IPMP).

12. **Operations**. The project TTL will provide timely implementation support of all operational aspects, as well as ensure coordination with the client and among World Bank team members. The TTL will lead field implementation support missions, and as needed, conduct ad hoc missions to resolve operational issues.

13. **Skills Transfer**. Careful attention will be given to ensure that skills developed under the project are sustainably transferred to REMA and other ministries where appropriate. To achieve this, government staff involved in project implementation and supervision missions will review progress made with respect to skills transfer.

Table 2: Implementation Support Plan

Time	Focus	Skills Needed	Projected Missions	Resource Estimate	Partner Role
First twelve months	Startup phase in coordination with REMA, initiating key project activities and quality control processes, MIS system operating, financial	Team lead, safeguards, financial management, procurement, core technical team skills, M&E.	2	$50,000	Coordination with key stakeholders

	management systems and procurement practices established and functioning				
12-48 months	Monitor overall progress, procurement and execution of contracts, financial management, procurement, environment and social safeguards	Team lead and organizational, monitoring and evaluation, safeguards, financial management, procurement, communications, core technical specialists	6	$150,000	Coordination with key stakeholders, SPIU will prepare comprehensive project progress report in advance of each mission, and field plan (including the midterm review)
Completion Review	Final IS mission, impact evaluation and then ICR	Team lead, M&E, Impact evaluation	1	$100,000	SPIU will prepare comprehensive project progress report in advance of the mission. ICR will start immediately prior to project closure

Table 3: Skills Mix Required

Skills Needed	Number of Staff Weeks per Year	Number of Trips per Year	Comments
Financial Management	1	1	FM implementation support mission will be consistent with a risk-based approach, and will involve a collaborative approach with the entire Task Team (including procurement).
Procurement	1	1	Procurement implementation support mission will be consistent with a risk-based approach, and will involve a collaborative approach with the entire Task

			Team (including FM).
Project Management (TTL, Environmental, Social specialists)	12	2	Project implementation support mission will be consistent with a risk-based approach, and will involve a collaborative approach with the entire Task Team (including procurement and Legal).

Annex 6: Economic Analysis

Cost-Benefit Analysis:

1. LAFREC will primarily support the forest-based restoration of a fragile landscape, livelihood improvements, disaster risk preparedness, and conduct research to support landscape restoration, biodiversity conservation, and agroforestry practices. For the calculation of net present value (NPV), a discount rate of 7 percent and a time period of 20 years have been applied. This section provides a partial CBA due to the difficulty of developing reliable quantitative estimates of several of the environmental benefits. Nevertheless, the analysis suggests a significant net benefit and healthy ERR. M&E data obtained during the project will help to improve the characterization of the economic returns to the project.

2. The economic costs of the project are composed of:

    a. The full base cost of the project investment - US$ 12.54 million, or US$ 11.08 million in NPV terms.
    b. Incremental recurrent costs, which are assumed to be limited to the management costs of the newly established Gishwati-Mukura National Park, and which are taken to be fully attributable to the project in spite of the fact that RDB would likely have converted to a national park without LAFREC's investment. The NPV of these costs is $0.93 million.
    c. The opportunity cost of preserving the future Gishwati-Mukura National Park. Lost economic opportunities in local communities owing to protected area surveillance include revenues associated with illegal mining, wood harvesting, and non-timber forest product (NTFP) collection, and theoretical conversion to agriculture or other income-generating functions. No figures are available to estimate the value of the ongoing illicit activities due to their informal and clandestine nature. However, given the requirements of the World Bank's Resettlement Policy that foresee compensation for economic damages to livelihoods resulting from access limitation, it is assumed that the net opportunity cost will be zero. As to conversion into agricultural, this would also imply lost ecosystem services, and as such the tradeoffs are difficult to calculate without an in-depth analysis of the agricultural potential of the land in question, which is beyond the scope of this study.

3. The economic benefits of the project are composed of:

    a. Revenues from ecotourism: Rwanda generates some $281 million in tourism revenues in 2012 from a very limited resource base. Leisure tourism made up $130 million, or about half this amount. Year-on-year growth has been in the double digits for several years running, most recently 12 percent.[73] The majority of leisure tourism is nature-based and was generated by the national park system. Although the Gishwati-Mukura landscape is likely to only contribute a small increase in tourism due to its limited size and resources, to the extent that it can result in extending foreign tourist stays in the country and increase domestic tourism activity (plausible in the face of a rapidly expanding domestic economy), it is expected to contribute to the overall growth of the sector. Based on conservative estimates, it assumed that

[73] RDB Tourism Report 2012.

initially, 1,000 visitors will be registered annually, and that their average entrance fee for the protected area is $25 (this takes into account differentials between local and foreign tourists, as well as a number of different activities that could be offered[74]). Further, it is assumed that for every dollar visitors will spend on park fees, they will spend three dollars on other goods and services (accommodation, food and beverages, guide services, transportation, souvenirs etc.). Lastly, an annual revenue growth rate of three percent has been assumed. This results in an income stream with a NPV of $1.2 million.

b. Conservation benefits: The conservation value not been assessed for Gishwati and Mukura Forest Reserves. ARCOS is in the process of preparing a study for Mukura Forest Reserve, the results of which were not yet available at the time of writing, however. As a result, the value of conservation benefits realized through the Gishwati-Mukura National Park has been estimated using figures from a study carried out on the Nyugnwe watershed by Masozera[75]. Nyungwe shares many ecosystem characteristics with Gishwati-Mukura and is the closest comparator available. Masozera calculated a TEV of US$ 2515 per ha (including watershed protection, biodiversity protection, and carbon sequestration; for the purposes of this study, tourism and recreation were excluded and calculated separately; see above). Extrapolated to Gishwati-Mukura National Park, this would imply an annual conservation value of US$ 8.62 million. To determine LAFREC's marginal contribution to the conservation of the parks, it is assumed that the TEV would diminish at a rate of 6 percent per annum in the absence of the increased protection the park affords.[76] This represents the conservatively estimated degradation rates in the reserves in the absence of effective protection. The resulting NPV is estimated to be US$ 29.99 million.
c. Returns from RDB's revenue sharing mechanism: RDB commits five percent of the revenues it generates from Rwanda's national park system to community initiatives. In 2013, this amounted to US$ 457,000 across the country. RDB is tentatively envisaging that the communities surrounding Gishwati-Mukura National Park—although contributing initially to the collective revenues in only a limited way—would receive an allocation that exceeds its revenue generating potential. RDB has preliminarily estimated this portion to be 20 percent of the total amount, or about US$ 90,000 per year. A conservative 3 percent growth in the total amount of this fund has been assumed for future years, representing overall growth in tourism numbers that would be well below recent annual growth rates. The NPV of the resulting revenue stream for the local economy is US$ 1.22 million. These benefits accrue to the local communities surrounding Gishwati-Mukura National Park, where they will make a significant difference. However, they do not form part of the economic analysis as they constitute a transfer payment.
d. Agricultural productivity gains from improved SLM measures: The project is planning to establish protective forests on 700 ha. Although income is expected to decrease on these areas, it is assumed that the livelihoods and SLM interventions that will be offered to project participants agreeing to establish protective forests will at

[74] For more details, see Great Apes Trust (undated): Proposal for a pilot ecotourism program – Gishwati national conservation park.
[75] Masozera, M. 2008. Valuing and capturing the benefits of ecosystem services of Nyungwe Watershed, Southwest Rwanda. Kigali, WCS/IRG. 49p.
[76] Forest of Hope Association.

the very least equalize the income reductions, resulting in zero net economic loss (and potential gains that have not been quantified so as to remain on the conservative end of the spectrum of estimates). LAFREC is planning to promote silvopastoralism on 350 ha, which is assumed to lead to productivity increase of 10 percent owing to nitrogen fixing and reduced runoff. Finally, improvements in woodlot management are assumed to lead to increases in woodlot productivity of 45 percent.[77] A number of assumptions were necessary to compute the benefit stream from SLM interventions: Average land holding per household in the area is 0.57 ha[78]; average household income is US$ 153/year[79]; and the share of income derived from agriculture is 49 percent[80]. Applying these assumptions results in an NPV of benefit streams of US$ 0.59 million.

e. Reduced negative externalities from silt-laden runoff of fields as a result of SLM practices: Although due to a lack of data and as yet undetermined areas of individual SLM techniques (with correspondingly uncertain erosion reduction coefficients), the value of this benefit cannot be quantified, it results from reduced siltation of water courses in the watersheds affected. This will, among others, reduce the cost of water treatment and power generation on the Sebeya River, and increase the quality of untreated water for water users. Lower in-stream sediment loads also reduce the risk of flooding.
f. Increased carbon sequestration from SLM measures and agroforestry: The forest-based approach to landscape restoration that LAFREC espouses will introduce some 4.6 million trees to the landscape. Using the estimated carbon sequestration potential of the project over the course of 20 years, as calculated using EX-ACT (see Annex 7), and a carbon price of $7/tCO$_2$e[81], the NPV of the tree carbon sequestration is US$ 4.71 million. In addition, the SLM measures are expected to increase soil carbon, which has not been quantified. Neither of these benefits will be monetized on the carbon market. Rather, they accrue as positive externalities to the global community.
g. Reduced impact of natural disasters: The targeted area has been subject to repeated flood and landslide events. The improved land management LAFREC will be implementing is expected to reduce run-off, while the DRM activities in Sub-Component 1.d. are expected to reduce the losses associated with flood events. An assessment of the 2007 flooding in the former Gishwati Forest Reserve concluded that the direct costs to property, crops, livestock and human life were in the order of $4m - $22m in Nyabihu and Rubavu Districts alone. Nevertheless, disaster reduction benefits have not been included in the current analysis because the expected flood attenuation impact of the project is not yet known. The flood risk mapping and hydrological modelling planned under the project will allow this to be better characterized.
h. Improved earnings resulting from livelihoods support: The livelihoods support activities the project will be undertaking are expected to increase the earnings of

[77] IUCN and WRI (2014): Restoration Opportunity Assessment for Rwanda.
[78] EICV3, Rutsiro District. In the absence of better data, this figure was assumed to be identical across agricultural, forest, and pasture plots.
[79] Using national average household consumption of $182/year (from EICV3), adjusted by a factor of 0.85 to account for the higher percentage of households in poverty in Rutsiro District compared to the national average (53 percent vs. 45 percent).
[80] EICV3, Rutsiro District.
[81] Price of 1 EUA as of April 11, 2014.

participating households. A portion of the support will go to households that have experienced economic dislocation as a result of land taking or access limitations due to the project. While the exact number of such households was unknown at the time of writing, it is conservatively estimated to be 20 percent. The remaining 80 percent of the improvement in livelihoods can thus accounted as benefits. An estimate of the amount is pending completion of the social assessment.

i. Increased effectiveness of biodiversity management, landscape restoration, and local agroforestry practices as a result of the research LAFREC will support. These benefits cannot be quantified and hence do not form part of the ERR calculation.

4. Based on the estimates and assumptions listed above and a discount rate of 7 percent, the project's ERR over a 20-year period is 35 percent, and NPV net benefit of $25.41 million will be generated for the economy (see Table).

Table 1: ERR Calculation

All figures in US$ million

	PV	2015	2016	2017	2018	2019	2020	2020-2034
Costs								
Project investments	**0.00**	**-1.40**	**-2.47**	**-2.58**	**-2.39**	**-2.38**	**-1.49**	**-1.49**
Recurrent costs	**-0.93**	**-0.09**	**-0.09**	**-0.09**	**-0.09**	**-0.09**	**-0.09**	**-1.32**
G/M Management (0)	-0.93	-0.09	-0.09	-0.09	-0.09	-0.09	-0.09	-1.32
Total Costs	**-11.02**	**-1.48**	**-2.56**	**-2.67**	**-2.48**	**-2.47**	**-1.58**	**-2.81**
Benefits								
Revenues from ecotourism (1)	1.20	0.00	0.10	0.10	0.11	0.11	0.11	2.20
Conservation benefit (2)	29.99	0.00	0.52	1.00	1.46	1.89	2.29	67.44
SLM/agricultural productivity	0.59	0.06	0.06	0.06	0.06	0.06	0.06	0.90
Carbon	4.71	0.44	0.44	0.44	0.44	0.44	0.44	7.11
Total Benefits	**36.49**	**0.50**	**1.12**	**1.61**	**2.07**	**2.50**	**2.91**	**77.65**
Net Benefits	**25.47**	**-0.98**	**-1.44**	**-1.06**	**-0.41**	**0.03**	**1.33**	**74.83**
ERR	**0.35**							

Assumptions

(0) RDB management budget for G/M = RWF 60M/year

(1) 1,000 visitors / year; Average Entrance Fee = $25; ratio of park/non-park spending: 3:1; annual growth rate: 3%

(2) Based on Total Economic Value (TEV) derived for Nyungwe National Park; difference between constant TEV of conservation maintained by effective protection and 6%/yr decrease in conservation value in the absence of effective protection (Source: FHA)

Additional analysis of landscape restoration economics at the national scale, based on IUCN / WRI assessment:

5. IUCN/WRI[82] calculated the per hectare costs and benefits of various restoration interventions using time horizons ranging from 20 to 30 years reflecting average rotation intervals, a 7 percent discount rate, annual budgets of management activities and material inputs for each land use and intervention, revenues from the sale of fuel wood, timber, and crops, and a broad range of possible returns scenarios to account for variability in tree growth, precipitation, and tree-crop interactions.

6. Table summarizes the net present value of existing land uses and restoration interventions in Rwanda. The numbers were calculated for the country as a whole and are therefore not directly applicable to the Gishwati-Mukura landscape setting, the range provided includes a number of possible scenarios. Due to the higher-than-average precipitation jn the Gishwati-Mukura landscape (especially compared to the Southern and Eastern Provinces, whose low annual precipitation would depress productivity and therefore national NPV averages), it can be assumed that the figures would be higher in this region.

Table 2: Net present value of land uses and restoration interventions in Rwanda (RWF)

Net Present Value (RWF)	Traditional agriculture with beans	Agroforestry with beans	Traditional agriculture with maize	Agroforestry with maize	Poorly managed woodlots	Improved management of woodlots with spacing only	Improved management of woodlots with best practices	Protective forests	Naturally regenerated forests
Minimum	-869,246	-484,942	-1,623,191	-1,444,434	228,573	298,518	-193,342	-645,202	-367,728
Mean	-630,900	556,749	396,394	873,302	286,077	386,896	-85,295	-627,127	-1,562
Maximum	111,467	945,291	5,788,093	6,582,152	336,996	464,790	9,761	-608,224	366,178

7. The results show that, in nearly every case, restoration improves the economic performance of degraded land. Over a 20-year period, the restoration transition from traditional agriculture to agroforestry systems yields the greatest additional revenue, both in scenarios with beans and with maize. Of note is the long-term mean decline in the returns of traditional agriculture with beans due to the low soil cover and resulting soil erosion of such systems. However, as the NPV distribution of agroforestry overlaps with that of traditional agriculture, there is a possibility that agroforestry will not provide a net benefit in every case even though on average, it will. No figures were available for potatoes, which are also an important crop in the Gishwati-Mukura landscape.

8. The NPV values cited for naturally regenerated forest over a 20-year period include valuing the price of carbon, although high levels of carbon sequestration can be profitable where the carbon is monetized. In contrast, reforestation on ridge tops and steep slopes carries a cost in all scenarios.

9. Figure shows the investment costs per hectare required for each transition, where agroforestry measures are calculated over a 20-year horizon. Agroforestry measures require

[82] IUCN and WRI (2014): Restoration Opportunity Assessment for Rwanda.

NPV investments of RWF 843,600/ha more than traditional agriculture, natural forest regeneration over 30 years costs RWF 384,000/ha, and protective forests on degraded land cost RWF 762,586/ha to establish.

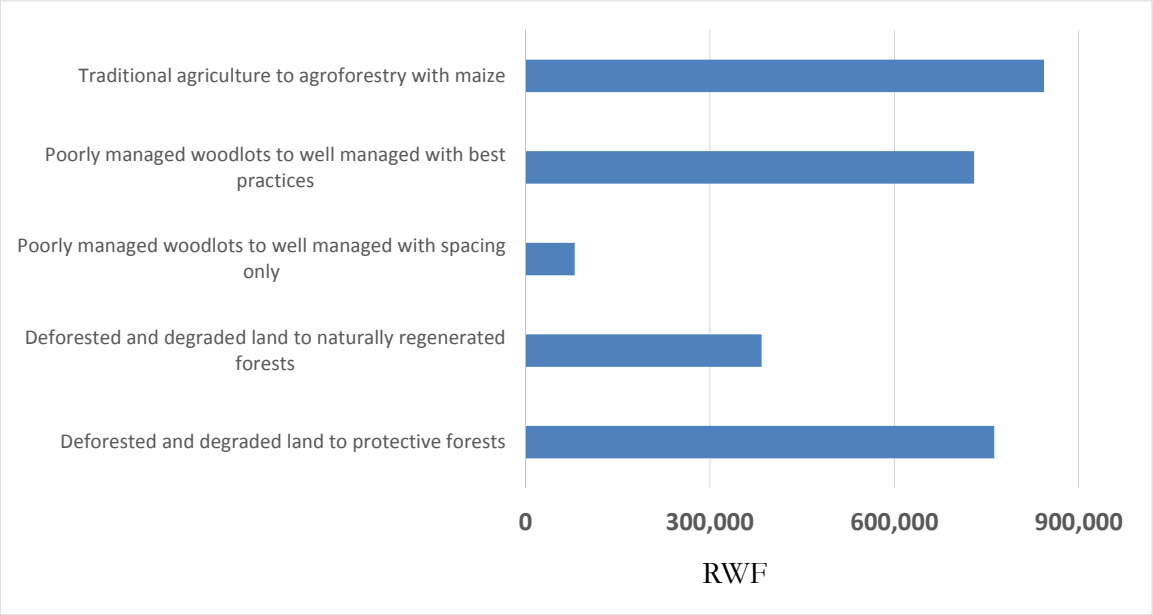


Figure 1: Transition costs (RWf/ha, (transition costs calculate using a 7% discount rate)

10. One of the positive effects of landscape restoration is carbon sequestration. While LAFREC is not planning to monetize the carbon benefits it is expected to achieve, it is expected that it will have a climate-positive impact, thereby contributing to a global public good and realizing reductions in the social cost of carbon. The IUCN / WRI study quantified the carbon sequestration potential of several restoration options as follows: Natural reforestation on deforested land: 448 tCO_2e / ha; implementing agroforestry by adding up to 300 trees/ha to existing agricultural land: 28 tCO_2e / ha; and establishing protective forests on ridge tops and steep slopes: 208 tCO_2e / ha. As these figures are Rwandan averages, it stands to reason that in the comparatively wetter-than-average climate of the Gishwati-Mukura landscape, the actual carbon sequestration potential is higher.

11. Also not directly monetized (but reflected in the assumptions about increased agricultural productivity in the ERR calculation above) are reductions in soil erosion, which do provide significant value by increasing soil nutrient stocks and retention, improving soil structure, and reducing detrimental downstream effects on water flow and quality. The IUCN / WRI study quantified the soil erosion reduction potential of various interventions as follows: Natural forest regeneration on deforested and degraded forests: 36 t/ha; protective forests on ridge tops and steep slopes: 9 – 31 t/ha; agroforestry: 5.5 t/ha; and improved woodlot management: 0.5 t/ha. Given the steeper-than-average terrain in the Gishwati-Mukura landscape and resulting higher erosion rates, it is expected that

interventions that reduce erosion in this area will result in soil erosion reductions exceeding these average values.

12. The return on investment (ROI) of the four interventions was calculated to be as follows: -82% for protective forests on ridge tops and steep slopes, a low value due to the relatively high costs and the relatively low returns, which are limited to carbon revenues; 0% for naturally restored forests, as the social cost of carbon just offset the costs (In both cases, given the prominence of carbon pricing, it bears highlighting that given the higher-than-average productivity of forests in Western Rwanda, these figures may be skewed upwards.); 12% to 38% for the establishment of agroforestry systems, depending on the crop selected and whether carbon revenues are included; and 17% and 24%, assuming some fire and erosion-prevention measures are already in place.

Public Sector Rationale

13. Component 1: Forest-friendly and climate-resilient restoration of Gishwati-Mukura landscape:

    a. Sub-component 1.a.: Upgrading and sustainable management of Gishwati-Mukura Protected Area: Conservation of Rwanda's rich biodiversity resources is undersupplied in the absence of public investment, a reality that results from a set of market failures: First, there is only limited market value attached to the financial flows that the Gishwati-Mukura National Park generates. Thus, the forests primarily generate local public goods in the form of ecosystem services. Second, the positive externalities of conservation – the forests' total economic value – are not priced into the financial streams they will generate, even when they provide revenues from access fees and associated local economic activity once they become a national park. And third, the biodiversity in the forests constitutes a global public good that the government is can only imperfectly safeguard without external assistance. The global public good character of the area stems primarily from its biodiversity (possible future provisioning services, option and nonuse values) and its role in carbon sequestration. As a result of these market failures, conservation is under-provisioned by the market.
    b. Sub-component 1.b.: Forest restoration and land husbandry in the Gishwati-Mukura landscape: The lack of information on SLM techniques results from its public good character and the inability of local farmers to pay for, access, or use such information if it were to be supplied by the market. Public provision of such information resolves this underprovision.
    c. Sub-component 1.c.: Sustainable and resilient livelihoods: Given that the Gishwati-Mukura National Park is a publicly owned and operated entity, the government bears responsibility for managing the protected area's relationship with local communities and minimizing the negative externalities that result from the park due to the exclusion of human use. The project will better align incentives for communities to protect the natural resource that the areas represent, creating a market for the safeguarding of the resource where none exists to date.

d. Sub-component 1.d.: Flood forecasting and preparedness: Public safety is an undersupplied public good, and generally accepted to be the domain of government, as paid access through the market would likely exclude poorer segments of the population, resulting in inefficiencies owing to their unaddressed vulnerability to floods.

14. Component 2: Research, monitoring and management: Due to the inability of individual farmers to pay for research and a combination of the lack of organization and a lack of financial means on the part of farmer associations, there is an undersupply of research into new agricultural and SLM techniques in Rwanda.

World Bank Added Value:

15. The World Bank's value-added arises from four main sources: 1) The World Bank's experience in supporting protected area, landscape, and sustainable land management spans several decades, and the Bank is able to draw on the lessons it has learned from its work in this domain around the globe. 2) The World Bank is already running the LVEMP, LWH, and RSSP projects, which provide it with knowledge of the local context, lessons to build on, and synergies to exploit. 3) Due to its convening power, the World Bank can draw on a rich array of external expertise to inform its work on the project.

Annex 7: Incremental and Additional Cost Analysis

1. **Background**: The Gishwati-Mukura landscape is highly degraded. Forest cover has decreased dramatically over time to the point where only two small areas of natural forest remain, while the remainder of the land is used for pasture, agriculture, plantation forestry, and tea cultivation. The impact on the previously rich biodiversity (as part of the Congo-Nile Crest forests within the Albertine Rift Ecoregion) has been dramatic. Some of the highest population densities in Africa and the return of refugees following genocide and conflict in the 90s have pushed agriculture onto marginal lands on steep slopes where productivity is low. Combined with deforestation, this results in severe soil erosion, such that the area is estimated to lose some 1 million tons of soil annually, further diminishing agricultural productivity. Loss of protective vegetation has left the population vulnerable to flooding and landslides, including severe events in 2007 that led to the loss of several lives and damages assessed in millions of US$. It has also led to siltation of rivers and associated increased costs for water filtration and hydropower generations.

2. The vast majority of the population in the area is currently dependent on rain-fed agriculture. With high poverty levels, weather patterns becoming less predictable, and an increased risk of extreme weather events, this lack of economic diversification poses a threat to local livelihoods. The GoR has recognized the challenge but has insufficient resources to address the problem systematically. Additional background information is provided on the project target landscape in Annex 2.

3. **Evolution of the project approach and fit with GEF/LDCF objectives**: Since the preparation and approval of the PIF, project preparation has significantly clarified and focused the project activities. Given the clear needs and government priority on the Gishwati-Mukura landscape, the opportunities for combined environmental, biodiversity and economic outcomes, and limited funding, the decision was made to focus investments on the ground on one target landscape to allow a critical mass of local impact, particularly in relation to watershed function and biodiversity connectivity. Also, in response to guidance from the Bank's Rwanda CMU to simplify the project structure, the number of components was reduced to two. Component 1 provides a comprehensive and coherent approach to landscape management in the Gishwati-Mukura landscape, focusing on the interventions on the ground in different elements of the landscape, and on linked improvements to livelihoods and flood forecasting and EWS for the area. Component 2 complements this with national-level research and monitoring activities, to facilitate the use of the Gishwati-Mukura activities as a national example of landscape management, as well as overall project management.

4. The PDO/GEO for the project was also revised from "To restore and maintain critical landscapes in Rwanda that provide global environmental benefits and contribute to enhanced resilient economic development and livelihoods" to "Demonstrate landscape management for enhanced environmental services and climate resilience in one priority landscape". The revisions reflect (i) the explicit purpose of the project to demonstrate a model for application elsewhere in the country, (ii) the fact that landscape maintenance is a long-term objective, outside the measurable results of the project within its lifespan, and (iii) the need for a simplified PDO, each component of which is linked directly to an indicator.

5. Despite the consolidation, the scope of activities is only slightly altered. Key refinements coming from the preparation process are:

a) The description of climate adaptation activities in the PIF is broad in scope, but lacking in specific implementation details. Preparation has led to a greater focus of activities specifically financed by LDCF funds on diversifying livelihoods and strengthening flood forecasting and early warning systems. However, the project still presents an integrated and comprehensive approach to strengthening local resilience that capitalizes on the synergy between land management, livelihoods and flood preparedness interventions. The entire landscape approach will have adaptation benefits, through investing in green infrastructure, soil conservation, diversification of farm productions systems, and improved watershed function. Planning of project interventions with communities and cooperatives will involve participatory assessment of climate vulnerabilities (as well as broader social vulnerabilities), to effectively target both land management and livelihood interventions for adaptation outcome. Identification of livelihoods diversification options will explicitly rank the climate vulnerability of different options as part of the selection criteria. In addition, flood management activities will assist those facing the most acute climate risks in the project area. Flood risk mapping and hydrological modelling, as well as community response planning and preparation will still strengthen the characterization of climate-related risks and community awareness of responses, alongside specific investments in improved forecasting and warning systems. Given the scope of the budget, infrastructure hardening measures have not been included within the adaptation activities, beyond some very simple locally-led activities (e.g. river-bank protection with gabions or sandbags), and the general improvements in ecological infrastructure from the broader program of land management interventions.
b) Wood fuel production is better regulated in Rwanda and less of a threat to natural forests than in many other countries in Sub-Saharan Africa. Nevertheless, improving the sustainability of rural energy use remains a key challenge for both meeting household needs and achieving more sustainable landscapes. Although this topic is not addressed through a separate set of activities under the component structure, it is still integrated into the project design. Establishing new and improving the management of existing woodlots will be key activities within the agroforestry approach, and expansion of the use of efficient charcoal production and stoves (based on existing models already widely used in Rwanda) will be promoted as part of the livelihoods options. The livelihoods assessments will also investigate the potential for introduced bio-digesters linked to stall-fed cattle rearing.
c) The PIF envisaged a “sustainable national multi-stakeholder mechanism / forum” for landscape management as an output. Rwanda already has a number of cross-sectoral coordination mechanisms in place, however, and has developed a National Land Use Master Plan and implemented a comprehensive land titling program. Decentralization of implementation to the District level, the inherently local nature of landscape management, and the existing, unique institutional

foundations in the Gishwati landscape[83] make local coordination of landscape planning a higher priority. To that end, a cross-sectoral working group will be established for the Gishwati-Mukura landscape, to ensure coordination of sector investments and their harmonization with District Land Use Plans. The project will still promote forest-based landscape management at the national level, however, primarily through research activities to increase the scope of viable agroforestry techniques, use of native tree species and financing options, and through an impact monitoring system that will compare the landscape results of LAFREC with other projects and programs investing in rehabilitation of rural lands, in order to identify the specific benefits of landscape and tree-based approaches. There are limits to the currently available menu of agroforestry options and knowledge on the propagation of native species that further research could address, thereby supporting the project goal of achieving not only a higher tree cover, but of also reintroducing a higher level of biodiversity into the landscape. The LVEMP II project is also conducting national analysis to identify watershed management priorities across the country. Establishing national landscape management structures has not been given such priority by GoR as during the earlier stages of project identification. The IUCN national Forest Landscape Restoration Initiative will complement the more localized interventions of LAFREC with policy actions at the national level (for instance, helping to expand propagation of native seeds), but it is also expected to focus on more on-the-ground investments than originally envisaged.

6. An activity to include the preparation of the UNESCO Biosphere Reserve proposal was also added, following an initial site visit by UNESCO that concluded favorably on the possibility. This development would allow the Gishwati-Mukura landscape to achieve a higher degree of prominence, improving its chances of attracting tourists, investment and funding.

7. In accordance with the greater specificity of project activities, some adjustments were made in the alignment with GEF / LDCF Focal Area Objectives:

a. "BD1, 1.1: Improved management effectiveness of existing and new protected areas, New protected areas (number) and coverage (hectares) of unprotected ecosystems" was added to reflect the upgrading of the Gishwati and Mukura Forest Reserves to national park status, which the project is supporting. These forest patches form key anchors to the regional ecosystem. “BD2, 2.1: Increase in sustainably managed landscapes and seascapes that integrate biodiversity conservation” was retained as the project will still be working on enhancing biodiversity in the border landscape, particularly in promoting the use of native forest elements in microcatchment rehabilitation and silvopastoral approaches.

b. Under the LD3 Objective, shifted most of the funding from output 3.2: *INRM tools and methodologies developed and tested* to output 3.1 *Integrated land*

[83] The Land Redistribution Committee established to address resettlement issues related to the earlier GWLM project established a precedent for cross-sectoral coordination for the Gishwati-Mukura landscape. The final report of the Committee suggested establishing a more permanent structure be put in place, and there have also been suggestions for a dedicated funding mechanism for Gishwati in the past.

management plans developed and implemented to reflect the fact that the main investments will be in the implementation of improved land management on the ground.

c. Replaced "CCA-1, 1.2: Reduced vulnerability to climate change in development sectors" with "CCA-1, 1.3: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas" to reflect the focus on provision of concrete interventions that strengthen the economic resilience of local communities through a diversified base of income streams. Although physical, social and natural assets will be strengthened in response to climate change, as per the original output under CCA-1 Outcome 1.2, this will mainly be achieved through improvements in flood warning and response which is captured more directly under the existing CCA-2 outputs (as well as through improvements in ecological infrastructure captured elsewhere). Also, "CCA-2, 2.3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at the local level" was dropped as although community-level capacity-building will be carried out, the focal use of LDCF funds is on investments in flood forecasting and livelihoods, rather general adaptation awareness and planning.

Table 1: Selected GEF-5 and LDCF Focal areas: Objectives, Outcomes, and Core Outputs

Focal areas and Focal Areas Objectives	Expected Outcomes	Core Outputs
***Biodiversity-BD1*:** Improve Sustainability of Protected Area Systems	1.1. Improved management effectiveness of existing and new protected areas.	1. New protected areas (number) and coverage (hectares) of unprotected ecosystems.
***Biodiversity-BD2*:** Mainstream Biodiversity Conservation and Sustainable Use into Production Landscapes, Seascapes and Sectors	2.1: Increase in sustainably managed landscapes and seascapes that integrate biodiversity conservation.	2. National and sub-national land use plans that incorporate biodiversity and ecosystem services valuation.
Land Degradation-LD 3: Integrated Landscapes: Reduce pressures on natural resources from competing land uses in the wider landscape	3.1: Enhanced cross-sector enabling environment for integrated landscape management. 3.2: Integrated landscape management practices adopted by local communities.	3.1 Integrated land management plans developed and implemented. 3.2: INRM tools and methodologies developed and tested.
Sustainable Forest Management-SFM1 : Reduce pressures on forest resources and generate sustainable flows of forest ecosystem services	1.3: Good management practices adopted by relevant economic actors.	Forest area (hectares) under sustainable management, separated by forest type. Types and quantity of services generated through SFM.
Climate Change CCA-1:	1.3: Diversified and	1.3.1 Targeted individual and

Reducing Vulnerability: Reduce vulnerability to the adverse impacts of climate change, including variability, at local, national, regional and global level	strengthened livelihoods and sources of income for vulnerable people in targeted areas.	community livelihood strategies strengthened in relation to climate change impacts, including variability.
Climate Change CCA-2: Increasing Adaptive Capacity: Increase adaptive capacity to respond to the impacts of climate change, including variability, at the local, national, regional and global level	2.1: Increased knowledge and understanding of climate variability and change-induced threats at country level and in targeted vulnerable areas.	2.1.1 Risk and vulnerability assessments conducted and updated. 2.1.2 Systems in place to disseminate timely risk information.

8. LAFREC responds to all six of Rwanda's NAPA priority adaptation options:

(a) Integrated Water Resource Management (IWRM): Component 1.b will pilot the landscape approach to forest restoration forms an integral piece of the IWRM puzzle. The project will take a microwatershed-approach to introducing sustainable land management techniques that reduce run-off, while also seeking to reduce upstream run-off by reestablishing trees in the landscape in critical areas, such as on particularly steep slopes, ridge tops and on pasture land.
(b) Setting up an early warning information system with hydro-meteorological data and rapid intervention mechanisms: LAFREC's hydromet component (1.d) will increase the reliability and rapidity of flood forecasting.
(c) Promotion of non-agricultural income generating activities: Component 1.c will diversity livelihoods in an effort to decrease dependency on unsustainable exploitation of forest resources.
(d) Promotion of intensive agro-pastoral activities: Component 1.b will intensify and make more sustainable agricultural production, in particular on steep slopes and pasture land.
(e) Introduction of resistant species to environmental conditions: Component 1.b will partially rely on agroforestry with a particular focus on native species. Component 2's research activities will seek to advance knowledge on suitable species for agroforestry.
(f) Development of firewood alternative sources of energy: Component 1.c may include elements increasing energy efficiency by improving charcoal production and stoves, if confirmed as a viable livelihood improvement option.

9. LAFREC's activities also conform to several of the resulting seven high-priority projects defined in the NAPA: Land conservation and protection against erosion and floods at the level of districts of regions vulnerable to climate change; establishing hydro-meteorological information and early warning systems to control extreme phenomena due to climate change; supporting districts of regions vulnerable to climate change in planning and implementing measures and techniques related to conservation and intensive agriculture.

10. **Baseline Scenario:** The GoR is implementing a few projects and initiatives to address high levels of land degradation and rural poverty. As part of this strategy, food security and improved management of soil and water resources have received most of the attention projects focusing on rehabilitation of degraded hillsides. The baseline for the proposed project constitutes a number of environmental, agricultural and climate change initiatives undertaken by government and NGOs:

(a) LVEMP II APL-2 (P118316), approved on June 13, 2011, is a US$ 30 million operation addressing the socio-environmental impacts of environmental degradation in the Lake Victoria Basin. More specifically, it seeks to (i) improve the collaborative management of the transboundary natural resources of the LVB for the shared benefits of the five East African Community Partner States; and (ii) reduce environmental stress in targeted pollution hotspots and selected degraded sub-catchments to improve the livelihoods of communities who depend on the natural resources of the LVB. Out of the US$ 15 million IDA credit to Rwanda under LVEMP II Phase II, US$ 9.4 million are being considered as baseline associated financing for the proposed project, as it will be used to develop national analytical work on watershed investment priorities as well as to support watershed and wetland restoration activities on the ground. LAFREC is expected to inform parts of LVEMP's restoration efforts by sharing lessons on tree-based approaches. LAFREC's investments in the improvement of the generation and utilization of hydrometeorological data can also help inform the national analytical work on watershed investment priorities.

(b) The Third Rural Sector Support Project (RSSP). The Third Rural Support Project is an US$ 80 million IDA project aiming to support implementation of the PSTA II, especially its first two strategic pillars: intensification and development of sustainable production systems, and support to the professionalization of producers. The current operation is the third in a series that started in 2001 and has so far over-achieved in relation to the triggers previously established for its preparation and approval. Project objectives are to: (i) Increase the agricultural productivity of organized farmers in marshlands and hillsides of sub-watersheds targeted for development in an environmentally sustainable manner; and (ii) strengthen the participation of beneficiaries in market-based value chains. The project involves some investments in associated hillside rehabilitation, and its work in this domain fosters many of the same landscape restoration goals as LAFREC.

(c) The Land Husbandry, Water Harvesting and Hillside Irrigation Project (LWH), which is increasing the intensity and sustainability of hillside agriculture, in particular by establishing radical terracing alongside improved agronomic techniques on cultivated hillsides. More so even than the RSSP described above, LWH aims to restore entire landscapes through its approach, with a dual objective of increasing agricultural productivity and arresting land degradation. These goals closely align with LAFREC's. Including additional financing and donor funds, the project financing comes to over $150 million. During preparation, the project team coordinated closely with LWH, after which it announced that it would include the Gishwati-Mukura landscape in its US$ 35 million additional financing round. LWH

has a proven model for enhancing productivity and watershed functions in crop lands, but its investments are intensive and can only cover certain areas, selected largely on poverty-reduction criteria. Within the project's three target areas adjacent to the former Gishwati Forest Reserve, it will only be able to cover about a fifth of the agricultural land. LWH incorporates agroforestry elements, but tree-based approaches and biodiversity objectives are not a main priority. As part of a broader landscape approach, LWH activities are considered highly complementary to the LAFREC landscape investments and the US$ 35 million additional financing is considered as baseline associated financing for LAFREC.

(d) The Rwanda Forest Landscape Restoration Initiative is a collaborative program between the Government of Rwanda and IUCN, based on their strategic dialogue in recent years. IUCN expects to receive funding from the German Environment Ministry for the Initiative. A pilot phase aimed at developing the proposal for the main funding is already underway and has resulted in a national assessment of landscape restoration potentials by an IUCN / WRI team, which has been used to inform the preparation of LAFREC. The full Initiative will support a mixture of on-the-ground interventions and policy / enabling environment strengthening activities. A coordinator for the Initiative is due to start work shortly, based in the Forestry Department of RNRA, and would be expected to play an important role in the coordination of forestry activities with LAFREC. The expected funding from the German Environment Ministry of US$ 5 million is considered baseline associated financing.

(e) Once the Gishwati-Mukura National Park is formally gazetted, the Rwandan government will provide in-kind contributions in the shape of routine staffing costs (projected to be $0.45 million over the five-year life span of the project), and transfer payments that will be redirected to the communities surrounding the Gishwati-Mukura National Park from the nation-wide revenue sharing scheme from the park fees RDB collects in the national park system (estimated to be $0.455 million over the five-year life of the project). In the absence of the LAFREC project, however, there would be a lack of funds for initial investments in ecological restoration and basic infrastructure for the Park which would retard the development of the Park as a viable, revenue-generating eco-tourism site. It would also impede the management of the broader landscape that will be necessary to sustain the two small remnant forest areas. The absence of the project would further risk a hiatus or disconnect between current community-based management activities under the Forests of Hope Association in the event that the arrival of RDB is delayed. The GoR sums are considered baseline associated financing. (In addition, GoR will provide $1.291 million in in-kind contributions, in the form of government staff time from district to the national level as direct co-financing of the project. This is not part of the baseline as it would not occur in the absence of the project.)

(f) Following an earlier LDCF-funded project through REMA, which supported capacity-building by the UK Met Office, a basic rainfall forecasting and alerting system has been established for northwest Rwanda. However, this has yet to translate

into an effective flood early warning system because (i) the coverage of real-time rain gauges and forecasting techniques are too narrow to allow very accurate rainfall forecasts within the complex topography of the region, (ii) hydrological models have not been established to convert rainfall forecasts into flood forecasts, and (iii) last-mile connectivity (i.e. establishment of information dissemination and response systems at the community level) has not been effectively developed.

11. Although the baseline scenario includes a number of investments that would be beneficial to the Gishwati-Mukura landscape, they are either too piecemeal (e.g. local LWH investments and expected RDB support to the new national park) or to diffuse (e.g. national level analyses and initiatives through LVEMP and IUCN) to have a transformative effect at the landscape level. In the absence of the project, land degradation in the Gishwati-Mukura landscape would be likely to continue, with attendant negative effects on agricultural productivity due to soil erosion, and exposure to flood events and landslides. Climate change is expected to lead to more intense precipitation events in the area, heightening both erosion and flood potentials. Both negatively impinge upon local livelihoods.

12. **GEF/LDCF Alternative**: The GEF/LDCF Alternative is the baseline scenario plus the project costs and additional in-kind government contribution. Due to (i) the high dependency of the area's economy on a variety of natural resources and agricultural activities; (ii) the high population density; (iii) the highly fragmented nature of the remaining natural habitats; (iv) the advanced state of degradation in the environmentally fragile area; and (v) the potential for a diverse and attractive landscape to support the development of a local tourism industry linked to the Kivu Belt - the landscape approach to land-use planning and restoration is believed to be the most promising approach. It would convene all relevant stakeholders to discuss and agree on the best combination of uses for that particular area, while building on existing coordination mechanisms at the district and landscape level.

13. The project will allow for a true landscape approach within the target landscape through (i) enhancing agroforestry and production forest management within production landscapes, (ii) introducing silvo-pastoral approaches on grazing lands, (iii) restoring natural forests and enhancing connectivity between them through forest-focused micro-catchment rehabilitation, and (iv) tying into district- and national-level landscape planning efforts. Landscape and natural resources management activities will be complemented by adaptation activities: flood-risk forecasting and response systems, and diversification of sustainable livelihoods. Experimental and impact-monitoring approaches will build a case for enhanced forest landscape restoration activities within much broader land husbandry programs, which have the power to be transformative at the national level.

14. Specifically, the project investments would provide the following local, global and adaptation benefits:

Component 1: Forest-friendly and climate-resilient restoration of Gishwati-Mukura landscape (GEF US$ 4.427m; LDCF US$ 3.800m; GoR US$ 1.696m) will provide for a comprehensive and coherent landscape restoration program working in natural forests, crops lands and pasture lands to enhance biodiversity, watershed, carbon sequestration, and economic

functions alongside additional complementary climate resilience investments in livelihood diversification and flood forecasting and response.

Sub-Component 1.a.: Upgrading and sustainable management of Gishwati-Mukura Protected Area (GEF US$ 1.408m; GoR US$ 0.450m) will provide for planning, natural forest restoration, training, equipment and basic infrastructure investments that will directly improve the condition and protection of the natural forests in Gishwati and Mukura, and greatly accelerate the potential for developing conservation-based incomes (especially from chimp-based eco-tourism) for both the population and to secure the viability of the Park. This will improve the sustainability of the Gishwati-Mukura National Park and the protection of key remnant sections of a forest system of high biodiversity importance. RDB currently manages the three national parks in Rwanda with little external financing, but technical assistance from e.g. WCS in Nyungwe and the Dian Fossey Gorilla Fund in Volcanoes. The parks generate significant income, both as fees to support their own management and community programs, and for the economy more broadly as eco-tourism is a leading export sector. The addition of Gishwati-Mukura is a unique opportunity to expand the system, but longer-term support for the new park may rely upon its success as tourist attraction that can also contribute to incomes. The short-term investments under the project aim to allow it to achieve viability as an extension of the national park system within an acceptable period of time.

Sub-Component 1.b.: Forest restoration and land husbandry in the Gishwati-Mukura landscape (GEF US$ 3.019m; GoR US$ 0.450m) will enhance biodiversity outcomes by increasing the ecological connectivity between the Gishwati and Mukura Forest Reserves and within the landscape more generally through the use of natural forest elements in micro-catchment management within croplands and silvo-pastoralism within rangelands. This will also reduce land degradation throughout the broader landscape, with concomitant agricultural production, watershed function, carbon sequestration and climate resilience benefits. It will incorporate coordinated landscape planning processes that maximize synergies between economic and environmental landscape functions across sectors.

Sub-Component 1.c.: Sustainable and resilient livelihoods (LDCF US$ 2.616m; GoR US$ 0.455m) will support the sustainability of all the above interventions by promoting livelihoods that add value to sustainable management of natural resources or otherwise reduce pressure on the resource base. It will directly enhance climate resilience by diversifying the livelihoods base away from a narrow range of rain-fed agricultural activities, based on participatory vulnerability assessment and identification of more climate-resilient income streams.

Sub-Component 1.d.: Flood forecasting and preparedness (LDCF US$ 1.184m; GoR US$ 0.341m) will further enhance the climate resilience of local communities by overcoming the inability of existing hydro-meteorological systems to predict flood events in an accurate and timely manner, and preparing at-risk communities to respond to extreme weather events. Installation of additional automated hydro-met stations, improved use of existing equipment (including Doppler radar) and training in additional forecasting tools will improve the reach and granularity of rainfall forecasts. Hydrological modelling will allow for spatial flood-risk forecasting, and community-level vulnerability analysis and preparedness training will provide for effective local response to guard life and property from future flooding events. It will further synergize with the land management

interventions through the flood-risk mapping and hydrological modelling studies, which will quantify the contribution of watershed rehabilitation to flood attenuation.

Component 2 – Research, monitoring and management (GEF US$ 1.060m; LDCF US$ 0.245m; GoR US$ 0.500m) will enhance national knowledge and capacity on the application of agroforestry techniques (particularly using native species), demonstration of the impacts of difference land rehabilitation approaches as well as providing for overall project management. There are a number of specific barriers to scaling up forest landscape restoration activities in Rwanda, not least technical knowledge of the propagation and use of native species to expand the small number of agroforestry species and approaches currently in use. In addition, several projects and programs are underway in Rwanda that are promoting sustainable land management. The largest of these, being implemented through the agriculture sector, emphasize crop intensification and poverty reduction, and not necessarily tree-based systems or coordinated landscape management. A systematic investigation into the relative effectiveness of different approaches offers the potential to leverage much larger (by one or two orders of magnitude) programs of investment in land rehabilitation in future through demonstrating the added value of incorporating these elements, particularly to MINAGRI.

Incremental Cost The GEF grant of US$ 5.487 million (from LD, BD, and SFM) and LDCF grant of US$4.045 million, along with a separate Government in-kind contribution of US$2.196 million, will be complemented with associated financing from the following: (i) LVEMP II (US$9.4 million); (ii) LWH (US$35 million); and (iii) the IUCN Forest Landscape Restoration Initiative (US$5 million). The total project cost under the baseline scenario is US$ 50.305 million and the GEF alternative is US$ 61.128 million.

Table 2: Summary of Additional Financing Costs by components and source ($US million)

Project component	GEF focal area			LDCF	GoR	Associated finance	Total
	BD	LD	SFM				
1.a. Upgrading and sustainable management of Gishwati-Mukura Protected Area	1.262		0.146		0.450		**1.858**
1.b. Forest restoration and land husbandry in the Gishwati-Mukura landscape		2.250	0.769		0.450	40.000	**43.469**
1.c. Sustainable and resilient livelihoods				2.616	0.455	0.400	**3.471**
1.d. Flood forecasting and preparedness				1.184	0.341	4.500	**6.025**
2.a. Applied research and impact monitoring	0.050	0.421	0.390			4.500	**5.361**
2.b. Project management	0.050	0.090	0.059	0.245	0.500		**0.944**
Total	**1.362**	**2.761**	**1.364**	**4.045**	**2.196**	**49.40**	**61.128**

15. **Estimation of the impact of project activities on carbon dioxide balance:** The impact of project interventions on carbon emissions will stem from land use changes (e.g. reforestation on stream banks, steep slopes, in protected areas, and in certain plantation forests), improved land management (e.g. through adoption of conservation agriculture, agroforestry approaches, and

silvopastoralism), and avoided degradation (e.g. avoided deforestation, especially in protected areas).

16. A carbon dioxide balance calculation has been carried out using the Ex Ante Carbon-balance Tool (EX-ACT, Version 5.1.1, Tier 1 edition), which comprehensively captures the main GHG emissions sources and sinks for both forest and agricultural land types. This version of the tool uses default emissions and sequestration factors based on climate and soil parameters. The tool can also be used for further adjustments and monitoring by the project team as specific project research and M&E activities generate improved data and knowledge.

17. Under the baseline scenario, the current estimated rates of deforestation and forest degradation would prevail – currently estimated by the Forest of Hope Association to be 6 percent – with a resulting loss in forest areas and reduced forest carbon stocks in the degraded forests.

18. With the GEF financing, the main land use changes and improvements are expected to derive from:

(a) Rehabilitation of 800 ha of natural forest in Gishwati-Mukura National Park;
(b) Reduced degradation of a further 1,500 ha of natural forest in Gishwati-Mukura National Park due to improved protection;
(c) Restoration of 500 ha of buffer zone plantations around Gishwati-Mukura National Park;
(d) Planting of 1,050 ha of primarily natural forest in micro-catchment protection strips (700 ha) and silvo-pastoral corridors (350 ha);
(e) Sustainable land management technologies on a further 1,500 ha;
(f) Improved woodlot management covering around 250 ha.

19. The EX-ACT calculation yielded the following results, which provide an estimate of the emissions balance over a 20-year period as a result of the five-year project as compared with the baseline scenario (without project)[84]:

Table 3: Summary of EX-ACT Carbon Assessment

Project Component	Gross fluxes			Share of the Balance	
	Without	With	Balance		
	All GHG in tCO_2eq Positive = source / negative = sink				
				Biomass	Soil
Land Use Changes					
Deforestation	181,808	0	-181,808	-132,300	-49,508
Afforestation	0	-462,366	-462,366	-354,400	-107,967

[84] The net carbon balance numbers reported in the SFM tracking tool reflect only the forest-specific portion of the total net carbon balance.

Other	0	-59,362	-59,362	22,066	-81,428
Agriculture					
Annual	-37,572	-26,400	11,172	0	11,172
Perennial	-11,900	-188,163	-176,263	-168,300	-7,963
Grassland					
Grassland	0	-17,348	-17,348	0	-17,348
Degradation	28,576	-354,731	-383,306	-291,700	-91,606
Inputs & Investments	1,349	1,349	0		
Total	162,261	-1,107,019	**-1,269,281**	-924,634	-344,647
Per hectare	13	-86	-99	-72.1	-26.9
Per hectare per year	0.6	-4.3	-4.9	-3.6	-1.3

20. The emissions balance of the project is expected to be strongly negative, that is carbon sequestration of some 1.27 million tons (Mt) of carbon dioxide-equivalent (CO_2eq) is expected over the 20-year period accounted for. The largest contributor to the sequestration is afforestation (0.46 Mt), followed by reduced forest degradation (0.38 Mt), avoided deforestation (0.18 Mt), and the introduction of SLM practices (promotion of *inter alia* the use of organic compost / manure, green manures, reduced tillage, conservation agriculture) and perennial crops (trees in agroforestry systems) (0.18 Mt). The introduction of silvopastoral and agroforestry approaches is expected to make a relatively minor contribution (0.02 Mt). Emissions sources are limited to annual agriculture (due to poor land management practices and some use of nitrogen fertilizer).

21. It should be stressed that the above figures represent estimates, as assessing expected changes in GHG emissions remains relatively speculative. Indeed, the respective scale and location of each intervention cannot be accurately known for the moment as, following the approach that the project has adopted, the eventual choice of SLM options will be left for local communities/farmers to determine. Yet, emission levels will be a function of eventual changes in diverse land cover types (e.g. natural forest, plantation forest, crops and pasture) as well as diverse technologies used. The assumptions made to arrive at the estimates above are limited to the land use change area estimates cited above, the default emissions and sequestration factors built into EX-ACT, and an assessment period of 20 years. GHG emissions due to actual project implementation (support/supervision services, construction) are considered to be limited, and therefore are not accounted for.

Annex 8: Map of Project Area